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Brief notes on the execution of Canadian multi-species surveys in 2007 and 2008.

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Abstract

Brodie and Stansbury (2007) reviewed the performance of the Canadian multi-species spring and autumn surveys over 1995 – 2006. We update some basic survey performance statistics and document any coverage deficiencies in the four multi-species surveys conducted by the Department of Fisheries and Oceans, Newfoundland Region since 2006: the spring and autumn surveys of 2007 and 2008. The most significant issue over this time period is the lack of deepwater coverage for practically the entire edge of the Continental Shelf during the autumn 2008 survey. The impact of the coverage deficiencies during the 2007 and 2008 spring and fall surveys on stock assessments is briefly discussed.

Introduction

The Canadian Department of Fisheries and Oceans, Newfoundland Region, has undertaken stratified random surveys since the early 1970's. A full description of the history of these surveys, survey stratification, net towing protocols, vessels employed, as well as NAFO Divisions covered (up to and including 2006) are detailed by both Brodie and Stansbury (2007), Brodie (2005), and references therein. The stratification of Divs. 2GHJ3KLMNO are illustrated in Figs. 1-8.

This paper summarizes the performance of the spring and fall surveys of 2007 and 2008, with additional attention given to a revision to the survey design prior to the fall 2008 survey.

Methods

The survey data were analyzed to determine the total number of successful fishing "sets", i.e. all fishing stations during which all tow protocols are met, and with minimal to no gear damage. Counts of successful sets were organized by stratum, division and RV vessel employed. The survey start/end dates and depth ranges covered in 2007 and 2008 were also tabulated. For comparative purposes, all such information since the introduction of the Campelen 1800 shrimp trawl as the survey gear are included. This gear was first deployed in the 1995 fall survey, and has been used in all spring surveys since 1996.

Fall Surveys

Division 2G has not been surveyed since 1999 and at present is no longer included in the survey design. Surveys of Division 2H are intended to occur in every second year, although this has not always been realized. Divisions 2J3KLMNO are part of the annual sampling design, and surveys are generally conducted from early-October to mid-December. Surveys are currently conducted by two Canadian Coast Guard Research Vessels, although a third vessel has at times been deployed if significant delays are experienced during the initial stages of the survey. Currently, the Canadian Coast Guard vessels available to conduct these surveys are the sister-ships *CCGS Wilfred Templeman*, *CCGS Alfred Needler*, and the *CCGS Teleost*. As of the fall 2008 survey, the survey work typically conducted using

the *CCGS Wilfred Templeman* will be completed using the *CCGS Alfred Needler* (applies to both spring and fall surveys).

The design of the Canadian fall survey was altered slightly prior to the beginning of the 2008 survey. The number of sets allocated for the fall 2008 survey was decreased by approximately 7.5% (from 800 to 741, for Divs. 2HJ3KLMNO) compared to the allocation in recent years. The reduction was implemented for two reasons. First, chronic mechanical problems with research vessels in recent years have led to a significant reduction in the realized number of sampling sets compared to the total allocated at the onset of recent surveys. Secondly, sampling in support of an Ecosystem Research Initiative (ERI) was introduced to the 2008 fall survey. The ERI initiative includes more detailed at-sea processing for several species of non-commercial fish and invertebrates, which may increase the time required to complete a sampling set in some circumstances.

In order to maximize the number of sets covered by the end of the 2008 survey period, there were four sets during which the standard sampling schema were altered. Some species that are typically sampled individually were simply weighed (in aggregate) and counted. The length, sex, maturity, and individual weights could not be recorded, and otoliths for aging were not collected as there was insufficient time to do so in these sets. Although this occurred in only four sets, the impact is not trivial as there were relatively large catches of some species (e.g. Greenland Halibut) during some of these tows.

Spring Surveys

The spring surveys encompass Divs. 3LNOPs, and are typically conducted from early-April through to the end of June, typically employing either the *CCGS Wilfred Templeman* or the *CCGS Alfred Needler*. Though the spring survey covers Divs. 3LNOPs, we focus upon Divs. 3LNO within this document.

Results and Discussion

A synopsis of the successful sets during fall surveys over 1995-2008 (Table 1; see also Fig. 9a) indicates that the 2007 and 2008 fall surveys have consisted of fewer sampling sets than most other years in the time series. (Note that Div. 2H was not included in the 2007 survey but was sampled during the 2008 survey.) At the completion of the 2007 survey, only the set totals for 1995 survey were lower than those of 2007. The 2008 totals are the lowest in the 1995-2008 period, with only 532 sets completed. The summaries indicate that the 2008 divisional totals for each of Divs. 2J3KLN were the lowest in the 1995-2008 period. For Divs. 2H and 3O, the 2008 levels were second lowest coverage levels achieved since 1995, and no sets were conducted in Div. 3M. These shortfalls result from extensive mechanical delays, primarily due to issues with the *CCGS Teleost*. Figure 9b displays the number of sets completed as well as the percentage of planned sets which were completed in each year. Over 1995-2008 period, the targeted number of sampling sets was completed only once; in 2002 (128 of these sets were completed in January of 2003). In 2007 and 2008, the success rate of the fall survey with respect to the number of allocated sets being realized were 88% and 72%, respectively.

In the spring surveys of 2007 and 2008, the number of sets completed (Table 2; see also Fig. 10a) are also amongst the lowest values for this time-series. In contrast to the fall surveys, spring surveys have generally been fully completed (Fig. 10b). Exceptions to this were the 2000 spring survey, for which there were reductions within many Div. 3L strata, the 2006 survey which had extensive coverage shortfalls in Divs. 3NO, and some slight reductions in Divs. 3LN during 2008 survey. There was a substantial delay during the 2007 survey, resulting in its latest completion ever (July 12); this is the only spring survey which has extended beyond the end of June. Mechanical difficulties with the *CCGS Wilfred Templeman* in both 2007 and 2008 required the utilization of the *CCGS Teleost* for the first time in spring surveys of Divs. 3LNO.

Classification of the number of successful fall survey sets by stratum over 1995-2008 (Tables 3a – 3h) identifies where coverage gaps have occurred in the past two surveys. In the fall of 2007, the inshore strata in Divs. 3KL were not covered, and sampling was reduced in some of the larger strata in western 3K. In the fall of 2008, the inshore strata were again not surveyed, the Div. 3M portion of the survey was cancelled, and aside from the southern portion of Div. 2J, there was no coverage in depths >732m. Also, there were substantial reductions in the number of sets taken in the largest strata (e.g. strata 620, 631, 633, 634 and 639) in Div. 3K (Table 3d).

The set counts by stratum for spring surveys (Tables 4a - 4c) indicate that there have been few coverage problems in Divs. 3NO for either of the 2007 or 2008 surveys. In Div. 3L, the inshore strata (strata 784-800) are included in the survey design, but are of the lowest priority and are infrequently covered. Most of the larger strata within Div. 3L had slight reductions in coverage during the 2008 survey. Stratum 328 was not completed as only one set was completed out of the five sets allocated. (The stratified-random design requires a minimum of two sets per stratum to be considered complete.)

Brodie and Stansbury (2007) discuss three potential sources of major uncertainties when the spring and fall surveys are not completed as planned. These are gaps in coverage (both missed strata and reduced numbers of sets), changes in timing (with respect to extension of survey ends dates, and lengthened time required to complete individual strata or divisions) and vessel effects (with incomplete comparisons amongst the vessels used, and using vessels in areas where they have generally not surveyed in prior years). All of these issues have affected the data collected during the fall surveys of 2007 and 2008. In the spring surveys of 2007 and 2008, the surveys of Divs. 3LNO there have been coverage gaps and unplanned vessel interchange. Regarding timing, the 2007 spring survey extended into July, the latest completion ever, and the 2008 survey was completed on time. Each of these factors may have important consequences for the stock assessments reliant upon this data. As a result of extensive mechanical problems with the research vessels in the fall of 2008, an additional source of uncertainty was introduced to these survey data. A short time frame in which to complete a large number of sets and strata prior to the end of the fall 2008 survey required the suspension of sampling for several species which would typically be fully sampled (e.g. Greenland Halibut, American Plaice). Although this issue was limited to four sets, it introduces a bias to any investigations of the survey data by length, sex, age, or maturity stage.

Conclusion

Extensive mechanical delays during the 2007 and 2008 fall surveys resulted in reduced survey coverage, extensive interchange of research vessels (i.e. vessels surveying areas in which they typically would not), and have extended the time required to complete surveys of the individual divisions. The spring surveys of 2007 was two weeks late and the 2008 survey was completed on time. Also, for the first time, the *CCGS Teleost* participated in the 2007 and 2008 spring surveys of Divs. 3LNO, and the total number of sets completed during spring 2008 was less than normal. These deficiencies and those documented for 1995-2006 surveys by Brodie and Stansbury (2007) impact the assessments of many groundfish and invertebrate stocks to varying, often unquantifiable, degrees.

Acknowledgements

The Canadian multi-species survey dataset would not exist without extensive efforts on the part of the Fisheries and Oceans scientific sampling teams as well as the crews of the *CCGS W. Templeman*, *CCGS Teleost*, and *CCGS A. Needler*. Also, we thank David Orr (DFO, St. John's, Newfoundland) for maintaining a survey summary document, which expedites analysis of the survey data, and Gus Cossitt (DFO, St. John's, Newfoundland) for producing Figures 1-8.

References

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- Brodie, W., and D. Stansbury. 2007. A Brief Description of Canadian Multispecies Surveys in SA2+ Divisions 3KLMNO from 1995-2006. NAFO SCR Doc. 07/18, Ser. No. N5366.

Table 1. Summary of successful sets, Canadian fall surveys 1995-2008. Depths surveyed by each vessel given in meters, number of sets appear in parentheses.

