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**Estimates of Halibut Abundance
from NMFS Trawl Surveys**

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Estimates of Halibut Abundance from NMFS Trawl Surveys

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ABSTRACT

The National Marine Fisheries Service (NMFS) of the United States has carried out a number of scientific trawl survey programs in U.S. waters since the 1970's to monitor the abundance of groundfish stocks. This paper presents detailed and summary results of these surveys in the form of swept-area estimates of halibut abundance.

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INTRODUCTION

The directed halibut fishery of the North Pacific is carried on with setline gear, and for the most part the International Pacific Halibut Commission (IPHC) has relied on survey and commercial catch rates of halibut by setline gear in its monitoring of stock abundance. Over the years IPHC has conducted numerous setline surveys, mostly in IPHC Areas 2B and 3A (Figure 1), and in recent years the results of those

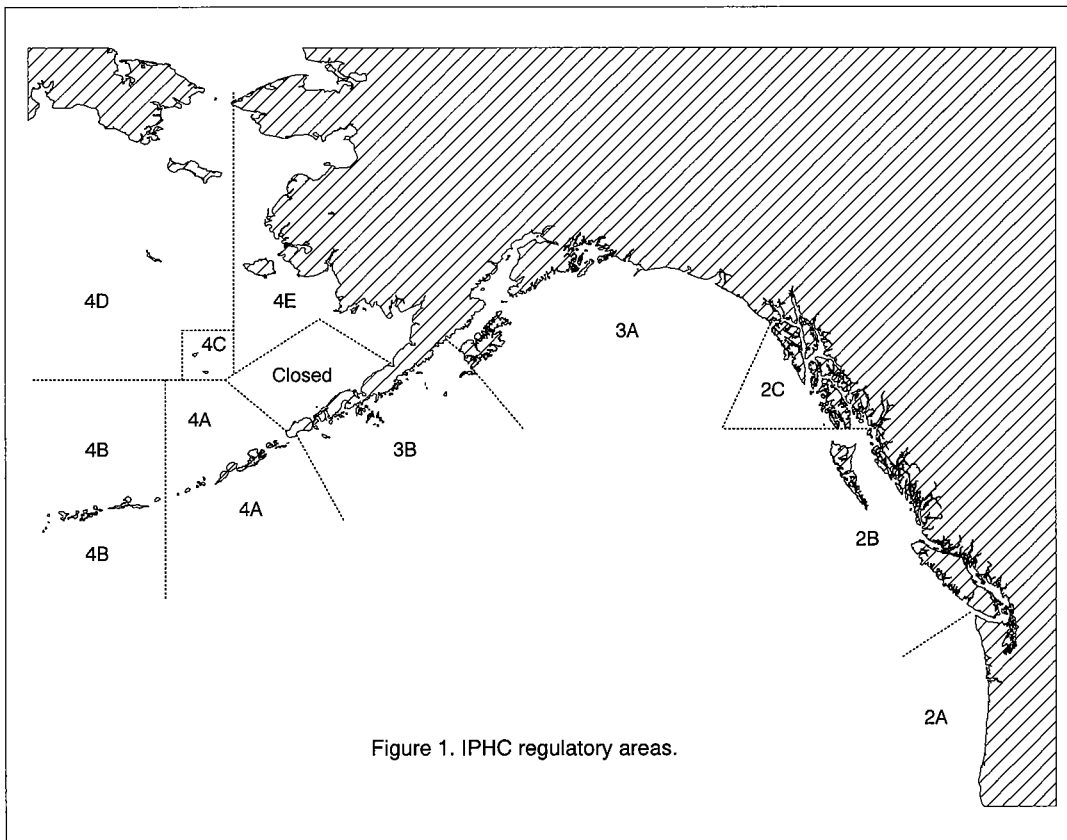


Figure 1. IPHC regulatory areas.

surveys have been the most important auxiliary information used in fitting the age- and length-structured population model that is the basis of the annual stock assessment.

Setline gear has some advantages for surveys of the halibut stock: it can be fished almost anywhere, and of course it has very similar size selectivity to the commercial fishery, so it provides a direct index of the abundance of fish exploitable by the commercial fishery. On the other hand, it is relatively time-consuming because at each station the gear has to be set, soaked for some hours, and then retrieved. As a result, a setline survey vessel can only fish three or four stations a day, and has to run many miles among stations to do so. Surveying very large areas with setline gear is therefore a very large undertaking, and for that reason IPHC has never (before 1997) attempted to survey the entire Commission area. Also, setline catch rates can be affected by a number of things other than halibut abundance, such as competition with other species for the baited hooks and, at very high densities, gear saturation.

The National Marine Fisheries Service (NMFS) of the United States has carried out a number of regular trawl survey programs in U.S. waters to monitor the abundance of groundfish stocks, and these surveys also provide an index of halibut abundance. On the positive side, the trawl surveys have covered large areas in western Alaska that were never (before 1997) surveyed by IPHC with setline gear. On the other side, the trawl surveys could not cover very rough grounds, which tend to be preferred habitat for halibut. Also, the trawl is selective for smaller fish than setline gear. This is an advantage in that the trawl survey provides an indication of future recruitment to the setline fishery, but it means that overall trawl and setline survey results are not directly comparable because they refer to different size groups of halibut.

Despite some complications, the NMFS trawl surveys are potentially just as useful as IPHC setline surveys for monitoring halibut abundance, at least in areas that are mostly trawlable. The different gear selectivity can be handled either by estimating the trawl selectivity directly or by limiting the size range included in the trawl catch rates. When that is done, the trawl surveys can provide a useful measure of relative abundance over time, or of the distribution of biomass among (trawlable) areas.

For the 1997 halibut assessment, the staff retrieved all of the NMFS trawl survey results for halibut and calculated swept-area abundance estimates by IPHC regulatory area. NMFS normally calculates estimates by International North Pacific Fisheries Commission (INPFC) area. While the trawl estimates were not directly used for fitting the stock assessment model, they had an important influence on the staff's view of relative halibut abundance in western Alaska (Areas 3B and 4) where fishing effort is spotty. This paper documents those estimates.

DESCRIPTION OF NMFS TRAWL SURVEYS

Overview

NMFS has carried out a large number of trawl surveys of various kinds over the years. The ones of interest here are the recent, periodic, general-purpose surveys that are designed to monitor the abundance of all groundfish species.

NMFS conducts an annual survey of the eastern Bering Sea shelf to a depth of 200 m using a flatfish trawl (one with no rollers on the footrope, so that the footrope is on the bottom when the net is towed). The agency conducts triennial surveys of the shelf and slope in the Aleutian Islands region, the Gulf of Alaska, and the West Coast

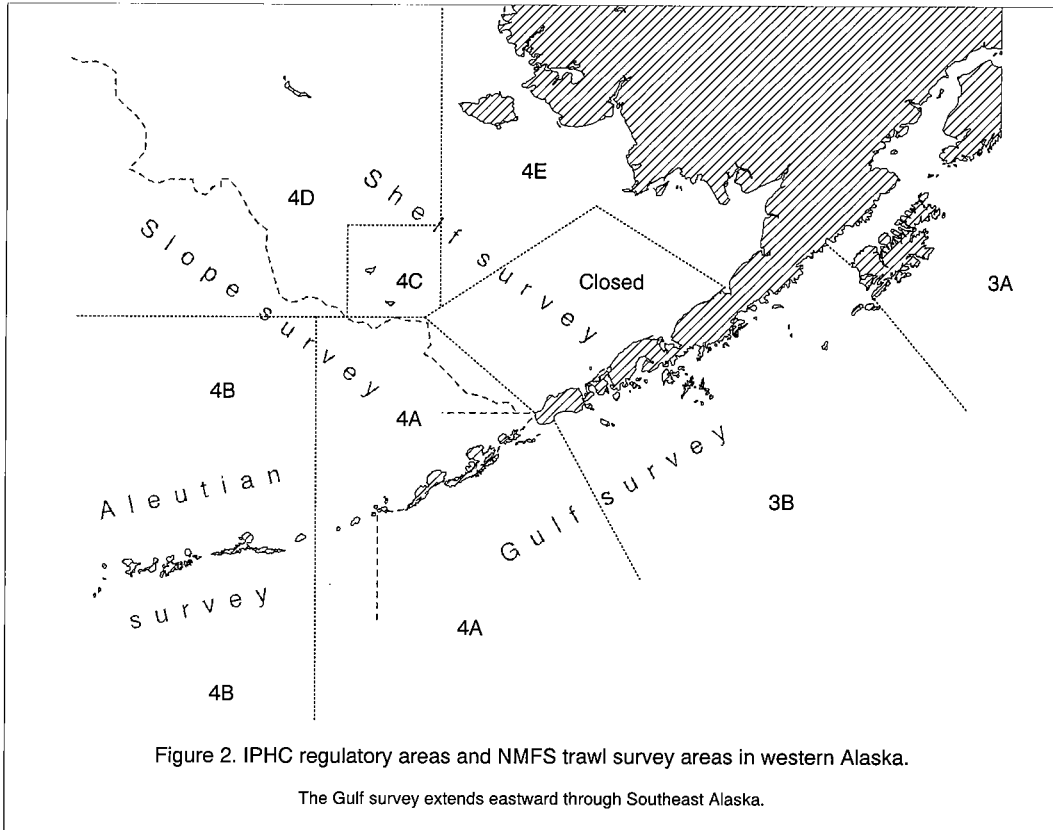


Figure 2. IPHC regulatory areas and NMFS trawl survey areas in western Alaska.

