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An Acoustic Survey of Atlantic Cod (*Gadus morhua*) in Three Inshore Areas of Western Trinity Bay (NAFO Division 3L)

by

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Abstract

The results of an acoustic survey of cod conducted in three fjords (Smith Sound, Northwest Arm, and Southwest Arm) on the western side of Trinity Bay during 15-26 April 1996 are presented. Integrated density estimates were obtained using a Biosonics 102 system employing a dual beam 38Khz transducer from the RV Shamook. Data acquisition and signal processing were conducted with Biosonics ESP software. Each fjord was treated as a separate stratum and a series of equidistant (1nm apart) parallel transects perpendicular to the long axis of each fiord was run, with a randomly chosen starting point. A total of 52 transects totalling 44.85 nm miles were run in the surveyed area. Extensive biological sampling of cod was conducted, using an otter trawl, handlines, and gill nets. Cod were generally large and of similar mean length in each stratum (54.7-56.2 cm). Average lengths and weights of cod sampled within each stratum were used to calculate target strengths and to convert acoustic integrated backscatter to cod biomass. Targets classified as cod were detected on 36 (69.2%) of the transects. Average densities of cod on most transects were generally low ($<0.1 \text{ mT/km}^2$), but relatively high densities (5.0-6.4 mT/km²) were observed in three adjacent transects across a school of spawning cod in deep (>200m) water in the outer region of Smith Sound. Total estimated biomass for the three areas combined was 171.3 mT (CV 38.7%) Most of the cod (90.4%) were found in Smith Sound. Much of the area surveyed was characterized by rough bottom and steep sides making it difficult to detect cod close to the bottom; consequently, biomass for the surveyed area is possibly underestimated.

Introduction

Since the early 1990's the offshore components of the major cod stocks off the coast of Labrador (2J) and northeastern Newfoundland (3KL) have essentially disappeared. Annual and biannual stratified-random trawl surveys have not detected any major concentrations of adult cod in the offshore areas, in spite of the moratorium. In contrast, inshore acoustic surveys and tagging studies, as well as catch rates from the sentinel survey and food fishery, all indicate that there are aggregations of adult cod inhabiting many of the inshore bays off castern and northeastern Newfoundland, particularly in Notre Dame Bay, Bonavista Bay, and Trinity Bay.

Accurate information on the size of these inshore aggregations is lacking. Additional inshore strata have been added to the trawl survey area as of fall 1996 to extend coverage as close as possible to the shoreline; however, much of the coastal area remains untrawlable due to rough bottom and alternative methods of quantifying inshore components are clearly required.

The present paper summarizes the results of an acoustic survey for cod conducted in three fjords in western Trinity Bay, Newfoundland, during April 1996. Age-length distributions of cod sampled during the survey are also given. Other biological characteristics of sampled cod, including length frequencies, maturities, condition, and parasites are presented in detail elsewhere (Brattey 1996). The survey was conducted mainly to provide information on the feasibility and logistics of conducting inshore acoustic surveys for cod, prior to planning more extensive inshore surveys.

Survey Area

The area surveyed encompassed three adjacent fjords 20-30 nautical miles (nm) long and 0.5-2.0 nm wide in the Random Island area on the western side of Trinity Bay (Fig. 1). Smith Sound and Southwest Arm have deep (>200 m) central channels that extend out into Trinity Bay, whereas Northwest Arm is shallower (approximately 160 m) and has a relatively shallow (70 m) sill near the entrance (Fig. 2).

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Hydroacoustic equipment

A Biosonics model 102 echosounder and a dual beam 38Khz transducer were used to conduct the survey. The transducer was mounted on a Biofin tow-body deployed with a deck-mounted crane and suspended approximately 5 m below the surface off the rear starboard quarter of the vessel. Data acquisition and signal processing including integration were conducted with Biosonics echo signal processing (ESP) software, version 3.2.

Calibration

Prior to and during the trip a 38 mm tungsten-carbide standard target suspended 7.5 m below the transducer was used to calibrate and check the stability of the system. Measured TS (mean =- 42.22) was consistent with the expected value (-42.1) and showed little variability, (variance 0.058; Fig. 3) at up to 4dB off axis. Measured standard TS values were also consistent with those obtained during previous calibrations.

Integrator calibration parameters were the same as those used during previous surveys and were provided by Biosonics (simultaneous $20\log R(dB) = -145.80$, beam pattern factor 0.0009136). Sounder and calibration parameters used during the acoustic survey are summarized in Table 1.

Survey Design

The survey design was based on that used for acoustic surveys of herring in the inshore of NAFO Divisions 3KL (Wheeler 1991). Each of the three areas surveyed is geographically discrete and was treated as a separate stratum. There is no historical time series of data on the distribution of cod in these areas to serve as a basis for partitioning effort among the strata, so each area was surveyed with the same sampling intensity. To assign transect positions, a perpendicular baseline was assigned to the head of each area as close to shore as the vessel could safely operate and the first mile was subdivided into a baseline plus ten parallel lines 0.1 nm apart: the position of the first transect was chosen randomly from these lines. Transect spacing was set at 1nm within each area and was based largely on logistic constraints (size of area, time available, and vessel speed) and resulted in 14-22 transects per stratum (Fig. 4, Table 2). Transects were run at approximately four knots during daylight hours.

Data collection and signal processing

During the survey a detailed log and a paper echogram were collected for each transect. The ping rate of the echosounder was set at one ping per second. At an average speed of approximately 4 knots this translates into a horizontal distance or "bin" of 10.2 m for each data report. On the vertical scale, data were collected from the surface to the bottom in 5 m primary "bins". Secondary bins for the bottom 10 m (bottom up) were set at 1 m. The acoustic data was edited to select for cod and to ensure that acoustic backscatter from the bottom was excluded. Due to the steep slopes in the surveyed area, it was necessary to set the bottom removal algorithm to exclude acoustic backscatter within 2 m of the detected bottom.

The average length of cod sampled within a stratum (Table 3) was converted to an average TS per fish using the following relationship derived specifically for cod by Rose and Porter (1996):

TS=20 log L - 65.5

where L=cod fork length in cm. The average TS's were similar within each stratum: -32.67 in

Smith Sound; -32.7 in Southwest Arm; -32.51 in Northwest Arm. Densities of cod in terms of numbers of individuals were obtained by dividing system voltages by the average TS; these were converted to weights (mT/km²) by multiplying by the average weight of cod sampled within a stratum (Table 3).

Acoustic survey results

Integrated density estimates were calculated for the 52 transects run within the survey area (Tables 4-6). The formulas used to compute mean densities, variances, and biomass estimates within each stratum and overall biomass are described in Wheeler (1991). Biomass per stratum was obtained by multiplying the average stratum density by the stratum area. Stratum variances given in Tables 4-6 indicate the extent to which individual transect densities vary around the overall stratum mean. Estimates of biomass (±variance, in metric tons) for each stratum were as follows:

Cod Biomass (mT)	Variance
154.41	4319.72
9.89	24.15
6.96	3.20
	<u>Cod Biomass (mT)</u> 154.41 9.89 6.96

Targets classified as cod were detected on 36 (69.2%) of the transects. Average densities of cod on most transects were generally low (<0.1 mT/km²), but relatively high densities (5.0-6.4 mT/km²) were observed in three transects across deep (>200m) water in the outer region of Smith Sound (Table 4). Cod in this area appeared to be spawning (Brattey 1996).

Acoustic estimates of biomass per transect (extrapolated to 0.5nm either side of the transect line) varied widely both among and within strata, with the highest estimates (22.1-65.7,mT) on transects in the outer portion of Smith Sound. Plots of acoustic estimates of biomass on individual transects suggested that cod were widely distributed in Smith Sound, restricted to the inner portion of Northwest Arm, and widely distributed in the central portion of Southwest Arm (Fig. 5) cod. Plots of cod distribution by depth from the acoustic data (Fig. 6) and from echograms (Figs. 7, 8, 9) indicated that cod were distributed over a wide range of depths in the survey area. However, depth distributions were not consistent among the three strata. In Smith Sound, highest densities were observed in deep water (>180m), but low densities were also recorded at depths as shallow as 20 m (Fig. 6). In Northwest Arm, the acoustic data suggested that cod were mostly at intermediate depths (35-80 m), whereas in Southwest Arm they were mostly in deep water (>180 m, Fig. 6). The echograms revealed widely differing vertical distributions; cod in the deep central channel of Smith Sound often extended 60 m up from the bottom (Fig. 7); however, those on the slopes in Smith Sound (and Northwest Arm) showed a narrow vertical distribution and tended to remain close to the bottom (Figs. 8). Cod in the deep central channel of Southwest Arm extended 50 m up from the bottom (Fig. 9) but were much less densely aggregated than those in Smith Sound.

Three additional transects were also run outside the survey area, in the main part of Trinity Bay eastward from the entrance to Smith Sound. Although detailed results are not reported here, no significant aggregations of cod were detected in these transects.

Biological sampling

Samples of fish were collected with the Yankee 36 otter trawl equipped with a small-mesh liner in areas where trawling was feasible. Hand-lines equipped with feathered hooks and jiggers were used in areas of rough or steep-sided bottom at depths <100 m. Gill nets (5.25 in mesh) were deployed elsewhere. Most cod were sampled for fork length, weight, sex, maturity, and gill parasites: otoliths were also taken from 719 fish for age determination. Fishing set locations are indicated in Fig. 10. Sampling was conducted widely throughout each stratum and over a wide range of depths (25-290 m), but two areas (shoreward ends of Smith Sound and Southwest Arm) were not sampled due to time constraints.

Cod were widely distributed in the survey area; they were caught in all three strata and in 23 of the 26 fishing sets conducted (Table 7). Catch weights and numbers of cod varied widely among sets, with the largest catch (442 fish weighing 826.6 kg) taken in Smith Sound. The only

other species caught in significant numbers was American plaice (<u>Hippoglossoides platessoides</u>); other species such as turbot (<u>Reinhardtius hippoglossoides</u>), witch (<u>Glyptocephalus cynoglossus</u>) and redfish (<u>Sebastes</u> sp.) were caught in small numbers.

Cod were generally large and mean lengths were similar among sets within each stratum (Table 3). The mean lengths for cod in each stratum, obtained by combining catches from all gears, varied by only a few cms and ranged from 54.7 cm in Southwest Arm (n=246) to 56.2 cm in Northwest Arm (n=253). Average weights of cod within each stratum ranged from 1.66 kg in Smith Sound and Southwest Arm to 1.85 kg in Northwest Arm.

An age-length key contructed using data from cod whose ages were known and applied to the length frequency of the total catch (Table 8) revealed a wide range of ages (2-25 yr) among cod in the survey area. However, the majority of cod sampled (76.2%) were 5-7 yrs old and 6 yr old fish (1990 year class) dominated the catch (Table 8).

Oceanographic data and further details of the biological characteristics of these cod, including maturities, condition, and parasite (Lernacocera branchialis) infestation are summarized elsewhere (Morgan and Brattey 1996; Brattey 1996).

Discussion

The three areas covered during this survey are probably among the most difficult in which to conduct a hydroacoustic survey for demersal species such as cod. The fjords are extremely steep sided and contain areas of rough bottom making it difficult to detect fish that are within a few meters of the bottom. Consequently, we were forced to be conservative in our method of editing the acoustic data to ensure that backscatter from the bottom was not included in our estimates. However, this undoubtedly resulted in removal of some cod from our estimate.

Experience gained during this survey will be invaluable if future inshore acoustic surveys of cod are to be conducted. The ability to detect cod close to the bottom could probably be improved by collecting the acoustic data at a much higher level of resolution, both horizontally (higher ping rate) and vertically (smaller vertical "bins"). Better survey coverage (i. e. more transects miles per unit time) could also be achieved by using a larger and more stable tow-body that would enable the vessel to operate at faster speeds. The tow body we used became unstable at speeds greater than five knots, particularly in bad weather; consequently, our survey speed was restricted to four knots which limited the total number of transect miles that could be covered.

The use of two vessels, one for biological sampling and one for acoustic work, rather than only one as was available here would greatly extend the area that could be covered in two weeks and would be essential to cover larger inshore areas in a reasonable period of time. The use of two vessels has other advantages in that fishing can be conducted immediately after a transect has been run giving more accurate and timely information on the size distribution of fish in local areas. In our survey, fishing was usually conducted the day after transects were run or even later, which introduces the possibility of changes in the size composition between fishing and acoustics. However, for this survey this did not appear to be a problem as the size of the fish was remarkably similar throughout the surveyed area.

Our results suggest that the transect spacing of one nm was reasonable for surveying the area given that the aggregations of cod we detected tended to extend over at least a few miles, resulting in several transects per aggregation. Our results in conjunction with previous acoustic work in this area (Rose 1996) suggests that cod consistently spawn in the outer area of Smith Sound during April and it may be appropriate to designate this area as a separate stratum and assign a higher level of sampling intensity to this area, or to reduce the sampling other areas.

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Value	Sounder Parameters
F2/X2	Mode
້ 0.00	Transmitter
0.4ms	Pulse Width
Blank at Range	Control
500 N	Range
Interna	Trigger
1 sec	Trigger Interval
Of	Calibrator
-6 db	Receiver Gain(X2)
5 khz	Bandwidth
40LogR	Toggle Switch
Salt Water	Toggle Switch
40logR(N)	Channel 1
40LogR(W)	Channel 2
20LogR (Simultaneous)	Channel 3

· · · · · · · · · · · · · · · · · · ·	·····	Calibration Tone Values		·
5.75(Vrms)		Channel 1 @ 10 Khz	, . , .	
5.47(Vrms)		Channel 2 @ 10 Khz		
-40db CW	•	Calibrator		
1 M		Separation		
- Normal		Control		

	al/bration Parameters(38khz dual beam)	
	Source Level(db)	223.50
	Receiver Sensitivity (narrow beam) db	-187.00
	Receiver Sensitivity (wide beam) db	-186.50
Ċ	Wide Beam Roll Off	1.30
	Simultaneous 20logR(db)	-145.80
	Beam Pattern Factor	0.0009136

Table 1. Summary of Biosonics 102 sounder and calibration parameters used during the acoustic survey.