Year	Division	Ship			Total	Year	Division	Ship			Total
		Teleost	W. Templeman	A. Needler				Teleost	W. Templeman	A. Needler	
1995	2G	Not surveyed in 1995				2002	2G	Not surveyed in 2002			
	2H						2H				
	2J	145-948 (84)			84		2J	102-1372 (98)	136-572 (19)		117
	3K	166-1444 (31)	162-494 (100)		131		3K	156-1395 (64)	121-481 (111)		175
	3L	733-1210 (5)	63-640 (161)		166		3L	763-1431 (30)	35-670 (176)		206
	3M	Not surveyed in 1995					3M	818-1403 (26)			26
	3N		40-650 (90)		90		3N	811-1429 (24)	44-675 (70)		94
	3O		63-730 (81)		81		3O	775-1504 (24)	65-696 (75)		99
1995 fall survey extended into January 1996 (66 sets)					552	2002 fall survey extended into January 2003 (128 sets)					717
1996	2G	127 - 1436 (47)			47	2003	2G	Not surveyed in 2003			
	2H	122 - 1415 (77)			77		2H				
	2J	126 - 1410 (117)			117		2J	123-1404 (116)			116
	3K	111 - 1368 (115)	126 - 472 (60)		175		3K	151-1474 (118)	115-489 (50)		168
	3L	805 - 1433 (31)	51 - 671 (180)		211		3L	753-1446 (30)	32-702 (175)		205
	3M	784 - 1400 (18)	127 - 707 (68)		86		3M	795-1455 (26)			26
	3N	390 - 1147 (13)		37 - 309 (54)	67		3N		43-727 (70)		70
	3O	68 - 690 (24)	65 - 139 (19)	63 - 304 (15)	58		3O	761-1382 (8)	63-650 (75)		83
					838	2003 fall survey extended into January 2004 (210 sets)					668
1997	2G	201-1209 (69)			69	2004	2G	Not surveyed in 2004			
	2H	220-1382 (71)			71		2H	109-1415 (87)			87
	2J	123-1488 (117)			117		2J	127-1365 (115)			115
	3K	143-1431 (155)	117-421 (20)		175		3K	112-1412 (135)	212-549 (16)		151
	3L	161-1436 (71)	35-714 (134)		205		3L	151-522 (4)	44-653 (143)		147
	3M	799-1379 (26)			26		3M	Not surveyed in 2004			
	3N		41-769 (74)		74		3N		40-659 (69)		69
	3O		62-611 (73)		73		3O		63-634 (76)		76
					810	2004 fall survey extended into February 2005 (36 sets)					645
1998	2G	143-1488 (34)			34	2005	2G	Not surveyed in 2005			
	2H	98-1473 (83)			83		2H				
	2J	126-1398 (118)			118		2J	118-1427 (108)	172-416 (9)		117
	3K	122-1415 (154)	121-346 (17)		171		3K	150-1334 (26)	136-669 (141)		167
	3L	691-1437 (32)	34-675 (172)		204		3L	803-1351 (7)	50-706 (120)	121-667 (57)	184
	3M	768-1436 (26)			26		3M	Not surveyed in 2005			
	3N	834-1447 (12)	37-1079 (78)		90		3N	776-1445 (17)	42-633 (69)		86
	3O		82-1076 (87)		87		3O	754-1410 (24)	69-649 (75)		99
					813	2005 fall survey extended into January 2006 (86 sets)					653
1999	2G	142-1415(69)			69	2006	2G	Not surveyed in 2006			
	2H	104-1454(81)			81		2H	107-1437 (81)			81
	2J	109-1375(115)			115		2J	107-1443 (117)			117
	3K	146-1477(154)			154		3K	153-1384 (93)	109-480 (61)		154
	3L	1366(1)	63-1407 (169)		170		3L	111-1401 (34)	61-641 (151)		185
	3M	853-1403(12)			12		3M	756-1352 (23)			23
	3N		39-664(68)		68		3N		46-650 (70)		70
	3O		58-692(75)		75		3O		63-674 (74)		74
					744						704
2000	2G	Not surveyed in 2000				2007	2G	Not surveyed in 2007			
	2H						2H				
	2J	127-1400 (117)			117		2J	127-1494 (115)			115
	3K	113-1379 (159)			159		3K	145-1358 (92)	149-683 (37)		129
	3L	152-1430 (74)	42-447 (102)		176		3L	81-1424 (48)	61-694 (120)		168
	3M	764-1401 (26)			26		3M	768-1404 (26)			26
	3N	747-1419 (24)	46-642 (70)		94		3N	775-1419 (25)	48-652 (69)		94
	3O	752-1424 (24)	62-654 (76)		100		3O	753-1410 (24)	64-632 (75)		99
					672						631
2001	2G	Not surveyed in 2001				2008	2G	Not surveyed in 2008			
	2H	999-1466 (8)		117-655 (49)	57		2H	114-1392 (69)			69
	2J	120-1389 (49)		105-574 (71)	120		2J	253-1422 (20)	125-630 (79)		99
	3K	146-1479 (106)	128-439 (55)	170-252 (4)	165		3K	839-1439 (10)	147-608 (52)	148-455 (46)	108
	3L	146-1457 (34)	38-702 (169)	187-203 (2)	205		3L		62-664 (83)	71-332 (43)	126
	3M	763-1407 (26)			26		3M	Not surveyed in 2008			
	3N	739-1410 (24)	45-660 (70)		94		3N		38-643 (64)		64
	3O	803-1391 (22)	67-703 (75)		97		3O		60-661 (66)		66
					764						532

Table 2. Summary of successful sets, Canadian spring surveys 1996-2008. Depths surveyed by each vessel given in meters, number of sets appear in parentheses.

Year	Division	Ship	Total	Year	Division	Ship*	Total
		<i>W. Templeman</i>				<i>W. Templeman</i>	
1996	3L	66-664(188)	188	2003	3L	62-698 (156)	156
	3N	42-665(82)	82		3N	39-681 (79)	79
	3O	65-685(86)	86		3O	63-726(79)	79
			356				314
1997	3L	60-681(158)	158	2004	3L	47-710 (151)	151
	3N	35-689(71)	71		3N	44-675 (79)	79
	3O	62-669(81)	81		3O	61-636 (79)	79
			310				309
1998	3L	53-721(163)	163	2005	3L	64-672 (133)	133
	3N	38-682(88)	88		3N	45-691 (78)	78
	3O	64-657(93)	93		3O	66-719 (79)	79
			344				290
1999	3L	41-692(177)	177	2006	3L	60-701 (141)	141
	3N	40-659(82)	82		3N	46-77 (22)	22
	3O	62-679(86)	86		3O	64-103 (32)	32
			345				195
2000	3L	61-681(134)	134	2007	3L	61-702 (137)	137
	3N	45-664(81)	81		3N	44-636 (79)	79
	3O	61-694(83)	83		3O	64-719 (79)	79
			298				295
2001	3L	34-695(154)	154	2008	3L	60-684 (122)	122
	3N	40-650(79)	79		3N	40-623 (71)	71
	3O	74-699(79)	79		3O	64-704 (80)	80
			312				273
2002	3L	42-710(146)	146				
	3N	40-641(79)	79				
	3O	63-628(79)	79				
			304				

* CCGS *A. Needler* conducted 47 sets in Divs 3NO during 2006 survey.

* CCGS *Teleost* conducted 40 sets in Div. 3L during 2007 survey.

* CCGS *Teleost* conducted 43 sets in Div. 3L during 2008 survey.

Table 3a. Number of successful fall survey sets in Division 2G over 1996-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year			
			1996	1997	1998	1999
			Se 30 - Oc 8	Oct 1-9	Oct 1-7	Oct 12-27
901	1213	201-300	4	8	1	5
902	120	301-400	2	3	2	2
903	80	401-500	0	3	2	2
904	153	501-750	0	2	2	2
905	164	751-1000	0	1	2	2
906	229	1001-1250	0	2	2	2
907	360	1251-1500	0	0	1	2
908	585	201-300	2	4	2	3
909	2773	<=200	8	0	2	12
910	2339	<=200	6	0	2	9
911	692	201-300	3	5	3	3
912	73	301-400	0	2	2	2
913	62	401-500	0	2	2	2
914	113	501-750	0	2	2	2
915	96	751-1000	0	0	1	0
916	146	1001-1250	0	1	2	0
917	165	1251-1500	0	0	1	0
918	515	1251-1500	1	0	0	0
919	316	1001-1250	1	2	0	0
920	172	751-1000	1	1	0	0
921	142	501-750	1	2	1	2
922	186	401-500	0	2	1	2
923	186	301-400	2	2	0	2
924	756	201-300	2	5	0	3
925	1804	<=200	4	0	1	4
926	433	201-300	2	3	0	2
927	832	301-400	2	6	0	2
928	783	401-500	3	3	0	2
929	1261	501-750	3	8	0	0
Annual Total	16749		47	69	34	69

Table 3b. Number of successful fall survey sets in Division 2H over 1996-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year							
			1996	1997	1998	1999	2001	2004	2006	2008
			Sep 18-30	Oct 9-19	Oct 7-30	Oc 22-No 9	Dec 8-15	Oct 8-26	Oct 5-20	Oct 4-18
930	1028	<=200	4	0	5	4	3	5	4	3
931	276	201-300	2	2	2	2	0	2	2	2
932	55	301-400	2	2	2	2	0	2	2	2
933	50	501-750	2	2	2	2	0	2	2	2
934	78	501-750	2	2	2	2	0	2	2	2
935	96	751-1000	1	2	2	2	0	2	2	2
936	78	1001-1250	1	2	2	1	2	2	2	2
937	94	1251-1500	1	2	2	1	2	2	2	2
938	191	1251-1500	2	2	2	2	2	2	2	2
939	130	1001-1250	2	2	1	2	1	2	1	2
940	97	751-1000	2	2	2	2	1	2	2	2
941	89	501-750	2	2	2	2	2	2	2	1
942	55	501-750	2	2	2	2	2	2	2	2
943	354	201-300	2	2	2	2	0	2	2	2
944	860	301-400	3	6	4	4	1	4	4	3
945	461	501-750	2	3	2	2	2	2	2	2
946	721	501-750	3	5	4	4	3	4	3	0
947	227	501-750	2	2	2	2	2	2	2	2
948	246	501-750	2	2	2	1	2	1	2	2
949	206	301-400	2	2	0	1	2	2	1	0
950	261	201-300	2	2	0	2	2	2	2	1
951	234	501-750	2	2	2	2	2	2	2	2
952	177	301-400	2	2	2	2	2	2	2	1
953	291	201-300	2	2	2	2	2	2	2	2
954	971	<=200	4	0	5	4	3	5	4	3
955	389	201-300	2	3	2	2	2	2	2	1
956	1051	<=200	3	0	5	4	4	5	4	3
957	1371	<=200	5	0	7	7	5	7	6	5
958	294	201-300	2	2	2	2	2	2	2	2
959	178	301-400	2	2	2	2	2	2	2	2
960	107	501-750	2	2	2	2	2	2	2	2
961	211	501-750	2	2	2	2	2	2	2	2
962	242	751-1000	2	2	2	2	0	2	2	2
963	265	1001-1250	2	2	2	2	0	2	2	2
964	342	1251-1500	2	2	2	2	0	2	2	2
Annual Total	11776		77	71	83	81	57	87	81	69