The Gulf survey extends eastward through Southeast Alaska.

(Washington-Oregon-California, plus part of the south coast of Vancouver Island) using a roller trawl (one with rollers on the footrope, so that it can be fished on rougher ground but at the cost of leaving a gap between the bottom and the footrope when the net is towed). One of the triennial surveys is done each year, so the Aleutians and the Gulf of Alaska are never surveyed in the same year. The Bering Sea slope was surveyed several times between 1979 and 1988 by Japanese vessels, but only one time—in 1991—by U.S. vessels using the standard survey roller trawl.

With two exceptions, every IPHC regulatory area in U.S. waters is covered by one and only one of the NMFS trawl surveys (Figure 2). The exceptions are Area 4D, which is covered partly by the Bering Sea shelf survey and partly by the Bering slope survey, and Area 4A, which is partly covered by all of the Alaska surveys.

There are two major problems in using trawl survey results to estimate the relative abundance of halibut in different areas. The first is the timing and coverage of the surveys. Most of Area 2B (British Columbia) is never covered, and most of the other areas are covered in different years under the triennial rotation. The second problem is the difference in gear between the Bering shelf survey and the other surveys. One would expect the flatfish trawl to be more effective in catching halibut than the roller trawl, but that is by no means certain. It is not the purpose of this paper to solve these problems, but they have to be kept in mind whenever the trawl survey results are used.

Another point to keep in mind is that the swept-area estimates are *not* estimates of absolute abundance. They are calculated by multiplying a mean catch per unit area (number of fish caught per hectare of bottom swept) by the area of a stratum or larger region (in hectares). If the trawl captured all of the fish in its path, the swept-area

estimate would in fact be an estimate of absolute abundance. But this is not the case, or at least is not known to be the case. The path of the trawl is defined as the opening between the wings, but it is likely that some fish are herded into the path of the trawl by the cables that connect the wings to the doors, so that the trawl catch rates may overstate the density of fish. On the other hand, some fish in the path of the trawl may avoid capture by swimming off. Both of these effects—herding and avoidance—probably vary with the size of the fish, so that the swept-area estimates may overstate the absolute abundance of smaller fish but understate the absolute abundance of large fish. Despite these uncertainties, the swept-area estimates are a useful index of the *relative* abundance of fish of a given size group among areas and years.

Eastern Bering Sea shelf survey

The Bering shelf survey covers the eastern Bering Sea shelf within the 200 m depth contour northward to about St. Matthew Island at 61°N. It was first conducted in 1975, and has been conducted annually since 1979.

The basic design of the survey is a grid. Since 1983 a station has been placed at the center of each 20 nmi square on the shelf. Additional stations have been placed at the corners of the squares in areas of important crab fisheries to improve estimates of crab abundance. The northward extension of the survey has varied somewhat from year to year, and in a few years a separate cluster of stations was fished in Norton Sound. A consistent set of stations was assembled for the purposes of this paper by excluding all stations north of 61°N and all corner stations. Figure 3 shows the selected stations for 1996, which are nearly identical to the selected stations for all years since 1983.

Since 1982, the standard survey trawl has been an 83/112 Eastern flatfish trawl with a 25 m headrope, 34 m footrope, and a 32 mm codend liner. (“83/112” refers to the headrope and footrope length measured in feet.) No rollers are placed on the footrope, so it fishes hard on bottom (i.e., fishes in contact with the sea floor).

Bering Sea slope survey

During the 1980’s, Japanese vessels conducted several surveys of the continental slope below 200 m in the eastern Bering Sea, but the Japanese gear and therefore catch rates are not readily comparable with U.S. gear and catch rates. The only U.S. survey was conducted in 1991, with the standard survey roller trawl: a high-rise Nor’eastern trawl with a 27 m headrope, a 37 m footrope rigged with rubber bobbin rollers of 36 cm, and a 32 mm codend liner. Only 94 tows were made (Figure 4), and only 42 halibut were caught. Overall density was low—0.1 halibut per hectare of swept area for fish of 65 cm or more. This is similar to the density on the shelf, but the area of the slope is only about 5% of the area of the shelf, so although the data are scanty, it appears that total halibut abundance on the Bering Sea slope below 200 m during the summer is negligible.

Aleutian Islands survey

The Aleutian survey covers the north side of the island chain from Unimak Pass westward to the Islands of Four Mountains (170°W), and both sides farther west, from 30 m depth out to 500 m (Figure 5). The area was surveyed at times during the

1980's, but mostly by Japanese vessels using gear different from the standard survey roller trawl. Standard surveys were done in the Aleutians in 1991 and 1994, and are reported here.

Like the Gulf of Alaska survey, the Aleutian survey has a random stratified design. The survey area is divided into about fifty strata (slightly different schemes were used in 1991 and 1994), and stations are allocated to strata not in proportion to stratum area, but according to the expected variance of catches within each stratum. In recent years 300-400 stations have been fished in each survey.

Also like the Gulf survey, the Aleutian survey uses a high-rise Nor' eastern trawl with a 27 m headrope, a 37 m footrope rigged with rubber bobbin rollers of 36 cm, and a 32 mm codend liner. This net is designed to fish rough bottom and to catch near-bottom species like rockfish. Nevertheless, there is a good deal of very rugged bottom in the Aleutians that cannot be fished even by this trawl, and halibut do favor rough bottom, so relative to other, more trawlable regions like the northern Gulf, the trawl survey likely understates the density of halibut in the Aleutians.

Gulf of Alaska survey

The Gulf survey area covers the coast of the Gulf of Alaska from Dixon Entrance to the Islands of Four Mountains (170°W), from a depth of 20 m to 500 m. Standard surveys were conducted on a triennial schedule in 1984, 1987, 1990, 1993, and 1996 (Figure 6). Japanese vessels took part in some of the early surveys but used different gear from U.S. vessels. Only survey catches by U.S. vessels were used for this report.

The survey has a random stratified design, and there have been only minor changes in the stratification scheme over the years. There are 49 strata based on INPFC region and depth, and stations are allocated among strata not in proportion to area but according to the expected variance of catch rates. A total of 600-800 stations have been fished by U.S. vessels in each survey except for 1987, when the number was 385.

The Gulf survey uses a high-rise Nor' eastern trawl with a 27 m headrope, a 37 m footrope rigged with rubber bobbin rollers of 36 cm, and a 32 mm codend liner. This net is designed to fish rough bottom and to catch near-bottom species like rockfish, and it can fish the bulk of the survey area. The exception is Southeast Alaska where the bottom is extremely rough in places and as a result the trawl catch rates likely understate the relative density of halibut.

West Coast survey

The U.S. West Coast survey extends from southern California (in most years Point Conception at 35°S) to about the middle of Vancouver Island (in most years about 49°N). Surveys were conducted on a triennial schedule in 1977, 1980, 1983, 1986, 1989, 1992, and 1995. The depth range was 90-466 m in 1977, 50-366 m in 1980-1992, and 50-500 m in 1995.

Stations are located randomly (with some constraints) within depth intervals along east-west transects placed regularly along the coast, and the results are treated as random samples stratified by depth and INPFC region. The stratum definitions and station allocations have changed considerably over the years as survey objectives have evolved, but the overall density estimates are comparable when calculated

according to each year's stratification scheme. The number of tows per survey has been 500-700.

The West Coast survey is conducted with the same roller trawl used in the Gulf of Alaska survey.

CALCULATION OF SWEEPED-AREA ESTIMATES BY IPHC REGULATORY AREA

For the trawl survey results to be useful in monitoring the halibut stock, it is necessary to calculate swept-area estimates that are specific to particular IPHC areas and fairly narrow length intervals.