Stratum	Transect	Start	Start	End	End	Speed	Duration	Distance
	number	Latitude	Longitude	Latitude	Longitude	(knots)	<u>(min)</u>	<u>(nm</u>
Smith Sound	SS1	4812,66	5354.20	48 12.91	5354.01	3.24	5.00	0.27
	SS2	4812.30	5352,89	4811.79	53 53.15	4.63	7.00	: 0.54
1	SS3	4811.46	5351.90	4810.61	5352.30	4.91	11.00	0.90
	SS4	4810.09	5351.28	4810.12	5351.21	3.85	19.00	1.22
]	SS5	4810.33	5349.34	4811.75	5348.32	4.10	23.00	1.57
l	, SS6	4811.60	5346.80	4810.74	5347.40	4.75	12.00	0.95
	SS7	4810.69	5345.79	4811.43	5345.32	4.36	11,00	0.60
	SS8	4810.83	5344.12	4809.50	5344.80	4.42	19.00	1.40
	SS9	4808.90	5343.60	4810.00	5343.00	4.13	17.00	1.17
÷	SS10	4809.89	5341.40	4809.04	5342.00	4.48	13.00	0.97
	SS11	4809.60	5339.60	4810.30	5340.50	4.75	12.00	0.95
	SS12	4810.46	5338.88	4809.99	5338.39	3.87	9.00	0.58
	SS13	4810.49	5337.07	4811.00	5337.80	4.26	10.00	0.71
	SS14	4811.52	5336.42	4811.09	5336.04	2.50	12.00	0.50
	SS15	4811.57	5335.55	4812.05	5335.09	4.00	9.00	0.60
	SS16	4812.79	5333.97	4812.34	5333.30	3.72	10.00	0.62
	SS17a	4811.94	5331.18	4812.50	5335.09	4.47	11.00	0.82
	SS17b	4812.70	5332.06	4813.62	5333.11	4.89	14.00	1.14
	SS18	4813.99	5331.61	4813.25	5330.67	3.92	15.00	0.98
	SS19	4813.87	5329.63	4814.71	5330.46	4.04	15.00	1.01
	\$S20	4814.39	5328.16	4815.21	5329.08	4.12	15.00	1.03
	SS21	4815.64	5338.12	4814.62	5326.80	3.52	23.00	1.35
Northwest Arm	NWO	4810.87	5357.28	4810.20	5356.70	4.10	6.00	0.41
	NW1	4809.12	5356.68	4809.41	5355.58	4.53	11.00	0.83
	NW2	4808.63	5354.93	4808.24	5356.38	3.90	16.00	1.04
	NW3	4807.31	5355.57	4807.59	5354.47	4.53	11.00	0.83
	NW4	4806.17	5355.73	4806.60	5354.21	3.61	17.00	1.08
	NW5	4805.11	5355.89	4806.86	5353.18	6.53	18.00	1.96
	^{>} NW6	4804.57	5351.61	4805.29	5351.65	3.42	10.00	0.57
	NW7	4805.23	5350.24	4804.63	5350.17	4.07	9.00	0.61
	NW8	4804.86	5348.71	4805.49	5348.68	3.78	10.00	0.63
	NW9	4804.89	5347.23	4805.58	5347.15	4,60	9.00	0.69
	NW10	4805.26	5345.66	4804.69	5345.68	4.87	9.00	0.73
•	NW11	4804.85	5344.24	4805.99	5344.14	4,02	17.00	1.14
	NW12	4805.29	5342.77	4805.70	5342.74	3.42	7.00	0.40
	NW13	4804.61	5341.11	4805.57	5341.23	4,38	13.00	0.95
	NW14	4803.25	5339.76	4804.62	5339.53	3.74	22.00	1.37
	NW15	4804.53	5338.15	4803.62	5338.11	3.92	13.00	0.85
						0.02	10.00	0.00

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Table 2. Transect details (see Fig 4. for transect positions).

Stratum	Transect	Start	Start	End	End	Speed	Duration	Distance
	number	Latitude	Longitude	Latitude	Longitude	(knots)	(min)	(nm)
Southwest Arm	SWO	4801.10	5356.20	4801.58	5356.11	2.82	10.00	0.47
	SW1	4801.43	5354.60	4800.77	5354.79	4.40	9.00	0.66
	SW2	4800.65	5353.25	4801.27	5353.91	3.78	10.00	0.63
	SW3	4801.10	5351.61	4800.47	5351.77	4.20	9.00	0.63
	SW4	4800.24	5350.29	4800.97	5350.21	4.04	11.00	0.74
	SW5	4800.84	5348.68	4800.00	5348.86	3.97	13.00	0.86
	SW6	4600.58	5346.55	4801.42	5347.20	4.52	13.00	0.98
	SW7	4801.47	5345.68	4800.86	5345.47	4.07	9.00	0.61
	SW8	4801.14	5343.70	4802.50	5344.29	3.96	15.00	0.99
	SW9	4802.45	5342.97	4801.41	5342.51	4.05	16.00	1.08
	\$W10	4801.85	5340.87	4803.00	5341.81	3.77	21.00	1.32
	SW11	4803.22	5340.14	4802.47	5339.85	4.09	11.00	0.75
	SW12	4803.51	5338.68	4803.58	5338.45	3.83	8.00	0.51
	SW13	4803.88	5337.42	4803.42	5337.88	3.00	9.00 -	0.45

	·····		······································			Catch	······································	
Area	Date	Set	Gear		No.	weight	Me	an
					cod	(kg)	Length (cm)	Weight (kg)
Smith Sound	960416	1	Jigger		54	54.6	48.5	· 1.01
	960416	2	Trawl		7	15.8	61.3	2.26
	960417	3	Trawl		. 3	2.3	47.3	0.77
	960417	4	Trawi		· · 442	[`] 826.6	58.6	1.87
	960418	5	Trawl		131	206.4	56.6	í 1.58
,	960418	6	Trawl		0	0		· `
	960418	7	Trawl		293	483.8	55.3	1.65
	960420	8	Jigger		113	140.3	51.8	1.24
	•		• •	Total	1043	1729.8	55.1	. 1.66
No altract Armi	060420	o .	ligger			6 0	51.9	1 70
Northwest Ann	900420	9 40	Jigger		· 70	162.0	51.0	, 1.70
	960421	10	Jigger		70	153.0	59.5	2,19
	900421	40			. 4	9.1	01.5	2.28
•	960421	12			1	40.6	07.U	2.40
	960421	13	Gili net		3	10,0	09.7	3.53
	960421	14	Irawi		9	C.O	- 35.4	0.72
	960421	15	Jigger		2	4.2	01.U	2.10
	960421	16	Jigger		128	228.5	55.4	1.79
	960422	1/	Gill net		1	2.5	66.U	2.50
	960422	18	Gill net		2	5.5	67.0	2.75
•	960425	26	Jigger		29	38.4	51.1	. 1.32
				Total	. 253	467.5	. 56.2	1.85
Southwest Arm	9 60423	19	Trawl		· · · 69	111.0	54.4	1.61
· - ·	960423	20	Trawl		78	133.4	55.0	1.71
	960423	21	Trawl		0			
	960423	22	Trawl		0	· · ·	۰.	
	960424	23	Trawl		[·] 16	. 26.9	55.2	1,68
	960424	24	Trawl		23	34.5	58.1	1.50
	960424	25	Trawl		60	103.7	55.2	1,73
				Total	246	409.5	54:7	1,66
		• .	Overall	Total	1542	2606.8	55.3	1.69

Table 3. Mean lengths and weights of cod sampled during Shamook trip 251 and used to convert acoustic integrated backscatter to cod density and biomass.

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Stratum	Stratum	Transect	Transect	Transect	Weighting	Density	Weighted Den	A	60	v
	Area(km2)		Len(m)	Area(m2)	Factor	(mT/km2)	(mT/km2)	(Den-mean wtd den)^2	Wtd Fact^2	A*B
Smith Sound	68.94686872	SS1	500.31	927074.43	0.295817	0.00E+00	0.00E+00	5.02E+00	0.087508	4.39E-01
		SS2	1000.62	1854148.86	0.591633	0.00E+00	0.00E+00	5.02E+00	0.350030	1 76E+00
		SS3	1667.70	3090248.10	0.986056	1.74E+00	1.72E+00	2.45E-01	0.972306	2.38E-01
		SS4	2260.66	4189002.98	1.336653	7.04E-01	9.41E-01	2.36E+00	1.786642	4.21E+00
		SS5	2909.21	5390766.13	1.720120	1.78E+00	3.06E+00	2.10E-01	2.958811	6.22E-01
		SS6	1760.35	3261928.55	1.040837	1.39E-01	1.45E-01	4.41E+00	1.083341	4.78E+00
		SS7	1482.40	2746887.20	0.876494	5.98E-02	5.24E-02	4.75E+00	0.768242	3.65E+00
		SS8	2594.20	4807052.60	1.533865	7.84E-01	1.20E+00	2.12E+00	2.352740	4.99E+00
		SS9	2168.01	4017322,53	1.281873	3.95E-01	, 5.06E-01	3.40E+00	1.643197	.5.59E+00
		SS10	1797.41	3330600.73	1.062749	5.10E-01	5.42E-01	2.99E+00	1.129435	3.38E+00
		SS11	1760.35	3261928.55	1.040837	1.02E+00	1.06E+00	1.49E+00	1.083341	1 61E+00
		SS12	1074.74	1991493.22	0.635458	5.30E+00	3.37E+00	9.35E+00	0.403807	3.77E+00
,		SS13	1315.63	2437862.39	0.777888	2.37E-01	1.85E-01	4.01E+00	0.605110	2.43E+00
		SS14	926.50	1716804.50	0.547809	3.15E-02	1.73E-02	4.88E+00	0.300094	1 46E+00
		SS15	1111.80	2060165.40	0.657371	0.00E+00	0.00E+00	5.02E+00	0.432136	2.17E+00
		SS16	1148.86	2128637.58	0.679283	3.15E-02 [°]	2.14E-02	4.88E+00	0.461425	2.25E+00
		SS17a	1519.46	2815559.38	0.898406	0.00E+00	0.00E+00	5.02E+00	0.807134	4.05E+00
		SS17b	2112.42	3914314.26	1.249004	5.50E+00	6.B8E+00	1.07E+01	1.560011	1.66E+01
		SS18	1815.94	3364936.82	1.073705	1,91E+01	2.05E+01	2.84E+02	1 152843	3.27E+02
		SS19	1871.53	3467945.09	1 106574	6.39E+00	7.07E+00	1.72E+01	1.224505	2.11E+01
		SS20	1908.59	3536617.27	1.128486	9.23E-01	1.04E+00	1.73E+00	1.273481	2.21É+00
		SS21	2501.55	4635372.15	1.479084	6.59E-01	9.75E-01	2.50E+00	2.187688	5.47E+00
		L	4	-	ــا ,			, ,		
				D0340808./2	Ŀ	Average	2.24E+00			9.09E-01
		، المحسم	Average	3133948.58		Ĺ			,	
							· Biomass (mT)	154.417	, 	
] ; ,	Variance	4319.722815		
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Table 5. Summary of details for cod biomass estimate for Northwest Arm.

Stratum	Stratum	Transect	Transect	Transect	Weighting	Density	Wtd Den	A	60	U
	Area(km2)		Len(m)	Area(m2)	Factor	(mT/km2)	(mT/km2)	(Den-mean wtd den)^2	Wtd Fact^2	A*B
Northwest Arm	48.37955081	NWO	759.73	1407779.69	0.465578	0.107300	5.00E-02	9.45E-03	0.216763	2.05E-03
		1 WV	1537.99	2849895.47	0.942512	0.157250	1.48E-01	2.23E-03	0.888330	1.98E-03
		NW2	1927.12	3570953.36	1.180979	0.945350	1.12E+00	5.49E-01	1.394712	7.66E-01
		NW3	1537.99	2849895.47	0.942512	1.233950	1.16E+00	1.06E+00	0.888330	9.41E-01
		NW4	2001.24	3708297.72	1.226402	0.577200	7.08E-01	1.39E-01	1.504061	2.09E-01
		SWN .	3631.88	6729873.64	2.225692	0.009250	2.06E-02.	3.81E-02	4.953705	1.89E-01
		NW6	1056.21	1957157.13	0.647268	0.101750	6.59E-02	1.06E-02	0.418955	4.42E-03
		NW7	1130.33	2094501.49	0.692690	0.000000	0.00E+00	4.18E-02	0.479819	2.01E-02
		NW8	1167.39	2163173.67	0.715401	0.000000	0.00E+00	4.18E-02	0.511799	2.14E-02
		6MN	1278.57	2369190.21	0.783534	0.000000	0.00E+00	4.18E-02	0.613926	2.57E-02
		NW10	1352.69	2506534.57	0.828957	0.000000	0.00E+00	4.18E-02	0.687169	2.87E-02
		NW11	2112.42	3914314.26	1.294535	0.000000.0	0.00E+00	4.18E-02	1.675821	7.01E-02
-		NW12	741.20	1373443.60	0.454223	0.000000.0	0.00E+00	4.18E-02	0.206318	8.63E-03
		NW13	1760.35	3261928.55	1.078779	0.00000	0.00E+00	4.18E-02	1.163765	4.87E-02
		NW14	2538.61	4704044.33	1.555713	0.000000	0.00E+00	4.18E-02	2.420244	1.01E-01
		NW15	1575.05	2918567.65	0.965224	0.00000	0.00E+00	4.18E-02	0.931657	3.90E-02
		₽	Sum	48379550.81		Average	2.04E-01			1.03E-02
		1	Average	3023721.93						
							Biomass (mT)	9.833		
							Variance	24.15269239		
						1				