Table 3c. Number of successful fall survey sets in Division 2J over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year													
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
			De 4 - Ja 22	Oc 22 - No 7	Oc 19 - No 4	Oc 20 - No 4	Nov 6-25	Nov 1-14	No 21 - Dec 8	De 7 - Ja 12	Dec 1-17	Oc 27 - No 11	No 17-De 16	Oc 20-No 14	Nov 1-30	No 7 - De 7
201	633	<=200	0	2	2	2	2	2	2	2	2	2	2	2	2	2
202	621	201-300	2	2	2	2	2	2	2	2	2	2	2	2	2	2
203	487	301-400	2	2	2	2	2	2	2	2	2	2	2	2	2	2
204	288	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
205	1594	<=200	0	6	6	6	6	6	6	6	6	6	6	6	6	5
206	1870	<=200	5	7	7	7	7	7	7	7	7	7	7	7	7	6
207	2264	<=200	8	9	9	9	9	9	9	9	9	8	9	9	9	8
208	588	301-400	2	2	2	2	2	2	2	2	2	2	2	2	2	2
209	680	201-300	2	3	3	3	3	3	3	3	3	2	3	3	3	2
210	1035	201-300	3	4	4	4	4	4	4	4	4	4	4	4	4	3
211	251	301-400	2	2	2	2	2	2	2	3	2	2	2	2	2	2
212	557	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
213	1583	201-300	6	6	6	6	6	6	6	6	6	6	6	6	6	5
214	1341	201-300	4	5	5	5	5	5	5	6	5	5	5	5	5	4
215	1302	201-300	2	5	5	5	5	5	5	5	5	5	5	5	5	4
216	360	301-400	2	2	2	2	2	2	2	2	2	2	2	2	2	2
217	241	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
218	362	501-750	3	2	2	3	2	2	2	2	2	2	2	2	2	2
219	283	751-1000	2	2	2	2	2	2	2	2	2	2	2	2	2	0
220	303	1001-1250	0	2	2	2	2	1	2	2	2	2	2	2	2	0
221	330	1251-1500	0	2	2	2	2	2	2	2	2	2	2	2	2	0
222	450	301-400	2	2	2	2	2	2	2	3	2	2	2	2	2	2
223	158	501-750	2	2	2	2	2	2	1	2	2	2	2	2	2	2
224	228	501-750	3	2	2	2	2	2	2	2	2	2	2	2	2	2
225	195	1001-1250	0	2	2	2	2	2	2	2	2	2	2	2	2	2
226	201	1251-1500	0	2	2	2	2	2	2	2	2	2	2	2	2	0
227	598	501-750	2	2	2	2	2	2	3	2	2	2	2	2	2	2
228	2196	201-300	7	8	8	8	8	8	8	7	8	8	8	8	8	7
229	536	301-400	2	2	2	2	2	2	2	2	2	2	2	2	2	2
230	185	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
231	186	751-1000	2	2	2	2	2	2	2	2	2	2	2	2	2	2
232	228	1001-1250	0	2	2	2	2	2	2	2	2	2	2	2	2	2
233	237	1251-1500	0	2	2	2	2	2	2	2	2	2	2	2	2	2
234	530	201-300	0	2	2	2	2	2	2	2	2	2	2	2	2	2
235	414	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
236	193	751-1000	2	2	2	2	2	2	2	2	2	2	2	2	2	1
237	733	<=200	3	3	3	3	3	3	3	4	3	3	3	3	3	2
238	778	<=200	0	3	3	3	3	2	3	3	3	2	3	3	3	3
239	120	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
240	133	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
Annual Total	25272		84	117	117	118	115	117	120	117	116	115	117	117	115	99

Table 3d. Number of successful fall survey sets in Division 3K over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year													
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
			No 28 - Ja 25	No 7-26	No 4- De 19	Nov 4-30	No 20 - De 1	No 14 - De 11	No 27 - De 1	De 1 - Ja 14	De 17 - Ja 31	No 13 - Fe 1	No 24-Ja 28	No 6-De 21	No 22-De 16	Jo 11 - De 21
608	798	<=200	0	3	3	3	0	3	2	3	2	3	2	3	0	1
609	342	201-300	0	2	2	2	0	2	2	2	2	2	2	2	0	1
610	256	301-400	0	2	2	2	0	2	2	2	2	2	2	2	0	0
611	573	201-300	0	3	3	2	0	2	2	2	2	2	2	2	0	0
612	445	<=200	0	2	2	2	0	2	2	2	2	2	2	2	0	0
613	30	501-750	0	2	2	2	0	2	2	2	2	2	2	2	0	0
614	263	301-400	0	2	2	2	0	2	2	2	2	2	2	2	0	0
615	251	201-300	0	2	2	2	0	2	2	2	2	2	2	2	0	0
616	250	<=200	0	2	2	2	0	2	2	2	2	2	1	2	0	0
617	593	301-400	2	3	3	3	3	3	3	3	3	3	3	3	2	2
618	1347	<=200	5	6	6	4	6	6	3	6	4	6	6	5	6	5
619	1753	<=200	4	7	7	6	6	8	8	8	6	8	8	8	4	7
620	2545	201-300	3	11	11	11	11	11	11	11	11	8	11	11	7	3
621	2537	201-300	6	11	11	11	11	11	6	11	11	8	10	11	7	9
622	691	501-750	3	3	3	3	3	3	3	3	3	3	3	3	3	2
623	494	301-400	2	2	2	2	2	2	2	2	2	2	2	2	2	2
624	1105	201-300	4	5	5	5	5	5	5	5	5	5	5	5	5	3
625	888	301-400	3	4	4	4	4	4	4	4	4	4	4	4	4	2
626	1113	301-400	4	5	5	5	5	5	4	5	5	4	5	5	2	4
627	1255	501-750	5	5	5	5	5	5	3	5	5	4	5	4	4	5
628	1085	301-400	5	5	5	5	5	5	3	5	5	5	5	3	3	4
629	495	301-400	2	2	2	2	2	2	3	2	2	2	2	2	2	2
630	332	301-400	2	2	2	2	2	2	3	2	2	2	2	2	2	2
631	1321	501-750	5	6	6	6	6	6	10	6	6	4	5	6	6	2
633	2067	301-400	8	9	9	9	9	9	9	9	9	9	9	8	9	5
634	1555	201-300	7	7	7	7	7	7	7	7	5	2	7	6	7	2
635	1274	201-300	6	5	5	5	5	5	5	5	5	2	3	1	2	5
636	1455	201-300	7	6	6	6	6	6	6	6	6	3	5	3	3	4
637	1132	201-300	5	5	5	5	5	1	5	5	5	5	5	4	3	4
638	2059	301-400	9	9	9	9	8	5	8	9	9	9	9	5	9	7
639	1463	301-400	7	6	6	6	7	3	5	6	6	3	5	3	6	3
640	69	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
641	230	501-750	2	2	2	2	2	1	2	2	2	2	2	2	2	2
642	418	751-1000	2	2	2	2	2	2	2	2	2	2	2	2	2	2
643	733	1001-1250	3	3	3	3	3	2	3	3	3	3	3	3	3	0
644	474	1251-1500	2	2	2	2	2	2	2	2	2	2	2	2	2	0
645	216	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
646	325	501-750	2	2	2	2	2	2	2	2	2	2	2	2	2	2
647	360	751-1000	2	2	2	2	2	2	2	2	2	2	2	2	2	1
648	228	1001-1250	0	2	2	2	2	2	2	2	2	2	2	2	2	1
649	212	1251-1500	0	2	2	2	2	2	2	2	2	2	2	2	2	1
650	134	501-750	2	2	2	2	2	0	2	2	2	2	2	2	2	2
651	359	501-750	2	2	2	2	2	1	2	2	2	2	2	2	2	2
652	516	751-1000	2	2	2	2	2	2	2	2	2	2	2	2	2	2
653	531	1001-1250	2	2	2	2	2	2	2	2	2	2	2	2	2	2
654	479	1251-1500	2	2	2	2	2	2	2	2	2	2	2	2	2	1
Annual Total	37051		131	175	175	171	154	159	165	175	168	151	167	154	129	108

Table 3e. Number of successful fall survey sets in Division 3L over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year															
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		
			Oct 3 - Ja 25	Oct 9 - De 5	Oct 23 - De 21	No 2 - De 15	No 7 - De 12	Oct 24 - De 1	Oct 4 - De 6	Oct 23 - De 2	No 7 - Ja 20	No 24 - De 1	Oct 29 - Ja 29	Oct 21 - De 18	Oct 16 - De 20	No 1 - 13		
328	1519	92-183	6	5	5	5	5	5	5	5	5	5	5	5	5	3		
341	1574	92-183	6	6	4	5	5	5	5	5	5	4	5	5	4	5		
342	585	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
343	525	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
344	1582	184-274	5	6	5	5	5	3	4	5	5	5	5	5	4	3		
345	1432	275-366	7	5	5	5	5	3	5	5	5	5	5	5	5	4		
346	865	275-366	3	3	3	2	3	3	3	3	2	3	3	3	3	3		
347	983	184-274	4	3	3	3	3	3	3	3	3	2	3	3	2	3		
348	2120	92-183	7	7	7	6	7	4	7	7	7	7	7	7	7	6		
349	2114	92-183	9	7	7	7	7	7	7	7	7	7	7	7	7	6		
350	2071	56-91	8	7	7	7	7	7	7	7	7	7	7	7	6	6		
363	1780	56-91	7	6	6	6	6	4	6	6	6	6	6	6	6	5		
364	2817	92-183	9	10	9	9	9	2	9	9	9	9	9	9	9	8		
365	1041	92-183	4	4	3	3	3	1	3	3	3	0	3	3	3	3		
366	1394	184-274	5	5	5	5	5	2	5	5	5	0	5	5	5	4		
368	334	275-366	2	3	2	2	2	2	2	2	2	0	2	2	2	2		
369	961	184-274	3	2	3	3	3	2	3	3	3	0	3	3	3	3		
370	1320	92-183	5	4	4	4	4	4	4	4	4	1	4	4	4	4		
371	1121	56-91	5	4	4	4	4	3	4	4	4	4	4	4	4	3		
372	2460	56-91	10	9	8	8	8	2	8	8	8	8	8	8	8	8		
384	1120	56-91	5	4	4	4	4	4	4	4	4	4	4	4	4	3		
385	2356	92-183	9	9	8	8	8	8	8	8	8	8	8	8	8	7		
386	983	184-274	4	3	3	3	3	3	3	3	3	0	3	3	3	3		
387	718	275-366	3	2	2	2	2	2	2	2	2	2	2	2	2	2		
388	361	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
389	821	184-274	3	3	3	3	3	3	3	3	3	3	3	3	3	2		
390	1481	92-183	6	5	5	5	5	5	5	5	5	5	5	5	5	4		
391	282	184-274	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
392	145	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
729	186	367-549	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
170	170	550-731	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
731	216	367-549	2	1	2	2	2	2	2	2	2	2	2	2	2	2		
732	231	550-731	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
733	468	367-549	2	3	2	2	2	2	2	2	2	2	2	2	2	2		
734	228	550-731	2	2	2	2	2	2	2	2	2	0	2	2	2	2		
735	272	367-549	2	2	2	2	2	2	2	2	2	0	2	2	2	2		
736	175	550-731	2	2	2	2	2	2	2	2	2	0	2	2	2	2		
737	227	732-914	2	2	2	2	2	2	2	2	2	0	2	2	2	0		
738	221	915-1097	2	2	2	2	2	2	2	2	2	0	1	2	2	0		
739	254	1098-1280	1	2	2	2	2	2	2	2	2	0	2	2	2	0		
740	264	1281-1463	0	2	2	2	2	2	2	2	2	0	2	2	2	0		
741	223	732-914	0	2	2	2	2	2	2	2	2	0	0	2	2	0		
742	206	915-1097	0	2	2	2	2	2	2	2	2	0	0	2	2	0		
743	211	1098-1280	0	2	2	2	3	2	2	2	2	0	0	2	2	0		
744	280	1281-1463	0	2	2	2	1	2	2	2	2	0	0	2	2	0		
745	348	732-914	0	2	2	2	2	2	2	2	2	0	0	2	2	0		
746	392	915-1097	0	2	2	2	2	2	2	2	2	0	0	2	2	0		
747	724	1098-1280	0	3	2	2	2	2	2	2	2	0	0	2	2	0		
748	159	732-914	0	2	2	2	2	2	2	2	2	0	0	2	2	0		
749	126	915-1097	0	2	2	2	1	2	2	2	2	0	0	1	2	0		
750	556	1098-1280	0	2	2	2	2	2	2	2	2	0	0	1	2	0		
751	229	1281-1463	0	2	2	2	1	2	2	2	2	0	0	0	2	0		
784	268	<=55	0	2	2	2	0	2	2	2	2	2	0	0	2	0		
785	465	56-91	0	2	2	2	2	0	2	2	2	2	2	0	0	0		
786	84	92-183	0	2	2	2	0	2	2	2	2	2	2	0	0	0		
787	613	92-183	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
788	261	92-183	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
789	72	275-366	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
790	89	92-183	0	2	2	2	2	0	2	2	2	2	2	0	0	0		
791	227	184-274	0	2	2	2	2	0	2	2	2	2	2	0	0	0		
792	50	367-549	0	2	2	2	2	0	2	2	2	2	2	0	0	0		
793	72	92-183	0	2	2	2	2	0	2	2	2	2	2	0	0	0		
794	216	92-183	0	2	2	2	2	0	1	2	2	2	2	2	0	0		
795	164	184-274	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
796	175	275-366	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
797	98	92-183	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
798	100	275-366	0	2	2	2	2	0	2	2	2	2	2	0	0	0		
799	72	92-183	0	2	2	2	2	0	2	2	2	2	2	2	0	0		
800	81	275-366	0	0	2	2	2	0	2	2	2	2	2	1	0	0		
Annual Total	46338		166	211	205	204	170	176	205	206	205	147	184	185	168	126		