Most of the NMFS trawl surveys are stratified, meaning that the survey area is divided into a number of strata (subareas), and each stratum is allocated some number of tows, which are placed randomly throughout the stratum. The density of stations is not the same in all strata, so the swept-area estimates of total abundance have to be obtained by calculating a mean density of fish for each stratum, multiplying the mean density by the stratum area to obtain the swept-area estimate for the stratum, and summing over strata.

The NMFS strata are defined so that each one falls entirely within an INPFC region, but some of them overlap two (or more) IPHC regulatory areas, so the calculation of swept-area estimates by IPHC area required an extra step, which was to post-stratify the NMFS strata by IPHC area. The tow-by-tow data were also screened and corrected as explained below. In general, the swept-area estimates were calculated as follows:

- (i) The number of recorded halibut lengths for each tow (in the length data file) was compared with the recorded total number of halibut caught in that tow (from the catch data file). If it was greater, the length data were taken to be correct and all were used. If it was less, the length data were taken to be incomplete and the recorded lengths were resampled to bring the length sample size up to the recorded number caught. If the catch data file indicated some catch but there were no lengths recorded in the length data file, the catch was taken to be zero. Discrepancies between the catch and length data files were not numerous.
- (ii) The area swept on each tow was calculated from the distance towed and net width. If net width was not given for a particular tow, the mean net width for the survey was used.
- (iii) Only those tows were used where the gear performance was satisfactory and the area swept could be calculated.
- (iv) Each tow was assigned to an IPHC regulatory area on the basis of latitude and longitude.
- (v) NMFS stratum information was stored one way or another so that the stratum code of each tow could be used to group tows by NMFS

stratum and to look up the area in hectares of each stratum. (This part varied quite a bit among surveys.)

(vi) Swept-area estimates were calculated for each IPHC regulatory area within each NMFS stratum. In other words, new strata were defined by partitioning each NMFS stratum among IPHC areas, and swept-area estimates were calculated for the new strata. If a particular NMFS stratum lay entirely within an IPHC regulatory area (as most do), there was no difference. If a NMFS stratum extended over two or more IPHC areas, the tows were grouped by IPHC area and a mean catch rate was calculated for each IPHC area. The proportion of the NMFS stratum area lying within a given IPHC regulatory area was estimated by the proportion of tows made within that IPHC area.

(vii) The swept-area estimate for each IPHC area was obtained by summing over the new strata.

(viii) A swept-area estimate was calculated for each fork length in centimeters.

Mostly because of the screening of the catch and length data described in step (i), the swept-area estimates calculated here are not equal to comparable estimates published by NMFS, which are calculated directly from the catch data file. They are close in all cases, but there are some differences. For example, in the West Coast survey of 1977 eight halibut were caught but no lengths were recorded. The swept-area estimate for Area 2A in this report is therefore zero, while the NMFS estimate is ten thousand fish.

ESTIMATES OF RELATIVE DENSITY AND BIOMASS DISTRIBUTION

Swept-area estimates of density (fish per hectare) and total numbers for all surveys, years, and regulatory areas are given in the Appendix, broken down by 10 cm length interval. Figure 8 shows swept-area density estimates for fish of 65 cm or more by area. This is something like an index of recruitment to the setline fishery, because by 65 cm migration is nearly complete and vulnerability to setline gear increases gradually with fish length from nil at 60 cm to 100% at around 100 cm. Because the vulnerability of halibut to trawls decreases with length, this index is heavily weighted toward smaller fish. Densities are highest in the northern Gulf, generally low in the Bering Sea, and very low off the U.S. West Coast. As mentioned above, relative densities in the Aleutians (4A and 4B) and Southeast Alaska (2C) are probably underestimated because of the amount of untrawlable ground in those areas. Setline surveys indicate similar densities of halibut in Areas 2C and 3A, but the trawl catch rates in 2C in recent years have been only about half the trawl catch rates in 3A.

Figure 9 shows the estimated distribution of total numbers of halibut in the northern Gulf, Aleutians, and Bering Sea (Areas 3 and 4) based on swept-area estimates of total abundance of fish 65 cm or more in every year in which there was a Gulf of Alaska survey. Area 2A is shown on the same scale for comparison but does not figure in the calculated percentages. Because the West Coast and Aleutian surveys were

never done in years when the Gulf survey was done, some shifting and borrowing of estimates was required to construct all of the numbers. Specifically:

(i) Estimates for Area 4B and the Aleutian section of 4A were calculated from the average ratios between the Aleutian survey estimates for those areas and the nearest Gulf survey estimate for the Gulf portion of 4A, for all Gulf survey years.

(ii) The nearest estimate for Area 2A from the West Coast survey was used for the estimate in each Gulf survey year. For example, the figure for 2A in 1993 is really the 1992 West Coast survey estimate.

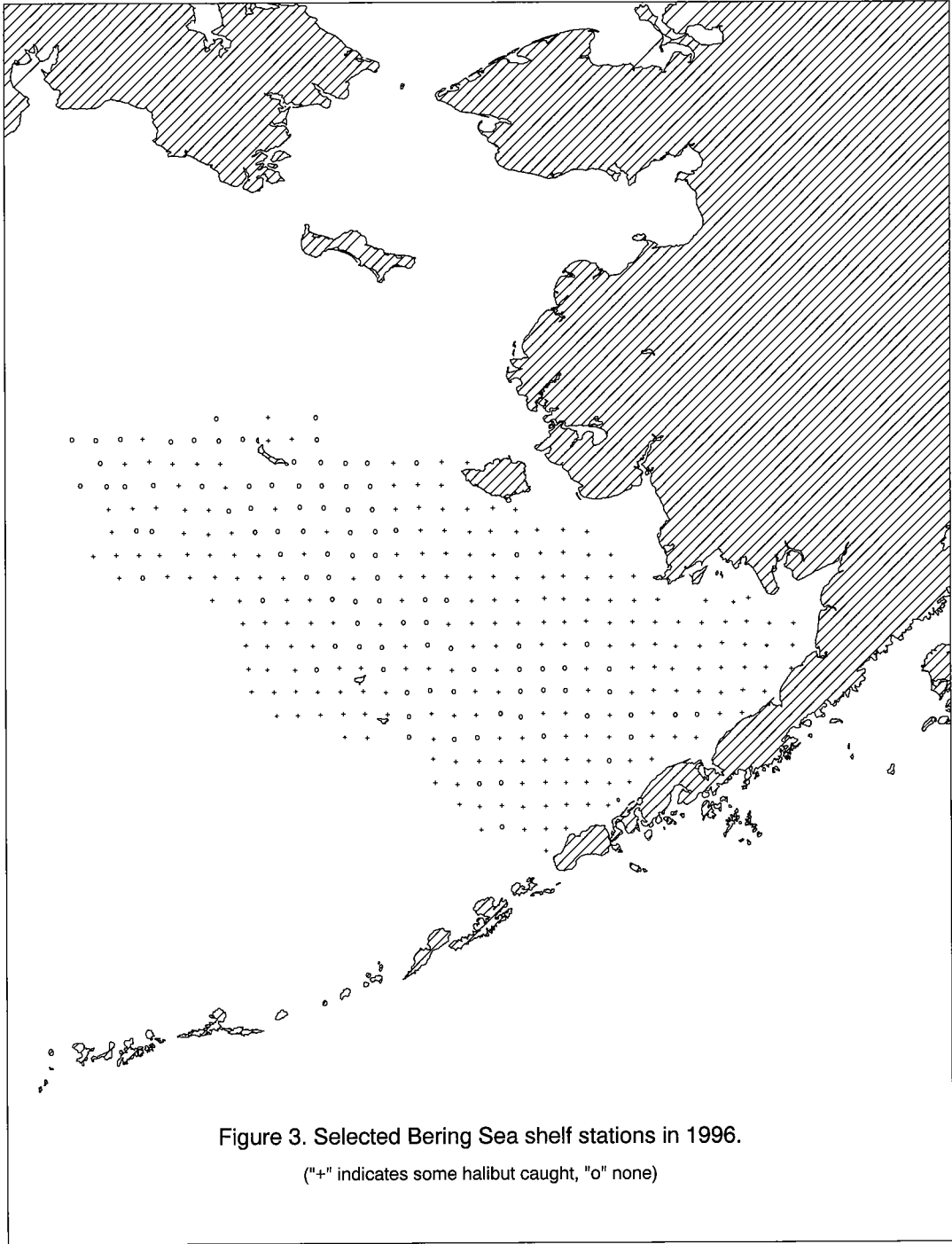
While the estimated distribution of total numbers varies considerably from year to year, on the whole the results indicate that total abundance in Area 3B is less, but not a great deal less, than in Area 3A, and likewise for Area 4. The comparison is weaker for Area 4 because of the effect of untrawlable ground in the Aleutians and the effect of the different gear used in the Bering Sea shelf survey.