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Areal(int) Len(int) Area(int) Factor (int)frimp) (continue) Area(int) (int)frimp) (continue) (int)frimp) (continue) Area(int) (int)frimp) (continue) (int)frimp) (continue) (int)frimp) (continue) (int)frimp) (continue) (int)frimp) (continue) (int)fritp) (continue) (continue) 2.57E-C0 (continue) 2.67E-C0 2	Arealerrol ser Arm Arealerrol Ser Arm Teach (m1/mm2) (m1/	Americand Lentim Americand Imitand Imitand Imitand Americand America	Amarilion3 Len(m) Len(m) Len(m) Maralian3 (m1/mm2) (m1/mm2) (m1/mm2) (m1/mm2) (m1/mm2) Must ferr2 Arabition3 ar Amarina SW0 07031 16173645 0.005140 3.852-01 2.375-01 2.375-01 2.375-01 2.375-01 2.326-0	Stratum	Stratum	Transect	Transect	Transect	Weighting	Density	Wtd Den	A	ß	с v
at.Am 36.67004412 \$\text{style}\$ is \text{in} 2275-01 \$275-01 \$275-01 \$275-02 \$0.706665 \$1135-02 \$ SW1 \$122:98 \$2265163 \$4 0.8657663 \$1865-01 \$1625-01 \$4365.00 \$0.46517\$ SW2 \$1177.32 \$245670 \$6 0.970373 \$365-62 \$0.862016 \$2.455-05 \$ SW3 \$1177.22 \$246670 \$6 0.970373 \$365-62 \$0.862016 \$2.455-05 \$ SW3 \$1177.22 \$246670 \$6 0.970373 \$365-62 \$0.862016 \$2.455-05 \$ SW3 \$1177.22 \$246670 \$6 0.970373 \$365-62 \$0.865-01 \$2.655-01 \$ SW2 \$117.32 \$2.45670 \$6 0.970373 \$365-62 \$0.862016 \$2.455-02 \$ SW3 \$1177.22 \$246670 \$6 0.970373 \$365-62 \$0.862016 \$2.465-02 \$ SW3 \$117.32 \$2.45670 \$6 0.970373 \$365-61 \$3775-01 \$0.162-01 \$2.465-02 \$ SW3 \$1375-41 \$5.46 \$2.566-10 \$0.655-00 \$0.665-00 \$0.665-00 \$0.666-00 \$0.006-00 \$0.666-00 \$0.666-00 \$0.666-0 \$0.666-00 \$0.006-00 \$0.00124 \$0.7167 \$0.00124 \$0.71620 \$0.947667 \$0.946-66 \$0.956-00 \$0.00124 \$0.7	at Am 36 67094112 SiV0 67051 1617567 20 616105 3 502 61 122051 226 0 0776965 1135 0 2376 00 1022 01 12228 228610194 052543 0005-00 0005-00 30505 0 0740517 33282 0005 51 16738 21817367 025543 0005-00 0005-00 30505 0 062016 2 2455 0 3465 1563 3 5546 0 13707 0005-00 0005-00 3055 0 062016 2 2455 0 3465 1563 3 5556 0 137173 1 13037 0005-00 0005-00 3055 0 1670311 1555 0 3395 0 1564 0 1854 4 2 386037 2 12546 4 2 286 0 1 3774 1 555 0 1 271734 1 555 0 1 271734 1 555 0 1 2708 7 2 355 0 1 205 0 1 555 0 1 206 0 0055 0 0 005 0 0 0 005 0 0 005 0 0 005 0 0 005 0 0 0 005 0 0 0 005 0 0 0 005 0 0 0 005 0 0 0 005 0 0 0 005 0 0 0 005 0 0 0 005 0	Min S667094112 SW0 F0061 1973/65.23 0.616105 3.62.61 2.23.6-01 0.376.66 1.13.6-03 SW1 172.38 2.3861134 0.865193 1.862.01 0.865193 1.862.01 0.36617 3.386-06 0.49617 3.386-05 SW2 1167.38 2.14317367 0.855943 0.0067-00 0.3067-02 0.862016 2.465-07 SW4 1371.2 2.446707 0.855943 0.0067-00 0.0067-00 3.866-02 0.80016 2.465-07 SW4 1371.2 2.446707 0.855944 0.86504 1.127341 5.667-01 3.866-02 0.80016 2.465-07 SW4 1371.2 2.446707 0.876-00 0.866-00 0.980711 1.666-00	ar./m 36 67034412 5 100 6703 1157362.23 0 616105 3 62 E-01 2.27 E-02 0 239565 1132.20 3W1 1127.23 2 16317.36 0 2025443 0 0065100 0 0065100 3 60 E-02 0 682016 2 -456.23 5W1 317.22 8 216317.36 0 2025443 0 0065100 0 0065100 3 60 E-02 0 682016 2 -456.23 5W1 317.22 8 216377.36 1 177.32 6 1006400 3 60 E-02 0 682016 2 -456.23 5W1 317.12 3 116543 2 066403 5 46E-01 3 165.43 2 046071 3 3 56.23 5W1 110033 2 084601.40 0 0065400 0 0065400 3 66.62 1 3 66.22 1 2 04973 5W1 110033 2 06490 1 3 56.21 3 16.61 2 3 56.61 3 16.62 2 4 56.26 5W1 110033 2 06640 2 006403 3 56.61 2 1046907 1 056.41 2 004670 5W1 1 13827 1 13033 1 137273 1 117273 3 356.61 3 16.64 2 046670 1 056.41 5W1 2 03024 1 130437 2 046670 2 046670 2 046670 1 056.41 1 056.41 5W1 3 936 1 1369.75 <th></th> <th>Area(km2)</th> <th></th> <th>Len(m)</th> <th>Area(m2)</th> <th>Factor</th> <th>(mT/km2)</th> <th>(mT/km2)</th> <th>(Den-mean wtd den)^2</th> <th>Wtd Fact^A2</th> <th>A*B</th>		Area(km2)		Len(m)	Area(m2)	Factor	(mT/km2)	(mT/km2)	(Den-mean wtd den)^2	Wtd Fact ^A 2	A*B
SWI 12228 226/618 188E-01 142E-01 43E-06 07465/7 328E-06 SW3 1167:30 226343 0.00E+00 0.00E+00 306E-02 0.802016 2.46E-02 SW4 1371:22 25407056 0.870037 0.00E+00 0.00E+00 366E-02 0.802016 2.46E-02 SW4 1371:22 25406766 0.870037 0.00E+00 0.00E+00 366E-02 0.802016 SW4 1371:22 25406766 0.870037 0.00E+00 0.00E+00 366E-02 0.4862016 SW4 1371:22 254067166 0.870037 0.00E+00 0.00E+00 3.66E-02 0.4862016 SW1 1130:35 15564 0.870037 0.16E-01 3.54E-01 3.54E-01 SW1 1130:32 2384601-4 0.766676 5.46E-01 3.16E-02 1.046-02 SW1 130:33 2001:24 370623721 1.127741 5.46E-01 3.16E-01 2.166-01 SW1 130:33 24601-3 316E-01 3.16E-01 2.166-02 3.06E-02 2.046-03 SW1 133:32 158:47.03 3.06E-02 0.866-01 3.06E-02 2.046-03 SW1 138:37 2.06E-01 <	SW1 12258 2061614 0.865166 1.88E-01 1.62E-01 4.38E-06 0.748517 3.248-05 SW2 1167.39 2.16117367 0.8253443 0.00E+00 3.00E-00 3.	SW1 1722.98 2266161.40 0.665(60 1.662.01 4.362.06 0.4365/7 3.362.00 SW2 1167.38 216317367 0.625943 0.006+00 3.062.02 0.662016 2.465.02 SW4 1371.22 2546071367 0.625943 0.006+00 3.066-02 0.665016 2.465.02 SW4 1371.22 254607166 0.97037 0.006+00 3.066-02 1.965.01 1.566.02 SW6 155.06 158.05 2.16377367 0.625943 0.006+00 3.066-02 0.665016 2.465.02 SW6 158.04 1.377.41 5.156.01 5.166-01 3.166-02 1.120637 3.366.02 1.120637 SW0 1815.44 3.366.02 1.12033 204601 5.166-01 3.166-02 1.665.01 1.665.01 SW0 183.44 1.12033 2346.01 5.166-01 2.666-01 2.666-01 1.656-01 SW0 2.946.501 5.666-01 2.666-01 2.666-01 2.666-01 1.656-01 SW1 1.30327 1.417740.50 0.7866-01 2.666-01 2.666-01 2.666-01 SW1 2.306.073 1.416770 2.946-01 2.166-01 2.166-01 2.666-01 <t< td=""><td>SW1 1722.98 2266161 40 0.655163 1.864-01 1.622-01 4.362-05 0.46577 3.3262 SW2 11673.98 216617367 0.6256443 0.006+00 0.006+00 3.862-02 0.662016 2.465-07 SW3 11673.98 216617367 0.6256443 0.006+00 0.006+00 3.862-02 0.662016 2.465-07 SW4 1371.22 25640706 0.970037 0.006+00 0.006+00 3.862-02 1.862016 2.465-07 SW4 1371.22 25640706 0.970037 0.006+00 0.006+00 3.862-02 1.862016 2.465-07 SW7 113033 206401.49 0.586-03 3.715-01 3.616-01 3.616-01 1.626-01 SW8 183.44 338.677341 5.156-01 3.616-01 2.465-07 5.466-01 SW1 113033 206401.49 0.566-01 3.662-01 3.616-01 1.626-01 SW1 138.63 338.67734 5.156-01 3.616-01 2.466-01 5.466-01 SW1 138.63 338.67734 1.5777 2.3776-02 0.4439-56 1.966-01 SW1 138.63 1.3774-05 2.466-01 2.466-01 2.166-01 2.166-01 3.1</td><td>ist Arm</td><td>36.67094412</td><td>SWO</td><td>870.91</td><td>1613796.23</td><td>0.616105</td><td>3.62E-01</td><td>2.23E-01</td><td>2.97E-02</td><td>0.379585</td><td>1.13E-02</td></t<>	SW1 1722.98 2266161 40 0.655163 1.864-01 1.622-01 4.362-05 0.46577 3.3262 SW2 11673.98 216617367 0.6256443 0.006+00 0.006+00 3.862-02 0.662016 2.465-07 SW3 11673.98 216617367 0.6256443 0.006+00 0.006+00 3.862-02 0.662016 2.465-07 SW4 1371.22 25640706 0.970037 0.006+00 0.006+00 3.862-02 1.862016 2.465-07 SW4 1371.22 25640706 0.970037 0.006+00 0.006+00 3.862-02 1.862016 2.465-07 SW7 113033 206401.49 0.586-03 3.715-01 3.616-01 3.616-01 1.626-01 SW8 183.44 338.677341 5.156-01 3.616-01 2.465-07 5.466-01 SW1 113033 206401.49 0.566-01 3.662-01 3.616-01 1.626-01 SW1 138.63 338.67734 5.156-01 3.616-01 2.466-01 5.466-01 SW1 138.63 338.67734 1.5777 2.3776-02 0.4439-56 1.966-01 SW1 138.63 1.3774-05 2.466-01 2.466-01 2.166-01 2.166-01 3.1	ist Arm	36.67094412	SWO	870.91	1613796.23	0.616105	3.62E-01	2.23E-01	2.97E-02	0.379585	1.13E-02
SW2 1167:39 216377.367 0.825643 0.000E+00 3.60E-02 0.682016 2.46E-02 SW4 1371.2 24617.36 0.823843 0.000E+00 0.00E+00 3.60E-02 0.682016 2.46E-02 SW4 1371.2 24617.36 0.823843 0.00E+00 0.00E+00 3.60E-02 0.8067.03 SW5 1583.88 295290.74 1.127341 5.15E-07 5.80E-02 1.964073 2.45E-02 SW1 113.03 336456.90 1.267341 5.15E-01 5.61E-01 3.35E-01 1.61E-02 1.65E-02 SW1 113.03 2004.30 1.237753 4.37E-01 5.67E-01 3.61E-02 2.46E-01 2.46E-01 SW1 1396.272.81 1.237753 4.37E-01 5.67E-01 3.16E-01 2.366-01 1.65E-02 SW1 1396.272.81 1.237753 4.37E-01 2.94E-01 2.166-01 2.95E-02 SW1 1396.272.61 1.415730 2.94E-01 2.16E-02 2.046-01 2.95E-02 SW1 1396.272.66 0.566608 1.3775.04 1.11E-02 1.11E-02 1.16E-01 SW1 1396.273.15 Average 2.57E-02 0.66E-01 2.96E-01 2.96E-01	SW2 1167:39 216373.57 0.8254:30 0.000E+00 0.000E+00 3.60E-02 0.692016 2.456-02 SW4 1371:35 0.8254:43 0.80E+00 0.000E+00 3.60E-02 0.682016 2.456-02 SW4 1371:34 5.152-03 0.60E+00 0.00E+00 3.60E-02 0.682016 2.456-02 SW5 156.06 0.7344 5.15E-07 5.80E-02 1.916-02 1.750931 2.45E-02 SW7 113.04 3.38657.21 1.277444 5.15E-01 5.46E-01 2.46E-02 2.46E-02 SW8 183.043 3.38672.31 1.277844 2.86E-01 2.46E-01 2.46E-01 2.46E-02 SW8 183.043 3.38672.31 1.277844 5.46E-01 2.1467.30 2.46E-01 SW9 2.001.24 3.708571.62 0.868583 1.730377 2.46E-01 2.146E-02 2.046696 1.56E-02 SW11 133.03 2.44E-01 2.16E-02 2.46E-01 2.16E-02 2.46E-07 SW11 133.03 2.44E-01 2.16E-01 2.16E-01 2.16E-02 2.16E-02 2.16E-02 SW11 133.05 1.30677 1.416730 2.06E-01 2.16E-02 2.16E-02 2.16E-02	SW2 117:32 216317367 0.005443 0.006400 360542 0.606400 360542 0.606400 360542 0.606400 360542 0.606400 360542 0.606400 360542 0.606400 360542 0.606400 360542 0.606400 1.616402 1.616	SW2 1167.39 21617.367 0.0054.40 0.006-400 3605.02 0.660016 2.465.02 SW3 1167.38 21617.367 0.625943 0.006-400 3605.02 0.660016 2.465.02 SW3 1167.38 21617.367 0.625943 0.006-400 3605.02 0.660016 2.465.02 SW3 1167.38 2546706 0.7005470 0.006-400 3605.02 1270897 2.465.02 SW4 1371.22 2546601 3.165.01 1.12741 5.156.02 5.806.02 1.916.02 12.465.03 SW1 1103.31 3364032 1.157341 5.156.01 5.806.01 2.465.02 1.566.01 3.666.01 1.666.01 SW1 1103.31 3364032 1.1677341 5.156.02 5.806.01 2.465.02 1.566.01 1.566.01 3.666.01 1.666.01 2.646.02 1.666.01 SW1 1103.31 2.466.01 5.666.01 2.666.01 2.666.01 2.666.01 3.666.01 1.666.01 SW1 2.445.66 5.386.20 1.377.53 2.916.01 1.666.01 2.666.01 1.666.01 SW1 2.393.72 1.417.020 0.983.46 1.376.02 1.667.01 2.667.01 1.676.02			SW1	1222.98	2266181.94	0.865169	1.88E-01	1.62E-01	4.38E-06	0.748517	3.28E-06
SW3 1187:38 2.6617/367 0.005-400 36.60-42 0.682016 2.455-62 SW4 1536.42 0.005-400 36.60-42 0.682016 2.455-62 SW6 1815.94 336.64 0.970037 0.005-400 36.60-42 0.682016 2.455-62 SW6 1815.94 336.64 2.596 0.70037 0.005-400 36.60-42 0.680317 2.455-67 SW6 1815.94 336.64 2.596-01 3.715-01 1.71033 2.455-01 2.656-01 2.646-02 0.663017 1.552-62 SW7 113.033 2.044-01 2.865-01 5.675-01 5.675-01 0.639-001 1.562-02 SW8 2012.24 1.123773 2.045-01 3.562-01 2.166-04 2.044025 SW1 2.445-56 4523508 1.730377 2.046-01 3.567-01 2.106-04 2.994066 SW1 2.445-57 457-52 0.86314 5.675-01 5.675-01 2.045-57 6.375-04 SW1 2.445-57 5.667-01 3.567-01 2.666-01 2.666-04 2.666-04 SW1 1.336-57 1.33037 2.045-01 3.165-01 2.666-04 2.666-04 SW1 1.386-67 2.66	SW3 1167:38 2163713.67 0.8254:33 0.006+00 0.006+00 0.006+00 0.662016 2.465-02 SW6 158:34 3364:035 0.306020 0.970037 0.006+00 0.006+00 0.662016 2.465-02 SW6 161:54 338:4035.82 11272.02 1.915-02 0.990737 3.345-03 SW6 181:54 338:4035.82 1.234644 2.885-01 5.465-01 0.1915-02 0.940973 SW8 183:54 338:013.41 0.739025 6.825-01 5.465-01 0.146462 1.652-02 SW8 183:47 113:03.33 2004.24 0.799025 6.825-01 5.465-01 2.465-02 0.682016 SW9 2001.24 3706201.49 0.799025 6.826-01 2.465-01 2.465-01 2.465-01 SW10 2.445-55 6.825-01 5.465-01 2.465-01 2.465-01 2.465-01 SW11 2.445-55 6.826-01 5.465-01 2.465-02 0.64092 1.656-01 SW11 2.445-55 0.830146 1.74023 2.046-04 2.966-06 6.376-04 SW11 133235 1545-02 2.175-02 1.778-02 0.347-67 9.466-03 SW13 83355 <td>WV3 117:33 216317367 0.025543 0.00E+00 306E-02 0.002703 306E-02 0.002703 306E-02 0.002713 326E-02 0.002713 336E-02 0.004002 336E-02 0.004002 336E-02 0.004002 336E-02 0.004002 0.00570 1.602711 1.602701 1.1116-02 1.004020 0.604005 0.607702 0.604005 0.607701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701<td>WV3 117:32 2165:17367 0.825943 0.00E+00 306E-02 0.80016 3.46E-07 SW4 1371:22 2566073 3.00E+00 0.00E+00 3.06E-02 0.800173 3.46E-07 SW6 1615.94 3896462 1.248444 2.86E-01 3.71E-01 9.682-03 1.206077 3.46E-07 SW7 163.37 2.3684362 1.24844 2.86E-01 3.71E-01 9.682-01 1.680311 1.62E-02 SW1 163.37 2.3684362 1.24844 2.86E-01 3.71E-01 0.680311 1.62E-02 SW1 163.47 3.3827261 1.417730 2.86E-01 3.18E-04 2.004222 6.37E-04 SW1 1387.55 377825055 6.82E-01 5.71E-02 0.348452 1.62E-01 1.66E-02 SW1 2.945.04 0.586080 2.56E-01 3.18E-01 2.16E-01 1.66E-02 0.66656 SW1 2.945.04 0.586080 2.56E-01 3.18E-01 2.16E-01 1.66E-02 0.646966 1.36E-01 SW1 9.336.55 1.557.0657 0.646-01 3.18E-01 2.16E-01 1.66E-02 0.646966 1.36E-01 SW1 9.336.55 1.557.0657 0.66E-01 2.16E-</td><td></td><td></td><td>SW2</td><td>1167,39</td><td>2163173.67</td><td>0.825843</td><td>0.00E+00</td><td>0.00E+00</td><td>3.60E-02</td><td>0.682016</td><td>2.45E-02</td></td>	WV3 117:33 216317367 0.025543 0.00E+00 306E-02 0.002703 306E-02 0.002703 306E-02 0.002713 326E-02 0.002713 336E-02 0.004002 336E-02 0.004002 336E-02 0.004002 336E-02 0.004002 0.00570 1.602711 1.602701 1.1116-02 1.004020 0.604005 0.607702 0.604005 0.607701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 1.602701 <td>WV3 117:32 2165:17367 0.825943 0.00E+00 306E-02 0.80016 3.46E-07 SW4 1371:22 2566073 3.00E+00 0.00E+00 3.06E-02 0.800173 3.46E-07 SW6 1615.94 3896462 1.248444 2.86E-01 3.71E-01 9.682-03 1.206077 3.46E-07 SW7 163.37 2.3684362 1.24844 2.86E-01 3.71E-01 9.682-01 1.680311 1.62E-02 SW1 163.37 2.3684362 1.24844 2.86E-01 3.71E-01 0.680311 1.62E-02 SW1 163.47 3.3827261 1.417730 2.86E-01 3.18E-04 2.004222 6.37E-04 SW1 1387.55 377825055 6.82E-01 5.71E-02 0.348452 1.62E-01 1.66E-02 SW1 2.945.04 0.586080 2.56E-01 3.18E-01 2.16E-01 1.66E-02 0.66656 SW1 2.945.04 0.586080 2.56E-01 3.18E-01 2.16E-01 1.66E-02 0.646966 1.36E-01 SW1 9.336.55 1.557.0657 0.646-01 3.18E-01 2.16E-01 1.66E-02 0.646966 1.36E-01 SW1 9.336.55 1.557.0657 0.66E-01 2.16E-</td> <td></td> <td></td> <td>SW2</td> <td>1167,39</td> <td>2163173.67</td> <td>0.825843</td> <td>0.00E+00</td> <td>0.00E+00</td> <td>3.60E-02</td> <td>0.682016</td> <td>2.45E-02</td>	WV3 117:32 2165:17367 0.825943 0.00E+00 306E-02 0.80016 3.46E-07 SW4 1371:22 2566073 3.00E+00 0.00E+00 3.06E-02 0.800173 3.46E-07 SW6 1615.94 3896462 1.248444 2.86E-01 3.71E-01 9.682-03 1.206077 3.46E-07 SW7 163.37 2.3684362 1.24844 2.86E-01 3.71E-01 9.682-01 1.680311 1.62E-02 SW1 163.37 2.3684362 1.24844 2.86E-01 3.71E-01 0.680311 1.62E-02 SW1 163.47 3.3827261 1.417730 2.86E-01 3.18E-04 2.004222 6.37E-04 SW1 1387.55 377825055 6.82E-01 5.71E-02 0.348452 1.62E-01 1.66E-02 SW1 2.945.04 0.586080 2.56E-01 3.18E-01 2.16E-01 1.66E-02 0.66656 SW1 2.945.04 0.586080 2.56E-01 3.18E-01 2.16E-01 1.66E-02 0.646966 1.36E-01 SW1 9.336.55 1.557.0657 0.646-01 3.18E-01 2.16E-01 1.66E-02 0.646966 1.36E-01 SW1 9.336.55 1.557.0657 0.66E-01 2.16E-			SW2	1167,39	2163173.67	0.825843	0.00E+00	0.00E+00	3.60E-02	0.682016	2.45E-02