Table 3g. Number of successful fall survey sets in Division 3N over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year													
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
			Se 27 - Oc 21 No 25 - De 1	Oc 8 - No 5	Oc 16 - De 11 Nov 3-22	Oc 17 - De 5	Se 28 - Oc 25 Oct 13-26	Oc 21 - No 7 Nov 11-23	Oc 10-No 19 Oct 12-21	Oc9-No14	Oc 24 - No 1					
357	164	275-366	2	2	2	2	1	2	2	2	2	2	2	2	2	2
358	225	184-274	2	2	2	2	2	2	2	2	2	2	2	2	2	2
359	421	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2	2
360	2992	56-91	17	6	9	8	8	8	8	8	8	8	8	8	8	7
361	1853	56-91	11	5	5	5	5	5	5	5	5	5	5	5	5	4
362	2520	56-91	5	6	7	7	7	7	7	7	7	7	7	7	7	6
373	2520	56-91	5	7	7	7	6	7	7	7	7	7	7	7	6	6
374	931	56-91	2	2	3	3	3	3	3	3	3	3	2	3	3	2
375	1593	<=55	9	4	4	4	4	4	4	4	4	4	4	4	4	4
376	1499	<=55	9	4	5	4	4	4	4	4	4	4	4	4	4	3
377	100	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2	2
378	139	184-274	2	2	2	2	2	2	2	2	2	2	2	2	2	2
379	106	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2	2
380	116	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2	2
381	182	184-274	2	2	3	2	2	2	2	2	2	2	2	2	2	2
382	647	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2	2
383	674	56-91	2	2	2	2	2	2	2	2	2	2	2	2	2	2
723	155	367-549	2	2	3	2	2	2	2	2	2	2	2	2	2	2
724	124	550-731	2	2	2	2	2	2	2	2	1	2	2	2	2	2
725	105	367-549	2	2	2	2	2	2	2	2	2	1	2	2	2	2
726	72	550-731	2	2	2	2	2	2	2	2	3	2	2	2	2	2
727	160	367-549	2	2	2	2	2	2	2	2	2	2	2	2	2	2
728	156	550-731	2	2	2	2	2	2	2	2	2	2	2	2	2	2
752	134	732-914	0	0	0	2	0	2	2	2	0	0	0	0	2	0
753	138	915-1097	0	0	0	2	0	2	2	2	0	0	1	0	2	0
754	180	1098-1280	0	1	0	2	0	2	2	2	0	0	0	0	2	0
755	385	1281-1463	0	0	0	2	0	2	2	2	0	0	0	0	2	0
756	106	732-914	0	0	0	2	0	2	2	2	0	0	2	0	2	0
757	102	915-1097	0	0	0	2	0	2	2	2	0	0	2	0	2	0
758	99	1098-1280	0	0	0	2	0	2	2	2	0	0	2	0	3	0
759	127	1281-1463	0	0	0	2	0	2	2	2	0	0	2	0	2	0
760	154	732-914	0	0	0	2	0	2	2	2	0	0	2	0	2	0
761	171	915-1097	0	0	0	2	0	2	2	2	0	0	2	0	2	0
762	212	1098-1280	0	0	0	0	0	2	2	2	0	0	2	0	2	0
763	261	1281-1463	0	0	0	0	0	2	2	2	0	0	2	0	2	0
Annual Total	19523		90	67	74	90	68	94	94	94	70	69	86	70	94	64

Table 3h. Number of successful fall survey sets in Division 30 over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year															
			1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008		
			Se 26 - Oc 21 No 24 - De 1	Se 26 - Oc 15 Oc 10 - De 1	Oc 13 - No 1 Oc 11 - No 2	Se 22 - Oc 14 Oct 5-16	Se 23 - Oc 21 Oc 31 - No 1	Oct 4-17	Se 30 - Oc 9 Oc 6-31	Oct 3-20								
329	1721	92-183	5	5	5	5	5	5	5	5	5	5	5	5	5	3		
330	2089	56-91	5	6	6	6	6	6	6	6	7	6	6	6	6	5		
331	456	56-91	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
332	1047	92-183	3	2	3	3	3	3	3	3	3	3	3	3	3	3		
333	147	184-274	2	0	2	2	2	2	2	2	2	2	2	2	2	2		
334	96	275-366	2	0	2	2	2	2	2	2	2	2	2	2	2	2		
335	58	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
336	121	184-274	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
337	948	92-183	2	2	3	3	3	3	3	3	3	3	3	3	3	2		
338	1898	56-91	5	2	5	5	5	5	5	5	5	5	4	5	5	5		
339	585	92-183	2	3	2	2	1	2	2	2	2	2	2	2	2	2		
340	1716	56-91	4	5	5	5	7	5	5	5	5	5	5	5	5	3		
351	2520	56-91	7	6	7	7	6	7	7	7	7	7	7	7	7	6		
352	2580	56-91	17	5	6	7	7	7	7	7	7	7	7	8	7	6		
353	1282	56-91	3	2	4	4	4	4	4	4	4	4	4	4	4	3		
354	474	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
355	103	184-274	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
356	61	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
717	166	367-549	2	0	2	2	2	2	2	2	2	2	2	2	2	2		
718	134	550-731	2	0	2	2	2	2	2	2	2	2	2	1	2	2		
719	76	367-549	2	2	2	2	2	3	2	2	2	2	2	2	2	2		
720	105	550-731	2	2	1	2	2	2	2	2	2	2	2	2	2	2		
721	76	367-549	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
722	93	550-731	2	2	2	2	2	2	2	2	2	2	2	2	2	2		
764	105	732-914	0	0	0	2	0	2	2	0	0	2	0	2	0	0		
765	124	915-1097	0	0	0	2	0	2	2	0	0	2	0	2	0	0		
766	144	1098-1280	0	0	0	0	0	2	2	0	0	2	0	2	0	0		
767	158	1281-1463	0	0	0	0	0	2	2	2	0	0	2	0	2	0		
768	99	732-914	0	0	0	2	0	2	2	0	0	2	0	2	0	0		
769	138	915-1097	0	0	0	2	0	2	2	0	0	2	0	2	0	0		
770	128	1098-1280	0	0	0	0	0	2	2	0	0	2	0	2	0	0		
771	175	1281-1463	0	0	0	0	0	2	2	0	0	2	0	2	0	0		
772	135	732-914	0	0	0	2	0	2	0	2	0	2	0	2	0	0		
773	128	915-1097	0	0	0	2	0	2	2	2	0	2	0	2	0	0		
774	135	1098-1280	0	0	0	0	0	2	2	2	0	2	0	2	0	0		
775	155	1281-1463	0	0	0	0	0	2	2	2	0	2	0	2	0	0		
Annual Total	20176		81	58	73	87	75	100	97	99	83	76	99	74	99	66		

Table 4a. Number of successful spring survey sets in Division 3L over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year												
			1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
			Ma 30- Ju 27	Ju 4-26	Ju 6-30	Ju 6-29	Ju 3-29	Ma26-Ju24	Ma29-Ju22	Ju 4-26	Ju 4-26	Ju 11-29	Ju 10-29	Ju5-July12	Ju 4-30
328	1519	92-183	7	6	5	5	5	5	5	5	5	4	5	5	1
341	1574	92-183	7	6	5	6	5	5	5	5	5	4	5	5	3
342	585	92-183	3	2	2	2	2	2	2	2	2	2	2	2	3
343	525	92-183	2	2	2	2	2	2	2	2	2	2	2	3	2
344	1582	184-274	7	5	6	5	4	5	5	5	4	5	5	4	4
345	1432	275-366	6	5	6	5	4	5	5	5	4	5	5	4	4
346	865	275-366	4	3	3	3	3	3	3	3	3	3	3	3	3
347	983	184-274	4	4	4	3	3	3	3	3	3	3	3	2	3
348	2120	92-183	10	8	8	8	8	8	7	7	7	7	7	6	6
349	2114	92-183	9	8	8	7	8	7	7	7	6	6	7	7	6
350	2071	56-91	9	7	6	6	8	7	7	7	7	6	7	7	6
363	1780	56-91	8	6	6	6	7	6	6	6	6	5	6	6	5
364	2817	92-183	13	9	11	9	10	9	9	9	9	8	9	9	8
365	1041	92-183	5	4	5	4	2	3	3	3	3	3	3	2	3
366	1394	184-274	5	6	5	4	2	5	5	5	5	5	5	4	4
368	334	275-366	3	2	2	2	2	2	2	2	2	2	2	2	2
369	961	184-274	4	4	4	3	2	3	3	3	3	3	3	3	3
370	1320	92-183	6	5	4	5	5	4	4	4	4	4	4	4	4
371	1121	56-91	5	5	4	4	4	4	4	4	4	5	4	4	4
372	2460	56-91	11	9	8	9	9	8	8	8	8	6	7	8	7
384	1120	56-91	5	5	4	4	4	4	4	4	4	4	4	4	3
385	2356	92-183	11	9	9	7	4	7	8	8	8	6	8	8	6
386	983	184-274	4	4	4	3	2	3	3	3	3	3	3	3	3
387	718	275-366	3	2	3	3	2	2	2	2	2	2	2	2	2
388	361	275-366	3	2	2	2	2	2	2	2	2	2	2	2	2
389	821	184-274	4	3	3	3	2	3	3	3	3	3	3	3	3
390	1481	92-183	7	6	5	5	3	5	5	5	5	5	5	5	3
391	282	184-274	2	2	2	2	2	2	2	2	2	2	2	2	2
392	145	275-366	2	2	2	2	2	2	2	2	2	2	2	2	2
729	186	367-549	2	3	2	2	2	2	2	2	2	2	2	2	2
730	170	550-731	2	2	3	2	2	3	2	2	2	2	2	2	2
731	216	367-549	3	2	2	2	2	2	2	2	2	2	2	2	2
732	231	550-731	2	2	2	2	2	2	2	2	2	2	2	2	2
733	468	367-549	3	2	2	2	2	2	2	2	2	2	2	2	2
734	228	550-731	2	2	2	2	2	2	2	2	2	2	2	2	1
735	272	367-549	3	2	2	2	2	2	2	2	2	2	2	2	2
736	175	550-731	2	2	2	2	2	2	2	2	2	2	2	2	2
784	268	<=55	0	0	2	2	0	2	2	0	2	0	0	0	0
785	465	56-91	0	0	2	2	0	2	2	0	2	0	0	0	0
786	84	92-183	0	0	2	2	0	2	0	0	2	0	0	0	0
787	613	92-183	0	0	2	2	0	2	0	0	2	0	0	0	0
788	261	92-183	0	0	0	2	0	0	0	0	0	0	0	0	0
789	72	275-366	0	0	0	2	0	0	0	0	2	0	0	0	0
790	89	92-183	0	0	0	2	0	1	0	1	0	0	0	0	0
791	227	184-274	0	0	0	2	0	0	0	0	0	0	0	0	0
792	50	367-549	0	0	0	2	0	2	0	2	0	0	0	0	0
793	72	92-183	0	0	0	2	0	0	0	0	0	0	0	0	0
794	216	92-183	0	0	0	2	0	0	0	2	0	0	0	0	0
795	164	184-274	0	0	0	2	0	0	0	2	0	0	0	0	0
796	175	275-366	0	0	0	2	0	0	0	2	0	0	0	0	0
797	98	92-183	0	0	0	2	0	0	0	2	0	0	0	0	0
798	100	275-366	0	0	0	2	0	0	0	2	0	0	0	0	0
799	72	92-183	0	0	0	0	0	0	0	0	2	0	0	0	0
800	81	275-366	0	0	0	2	0	1	0	1	0	0	0	0	0
Annual Total	41918		188	158	163	177	134	154	146	156	151	133	141	137	122