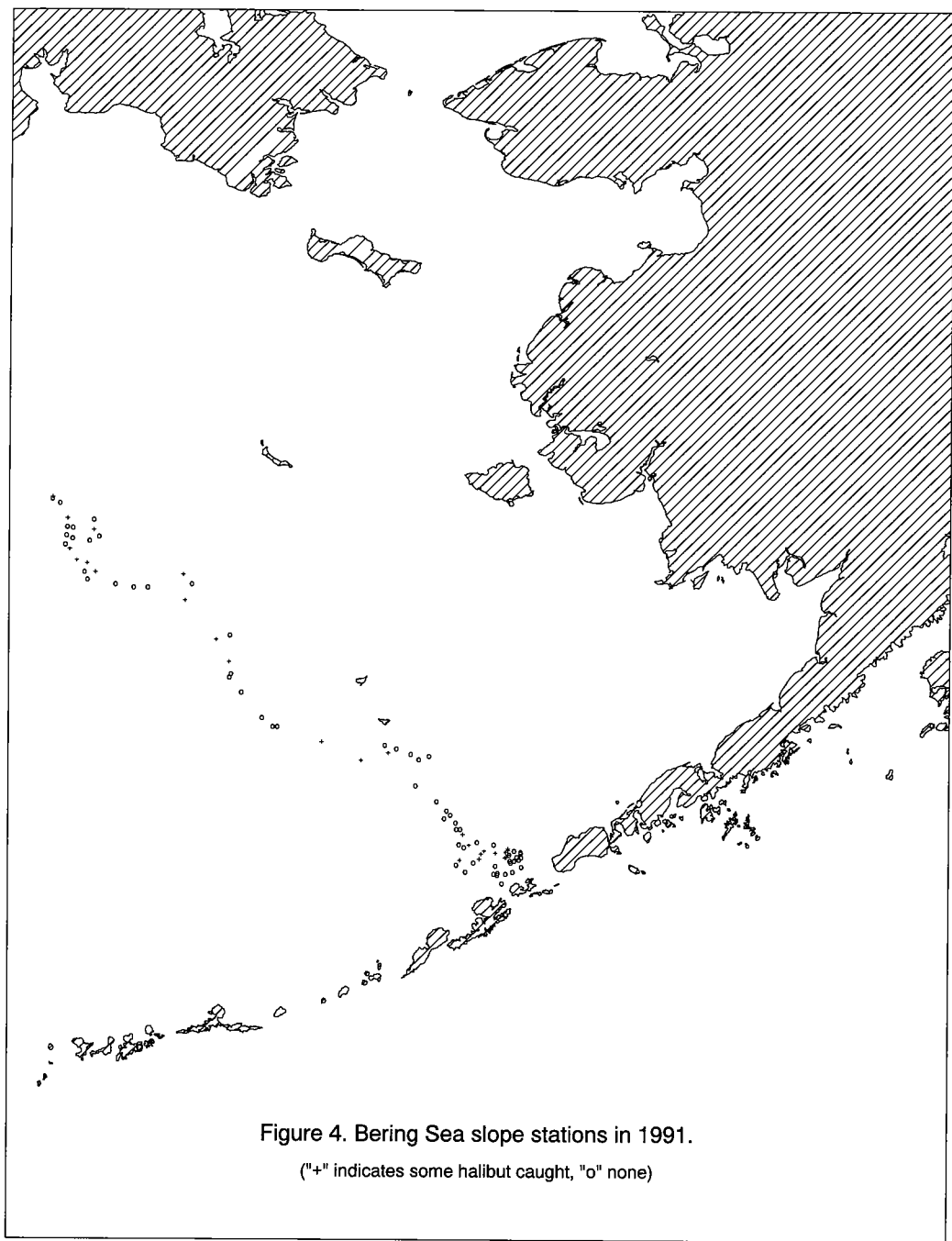
COMPARISON OF TRENDS IN TRAWL AND SETLINE SURVEY RESULTS

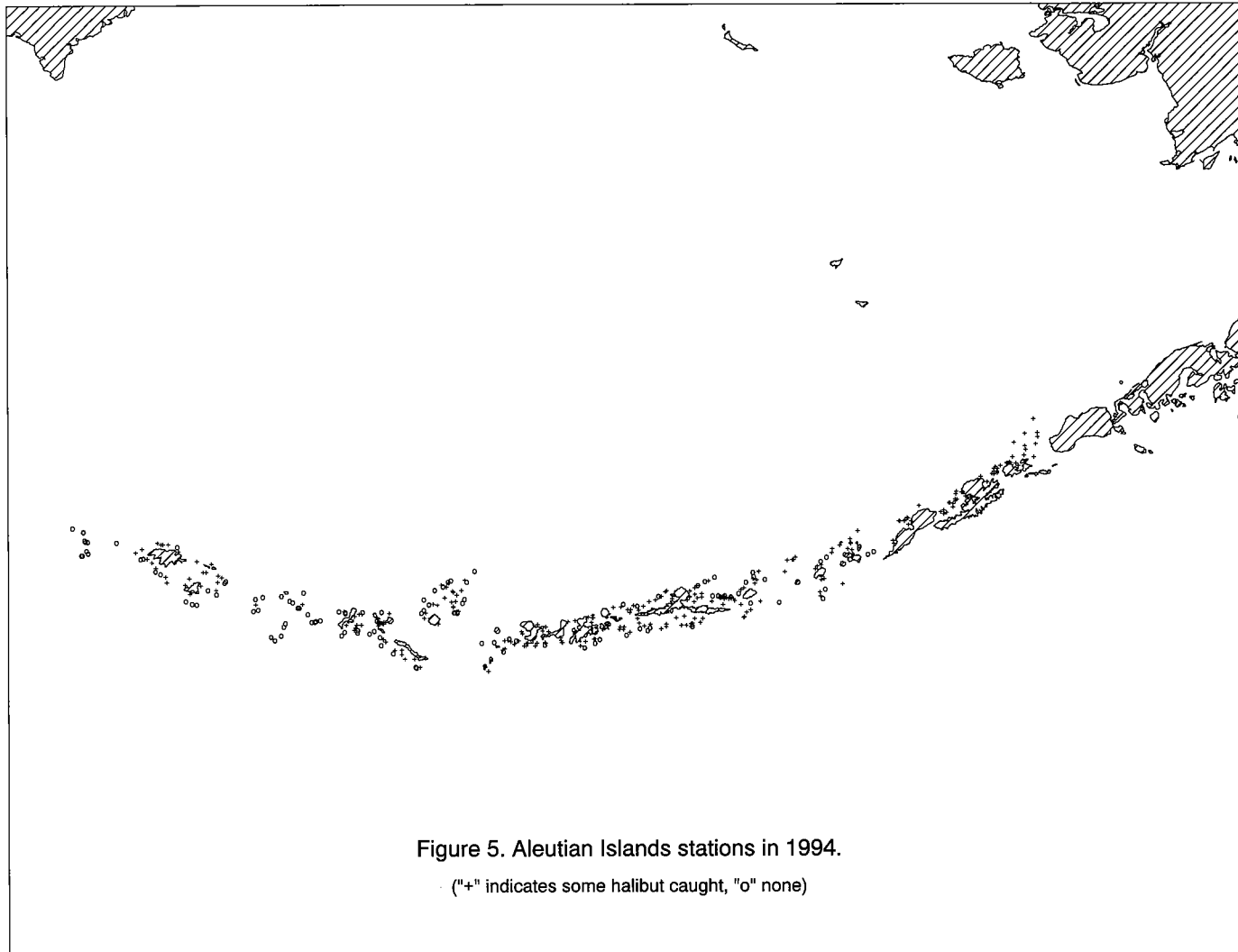
Only Area 3A has been surveyed consistently with both trawl gear (by NMFS) and setline gear (by IPHC). Figure 10 shows a comparison of catch rates by each gear of fish in four length intervals. The agreement is very good, indicating that the two gears provide a similar index of abundance. The variability of the setline index is generally smaller.