SW4 13712 25440706 0.570037 0.006+00 0.006+00 0.66E-02 0.40673 3.39E-02 SW5 1580.58 25602.07 1.127344 5.16E-02 0.61E-02 1.61E-02 1.270997 2.46E-07 SW6 1815.44 336927.291 1.127344 5.16E-07 5.6E-01 2.46E-07 2.46E-07 SW1 1130.33 2094501.49 0.739625 6.82E-01 5.46E-01 2.44E-01 0.659401 1.56E-01 SW1 1130.33 2094501.49 0.739625 6.82E-01 5.46E-01 2.44E-01 0.659401 1.56E-01 SW1 2445.56 4532383 1.231457 2.046-01 3.16E-04 2.004556 1.06E-01 SW1 2445.56 0.88144 5.91E-02 5.71E-02 2.16E-01 1.56E-02 SW1 1389.75 2.57750675 0.88144 5.91E-02 2.16E-02 0.346646 SW1 1389.75 2.577520675 0.88144 5.91E-02 2.16E-01 1.56E-02 SW1 1389.75 2.57750675 0.88144 5.91E-02 2.16E-01 2.16E-02 0.046945 1.66E-02 SW1 1389.75 2.57750575 0.881646 2.37E-02 0.347647 2.9	SW4 1371.22 25468706 0,70037 0.005+00 360E-02 0,940673 3.3866.02 SW6 1915.94 3580.58 25629.03,74 1,127341 5,156-02 0,940673 3.386.03 SW7 1130.33 2364076 0,70057 2,866-07 3.366-07 1,915.04 SW7 1130.33 2364076 6,826-01 5,466-01 2,446-07 2,446-07 SW8 1054.47 3388272.91 1,22773 4,376-01 5,676-01 3,566-01 2,446-02 1,662-02 SW9 2004.201 2,3344056 6,826-01 5,676-01 3,566-01 2,166-01 2,566-01 1,562-01 SW0 2445,66 4377.010 2,445,60 0,686330 1,467-02 2,1467-02 2,046-06 SW1 1389.75 25726675 0,883146 5,816-02 1,116-02 1,366-01 1,666-02 SW1 1389.75 257720677 0,88368 2,276-02 2,346056 6,376-03 SW1 1389.75 257720575 0,883146 5,816-02 1,316-04 2,94066 SW1 1389.75 25776677 0,886588 2,326-02 1,376-02 0,347677 Sun 3333.85 15461405 <t< td=""><td>SW4 1371.2 5-44670 16 0370037 0065-40 0.065-40 0.065-40 0.066-40 0.656-40<td>SW4 13/12 Z-44087066 0.970037 0.005+00 3605-02 340873 3395-02 SW5 1915-94 5.850.36 3475-44 5.850-02 1475-04 1562-01 3605-02 1270697 2.456-07 SW7 1130.33 2094501.49 0.7596025 6.826-01 5.66-02 3166-02 15916-02 15916-02 15916-02 15916-02 1200877 2.456-01 SW1 1130.33 2094501.49 0.7596025 6.826-01 5.676-01 3352-01 1562-01 1662-02 1662-02 1662-02 1662-02 1662-02 1662-01 1662-01 1662-01 1662-01 1662-02 1662-01 166</td><td></td><td></td><td>SW3</td><td>1167.39</td><td>2163173.67</td><td>0.825843</td><td>0.00E+00</td><td>0.00E+00</td><td>3.60E-02</td><td>0.682016</td><td>2.45E-02</td></td></t<>	SW4 1371.2 5-44670 16 0370037 0065-40 0.065-40 0.065-40 0.066-40 0.656-40 <td>SW4 13/12 Z-44087066 0.970037 0.005+00 3605-02 340873 3395-02 SW5 1915-94 5.850.36 3475-44 5.850-02 1475-04 1562-01 3605-02 1270697 2.456-07 SW7 1130.33 2094501.49 0.7596025 6.826-01 5.66-02 3166-02 15916-02 15916-02 15916-02 15916-02 1200877 2.456-01 SW1 1130.33 2094501.49 0.7596025 6.826-01 5.676-01 3352-01 1562-01 1662-02 1662-02 1662-02 1662-02 1662-02 1662-01 1662-01 1662-01 1662-01 1662-02 1662-01 166</td> <td></td> <td></td> <td>SW3</td> <td>1167.39</td> <td>2163173.67</td> <td>0.825843</td> <td>0.00E+00</td> <td>0.00E+00</td> <td>3.60E-02</td> <td>0.682016</td> <td>2.45E-02</td>	SW4 13/12 Z-44087066 0.970037 0.005+00 3605-02 340873 3395-02 SW5 1915-94 5.850.36 3475-44 5.850-02 1475-04 1562-01 3605-02 1270697 2.456-07 SW7 1130.33 2094501.49 0.7596025 6.826-01 5.66-02 3166-02 15916-02 15916-02 15916-02 15916-02 1200877 2.456-01 SW1 1130.33 2094501.49 0.7596025 6.826-01 5.676-01 3352-01 1562-01 1662-02 1662-02 1662-02 1662-02 1662-02 1662-01 1662-01 1662-01 1662-01 1662-02 1662-01 166			SW3	1167.39	2163173.67	0.825843	0.00E+00	0.00E+00	3.60E-02	0.682016	2.45E-02
SVU5 1583.58 2952903.14 11.27341 5,155.402 5,066.02 1,915.402 1,515.402 2,456.401 2,456.401 2,456.401 2,456.401 1,556.402 1,556.401 <td>SW5 1583.68 2852903.14 11.27341 5.15E.402 5.06E.02 1.91E.422 1.270897 2.45E.02 SW6 1651.54 336826.08 1.2376444 2.98E.01 3.71E.01 0.638-03 1.650.011 1.65E.42 SW7 1130.33 2.094601.48 0.7366.56 6.37E.01 5.47E.01 2.43E.01 1.650.011 1.55E.42 SW0 1834.47 338277.291 1.237753 4.37E.01 5.67E.01 2.43E.03 1.661.462 1.65E.42 SW0 2.001.24 7008207.72 1.415730 2.06E.01 3.58E.01 2.166.01 1.65E.42 SW10 2.445.05 0.736338 1.745730 2.06E.01 3.58E.01 1.16E.44 2.904666 SW11 1.345.70 0.68614.65 0.68614.65 1.415730 2.06E.01 3.58E.01 1.05E.01 SW11 1.348.77 2.456.01 3.58E.01 2.16E.01 3.58E.01 1.05E.02 SW12 9.450.38 1.751.40.58 0.6865439 1.55E.02 1.11E.02 0.946945 1.34E.03 SW13 6.33.65 1.56F.02 1.37E.02 2.17E.02 0.446945 1.34E.03 Sw13 5.33.55 1.56F.02 1.37E.02 0.566533.15</td> <td>SW5 153256 255300.74 11.27341 5,155.42 5,606.42 1,916.42 1,270877 2,455.45 SW7 1130.33 204401 2,846.47 3392.03 1,803.11 1,656.42 SW8 163.44 3396.06.82 1,270847 2,456.47 2,846.76 1,804.46 1,666.42 SW1 1130.33 2044.01 1,29753 4,375.01 5,866.40 2,166.47 2,084.16 SW1 2,847 3392.72.91 1,297753 4,376.01 2,966.01 2,416.40 2,966.01 1,666.42 SW1 2,455.66 6,875.30 2,016.40 2,966.01 3,166.40 2,04465 1,567.46 SW1 1,393.75 1751.405 0,586.53 1,567.20 5,516.02 1,176.02 0,347.67 SW1 1,393.75 2,575.067 0,366.53 1,566 1,376.02 0,347.67 9,666.53 SW1 1,384.75 2,575.067 0,586.53 1,567.20 0,546.54 1,366.45 SW1 945.03 1,567.24 0,586.53 1,566.72 0,347.67 0,546.54 1,366.45 Sw1 5,316.01 1,567.24 0,586.53 1,567.24 0,546.54 1,366.45 1,366.45</td> <td>SW5 1583.68 235200.74 11.27341 5156.40 5.06E.42 1916.40 1270867 2.465.70 SW7 1105.64 33466.01 5.076.64 5.476.01 5.466.01 1650.01 1556.01 SW7 1103.32 2466.01 5.476.01 5.476.01 5.476.01 5.466.01 1656.02 SW1 1133.47 333607.281 1.237733 4.376.01 5.676.01 5.616.02 1.664.62 SW0 2.466.66 5.376.30 2.386.01 5.676.01 5.676.01 5.686.40 SW0 2.466.66 5.376.01 5.676.01 5.676.01 5.676.01 1.666.02 SW1 1.389.75 2.375.0675 0.883146 5.816.20 5.716.02 0.366.50 1.676.02 SW1 1.389.75 255750675 0.883146 5.816.20 5.716.02 0.34667 1.666.01 SW1 1.389.75 255750675 0.883146 5.816.02 1.376.02 2.176.02 0.34667 1.676.02 SW1 1.389.75 2555.16 1.666.02 1.566.01 1.666.02 1.666.02 SW1 1.389.75 2555.16 0.668146 5.876.02 1.316.01 SW1 333.55 1.561.20 <t< td=""><td></td><td></td><td>SW4</td><td>1371.22</td><td>2540870.66</td><td>0.970037</td><td>0.00E+00</td><td>0.00E+00</td><td>3.60E-02</td><td>0.940973</td><td>3.39E-02</td></t<></td>	SW5 1583.68 2852903.14 11.27341 5.15E.402 5.06E.02 1.91E.422 1.270897 2.45E.02 SW6 1651.54 336826.08 1.2376444 2.98E.01 3.71E.01 0.638-03 1.650.011 1.65E.42 SW7 1130.33 2.094601.48 0.7366.56 6.37E.01 5.47E.01 2.43E.01 1.650.011 1.55E.42 SW0 1834.47 338277.291 1.237753 4.37E.01 5.67E.01 2.43E.03 1.661.462 1.65E.42 SW0 2.001.24 7008207.72 1.415730 2.06E.01 3.58E.01 2.166.01 1.65E.42 SW10 2.445.05 0.736338 1.745730 2.06E.01 3.58E.01 1.16E.44 2.904666 SW11 1.345.70 0.68614.65 0.68614.65 1.415730 2.06E.01 3.58E.01 1.05E.01 SW11 1.348.77 2.456.01 3.58E.01 2.16E.01 3.58E.01 1.05E.02 SW12 9.450.38 1.751.40.58 0.6865439 1.55E.02 1.11E.02 0.946945 1.34E.03 SW13 6.33.65 1.56F.02 1.37E.02 2.17E.02 0.446945 1.34E.03 Sw13 5.33.55 1.56F.02 1.37E.02 0.566533.15	SW5 153256 255300.74 11.27341 5,155.42 5,606.42 1,916.42 1,270877 2,455.45 SW7 1130.33 204401 2,846.47 3392.03 1,803.11 1,656.42 SW8 163.44 3396.06.82 1,270847 2,456.47 2,846.76 1,804.46 1,666.42 SW1 1130.33 2044.01 1,29753 4,375.01 5,866.40 2,166.47 2,084.16 SW1 2,847 3392.72.91 1,297753 4,376.01 2,966.01 2,416.40 2,966.01 1,666.42 SW1 2,455.66 6,875.30 2,016.40 2,966.01 3,166.40 2,04465 1,567.46 SW1 1,393.75 1751.405 0,586.53 1,567.20 5,516.02 1,176.02 0,347.67 SW1 1,393.75 2,575.067 0,366.53 1,566 1,376.02 0,347.67 9,666.53 SW1 1,384.75 2,575.067 0,586.53 1,567.20 0,546.54 1,366.45 SW1 945.03 1,567.24 0,586.53 1,566.72 0,347.67 0,546.54 1,366.45 Sw1 5,316.01 1,567.24 0,586.53 1,567.24 0,546.54 1,366.45 1,366.45	SW5 1583.68 235200.74 11.27341 5156.40 5.06E.42 1916.40 1270867 2.465.70 SW7 1105.64 33466.01 5.076.64 5.476.01 5.466.01 1650.01 1556.01 SW7 1103.32 2466.01 5.476.01 5.476.01 5.476.01 5.466.01 1656.02 SW1 1133.47 333607.281 1.237733 4.376.01 5.676.01 5.616.02 1.664.62 SW0 2.466.66 5.376.30 2.386.01 5.676.01 5.676.01 5.686.40 SW0 2.466.66 5.376.01 5.676.01 5.676.01 5.676.01 1.666.02 SW1 1.389.75 2.375.0675 0.883146 5.816.20 5.716.02 0.366.50 1.676.02 SW1 1.389.75 255750675 0.883146 5.816.20 5.716.02 0.34667 1.666.01 SW1 1.389.75 255750675 0.883146 5.816.02 1.376.02 2.176.02 0.34667 1.676.02 SW1 1.389.75 2555.16 1.666.02 1.566.01 1.666.02 1.666.02 SW1 1.389.75 2555.16 0.668146 5.876.02 1.316.01 SW1 333.55 1.561.20 <t< td=""><td></td><td></td><td>SW4</td><td>1371.22</td><td>2540870.66</td><td>0.970037</td><td>0.00E+00</td><td>0.00E+00</td><td>3.60E-02</td><td>0.940973</td><td>3.39E-02</td></t<>			SW4	1371.22	2540870.66	0.970037	0.00E+00	0.00E+00	3.60E-02	0.940973	3.39E-02
SW6 1815.94 3384356.12 1,2846.44 2.88E-01 3,71E-01 9.88E-03 1560311 1,52202 SW7 1100.33 204501.49 0.739655 6.82E-01 5,46E-01 0.445.96 1.56701 156E-01 SW8 1834.47 3063772 1.27750 4.375 4.375 4.375 1.27751 1.27753 SW9 1834.47 3063772 1.27750 4.375 4.375 2.456.91 1.684(62) 1.566-01 SW9 2845.96 45326575 0.3596.91 2.67E-01 3.16E-04 2.994006 6.37E-04 SW11 1389.75 25550575 0.965146 5.81E-02 5.57E-02 0.465945 1.57E-02 SW11 1389.75 25550575 0.965146 0.558088 2.37E-02 0.347567 9.64E-03 SW12 945.03 1.66E-02 1.66E-02 0.665076 1.31E-02 0.347567 9.64E-03 SW11 1389.75 2545124.05 0.58688 2.37E-02 0.347567 9.64E-03 Sum 83385 1.545124.05 0.586988 2.37E-02 0.347567 9.64E-03 Sum 83385 1.545124.05 0.586988 2.37E-02 0.347694 9.64E-03	SW6 1915.94 338438.82 1.2846.44 2.88E.01 3.71E.01 8.83E.43 1.60311 1.622.02 SW7 1130.33 2.894601 40 0.798655 6.82E.01 5.46E.01 3.16E.42 1.661642 1.562.01 SW0 1384.47 3.338427263 6.82E.01 5.46E.01 3.16E.04 2.984601 1.56E.01 SW0 2001.24 370829772 1.415700 2.06E.01 3.64E.01 3.16E.04 2.984601 1.56E.01 SW10 2445.66 453226358 1.130733 2.06E.01 3.16E.02 1.16E.02 2.106E.04 2.984606 6.37E.04 SW11 1389.77 2.7052675 0.686549 1.56E.02 1.11E.02 2.046576 1.57E.02 SW11 1389.77 2.5140.56 0.686549 1.37E.02 1.11E.02 2.046565 1.57E.02 SW11 1389.77 2.5140.56 0.686549 1.37E.02 1.11E.02 2.046565 1.57E.02 SW11 1389.77 2.545.67 1.37E.02 1.37E.02 2.77E.02 0.44967 1.67E.02 Sum 366704475 0.6865439 1.56E.02 1.37E.02 2.77F.02 0.44967 1.67E.02 Sum 3607044412	SW6 1915.94 3384368.62 1,234644 2.88E-01 3.71E-01 9.83E-03 1560311 1,522-02 SW7 11303.33 2.044201 49 0.796525 6.82E-01 5.46E-01 0.546E-01 1565-01 SW9 2.012.43 7.09277.23 1.237753 4.37E-01 5.46E-01 2.045E-01 0.569401 1.56E-01 SW9 2.012.43 7.09277.21 1.137753 4.37E-01 3.53E-01 2.16E-04 2.994066 6.37E-04 SW10 2.445.56 4.532363.88 1.1370337 2.04E-01 3.35E-01 2.16E-04 2.994066 6.37E-04 SW11 7.345.74 0.686339 1.68E-02 3.35E-01 2.17E-02 0.44664 1.67E-02 SW11 7.335.15 Average 2.37E-02 1.37E-02 0.34767 9.64E-01 Sum 36504417 1.66E-02 1.66E-02 1.67E-02 0.44664 1.67E-02 Sw11 7.355 1.5457405 0.686389 1.56E-02 1.37E-02 0.34767 9.64E-03 Sw11 3.335 1.56E-02 1.37E-02 1.37E-02 0.34767 9.64E-03 Sw11 Sw12 3.0053715 Average 1.30E-01 3.205 0.34767	SW6 1015.94 336450.62 1,2364.4 2.88E-01 3,71E-01 9,83E-03 156.031 1,552-03 SW7 1303.53 204501.49 0,7365.55 6,82E-01 5,42E-01 0,5340.01 1,552-03 SW9 2001.24 304501.49 0,7365.55 6,82E-01 5,42E-01 0,5340.01 1,552-01 SW9 2001.24 306237.72 1,437.30 2,04E-01 5,47E-01 6,116-02 1,036-04 SW1 1384.75 2362757 0,8934.66 5,112-02 2,146-01 2,106-04 2,994.066 6,376-04 SW1 1386.75 29834.66 5,112-02 3,1552.01 3,1552.01 3,1562.02 1,1712.02 0,347647 1,346.02 SW1 1386.75 0,5884.88 1,571.405 0,584.66 2,004595 0,586.66 1,376.02 0,347677 0,546.01 SW1 1,514.05 0,5864.68 2,3256.02 1,376.02 0,347677 0,546.01 Sum 3630 1,556.01 1,376.02 0,3469.45 1,566.01 Sum 2510.04 2,546.01 1,376.02 0,347.079 0,546.01 Sum 2541.015 0,586.88 2,355.02 1,376.02 0,347.079 <t< td=""><td></td><td></td><td>SW5</td><td>1593,58</td><td>2952903.74</td><td>1.127341</td><td>5.15E-02</td><td>5.80E-02</td><td>1.91E-02</td><td>1.270897</td><td>2.43E-02</td></t<>			SW5	1593,58	2952903.74	1.127341	5.15E-02	5.80E-02	1.91E-02	1.270897	2.43E-02
SW7 1130.33 2064501.49 0.739625 6.82E-01 5.46E-01 2.43E-01 0.653401 1.555-01 SW8 1834.47 3398277.291 1.237733 4.37E-01 5.67E-01 0.633401 1.555-01 SW9 2001.24 3.398277.291 1.247733 2.36F-01 3.64E-01 2.04E-02 1.06F-02 SW0 246.67 0.6837.72 1.470370 2.06E-01 3.53E-01 3.68F-01 2.0456-0 SW11 1389.75 257520675 0.983146 5.81E-02 5.77E-02 0.946565 1.97E-02 SW11 1389.75 257520675 0.983146 5.81E-02 5.77E-02 0.946565 1.97E-02 SW11 1389.75 257520675 0.688539 1.66E-02 1.11E-02 3.00E-02 0.446945 1.36E-05 SW12 945.03 1.545124.05 0.589808 2.32E-02 1.37E-02 0.347967 9.64E-03 SW12 383.65 1.66E-02 1.11E-02 3.00E-02 0.446945 1.3462 SW13 833.65 1.66E-02 1.37E-02 0.347967 9.64E-03 Average 261395315 Average 23323 0.347967 9.64E-03 Average 261395315 <t< td=""><td>SW7 1130.33 2004501.49 0.789625 6.82E-01 5.46E-01 2.43E-01 0.659401 1.55E-01 SW8 18.44.7 3399272 1.127733 2.94E-01 5.67E-01 6.10E-02 1.084162 1.05E-01 SW10 2.001.24 3.399272 1.127733 2.04E-01 5.67E-01 6.10E-02 1.06E-01 SW10 2.0301.24 5.303272 1.73037 2.04E-01 3.55E-01 2.06556 6.30E-03 SW11 1.389.75 2.57520675 0.9863146 5.81E-02 1.11E-02 2.040056 6.30E-03 SW12 9.455.06 1.56174.05 0.580888 2.32E-02 1.31E-02 0.449545 1.34E-02 SW11 1.389.75 2.57520675 0.883146 5.81E-02 1.11E-02 0.906576 1.37E-02 SW12 9.455.015 0.580888 2.32E-02 1.37E-02 0.347967 9.6E-03 Sum 365 1.56174.05 0.580888 2.32E-02 1.37E-02 0.347967 9.6E-03 Sum Sum 3.05724.15 Average 1.36E-01 5.77E-02 0.347967 9.6E-03 Sum Sum 2.51955.315 Average 1.36E-01 5.277E-02 0.347967 <t< td=""><td>SW1 1130.33 2084601 49 0.739525 6.82E-01 5.46E-01 2.43E-01 0.638401 1.55E-01 SW0 1834.47 339207231 1.287733 4.37E-01 5.67E-01 3.16E-04 2.904652 6.37E-04 SW0 2.201.24 336807231 1.287733 4.37E-01 5.67E-01 3.16E-04 2.904652 6.37E-04 SW10 2.445.66 4.57250675 0.8814.46 5.51E-02 5.71E-02 2.16E-04 2.904652 6.37E-04 SW11 1.389.75 2.57520675 0.8814.46 5.51E-02 5.71E-02 2.16E-04 2.904656 6.37E-04 SW11 1.389.75 2.5772303.88 1.730371 2.04E-01 3.16E-01 2.16E-02 2.94666 6.37E-02 SW11 1.389.75 2.5772405 0.8814.46 5.51E-02 1.31E-02 2.16E-02 2.94666 6.36E-03 SW12 9.450714 0.666.92 1.151E-02 2.37E-02 0.347977 9.64E-02 SW13 833.05 1.56E-02 2.37E-02 0.34707 9.64E-03 Average 2.91953.15 Average 1.90E-01 3.200 Average 2.91953.15 Average 1.90E-01 3.200 Average</td><td>SW7 1130.33 2004501.49 0.739625 6.82E-01 5.46E-01 2.43E-01 0.639601 1.55E-01 SW8 2001.24 338272.31 1.23773 4.37E-01 5.67E-01 5.67E-01 5.67E-01 5.67E-01 1060-01 SW0 2.445.06 4532063.72 1.45730 2.08E-01 5.67E-01 3.16E-04 2.004502 6.37E-04 SW10 2.445.06 4532063.75 0.883146 5.51E-02 5.71E-02 1.56E-04 2.066576 1.67E-02 SW11 1.389.75 2.575206.75 0.883146 5.51E-02 5.71E-02 1.73E-02 0.66576 1.67E-02 SW11 1.389.75 2.575206.75 0.886389 1.66E-02 1.31E-02 0.347677 9.046345 1.97E-02 SW13 8.33.35 1.546124.05 0.586889 2.32E-02 1.31E-02 0.347677 9.046-03 Sum 383.35 1.546124.05 0.586889 2.32E-02 1.31E-02 0.347677 9.046-03 Sum Sum 383.35 1.546124.05 0.586889 2.32E-02 1.37E-02 0.347677 9.046-03 Sum Sum Sum Sum 5.01E-01 .0001 1.37E-02 0.34667 Su</td><td></td><td></td><td>SW6</td><td>1815.94</td><td>3364936.82</td><td>1.284644</td><td>2.89E-01</td><td>3.71E-01</td><td>9.83E-03</td><td>1.650311</td><td>1.62E-02</td></t<></td></t<>	SW7 1130.33 2004501.49 0.789625 6.82E-01 5.46E-01 2.43E-01 0.659401 1.55E-01 SW8 18.44.7 3399272 1.127733 2.94E-01 5.67E-01 6.10E-02 1.084162 1.05E-01 SW10 2.001.24 3.399272 1.127733 2.04E-01 5.67E-01 6.10E-02 1.06E-01 SW10 2.0301.24 5.303272 1.73037 2.04E-01 3.55E-01 2.06556 6.30E-03 SW11 1.389.75 2.57520675 0.9863146 5.81E-02 1.11E-02 2.040056 6.30E-03 SW12 9.455.06 1.56174.05 0.580888 2.32E-02 1.31E-02 