Table 4c. Number of successful spring survey sets in Division 3O over 1995-2008.

Stratum	Area (sq. n.nmi.)	Depth (m)	Survey Year												
			1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
			Ma 7 - 22	Ap30 - Ma17	Ma 12-30	Ma 11-28	Ma11-Ju5	Ap29 - Ma13	Ap27 - Ma14	Ma 8-15	Ma 12-24	Ma 9-22	Ju25-30	Ma3 - Ju19	Ma23-Ju1
329	1721	92-183	6	6	7	6	5	5	5	5	5	5	0	5	5
330	2089	56-91	8	7	8	7	7	7	7	7	7	7	9	7	7
331	456	56-91	2	2	2	2	2	2	2	2	2	2	0	2	2
332	1047	92-183	4	3	4	4	4	3	3	3	3	3	0	3	3
333	147	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2
334	96	275-366	2	2	2	2	2	2	2	2	2	2	0	2	2
335	58	275-366	2	2	2	2	2	2	2	2	2	2	0	2	2
336	121	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2
337	948	92-183	3	3	4	3	4	3	3	3	3	3	0	3	3
338	1898	56-91	7	6	7	7	6	6	6	6	6	6	7	6	6
339	585	92-183	2	2	2	2	2	2	2	2	2	2	2	2	2
340	1716	56-91	6	6	7	6	5	5	5	5	5	5	2	5	6
351	2520	56-91	8	8	10	9	8	8	8	8	8	8	4	8	8
352	2580	56-91	9	8	10	9	9	8	8	8	8	8	5	8	8
353	1282	56-91	5	4	5	5	5	4	4	4	4	4	3	4	4
354	474	92-183	2	2	2	2	2	2	2	2	2	2	0	2	2
355	103	184-274	2	2	2	2	2	2	2	2	2	2	0	2	2
356	61	275-366	2	2	2	2	2	2	2	2	2	2	0	2	2
717	166	367-549	2	2	2	2	2	2	2	2	2	2	0	2	2
718	134	550-731	2	2	3	2	2	2	2	2	2	2	0	2	2
719	76	367-549	2	2	2	2	2	2	2	2	2	2	0	2	2
720	105	550-731	2	2	2	2	2	2	2	2	2	2	0	2	2
721	76	367-549	2	2	2	2	2	2	2	2	2	2	0	2	2
722	93	550-731	2	2	2	2	2	2	2	2	2	2	0	2	2
Annual Total	18552		86	81	93	86	83	79	79	79	79	79	32	79	80