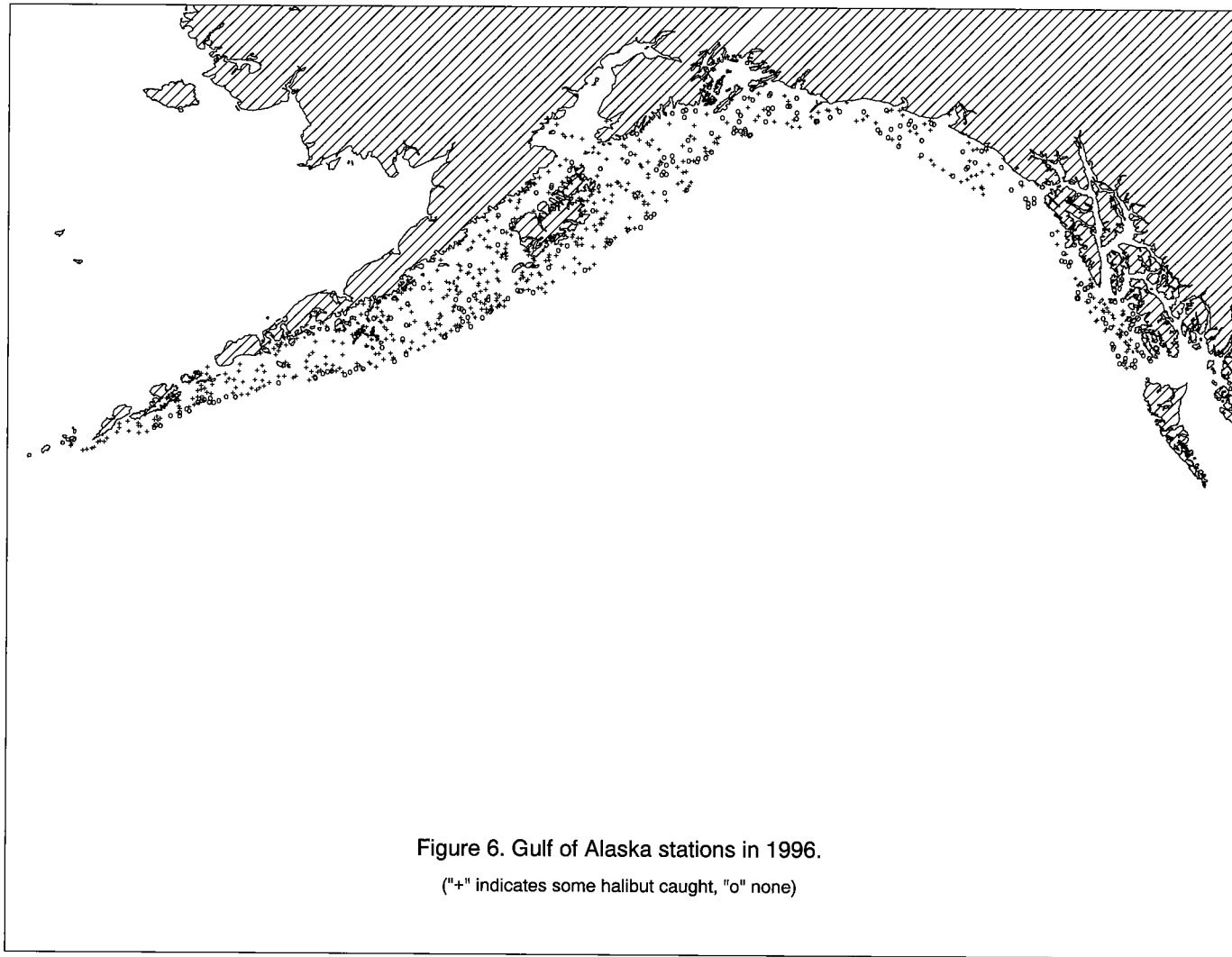
ACKNOWLEDGMENTS

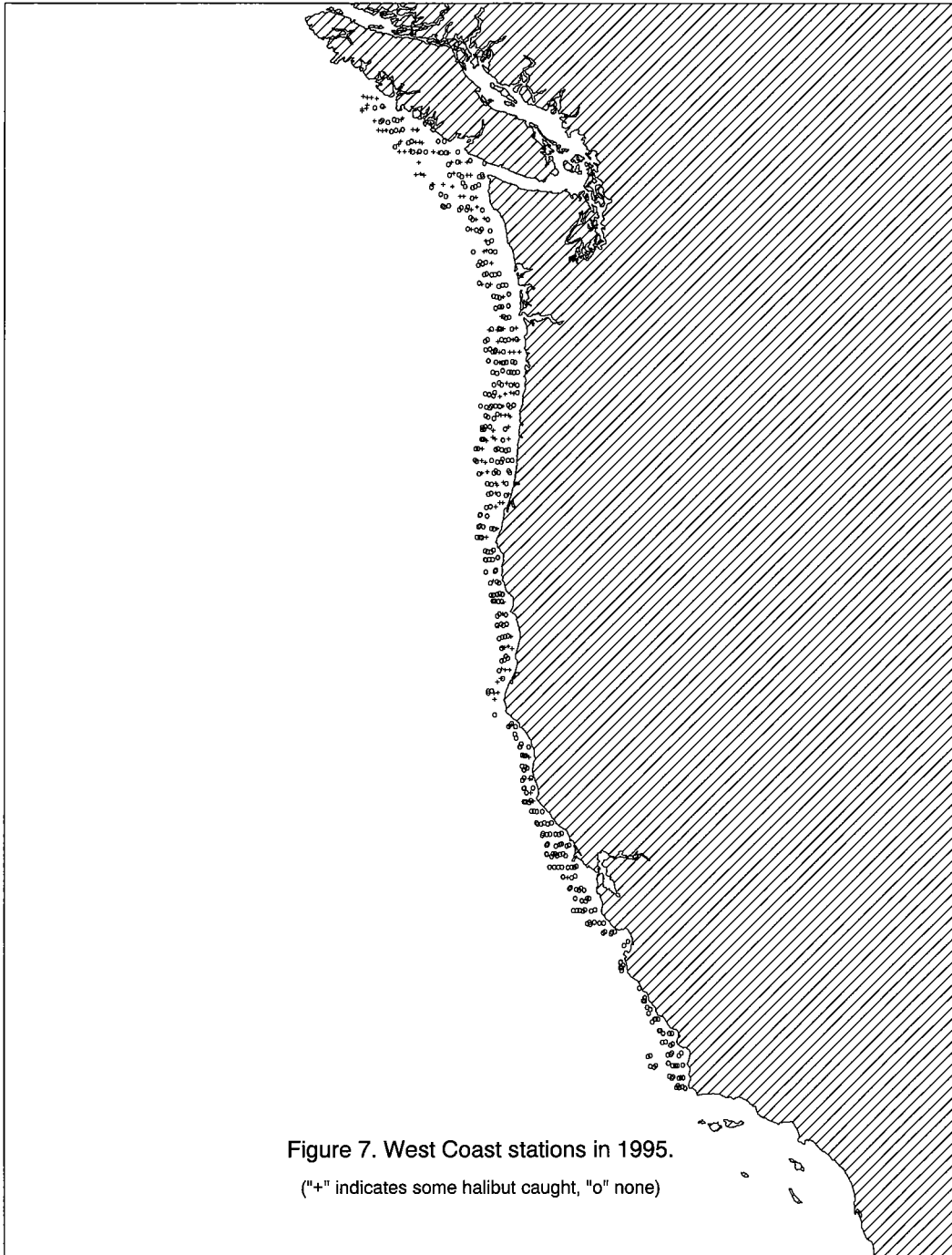
Dave Somerton, Gary Walters, Mark Wilkins, and Gary Mundell of NMFS all gave the authors a lot of help in assembling and interpreting the raw survey data. Richard Bakkala and Dave Clausen of NMFS reviewed an earlier version of the report.