0.449545 1.34E-02 SW11 1.389.75 2.57520675 0.883146 5.81E-02 1.11E-02 0.906576 1.37E-02 SW12 9.455.015 0.580888 2.32E-02 1.37E-02 0.347967 9.6E-03 Sum 365 1.56174.05 0.580888 2.32E-02 1.37E-02 0.347967 9.6E-03 Sum Sum 3.05724.15 Average 1.36E-01 5.77E-02 0.347967 9.6E-03 Sum Sum 2.51955.315 Average 1.36E-01 5.277E-02 0.347967 <t< td=""><td>SW1 1130.33 2084601 49 0.739525 6.82E-01 5.46E-01 2.43E-01 0.638401 1.55E-01 SW0 1834.47 339207231 1.287733 4.37E-01 5.67E-01 3.16E-04 2.904652 6.37E-04 SW0 2.201.24 336807231 1.287733 4.37E-01 5.67E-01 3.16E-04 2.904652 6.37E-04 SW10 2.445.66 4.57250675 0.8814.46 5.51E-02 5.71E-02 2.16E-04 2.904652 6.37E-04 SW11 1.389.75 2.57520675 0.8814.46 5.51E-02 5.71E-02 2.16E-04 2.904656 6.37E-04 SW11 1.389.75 2.5772303.88 1.730371 2.04E-01 3.16E-01 2.16E-02 2.94666 6.37E-02 SW11 1.389.75 2.5772405 0.8814.46 5.51E-02 1.31E-02 2.16E-02 2.94666 6.36E-03 SW12 9.450714 0.666.92 1.151E-02 2.37E-02 0.347977 9.64E-02 SW13 833.05 1.56E-02 2.37E-02 0.34707 9.64E-03 Average 2.91953.15 Average 1.90E-01 3.200 Average 2.91953.15 Average 1.90E-01 3.200 Average</td><td>SW7 1130.33 2004501.49 0.739625 6.82E-01 5.46E-01 2.43E-01 0.639601 1.55E-01 SW8 2001.24 338272.31 1.23773 4.37E-01 5.67E-01 5.67E-01 5.67E-01 5.67E-01 1060-01 SW0 2.445.06 4532063.72 1.45730 2.08E-01 5.67E-01 3.16E-04 2.004502 6.37E-04 SW10 2.445.06 4532063.75 0.883146 5.51E-02 5.71E-02 1.56E-04 2.066576 1.67E-02 SW11 1.389.75 2.575206.75 0.883146 5.51E-02 5.71E-02 1.73E-02 0.66576 1.67E-02 SW11 1.389.75 2.575206.75 0.886389 1.66E-02 1.31E-02 0.347677 9.046345 1.97E-02 SW13 8.33.35 1.546124.05 0.586889 2.32E-02 1.31E-02 0.347677 9.046-03 Sum 383.35 1.546124.05 0.586889 2.32E-02 1.31E-02 0.347677 9.046-03 Sum Sum 383.35 1.546124.05 0.586889 2.32E-02 1.37E-02 0.347677 9.046-03 Sum Sum Sum Sum 5.01E-01 .0001 1.37E-02 0.34667 Su</td><td></td><td></td><td>SW6</td><td>1815.94</td><td>3364936.82</td><td>1.284644</td><td>2.89E-01</td><td>3.71E-01</td><td>9.83E-03</td><td>1.650311</td><td>1.62E-02</td></t<>	SW1 1130.33 2084601 49 0.739525 6.82E-01 5.46E-01 2.43E-01 0.638401 1.55E-01 SW0 1834.47 339207231 1.287733 4.37E-01 5.67E-01 3.16E-04 2.904652 6.37E-04 SW0 2.201.24 336807231 1.287733 4.37E-01 5.67E-01 3.16E-04 2.904652 6.37E-04 SW10 2.445.66 4.57250675 0.8814.46 5.51E-02 5.71E-02 2.16E-04 2.904652 6.37E-04 SW11 1.389.75 2.57520675 0.8814.46 5.51E-02 5.71E-02 2.16E-04 2.904656 6.37E-04 SW11 1.389.75 2.5772303.88 1.730371 2.04E-01 3.16E-01 2.16E-02 2.94666 6.37E-02 SW11 1.389.75 2.5772405 0.8814.46 5.51E-02 1.31E-02 2.16E-02 2.94666 6.36E-03 SW12 9.450714 0.666.92 1.151E-02 2.37E-02 0.347977 9.64E-02 SW13 833.05 1.56E-02 2.37E-02 0.34707 9.64E-03 Average 2.91953.15 Average 1.90E-01 3.200 Average 2.91953.15 Average 1.90E-01 3.200 Average	SW7 1130.33 2004501.49 0.739625 6.82E-01 5.46E-01 2.43E-01 0.639601 1.55E-01 SW8 2001.24 338272.31 1.23773 4.37E-01 5.67E-01 5.67E-01 5.67E-01 5.67E-01 1060-01 SW0 2.445.06 4532063.72 1.45730 2.08E-01 5.67E-01 3.16E-04 2.004502 6.37E-04 SW10 2.445.06 4532063.75 0.883146 5.51E-02 5.71E-02 1.56E-04 2.066576 1.67E-02 SW11 1.389.75 2.575206.75 0.883146 5.51E-02 5.71E-02 1.73E-02 0.66576 1.67E-02 SW11 1.389.75 2.575206.75 0.886389 1.66E-02 1.31E-02 0.347677 9.046345 1.97E-02 SW13 8.33.35 1.546124.05 0.586889 2.32E-02 1.31E-02 0.347677 9.046-03 Sum 383.35 1.546124.05 0.586889 2.32E-02 1.31E-02 0.347677 9.046-03 Sum Sum 383.35 1.546124.05 0.586889 2.32E-02 1.37E-02 0.347677 9.046-03 Sum Sum Sum Sum 5.01E-01 .0001 1.37E-02 0.34667 Su			SW6	1815.94	3364936.82	1.284644	2.89E-01	3.71E-01	9.83E-03	1.650311	1.62E-02
SW8 1834.47 338277.23 4.37E-01 5.67E-01 6.10E-02 1.684162 1.03E-01 SW8 2001.24 37082877.72 1.415730 2.06E-01 2.94E-01 3.16E-04 2.004292 6.37E-04 SW10 2.445.56 4532563.88 1.730037 2.04E-01 3.16E-04 2.064-04 5.07E-04 SW11 1.389.75 5.5525.60 0.883146 5.16E-02 1.17E-02 0.045957 6.37E-04 SW11 1.389.75 5.555.0 0.883146 5.66E-02 1.11E-02 0.045957 1.34E-02 SW12 945.03 1.7514059 0.689808 2.32E-02 1.31E-02 0.347967 9.64E-03 SW13 833.85 1545124.05 0.569808 2.32E-02 1.37E-02 0.347967 9.64E-03 Sw11 333.85 1545124.05 0.569808 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 333.85 1545124.05 0.569808 2.32E-02 1.37E-02 0.347967 9.64E-03 Average 26133.15 Average 1.37E-02 2.77E-02 0.347967 9.64E-03 Average 26133.315 Average 1.30E-01 3.200 0.34797 2.36E-03	SWB 1834.47 3398272.91 1.28775.3 4.37E-01 5.67E-01 6.10E-02 1.684162 1.03E-01 SWB 2001.24 3708377.72 1.415730 2.06E-01 2.94E-01 3.18E-04 2.946666 6.37E-04 SWU1 2.445.03 1.245.06 5.01E-01 2.94E-01 3.18E-04 2.946666 6.37E-04 SWU1 2.445.03 1.7514.05 0.686339 1.66E-02 1.11E-02 1.77E-02 0.946945 1.34E-02 SWU1 1389.75 1.55114.05 0.686339 1.66E-02 1.11E-02 3.06E-02 0.346945 1.34E-02 SWU2 945.03 1.55114.05 0.686339 1.66E-02 1.11E-02 3.06E-02 0.346945 1.34E-02 SWU2 945.03 0.569088 2.32E-02 1.37E-02 2.77E-02 0.347697 9.465-03 Sum 333.65 15461,44.05 0.569088 2.32E-02 1.37E-02 2.77E-02 0.347697 9.465-03 Average 2619353.15 Average 1.30E-03 1.37E-02 2.37F-02 0.347597 9.465-03 Average 2619353.15 Average 1.30E-01 5.37E-02 1.37E-02 2.37F-02 0.347597 Average <	SWB 1834.47 338227.281 1.287753 4.375-01 5.67E-01 5.67E-01 5.67E-01 1.084622 6.37E-01 SW10 2.245.586 4.3706.273 1.416730 2.08E-01 2.94E-01 3.18E-04 2.946-06 6.37E-04 SW110 2.445.586 4.535256 1.416730 2.08E-01 2.94E-01 3.18E-04 2.946-06 6.37E-04 SW111 1.349.75 4.55520637 0.983146 5.61E-02 1.11E-02 2.0064255 6.37E-02 SW112 945.03 1.75114.05 0.983146 5.61E-02 1.37E-02 0.347567 9.64E-03 SW113 833.85 1.545124.05 0.586888 2.32E-02 1.37E-02 0.347667 9.64E-03 SW113 833.85 1.545124.05 0.586888 2.32E-02 1.37E-02 0.347667 9.64E-03 Sum 36570944.12 Average 2.137E-02 0.347079 0.347079 Average 2619353.15 Standard Error 3.203 0.347079 0.347079 Average 261932 6.393 5.447.079 0.347079 0.34797 Aurance 4347.079 3.437 3.437 3.437	SW6 1634.47 3386272.51 1.237753 4.37E-01 5.67E-01 6.10E-02 1.684162 1.03E-01 SW0 2001.43 77062877.23 1.415750 2.06E-01 3.51E-04 2.044262 6.37E-04 SW10 2.456.53 6.37E-01 5.61E-02 3.16E-04 2.044266 6.37E-04 SW11 1.369.75 2.57E-02 1.11E-02 2.044266 6.37E-04 SW11 1.369.75 2.57E-02 1.11E-02 2.044266 6.37E-04 SW13 6.33.56 1.56E-02 1.11E-02 2.044266 1.36E-02 SW13 6.33.56 1.56E-02 1.11E-02 2.044666 1.36E-02 SW13 6.33.56 1.56E-02 1.11E-02 2.044666 1.36E-02 SW13 6.33.56 1.56E-02 1.11E-02 2.044666 1.36E-02 SW13 6.33.55 1.56E-02 1.31E-02 0.446646 1.36E-02 Sum 3.33.65 1.56E-02 1.37E-02 2.37E-02 0.446646 Sum Sum 3.055.45 1.37E-02 0.446646 1.34E-02 Sum Sum Sum 3.055.45 0.446646 1.34E-02 Sum Sum Sum Sum			SW7	1130.33	2094501.49	0.799625	6.82E-01	5.46E-01	2.43E-01	0.639401	1.55E-01
SW9 2001.24 3708297.72 1415730 208E-01 294E-01 318E-04 2.004292 6.37E-04 SW10 2445.66 4532563.88 11.30337 2.04E-01 3.55E-01 3.18E-04 2.04695 6.30E-03 SW11 1389.75 2575206.75 0.963146 5.81E-02 5.71E-02 1.73E-22 0.966576 6.30E-03 SW11 1389.75 2575206.75 0.963146 5.81E-02 5.71E-02 1.73E-22 0.966576 1.67E-02 SW113 63355 1565124.05 0.5685393 1.66E-02 1.11E-02 3.00E-02 0.466945 1.34E-02 SW113 63355 15545124.05 0.5868898 2.32E-02 1.37E-02 2.37FE-02 0.347967 9.64E-03 SW113 63355 15545124.05 0.5868898 2.32E-02 1.37E-02 2.37FE-02 0.347967 9.64E-03 Sum 366709.44.12 Average 213FE-02 2.37FE-02 0.347967 9.64E-03 Sum 366709.412 Average 213FE-02 2.37FE-02 0.347967 9.64E-03 Sum 367709.412 Average 213FE-02 1.37E-02 2.37FE-02 0.347967 Average 2197553.15 Average	SWG 2001.24 3708:277.2 1415730 2.08E-01 2.94E-01 3.18E-04 2.004292 6.37E-04 SW10 2445.96 4527363.86 1730337 2.04E-01 3.35E-01 2.10E-04 2.994066 6.30E-04 SW11 1369.75 255750675 0.980146 5.81E-02 5.71E-02 0.996576 6.30E-04 SW13 133.85 1551405 0.686539 1.86E-02 1.17E-02 0.446945 1.34E-02 SW13 83.35 15451405 0.686539 0.559988 2.32E-02 1.37E-02 0.446945 1.34E-02 SW13 83.35 15451405 0.568988 2.32E-02 1.37E-02 0.446945 1.34E-02 SW13 83.35 15451405 0.568988 2.32E-02 1.37E-02 0.446945 1.34E-02 SW13 83.35 15451405 0.568988 2.32E-02 1.37E-02 0.446945 1.34E-02 Sum Sum 33.05 1650417 Average 2.07E-02 0.347647 9.64E-03 Average 2619553.15 Average 2.05E-01 3.302 0.347647 9.64E-03 Average 2619553.15 Average 2.07E-02 0.347647 9.64E-03	SW9 2001.24 3708.27/12 1.415730 2.08E-01 2.94E-01 3.18E-04 2.004282 6.37E-04 SW10 2.445.56 45326051 0.48151 0.33354 1.511E-02 1.11E-02 1.01E-04 2.046945 1.34E-04 SW11 1.389.75 2.57250676 0.688339 1.681E-02 1.11E-02 1.01E-04 2.046945 1.34E-04 SW11 1.389.75 2.57250676 0.688339 1.68E-02 1.11E-02 0.469455 1.34E-02 SW11 1.389.75 1.545124.05 0.688339 1.68E-02 1.11E-02 0.347967 9.466-05 SW13 83.385 1.545124.06 0.569688 2.32E-02 1.37E-02 0.347667 9.466-05 SW13 83.385 1.545124.06 0.569688 2.32E-02 1.37E-02 0.347667 9.466-05 Sum Sum 3.3667 1.37E-02 0.347967 9.64E-03 Average 2.19E-01 3.7E-02 2.37E-02 0.347967 9.64E-03 Average 2.19E-01 3.203 3.303 3.203 Average 2.19E-01 3.203 3.347 3.203 Average 2.19E-01 3.203 3.347 Average	SWB 2001.24 3708/20772 1415/30 2.08E-01 2.94E-01 318E-04 2.004222 6.37E-04 SW10 2.445.05 1.30337 2.04E-01 3.58E-01 2.10E-04 2.004222 6.37E-04 SW11 1.386.75 5.81E-02 5.117E-02 1.17E-02 0.496555 1.34E-02 SW11 1.385.75 0.589348 5.81E-02 5.11E-02 0.175E-02 0.496555 SW13 833.85 1.54514056 0.589868 2.32E-02 1.37E-02 0.3475675 0.466555 Sum 367094412 Average 1.01E-02 1.11E-02 0.1712-02 0.3475675 0.466555 Sum 3651405 0.589868 2.32E-02 1.37E-02 0.347567 0.466555 1.34E-02 Sum 367094412 Average 2.075-02 0.347567 0.347567 0.347567 Aurance 2.017 3.203 3.203 3.203 3.2355315 2.3457 0.466576 1.34E-02 Aurance 2.017 3.203 3.203 3.203 3.203 2.3457 Aurance Biomass (mT) 6.905 3.203 3.203 2.3457 Aurance Biomass (mT) 3.203 3.203 3.437			SW8	1834.47	3399272.91	1.297753	4.37E-01	5.67E-01	-6.10E-02	1.684162	1.03E-01
SW10 245.96 4532331 2.04E-01 3.53E-01 2.10E-04 2.994066 6.30E-04 SW11 139375 2572206.75 0.883146 5.81E-02 5.71E-02 0.966576 1.67E-02 SW112 945.03 1751140.59 0.686308 1.56E-02 1.11E-02 3.00E-02 0.46845 1.97E-02 SW13 833.85 1545124.05 0.568688 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 36570944.12 Average 1.90E-01 3.202 2.77E-02 0.347967 9.64E-03 Average 2.385.15 Average 1.90E-01 5.323 3.025 1.37E-02 0.347967 9.64E-03 Average 261935.15 Average 1.90E-01 5.323 3.025 1.37E-02 0.347967 9.64E-03 Average 261935.15 Average 1.90E-01 5.05 3.203 2.38E-03 2.38E-03 Average 261935.15 Biomass (m1) 6.956 1.37E-02 0.347967 9.64E-03 Average 261935.15 Average 1.90E-01 5.02 1.37E-02 0.347967 9.54E-03 Average 261935.16 Material 1.90E-01 3.203 0.347967 <t< td=""><td>SW10 2445.96 4532553.88 1.730337 2.046-01 3.556-01 2.106-04 2.99066 6.306-04 SW11 1389.75 2575206375 0.883146 5.816-02 5.116-02 1.776-02 0.966576 1.676-03 SW11 1389.75 2575206375 0.883146 5.816-02 5.116-02 0.966576 1.676-03 SW11 1389.75 2575206375 0.883146 5.816-02 1.116-02 0.449945 1.476-02 SW13 833.85 1545124.05 0.569888 2.322-02 1.376-02 2.776-02 0.347967 9.646-03 Sum 3657094412 Average 1.376-02 2.3776-02 0.347967 9.646-03 Average 2613553.15 Average 1.376-02 2.3776-02 0.347967 9.646-03 Sum 3657094412 Average 1.376-02 2.376-07 2.376-03 2.386-03 Average 2613553.15 Average 1.306-01 3.203 2.386-03 2.386-03 Average 26130553.15 Average 1.306-01 3.203 2.34707 Average 26130553.15 Average 1.306-01 3.203 2.34707 Averade 26130553.15 Averade 1.3</td><td>SWI0 245.96 453253.88 1/36337 2.04E-01 3.53E-01 2.10E-04 2.994666 6.30E-04 SW11 1389.75 5.575206.75 0.883146 5.81E-02 5.71E-02 0.986576 1.67E-02 SW112 345.03 1.73140.59 0.686538 1.66E-02 5.71E-02 0.946945 1.67E-02 SW113 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 SW13 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 SW13 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 SW13 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 Sum 36670944.12 Average 1.37E-02 1.37E-02 0.347667 9.64E-03 Average 2619353.15 Average 1.37E-02 0.347667 9.64E-03 Average 26190353.15 Average 1.96E-01 3.2005 Average 26190353.15 Average 1.917-26 0.347667 All strata combined: Biornass (mT) 1.71.266 Variance 4.347.075 <tr< td=""><td>SW10 2445.66 4532303 2.04E-01 3.55E-01 2.10E-04 2.96666 6.30E-04 SW11 1389.75 25752675 0.661346 5.61E-02 1.77E-02 0.966576 1.67E-02 SW11 1389.75 25752053 1.66E-02 1.67E-02 0.46645 1.46E-02 SW12 845.03 17514.05.6 0.666639 1.66E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05.6 0.566608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05 0.568608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05 0.568608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW1 833.65 1.466.79 1.30E-01 3.20E-02 0.446945 1.44E-02 Average 261933.15 Average 2.37E-02 1.30E-01 2.32E-02 2.77E-02 0.347667 Average 261933.15 Average 2.37E-02 1.30E-01 2.32E-02 2.77E-02 0.347667 Average 261933.15 Average 2.37E-02 1.30E-01 3.200 Average 261333.15 Vaverage <t< td=""><td></td><td></td><td>SW9</td><td>2001.24</td><td>3708297.72</td><td>1.415730</td><td>2.08E-01</td><td>2.94E-01</td><td>3.18E-04</td><td>2.004292</td><td>6.37E-04</td></t<></td></tr<></td></t<>	SW10 2445.96 4532553.88 1.730337 2.046-01 3.556-01 2.106-04 2.99066 6.306-04 SW11 1389.75 2575206375 0.883146 5.816-02 5.116-02 1.776-02 0.966576 1.676-03 SW11 1389.75 2575206375 0.883146 5.816-02 5.116-02 0.966576 1.676-03 SW11 1389.75 2575206375 0.883146 5.816-02 1.116-02 0.449945 1.476-02 SW13 833.85 1545124.05 0.569888 2.322-02 1.376-02 2.776-02 0.347967 9.646-03 Sum 3657094412 Average 1.376-02 2.3776-02 0.347967 9.646-03 Average 2613553.15 Average 1.376-02 2.3776-02 0.347967 9.646-03 Sum 3657094412 Average 1.376-02 2.376-07 2.376-03 2.386-03 Average 2613553.15 Average 1.306-01 3.203 2.386-03 2.386-03 Average 26130553.15 Average 1.306-01 3.203 2.34707 Average 26130553.15 Average 1.306-01 3.203 2.34707 Averade 26130553.15 Averade 1.3	SWI0 245.96 453253.88 1/36337 2.04E-01 3.53E-01 2.10E-04 2.994666 6.30E-04 SW11 1389.75 5.575206.75 0.883146 5.81E-02 5.71E-02 0.986576 1.67E-02 SW112 345.03 1.73140.59 0.686538 1.66E-02 5.71E-02 0.946945 1.67E-02 SW113 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 SW13 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 SW13 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 SW13 833.35 154514.05 0.586988 2.32E-02 1.317E-02 0.347667 9.64E-03 Sum 36670944.12 Average 1.37E-02 1.37E-02 0.347667 9.64E-03 Average 2619353.15 Average 1.37E-02 0.347667 9.64E-03 Average 26190353.15 Average 1.96E-01 3.2005 Average 26190353.15 Average 1.917-26 0.347667 All strata combined: Biornass (mT) 1.71.266 Variance 4.347.075 <tr< td=""><td>SW10 2445.66 4532303 2.04E-01 3.55E-01 2.10E-04 2.96666 6.30E-04 SW11 1389.75 25752675 0.661346 5.61E-02 1.77E-02 0.966576 1.67E-02 SW11 1389.75 25752053 1.66E-02 1.67E-02 0.46645 1.46E-02 SW12 845.03 17514.05.6 0.666639 1.66E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05.6 0.566608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05 0.568608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05 0.568608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW1 833.65 1.466.79 1.30E-01 3.20E-02 0.446945 1.44E-02 Average 261933.15 Average 2.37E-02 1.30E-01 2.32E-02 2.77E-02 0.347667 Average 261933.15 Average 2.37E-02 1.30E-01 2.32E-02 2.77E-02 0.347667 Average 261933.15 Average 2.37E-02 1.30E-01 3.200 Average 261333.15 Vaverage <t< td=""><td></td><td></td><td>SW9</td><td>2001.24</td><td>3708297.72</td><td>1.415730</td><td>2.08E-01</td><td>2.94E-01</td><td>3.18E-04</td><td>2.004292</td><td>6.37E-04</td></t<></td></tr<>	SW10 2445.66 4532303 2.04E-01 3.55E-01 2.10E-04 2.96666 6.30E-04 SW11 1389.75 25752675 0.661346 5.61E-02 1.77E-02 0.966576 1.67E-02 SW11 1389.75 25752053 1.66E-02 1.67E-02 0.46645 1.46E-02 SW12 845.03 17514.05.6 0.666639 1.66E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05.6 0.566608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05 0.568608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW13 833.65 154514.05 0.568608 2.32E-02 1.37E-02 0.446945 1.44E-02 SW1 833.65 1.466.79 1.30E-01 3.20E-02 0.446945 1.44E-02 Average 261933.15 Average 2.37E-02 1.30E-01 2.32E-02 2.77E-02 0.347667 Average 261933.15 Average 2.37E-02 1.30E-01 2.32E-02 2.77E-02 0.347667 Average 261933.15 Average 2.37E-02 1.30E-01 3.200 Average 261333.15 Vaverage <t< td=""><td></td><td></td><td>SW9</td><td>2001.24</td><td>3708297.72</td><td>1.415730</td><td>2.08E-01</td><td>2.94E-01</td><td>3.18E-04</td><td>2.004292</td><td>6.37E-04</td></t<>			SW9	2001.24	3708297.72	1.415730	2.08E-01	2.94E-01	3.18E-04	2.004292	6.37E-04