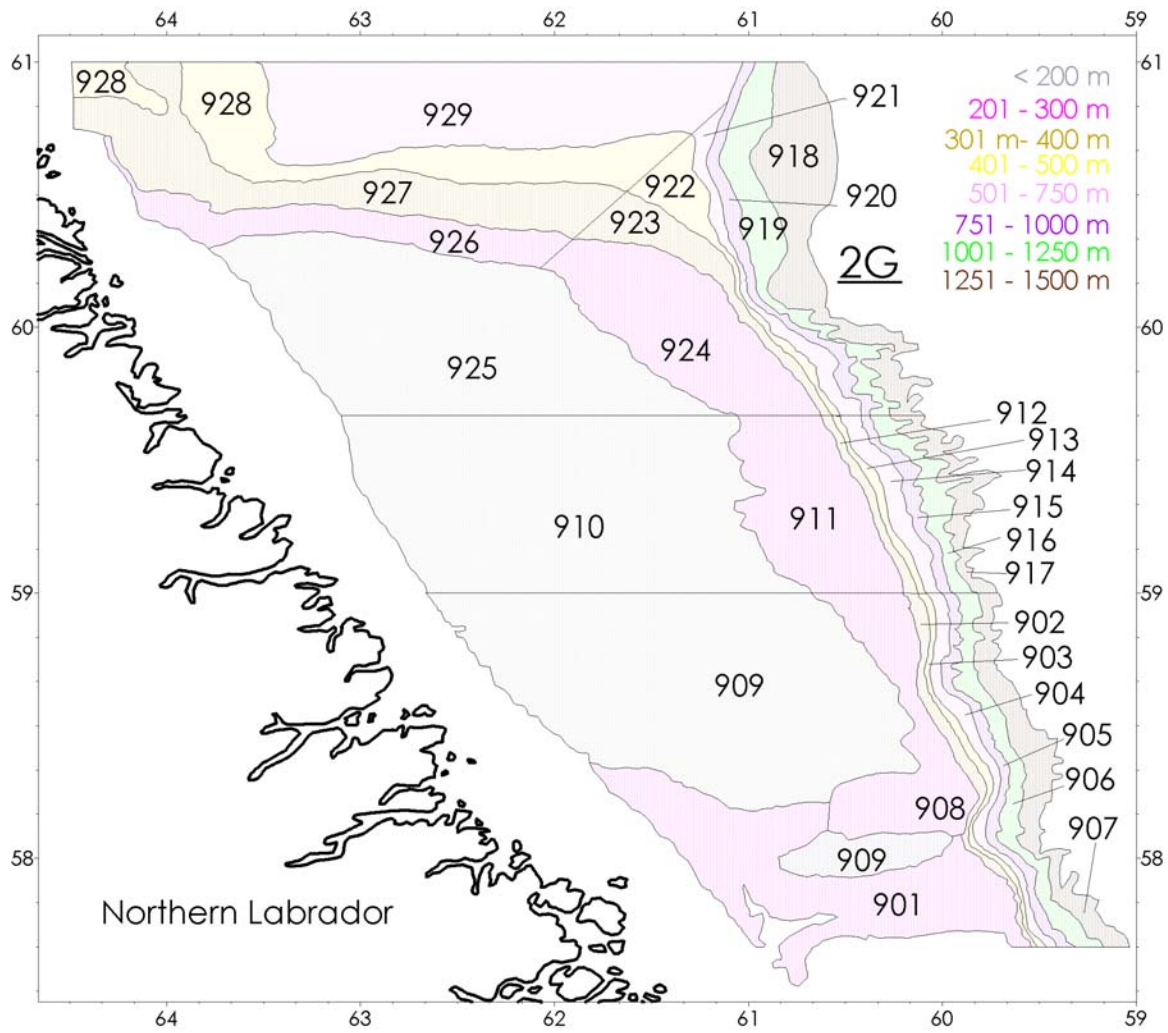


Fig 1. Stratification of Div. 2G

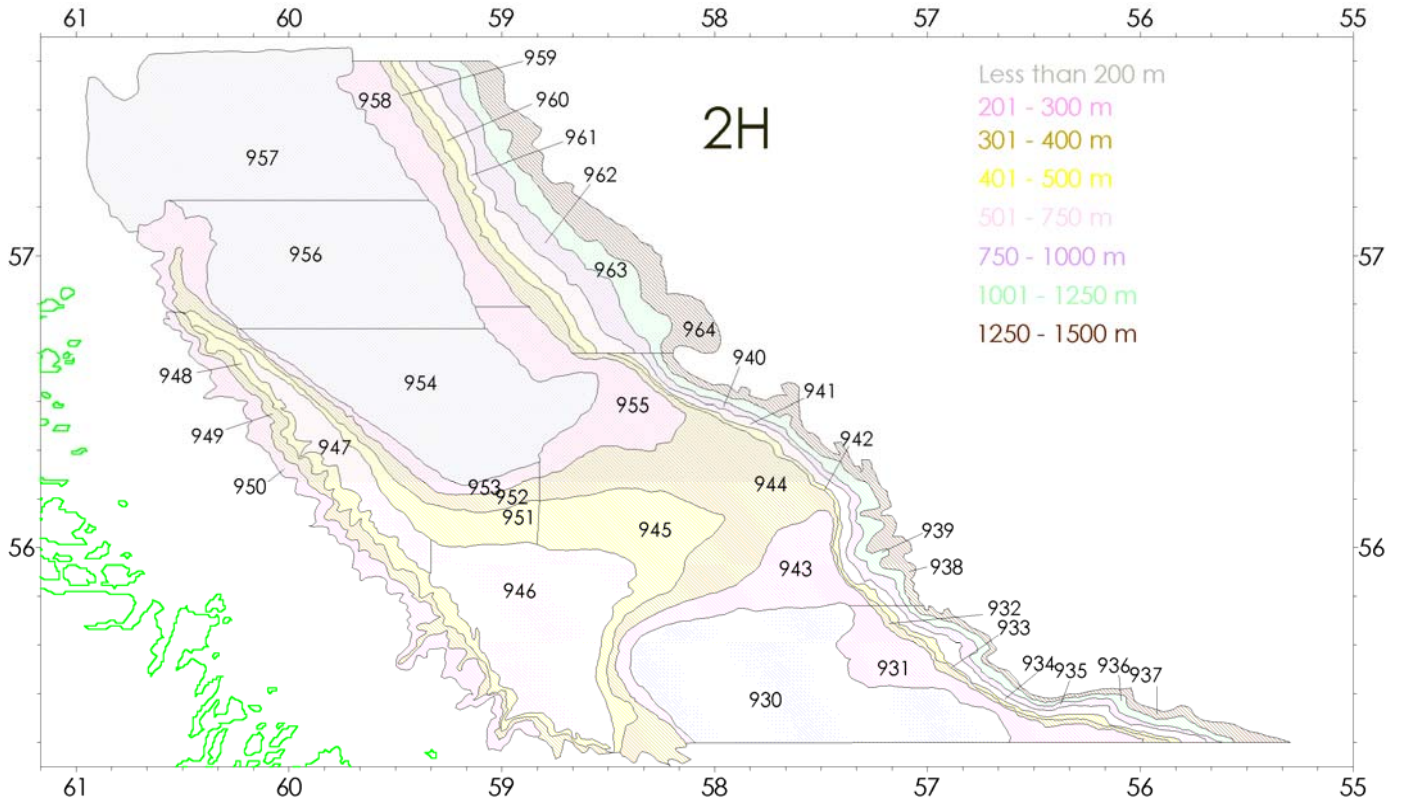


Fig 2. Stratification of Div. 2H

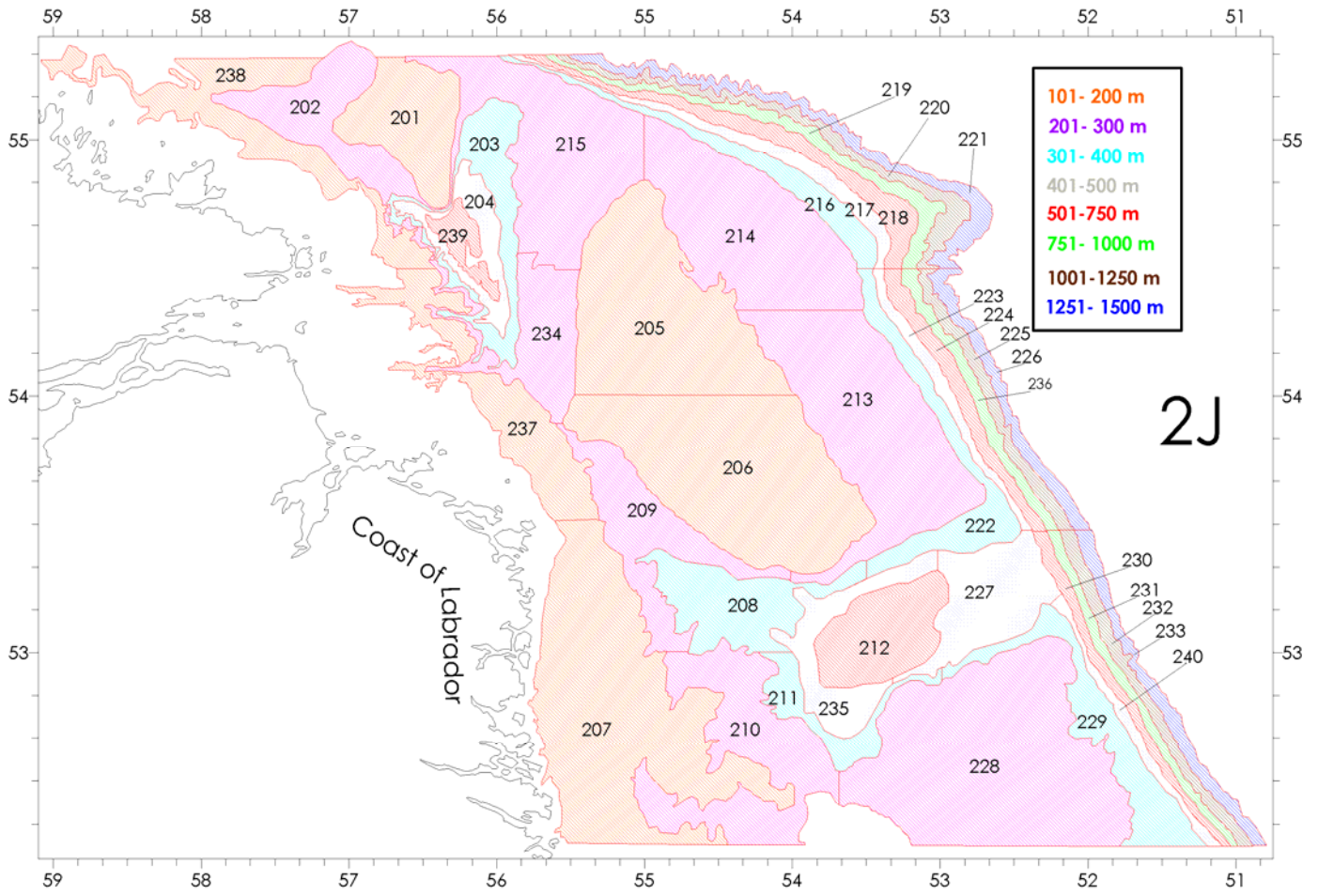


Fig 3. Stratification of Div. 2J

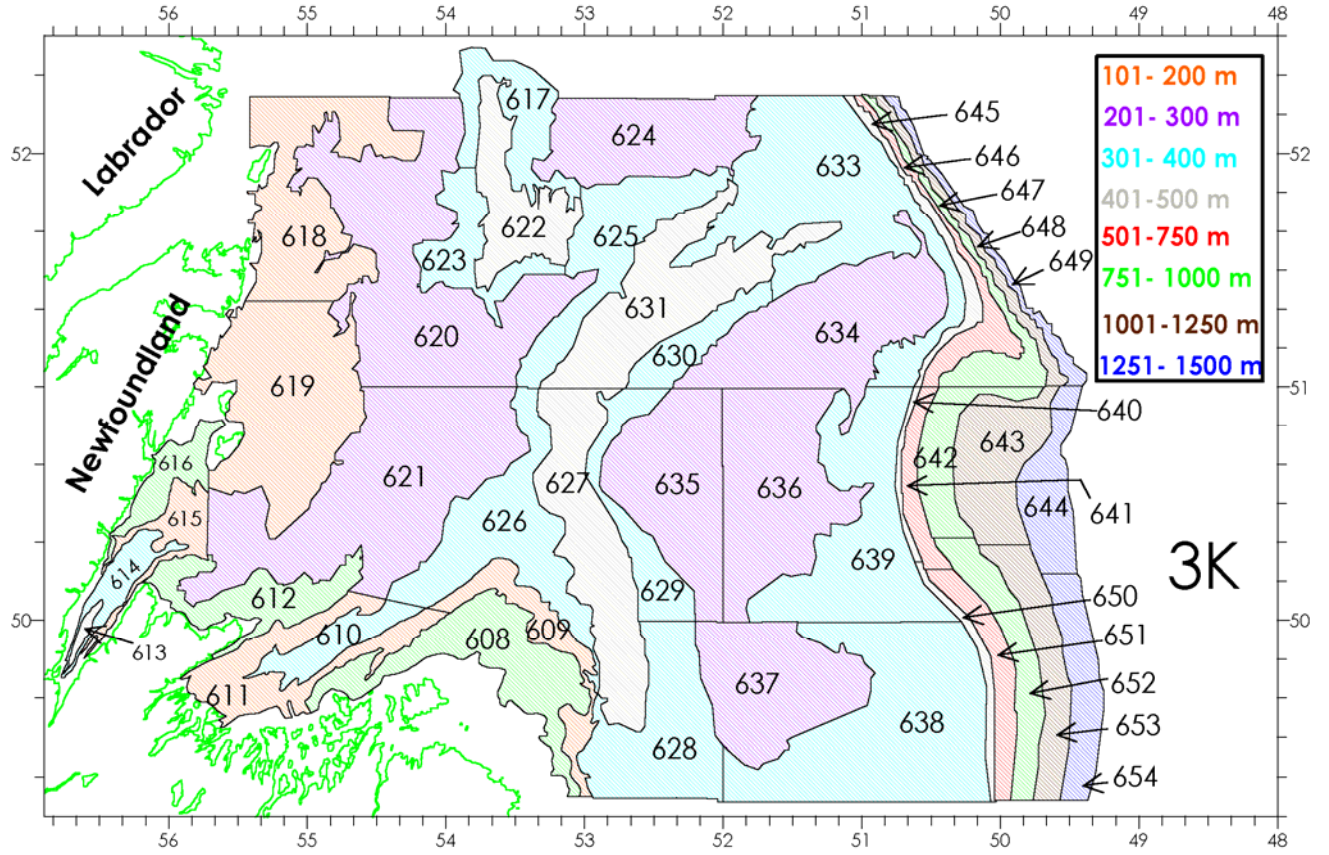


Fig 4. Stratification of Div. 3K

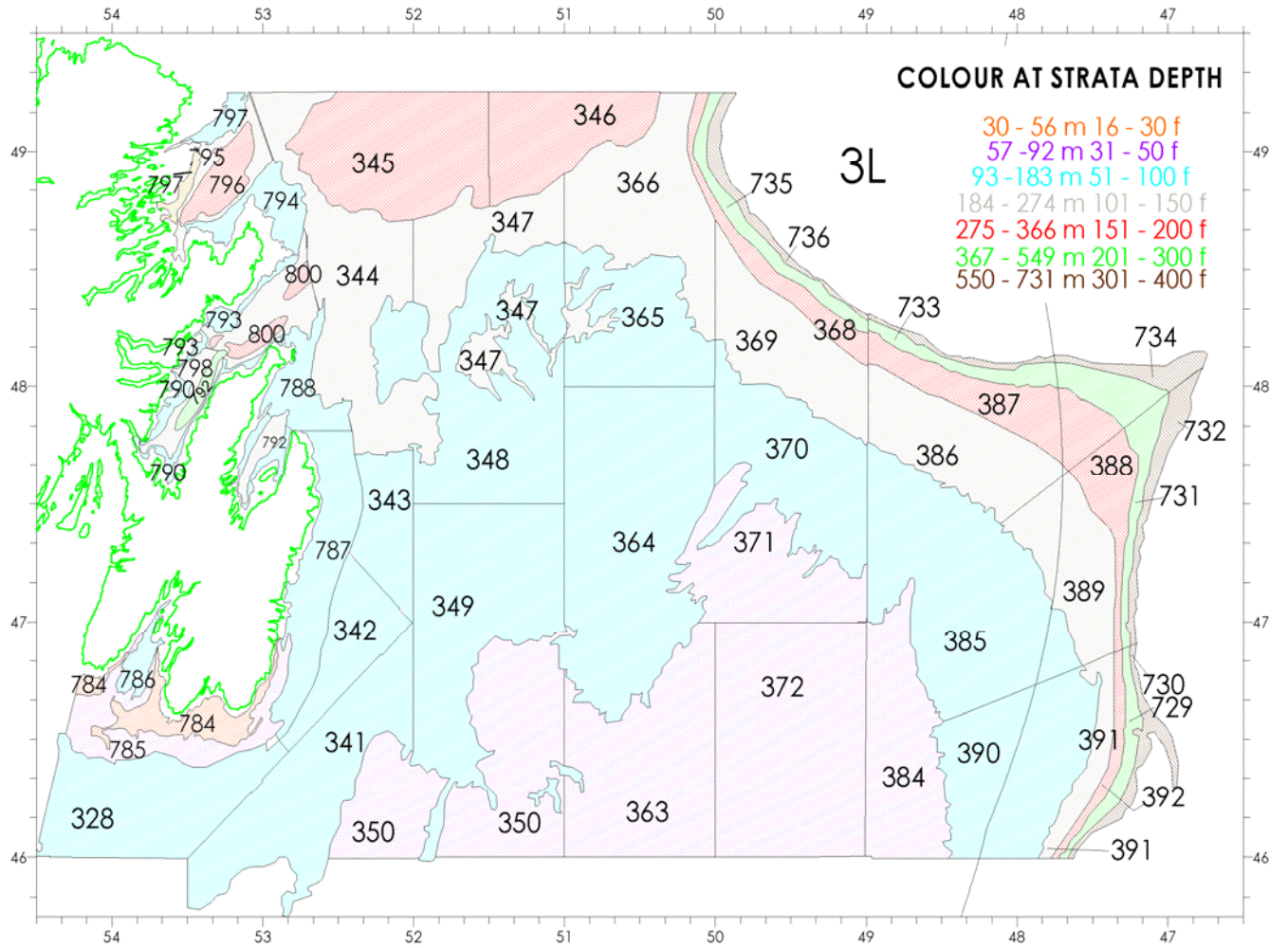


Fig 5. Stratification of Div. 3L

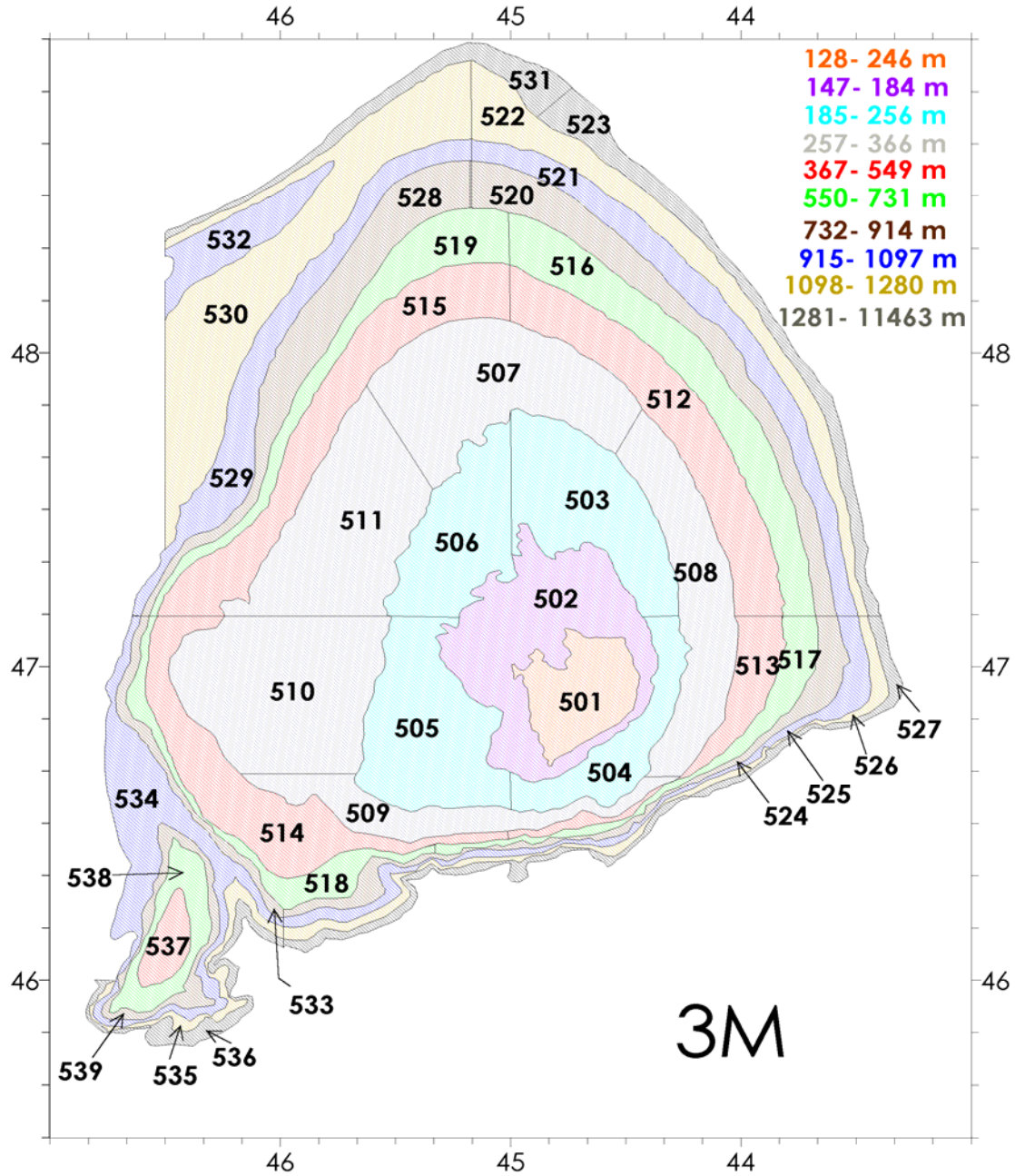