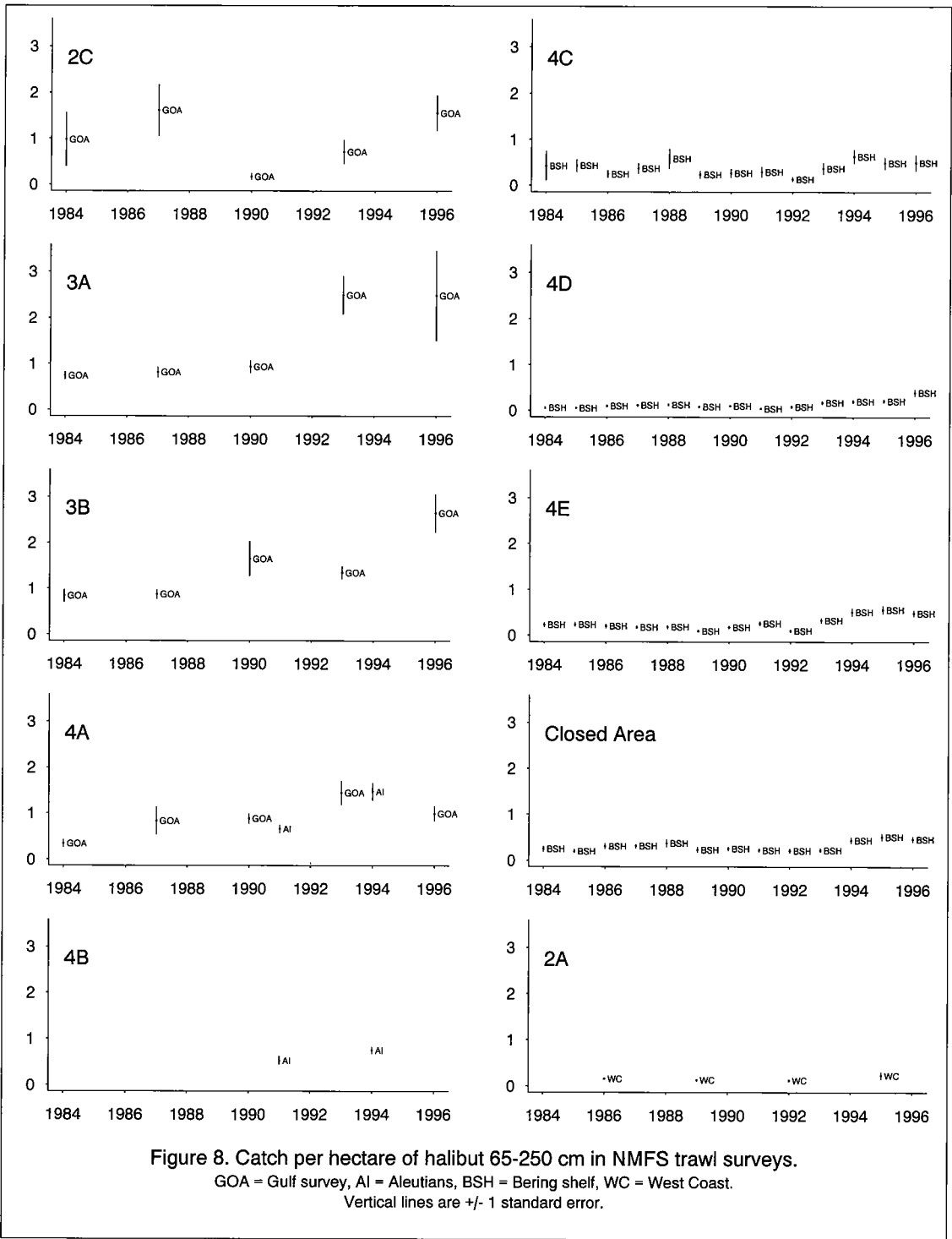


Figure 8. Catch per hectare of halibut 65-250 cm in NMFS trawl surveys.
 GOA = Gulf survey, AI = Aleutians, BSH = Bering shelf, WC = West Coast.
 Vertical lines are +/- 1 standard error.

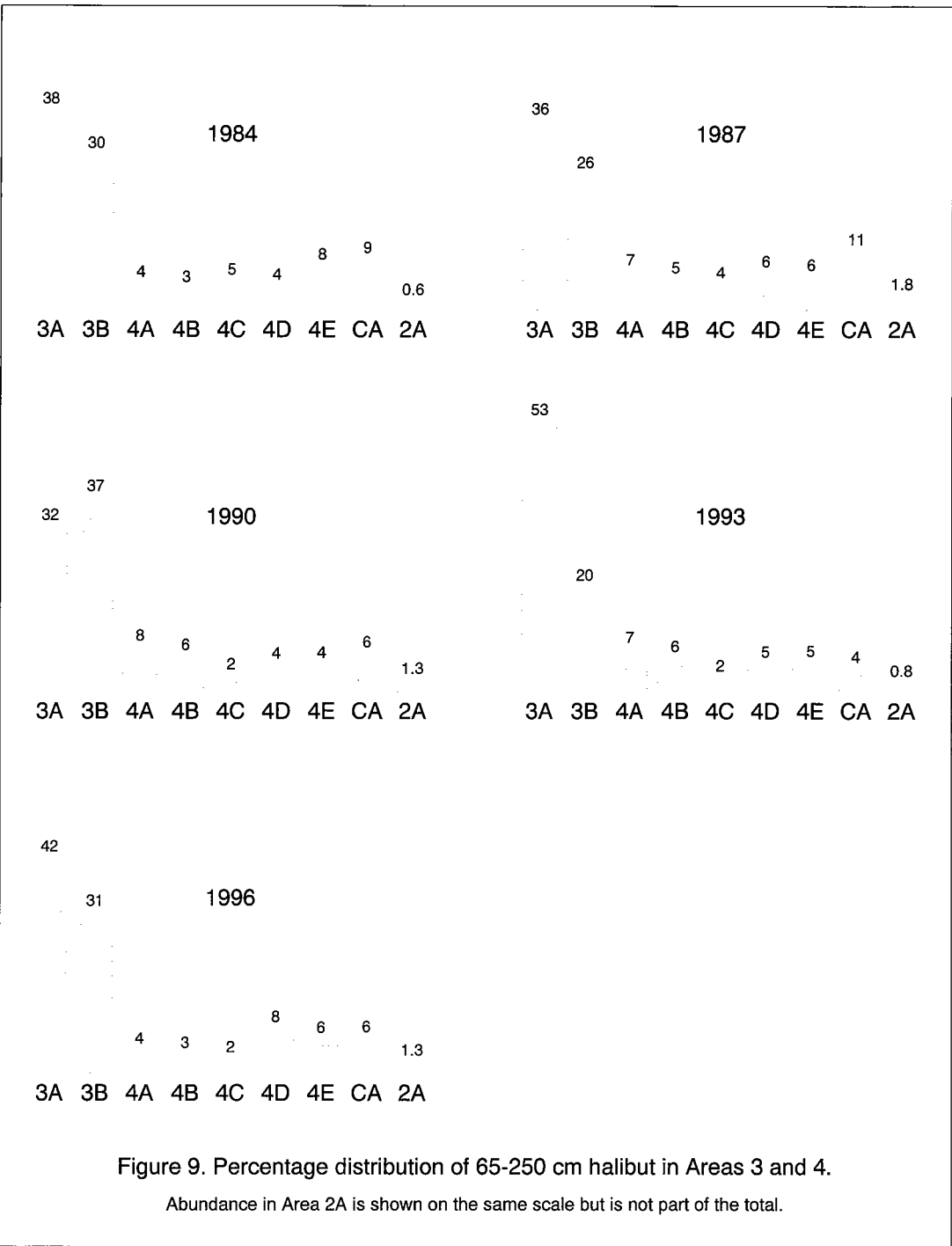
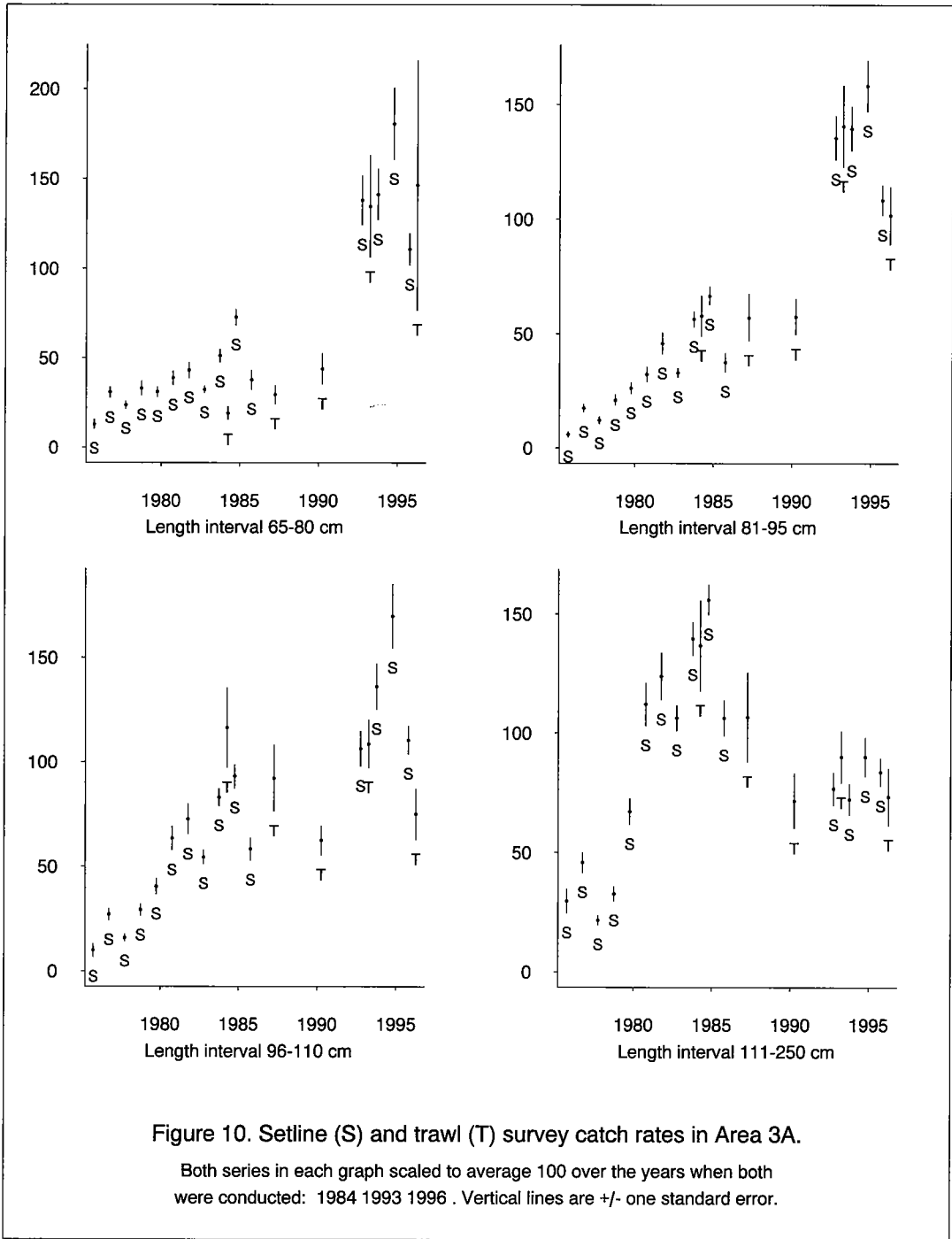