SW11 1389.75 2575206.75 0.983146 5.81E-02 5.71E-02 1.75E-02 0.966576 1.67E-02 SW12 945.03 1751140.59 0.685539 1.66E-02 1.11E-02 3.00E-02 0.446945 1.34E-02 SW13 833.65 1545124.05 0.589888 2.32E-02 1.11E-02 3.00E-02 0.446945 1.34E-02 SW13 833.65 1545124.05 0.589888 2.32E-02 1.31E-02 2.37FE-02 0.347567 9.64E-03 Sum 36670944.12 Average 2.37E-02 1.37E-02 2.77FE-02 0.347567 9.64E-03 Average 2619353.15 Average 1.90E-01 6.966 3.203 Average 2619353.15 Average 1.90E-01 6.966 Average 2619353.15 Average 1.90E-01 3.203 All strata combined: Biomass (mT) 6.966 0.347677 2.38E-03 All strata combined: Biomass (mT) 1.111.266 3.347079	SW11 1389.75 2575206.75 0.883146 5.81E-02 5.71E-02 0.966576 1.57E-02 0.966576 1.57E-02 SW12 945.03 175114058 0.686539 1.66E-02 1.11E-02 3.00E-02 0.446945 1.34E-02 SW13 833.85 154512405 0.588688 2.32E-02 1.31E-02 0.347967 9.44E-02 SW13 833.85 154512405 0.588688 2.32E-02 1.37E-02 0.347967 9.44E-02 Sum 3657064412 Average 1.36E-02 1.11E-02 2.00E-02 0.347967 9.44E-03 Average 231935115 Average 1.36E-01 5.326-02 2.37E-02 0.347967 9.44E-03 Average 231935115 Average 1.36E-01 5.326-02 2.37E-02 0.347967 Average 231935115 Average 1.36E-01 5.326-03 2.336-03 Average 231935315 Biomass (mT) 6.956 3.203 Average 23103 3.203 3.203 2.336-03 Average 23103 5.34707 5.326-03 3.235 Average 1.36E-01 3.203 3.203 Average 1.41266 1.412.06 1.412.06 <td>SW11 1389.75 2575206.75 0.88146 5.81E.02 5.71E.02 1.73E.02 0.966576 1.67E.02 SW12 945.03 175140.56 0.665339 1.66E.02 1.11E.02 0.046945 1.34E.02 SW13 833.85 154512405 0.665339 1.66E.02 1.11E.02 0.446945 1.34E.02 SW13 833.85 154512405 0.569989 2.32E.02 1.31E.02 2.77E.02 0.347967 9.446-03 SW13 833.85 154512405 0.569989 2.32E.02 1.31E.02 2.77E.02 0.347967 9.446-03 Sum 3657094412 Average 1.30E.01 5.37E.02 1.37E.02 2.37E.02 9.446-03 Average 261353.15 Average 1.30E.01 5.37E.02 1.37E.02 2.37E.02 Average 261353.15 Average 1.30E.01 5.37E.02 2.77E.02 0.347967 Average 261353.15 Average 1.30E.01 5.37E.02 2.37E.02 2.37E.02 Average 261353.15 Average 1.30E.01 5.305 Average 261353.15 Average 1.37E.02 2.37E.02 Average 261355.315 Average 3.203</td> <td>SWI1 1389.75 2575,206.75 0.883146 5.81E-02 5.71E-02 1.73E-02 0.966576 1.67E-02 SW12 345.03 1751140.56 0.666539 1.66E-02 1.11E-02 3.00E-02 0.446645 1.47E-02 SW13 833.65 1545124.05 0.569688 2.32E-02 1.37E-02 0.347667 9.64E-03 SW13 S667064412 Average 1.30E-01 5.966 1.37E-02 0.347667 Average 2619353.15 Average 1.30E-01 5.300 5.347667 Average 2619353.15 Average 1.30E-01 5.300 Average 2619353.15 Average 1.30E-01 5.300 Average 2619353.15 Variance 3.200 2.347067 All strata combined: Biomass (mT) 1.71.266 Standard Standard 3.24707 C.V.(%)<td></td><td></td><td>SW10</td><td>2445.96</td><td>4532363.88</td><td>1.730337</td><td>2.04E-01</td><td>3.53E-01</td><td>2.10E-04</td><td>2.994066</td><td>6.30E-04</td></td>	SW11 1389.75 2575206.75 0.88146 5.81E.02 5.71E.02 1.73E.02 0.966576 1.67E.02 SW12 945.03 175140.56 0.665339 1.66E.02 1.11E.02 0.046945 1.34E.02 SW13 833.85 154512405 0.665339 1.66E.02 1.11E.02 0.446945 1.34E.02 SW13 833.85 154512405 0.569989 2.32E.02 1.31E.02 2.77E.02 0.347967 9.446-03 SW13 833.85 154512405 0.569989 2.32E.02 1.31E.02 2.77E.02 0.347967 9.446-03 Sum 3657094412 Average 1.30E.01 5.37E.02 1.37E.02 2.37E.02 9.446-03 Average 261353.15 Average 1.30E.01 5.37E.02 1.37E.02 2.37E.02 Average 261353.15 Average 1.30E.01 5.37E.02 2.77E.02 0.347967 Average 261353.15 Average 1.30E.01 5.37E.02 2.37E.02 2.37E.02 Average 261353.15 Average 1.30E.01 5.305 Average 261353.15 Average 1.37E.02 2.37E.02 Average 261355.315 Average 3.203	SWI1 1389.75 2575,206.75 0.883146 5.81E-02 5.71E-02 1.73E-02 0.966576 1.67E-02 SW12 345.03 1751140.56 0.666539 1.66E-02 1.11E-02 3.00E-02 0.446645 1.47E-02 SW13 833.65 1545124.05 0.569688 2.32E-02 1.37E-02 0.347667 9.64E-03 SW13 S667064412 Average 1.30E-01 5.966 1.37E-02 0.347667 Average 2619353.15 Average 1.30E-01 5.300 5.347667 Average 2619353.15 Average 1.30E-01 5.300 Average 2619353.15 Average 1.30E-01 5.300 Average 2619353.15 Variance 3.200 2.347067 All strata combined: Biomass (mT) 1.71.266 Standard Standard 3.24707 C.V.(%) <td></td> <td></td> <td>SW10</td> <td>2445.96</td> <td>4532363.88</td> <td>1.730337</td> <td>2.04E-01</td> <td>3.53E-01</td> <td>2.10E-04</td> <td>2.994066</td> <td>6.30E-04</td>			SW10	2445.96	4532363.88	1.730337	2.04E-01	3.53E-01	2.10E-04	2.994066	6.30E-04
SW12 945.03 1751140.59 0.668539 1.66E-02 1.11E-02 3.00E-02 0.446945 1.34E-02 SW13 833.85 1545124.05 0.589888 2.32E-02 1.37E-02 0.347667 9.64E-03 Sum 3667094412 Average 1.37E-02 2.347667 9.64E-03 Average 2619353.15 Average 1.30E-01 5.305 Average 2619353.15 Elomass (mT) 6.956 Average 2619353.15 Average 1.30E-01 2.3265 Average 2619353.15 Average 1.30E-07 3.203 Average 2619353.15 Biomass (mT) 6.956 3.203 Average 2619353.15 Average 1.30E-07 2.34767 Average 2619353.15 Average 1.30E-07 3.203 Average 2619353.15 Average 1.30E-07 2.34767 Average 2619353.15 Average 1.30E-07 3.203 Average 2619353.15 Average 1.30E-07 2.34767 Average 261937 3.203 3.203 Average 261932 3.203 3.203 Average 27.0779 3.203 Average	SW12 945.03 1751140.59 0.686539 1.66E-02 1.11E-02 3.00E-02 0.446945 1.34E-02 SW13 833.85 154512405 0.589898 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 3667094412 Average 1.37E-02 1.37E-02 0.347967 9.64E-03 Average 2619353.15 Average 1.90E-01 6.966 3.203 Average 2619353.15 Average 1.90E-01 3.203 Average 2619353.15 Variance 3.203 Average 2619353.15 Variance 4.347,079 All strata combined: Biomass (mT) 171,266 Standard Error 66.332 Standard Error 65.332 Standard Error 5.4497	SW12 945.03 1751140.58 0.668539 1.66E-02 1.11E-02 3.00E-02 0.468945 1.34E-02 SW13 833.85 1545124.05 0.569888 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 3657094412 Average 2.32E-02 1.37E-02 2.37E-02 0.347967 9.64E-03 Average 2619353.15 Average 1.30E-01 5.966 3.200 Average 2619353.15 Average 1.30E-01 3.200 Average 2619353.15 Average 1.30E-01 2.38E-03 Average 2619353.15 Average 1.30E-01 3.200 Average 2619353.15 Average 1.30E-01 3.200 Average 2619353.15 Average 1.30E-01 3.200 Average 2619353.11 Average 1.30E-01 3.200 Average 2.31E-02 3.200 3.200 Average 2.31E-01 3.200 Average 2.31E-02 3.200 Average	SW12 945.03 1751140.59 0.668539 1.66E.02 1.11E-02 3.00E-02 0.46945 1.34E.02 SW13 633.65 1.545124.05 0.589689 2.32E.02 1.31E.02 2.77E-02 0.347967 9.64E.03 SW13 833.65 1.545124.05 0.589689 2.32E.02 1.31E.02 2.77E-02 0.347967 9.64E.03 Average 2619553.15 Average 1.90E-01 3.200 All strata combined: Biomass (m1) 6.966 4.417.076 All strata combined: Biomass (m1) 3.200 3.447.079 Standard Error 6.479.079 5.447.079 5.447.079			SW11	1389.75	2575206.75	0.983146	5.81E-02	5.71E-02	1.73E-02	0.966576	1.67E-02
SW13 B33.85 1545124.05 0.569688 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 36670944.12 Average 1.37E-02 0.347967 9.64E-03 Average 2619353.15 Average 1.30E-01 6.966 Average 2619353.15 Blomass (mT) 6.966 All strata combined: Blomass (mT) 171.266 Variance 4347.079 Standard Error 66.932 C.V(%) 38.497	SW13 833.85 1545124.05 0.569688 2.32E-02 1.37E-02 0.347667 9.64E-03 Sum 367094412 Average 1.30E-01 5.9553.15 Average 2619353.15 Biomass (mT) 6.966 9.547-02 2.33E-03 Average 2619353.15 Average 1.30E-01 3.203 Average 2619353.15 Biomass (mT) 6.966 Average 2619353.15 Siomass (mT) 6.966 Average 2619353.15 Siomass (mT) 6.966 All strata combined: Biomass (mT) 171.266 Standard Error 65.932 C.V.(%) 38.497	SW13 B33.B5 1545124.05 0.589688 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 3667094112 Average 1.90E-01 2.33E-02 1.37E-02 0.347967 9.64E-03 Average 2619353.15 Average 1.90E-01 3.203 3.203 Average 2619353.15 Average 1.90E-01 3.203 Average 2619353.15 Average 1.90E-01 Average 2619353.15 Average 3.203 All strata combined: Biomass (m1) 1.11.266 Standard Error 66.332 C.V(%) 38.497	SW13 833.85 1545124.05 0.589888 2.32E-02 1.37E-02 0.347967 9.64E-03 Sum 3677094.12 Average 2819333.15 Average 2819333.15 2.38E-03 1.50E-01 Average 2819333.15 Average 2819333.15 Average 1.70E-01 2.38E-03 Average 2819333.15 Average 2819333.15 Average 1.302 2.38E-03 Average 2819333.15 Average 1.302 3.203 3.203 All strata combined: Biomass (m1) 1.71.266 4.47.079 Standard Error 6.932 5.302 C.V(%) Standard Error 6.932 C.V(%) 3.437			SW12	945.03	1751140.59	0.668539.	1.66E-02	1.11E-O2	3.00E-02	0.446945	1.34E-02
Sum 36570044.12 Average 1.90E-01 2.38E-03 Average 2619353.15 Biomass (mT) 6.966 3.203 Average 2810mass (mT) 6.966 3.203 3.203 All strata combined: Biomass (mT) 171.266 3.203 2.38E-03 Standard Error 6.932 0.592 0.592 2.38E-03 2.303	Sum 3670944.12 Average 1 306-01 Average 2619553.15 Average 1 306-01 Average 2619553.15 Biomass (m1) 6.966 All strata combined: Biomass (m1) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497 079	Sum 36770344 12 Average 1.30E.01 Average 2813053.15 Average 1.30E.01 Average 2813053.15 Biomass (m1) 6.966 Average 3.203 4.347.075 3.203 All strata combined: Biomass (m1) 171.266 3.437.075 Standard Error 6.532 2.4.(%) 3.6.437	Sum 365/094412 Average 1.90E-01 238504 238			SW13	833.85	1545124.05	0.589888	2.32E-02	1.37E-02	2.77E-02	0.347967	9.64E-03
Sum 36709/4.12 Average 1.90E-01 2.38E-03 Average 2619353.15 Biomass (mT) 6.966 Variance 3.203 All strata combined: Biomass (mT) 1.11.266 Variance 4.477.079 2.38E-03 All strata combined: Biomass (mT) 1.71.266 Variance 4.347.079 2.384.97 C.V.(%) 3.8.497 C.V.(%) 3.8.497 3.8.497 3.8.497	Sum 36570944.12 Average 1.90E-01 Average 2619353.15 Average 1.90E-01 Average 2619353.15 Biomass (mT) 6.956 All strata combined: Biomass (mT) 171.256 3.203 All strata combined: Biomass (mT) 171.256 3.437.079 Standard Error 6.5.332 C.V.(%) 38.497	Sum 36709/412 Average 1.90E-01 Average 2619353.15 Average 1.00E-01 Average 2619353.15 896 896 Average 2619353.15 895 895 Average 2619353.15 895 996 Average 2619353.15 895 996 Average 171.266 917.079 3.203 All strata combined: Biomass (m) 171.266 Variance 4.347.079 Standard Eror 65.932 C.V.(%) 38.497 079	Sum 3667094412 Average 1.90E-01 Average 2319353.15 Average 1.90E-01 Average 2319353.15 Biomass (mT) 6.966 All strata combined: Biomass (mT) 1.126 3.203 All strata combined: Biomass (mT) 1.126 3.203 C.V.(%) 3.8.497 3.8.497 2.3.86.03						ÿ			•	-	
Average 2619353.15 Biomass (mT) 6.956 Variance 3.203 All strata combined: Biomass (mT) All strata combined: Biomass (mT) C.V.(%) 38.497	Average 2619553.15 Biomass (mT) 6.966 Variance 3.203 All strata combined: Biomass (mT) Variance 4.347,079 Standard Error 65,932 C.V.(%) 38.497	Average Ze13353.15 Biomass (mT) 6.956 Variance 3.203 All strata combined: Biomass (mT) Variance 4.347.079 Standard Error 66.332 C.V.(%) 38.497	Average 2619553.15 Biomass (m1) 6.956 Variance 3.203 All strata combined: Biomass (m7) 171.266 Variance 4.347,079 Standard Error 66,932 C.V.(%) 38.497				Sum	36670944.12		Average	1.90E-01			2.38E-03
Biomass (mT) 6.950 Variance Variance Variance 3.203 All strata combined: Biomass (mT) Variance 4.347,079 Standard Error 65.932 C.V.(%) 38.497	Biomass (m1) 6.966 Variance 3.203 All strata combined: Biomass (m1) All strata combined: Biomass (m1) All strata combined: C.V.(%) 3.303 C.V.(%)	Biomass (mT) 6.966 Variance 3.200 All strata combined: Biomass (mT) 171.266 Variance 4.347.079 Standard Error 65.332 C.V.(%) 38.497	Biomass (mT) 6.966 Variance 3.203 All strata combined: Biomass (mT) 171.266 Variance 4.347.079 Standard Error 65.332 C.V.(%) 38.497				Average	2619353.15		- 1 	•		`	
All strata combined: Biomass (mT) 171.266 All strata combined: Biomass (mT) 171.266 Standard Error 65.932 38.497 C.V.(%) 38.497	Variance 3.203 All strata combined: Biomass (mT) Nariance 4.347.079 Standard Error 65.932 C.V.(%) 38.497	Variance 3.203 All strata combined: Biomass (m1) 171.266 171.266 Standard Error 65.332 C.V(%) 38.497	Variance 3.03 All strata combined: Riomass (m1) 171.266 Variance 4.347.079 Standard Error 65.932 C.V.(%) 38.497			ų			ŗ		Biomass (mT)	6.956	 	
All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: All strata combined: Biomass (m1) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: All strata combined: Biomass (mT) 171.266 Variance 4.347.079 Standard Error 65.332 C.V.(%) 38.497							` `	Variance	3.203	, -	
All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: All strata combined: Biomass (m7) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4.347.079 Standard Error 6.5.332 C.V.(%) 38.497					,						
All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Nariance Standard Error C.V.(%) 38.497 C.V.(%)	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497											
All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497				. *						•	•
All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497				۱.						2	-
All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	All strata combined: Biomass (mT) 171.266 Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497				L						÷	· ·
Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497	Variance 4347.079 Standard Error 65.932 C.V.(%) 38.497			•		All strata combine	ed:		Biomass (mT)	171.266		
Standard Error 65.932 C.V.(%) 38.497	Standard Error 65.932 C.V.(%) 38.497	Standard Error 65.932 C.V.(%) 38.497	Standard Error 65.932 C.V.(%) 38.497						-		Variance	4347.079		
C.V.(%) 38.497	C.V.(%) 38.497	C.V.(%) 38.497	C.V.(%) 38.497			٠					Standard Error	65.932		-
							. .				C.V.(%)	38.497		