Fig 6. Stratification of Div. 3M

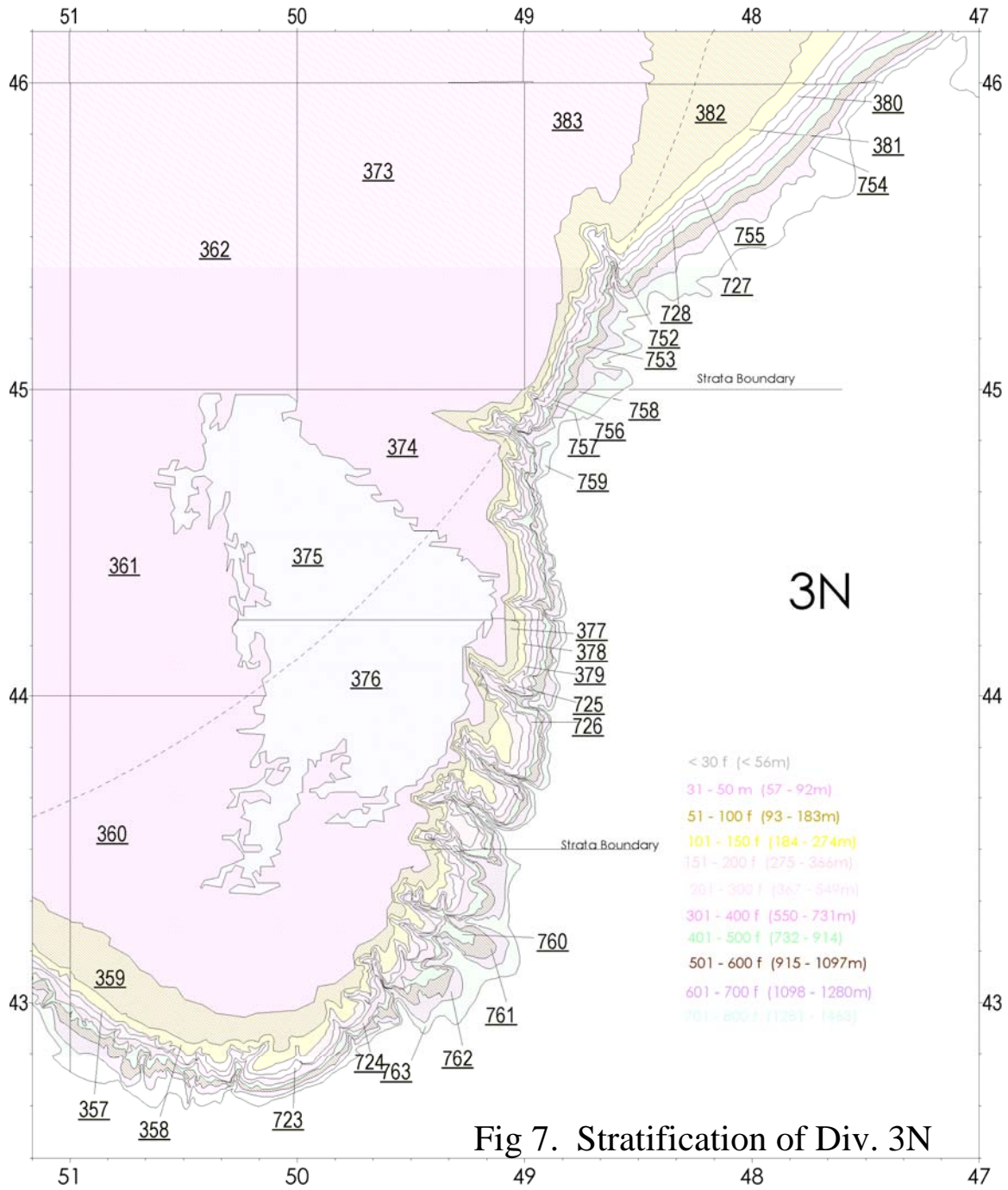


Fig 7. Stratification of Div. 3N

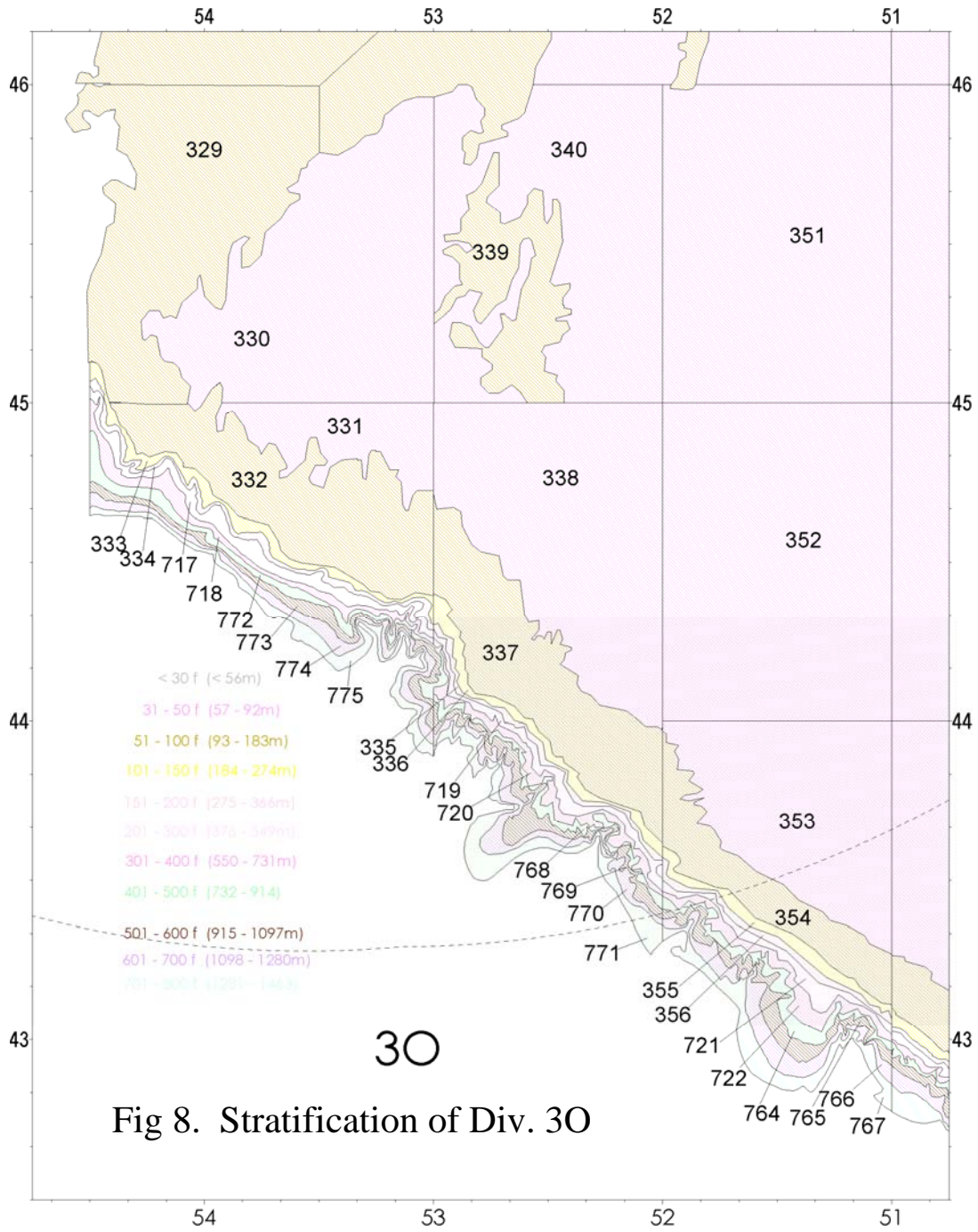


Fig 8. Stratification of Div. 30

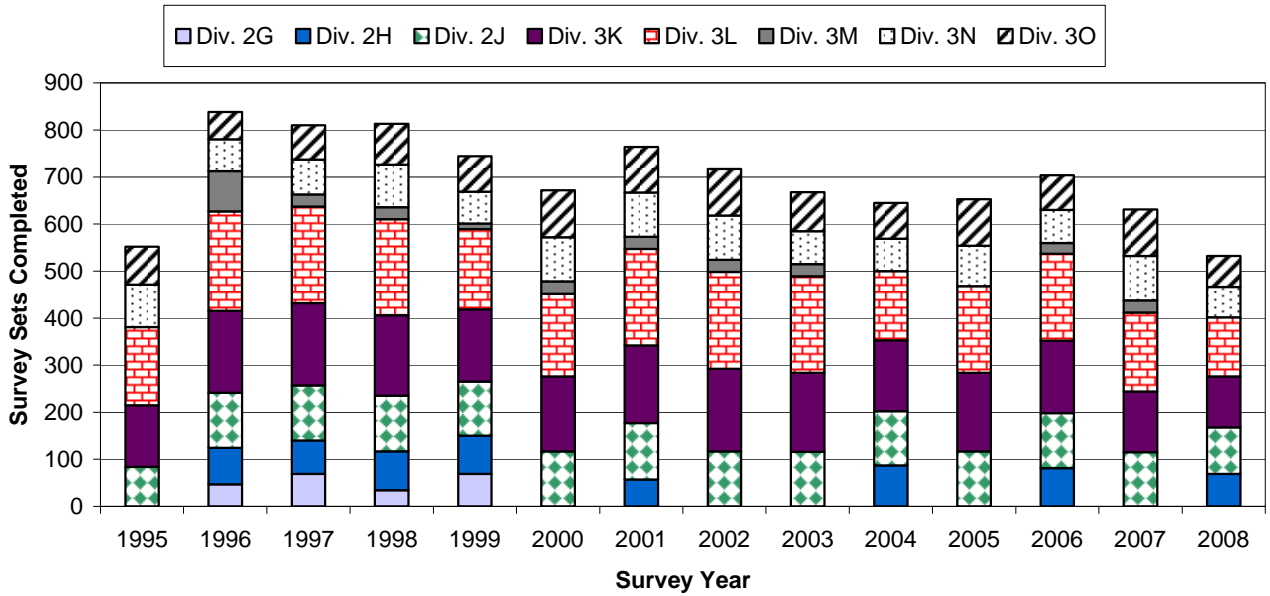


Figure 9a. Number of successful fall survey sets, by NAFO Division, 1995-2008.

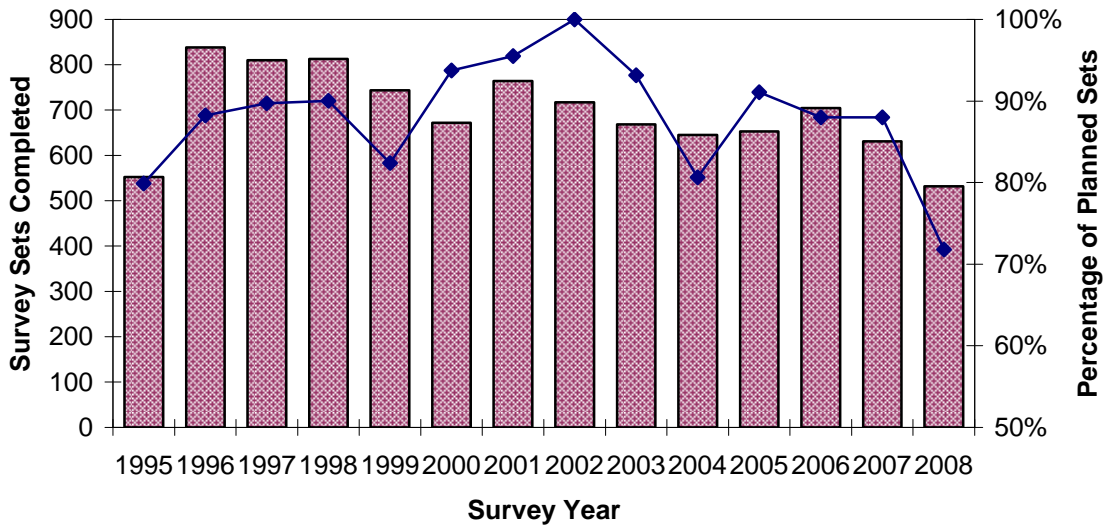


Figure 9b. Number of successful fall survey sets (bars), with percent of allocated sets realized (diamonds).