Figure 9. Percentage distribution of 65-250 cm halibut in Areas 3 and 4.
 Abundance in Area 2A is shown on the same scale but is not part of the total.



**APPENDIX. SWEPT-AREA ESTIMATES OF DENSITY AND
ABUNDANCE BY LENGTH INTERVAL.**

Detailed survey results are tabulated on the following pages for the Bering shelf surveys, Bering slope survey, Aleutian Islands surveys, Gulf of Alaska surveys, and West Coast surveys, in that order. For a given survey in a given year, the results are shown for each IPHC regulatory area and at the end for the entire survey area. In some cases (e.g., Area 2B), the NMFS trawl survey covered only part of an IPHC area, and that is noted in the table caption.

Swept-area estimates of density (fish per hectare) and abundance (total number in the area) are given by length interval, along with the actual number of fish caught and the coefficient of variation of the estimates. The coefficient of variation is the standard deviation of the estimate expressed as a proportion of the estimate.

As explained in the text, the swept-area estimates cannot be taken as reliable estimates of absolute density or abundance, but they provide an index of relative density and abundance that can be used to monitor differences in abundance among areas and years. It is essential for this purpose that the results be broken down by size interval because the vulnerability of the fish to the trawl varies with size.

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Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1983, IPHC Area 4A (part), 1231224 hectares, 9 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0234	28801	1.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	3	0.0702	86403	0.577	130-139	0	0.0000	0	0.000
50-59	12	0.2729	335995	0.456	140-149	0	0.0000	0	0.000
60-69	3	0.0682	83999	1.000	150-250	1	0.0245	30190	1.000
70-79	8	0.1819	223907	0.523	0-64	18	0.4113	506397	0.359
80-89	1	0.0234	28801	1.000	65-250	11	0.2532	311699	0.409
90-99	0	0.0000	0	0.000	0-250	29	0.6645	818096	0.272

Bering shelf survey, 1983, IPHC Area 4C, 3556870 hectares, 26 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	59	0.7010	2493464	0.260	120-129	1	0.0124	43995	1.000
40-49	56	0.6076	2161246	0.184	130-139	0	0.0000	0	0.000
50-59	26	0.2330	828655	0.210	140-149	0	0.0000	0	0.000
60-69	17	0.1675	595673	0.261	150-250	1	0.0085	30131	1.000
70-79	1	0.0079	28269	1.000	0-64	154	1.6707	5942343	0.133
80-89	3	0.0365	129887	0.592	65-250	12	0.1283	456408	0.314
90-99	2	0.0246	87431	0.742	0-250	166	1.7990	6398751	0.126

Bering shelf survey, 1983, IPHC Area 4D, 17784349 hectares, 130 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	1	0.0016	28192	1.000	110-119	0	0.0000	0	0.000
30-39	5	0.0087	155319	0.446	120-129	1	0.0016	28544	1.000
40-49	32	0.0526	935660	0.174	130-139	0	0.0000	0	0.000
50-59	32	0.0528	938957	0.180	140-149	0	0.0000	0	0.000
60-69	14	0.0231	411566	0.283	150-250	0	0.0000	0	0.000
70-79	4	0.0065	116305	0.499	0-64	81	0.1338	2378758	0.113
80-89	2	0.0031	55931	0.704	65-250	10	0.0164	291716	0.316
90-99	0	0.0000	0	0.000	0-250	91	0.1502	2670474	0.106

Bering shelf survey, 1983, IPHC Area 4E, 10533807 hectares, 77 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0072	76136	0.707	100-109	5	0.0144	151996	0.656
20-29	1	0.0031	32832	1.000	110-119	3	0.0096	101551	0.753
30-39	31	0.0942	992744	0.309	120-129	0	0.0000	0	0.000
40-49	276	0.8392	8839947	0.156	130-139	0	0.0000	0	0.000
50-59	196	0.5980	6299734	0.162	140-149	0	0.0000	0	0.000
60-69	96	0.3024	3185192	0.147	150-250	0	0.0000	0	0.000
70-79	18	0.0556	585544	0.250	0-64	570	1.7427	18356933	0.098
80-89	7	0.0224	236160	0.561	65-250	67	0.2092	2203461	0.151
90-99	2	0.0056	58558	0.707	0-250	637	1.9518	20560394	0.089

Bering shelf survey, 1983, IPHC Closed Area, 11491426 hectares, 84 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	5	0.0134	153863	0.448	100-109	2	0.0050	56900	0.707
20-29	1	0.0026	30361	1.000	110-119	0	0.0000	0	0.000
30-39	32	0.0858	985614	0.329	120-129	0	0.0000	0	0.000
40-49	82	0.2178	2502854	0.168	130-139	0	0.0000	0	0.000
50-59	109	0.2867	3294199	0.176	140-149	0	0.0000	0	0.000
60-69	34	0.0925	1062428	0.279	150-250	0	0.0000	0	0.000
70-79	15	0.0393	451080	0.323	0-64	243	0.6440	7400815	0.110
80-89	10	0.0268	307438	0.473	65-250	56	0.1493	1715984	0.188
90-99	9	0.0237	272062	0.363	0-250	299	0.7934	9116799	0.096

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1983, All IPHC areas, 44597676 hectares, 326 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	7	0.0052	229999	0.380	100-109	8	0.0053	237697	0.468
20-29	3	0.0020	91385	0.578	110-119	3	0.0023	101551	0.753
30-39	127	0.1038	4627141	0.171	120-129	2	0.0016	72539	0.723
40-49	449	0.3257	14526110	0.104	130-139	0	0.0000	0	0.000
50-59	375	0.2623	11697540	0.104	140-149	0	0.0000	0	0.000
60-69	164	0.1197	5338858	0.111	150-250	2	0.0014	60321	0.707
70-79	46	0.0315	1405105	0.175	0-64	1066	0.7755	34585246	0.062
80-89	23	0.0170	758217	0.286	65-250	156	0.1116	4979268	0.102
90-99	13	0.0094	418051	0.299	0-250	1222	0.8871	39564514	0.056