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Table 7 Catch details for the five most abundant marine fish species caught during Shamook Trip 251, 15-26 April 1996.

				Depth		ပိ	Ð	Pla	lice	Tur	pot	Ň	tch	Red	fish
Area	Date	Set	Gear	fished	-	0.	Veight	No.	Weight	No	Veight	No.	Weight	No.	Weight
				Œ)		ish	(kg)	fish	(kg)	fish	(kg)	fish	(kg)	fish	(kg)
Smith Sound	06//416	Ŧ	liador	50		Å,	516	c		c		_ c		c	
	960416	- c	Trawl	105		5 ~	ο α Γ τ		•	о с	•				-
	960417	0 1 1 1 1	Trawl	260		. ന	0.0	, 5	. a G	о с	• .	0 0			•
	960417	4	Trawl	278		442	826.6	12	20.0	• 4	30		•	» с	•
	960418	5	Trawi	215		131	205.4	106	31.4	0		0			•
	960418	Q	Trawl	148		0	0.0	0	•	0		0			
	960418	7	Traw	158		293	483.8	650	150.0	0		e S	2.1	5	1.2
	960420	80	Jigger	33		113	140.3	0		0	•	0		0	-
				F	otal 1	043	1728.8	845	204.0	4	3.0	e	5.1	5	1.2
Northwest Arm	960420	თ	Jigger	51		4	6.8	0		0		0	•	0	
	960421	10	Jigger	30		70	153.0	0	-	0	•	0	. ·	0	
	960421	. -	Gill net	60		4	9.1	-	0.4	0		0		0	•
	960421	12	Gill net	56		~	2.4	-	0.2	0		0		0	
	960421	13	Gill net	61		ო	10.6	-	0.4	0		0		0	
	960421	4	Traw	105		თ	6.5	175	35.0	0		Ò		0	
	960421	15	Jigger	25		3	4.2	0	•	0		0		0	
	960421	16	Jigger	31		128	228.5	0		0		0		0	-
	960422	17	Gill net	55		-	2.5	0	•	0	·.	0		0	
	960422	18	Gill net	70		2	5.5	0		0		0		0	•
	960425	26	Jigger	25		29	38.4	0		0		0	•	0	
				F	otal	253	467.5	178	36.0	0	•	0		0	
Southwest Arm	960423	6	Trawl	173		69	111.0	435	111.0	0		0		.	0.3
	960423	20	Trawl	268		78	133.4	411	108.0	e	1.5	7	1.5	0	
	960423	2	Trawl	290		0	•	0	•	0		0	. •	0	•
	960423	22 3	Trawi	162		0		0		0		0		0	•
	960424	23 ³	Traw	214		16	26.9	35	14.5	0		0		0	-
	960424	24	Traw	168		33	34.5	277	74.0	0		0		0	
	960424	25	Traw	215		60	103.7	413	107.0	0	-	0	•	0	-
				• •	otal	246	409.5	1571	414.5	e	1.5	7	1.5		0.3
				Overall 1	otal	542	2605.8	2594	654.5	7	4.5	0	3.6	e	1.5
² gear damaged. ³ gear fouled.									-						
)															