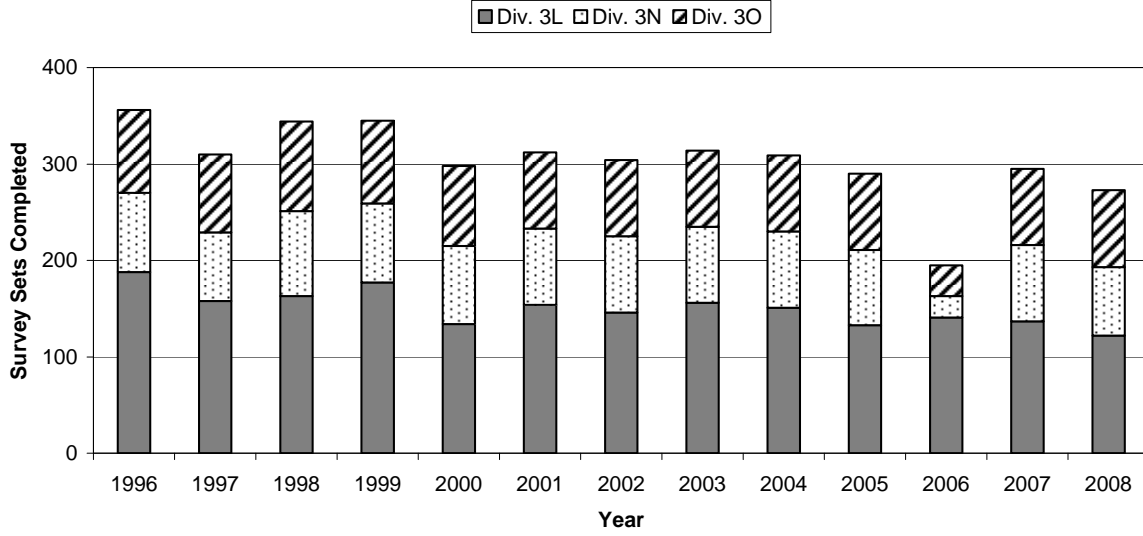


Figure 10a. Number of successful spring survey sets, by NAFO Division, 1996-2008.

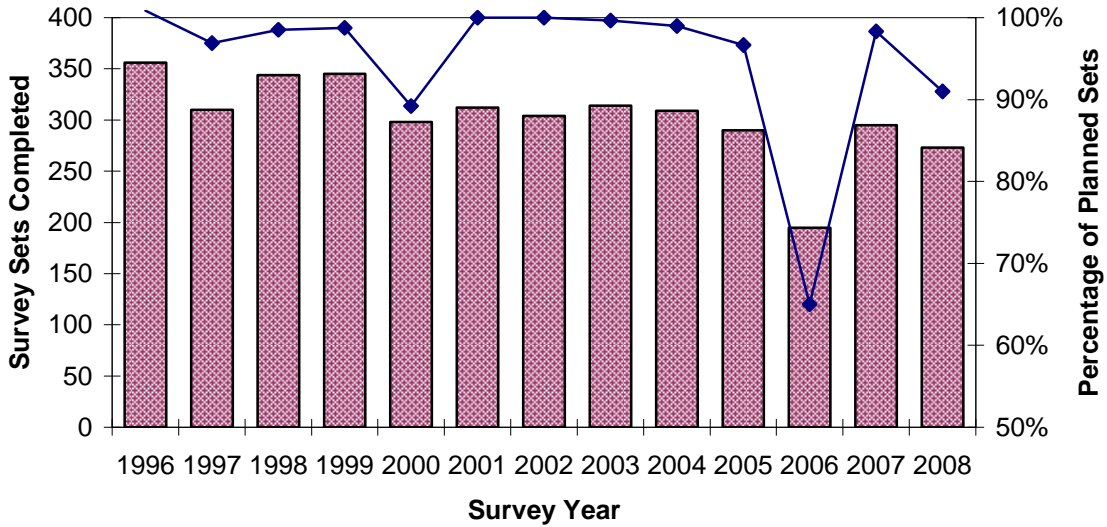


Figure 10b. Number of successful spring survey sets (bars), with percent of allocated sets realized (diamonds).

(These figures exclude the inshore strata of Div. 3L, which are included in the annual allocations but are considered of lower priority and rarely covered.)