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Table 8. Age-length distribution of cod sampled from inshore areas of Trinity Bay during April 1996. Values were obtained by applying an age-lend h129 ĸ 2 ; 68.95 σ <u>e</u> 67.14 თ N 37 G 64.42 ω ŝ 8 2 76 Ξ -61.55 228 53 2 27 8 2 2 ന Ξ 4 56.25 32 20 538 ω ~ 3 8 85 30 27 18 **O** Ages key from 719 aged samples to the length frequency of the entire catch. 49.82 223 ŝ ß \$ ß S e \$ 4 39.83 4 2 19 : 2 ₫ 3 9 25.99 ო 5 20.29 2 m 4 0 61 64 67 73 73 73 73 73 76 79 79 Totals 19 33 2 ŝ 83 28 \$ đ 22 25 9 \$ Ŷ Av/Len (cm) Length (cm)

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Fig. 1. Location of the area surveyed for cod during Shamook trip 251.



Fig. 2. Bathymetry of the survey area in western Trinity Bay, Newfoundland,





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Fig. 4. Acoustic transect positions. Shamook trip 251, April 15-26th, 1996.

Fig. 5. Biomass estimate of cod by transect and stratum for three areas in westem Trinity Bay surveyed during Shamook trip 251 (see Fig 4.for transect positions).





TRANSECT

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Fig. 6. Distribution of cod densities by depth as detected on acoustic transects during Sharnook trip 251 (April 15-26th, 1996).

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Fig. 7. Echogram from transect SS18 (outer Smith Sound). Horizontal lines are 50 m depth intervals. Note the dense aggregation of targets in the deepest section of the transect

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Fig. 8. Echogram from transect SS5 (inner Smith Sound). Horizontal lines are 50 m depth intervals. Note the aggregation of targets close to the bottom and extending down the slope throughout the depth range portrayed.

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Fig. 9. Echogram from Southwest Arm. Horizontal lines are 50 m depth intervals. Note the low density of targets scattered up through the water column.



Fig. 10. Fishing set locations during Shamook trip 251