Bering shelf survey, 1984, IPHC Area 4A (part), 1227459 hectares, 9 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	1	0.0225	27625	1.000	130-139	0	0.0000	0	0.000
50-59	6	0.1376	168900	0.399	140-149	0	0.0000	0	0.000
60-69	8	0.1810	222115	0.454	150-250	0	0.0000	0	0.000
70-79	1	0.0272	33374	1.000	0-64	13	0.2956	362832	0.325
80-89	2	0.0522	64094	0.707	65-250	5	0.1249	153276	0.448
90-99	0	0.0000	0	0.000	0-250	18	0.4205	516108	0.265

Bering shelf survey, 1984, IPHC Area 4C, 3409608 hectares, 25 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0173	58980	0.707
20-29	0	0.0000	0	0.000	110-119	1	0.0089	30209	1.000
30-39	2	0.0187	63774	0.693	120-129	0	0.0000	0	0.000
40-49	67	0.5997	2044671	0.311	130-139	0	0.0000	0	0.000
50-59	42	0.3803	1296525	0.221	140-149	0	0.0000	0	0.000
60-69	35	0.3132	1067740	0.290	150-250	0	0.0000	0	0.000
70-79	17	0.1503	512412	0.289	0-64	135	1.2144	4140472	0.178
80-89	8	0.0698	238094	0.426	65-250	48	0.4226	1440937	0.201
90-99	9	0.0789	269004	0.368	0-250	183	1.6370	5581409	0.142

Bering shelf survey, 1984, IPHC Area 4D, 18275500 hectares, 134 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0012	21810	1.000
20-29	0	0.0000	0	0.000	110-119	4	0.0062	113550	0.499
30-39	7	0.0111	202915	0.377	120-129	0	0.0000	0	0.000
40-49	22	0.0372	680054	0.239	130-139	1	0.0016	28506	1.000
50-59	50	0.0805	1471116	0.183	140-149	0	0.0000	0	0.000
60-69	36	0.0589	1076423	0.206	150-250	0	0.0000	0	0.000
70-79	13	0.0207	377883	0.298	0-64	100	0.1642	3000938	0.124
80-89	4	0.0061	111247	0.500	65-250	38	0.0592	1082566	0.175
90-99	0	0.0000	0	0.000	0-250	138	0.2234	4083504	0.102

Bering shelf survey, 1984, IPHC Area 4E, 10365209 hectares, 76 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0037	38203	1.000	100-109	0	0.0000	0	0.000
20-29	22	0.0661	685205	0.262	110-119	0	0.0000	0	0.000
30-39	16	0.0478	495567	0.249	120-129	0	0.0000	0	0.000
40-49	44	0.1421	1472750	0.177	130-139	0	0.0000	0	0.000
50-59	151	0.4943	5123191	0.112	140-149	0	0.0000	0	0.000
60-69	90	0.2881	2985755	0.124	150-250	0	0.0000	0	0.000
70-79	26	0.0873	904573	0.194	0-64	288	0.9269	9607285	0.076
80-89	2	0.0059	61429	0.707	65-250	70	0.2297	2380858	0.124
90-99	6	0.0214	221470	0.431	0-250	358	1.1566	11988143	0.066

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1984, IPHC Closed Area, 11319899 hectares, 83 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	3	0.0082	93055	0.578
20-29	1	0.0027	30993	1.000	110-119	0	0.0000	0	0.000
30-39	5	0.0132	149889	0.528	120-129	1	0.0027	30277	1.000
40-49	53	0.1406	1591211	0.162	130-139	0	0.0000	0	0.000
50-59	114	0.3039	3440220	0.107	140-149	0	0.0000	0	0.000
60-69	100	0.2733	3093989	0.114	150-250	1	0.0025	28446	1.000
70-79	31	0.0855	968313	0.182	0-64	241	0.6441	7291612	0.074
80-89	17	0.0439	496695	0.240	65-250	90	0.2465	2790893	0.111
90-99	5	0.0141	159417	0.445	0-250	331	0.8907	10082505	0.062

Bering shelf survey, 1984, All IPHC areas, 44597675 hectares, 327 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0009	38203	1.000	100-109	6	0.0039	173845	0.411
20-29	23	0.0161	716198	0.254	110-119	5	0.0032	143759	0.447
30-39	30	0.0205	912145	0.187	120-129	1	0.0007	30277	1.000
40-49	187	0.1304	5816311	0.129	130-139	1	0.0006	28506	1.000
50-59	363	0.2579	11499952	0.069	140-149	0	0.0000	0	0.000
60-69	269	0.1894	8446022	0.076	150-250	1	0.0006	28446	1.000
70-79	88	0.0627	2796555	0.112	0-64	777	0.5472	24403139	0.051
80-89	33	0.0218	971559	0.183	65-250	251	0.1760	7848530	0.071
90-99	20	0.0146	649891	0.238	0-250	1028	0.7232	32251669	0.042

Bering shelf survey, 1985, IPHC Area 4A (part), 954690 hectares, 7 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	2	0.0600	57305	0.712	140-149	0	0.0000	0	0.000
60-69	3	0.0789	75342	0.577	150-250	0	0.0000	0	0.000
70-79	1	0.0291	27777	1.000	0-64	5	0.1389	132647	0.450
80-89	0	0.0000	0	0.000	65-250	1	0.0291	27777	1.000
90-99	0	0.0000	0	0.000	0-250	6	0.1680	160424	0.410

Bering shelf survey, 1985, IPHC Area 4C, 3545993 hectares, 26 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	3	0.0278	98721	0.583
20-29	0	0.0000	0	0.000	110-119	2	0.0171	60594	0.707
30-39	6	0.0572	202804	0.479	120-129	0	0.0000	0	0.000
40-49	50	0.4620	1638369	0.218	130-139	1	0.0075	26531	1.000
50-59	45	0.3994	1416263	0.201	140-149	0	0.0000	0	0.000
60-69	41	0.3360	1191587	0.174	150-250	1	0.0075	26726	1.000
70-79	12	0.0966	342529	0.371	0-64	123	1.0996	3899028	0.127
80-89	9	0.0749	265486	0.330	65-250	52	0.4292	1521763	0.150
90-99	5	0.0426	151181	0.446	0-250	175	1.5287	5420791	0.100

Bering shelf survey, 1985, IPHC Area 4D, 18411884 hectares, 135 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	1	0.0015	28053	1.000
30-39	5	0.0081	149365	0.447	120-129	0	0.0000	0	0.000
40-49	39	0.0645	1187973	0.203	130-139	0	0.0000	0	0.000
50-59	34	0.0548	1008936	0.209	140-149	1	0.0014	26518	1.000
60-69	28	0.0428	788157	0.194	150-250	0	0.0000	0	0.000
70-79	13	0.0191	351282	0.277	0-64	89	0.1445	2661033	0.128
80-89	2	0.0031	57883	0.712	65-250	35	0.0525	967441	0.173
90-99	1	0.0016	30307	1.000	0-250	124	0.1971	3628474	0.105

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1985, IPHC Area 4E, 10092440 hectares, 74 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0034	33929	1.000
20-29	4	0.0121	121987	0.499	110-119	1	0.0033	32873	1.000
30-39	60	0.1987	2005808	0.165	120-129	1	0.0046	46909	1.000
40-49	28	0.0884	891927	0.216	130-139	0	0.0000	0	0.000
50-59	57	0.1875	1891877	0.199	140-149	0	0.0000	0	0.000
60-69	64	0.2120	2139402	0.132	150-250	0	0.0000	0	0.000
70-79	25	0.0835	842254	0.220	0-64	186	0.6086	6141793	0.095
80-89	13	0.0440	444564	0.305	65-250	71	0.2398	2419888	0.125
90-99	3	0.0109	110151	0.588	0-250	257	0.8483	8561681	0.077

Bering shelf survey, 1985, IPHC Closed Area, 11592668 hectares, 85 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	3	0.0076	87617	0.579
20-29	2	0.0068	78721	0.707	110-119	0	0.0000	0	0.000
30-39	58	0.1748	2026181	0.196	120-129	0	0.0000	0	0.000
40-49	20	0.0561	650361	0.241	130-139	1	0.0025	28720	1.000
50-59	49	0.1262	1463452	0.157	140-149	2	0.0058	67294	0.715
60-69	51	0.1358	1573795	0.146	150-250	0	0.0000	0	0.000
70-79	30	0.0778	902005	0.204	0-64	152	0.4247	4923503	0.104
80-89	9	0.0237	275323	0.367	65-250	76	0.1998	2315670	0.122
90-99	3	0.0074	85704	0.575	0-250	228	0.6245	7239173	0.081

Bering shelf survey, 1985, All IPHC areas, 44597675 hectares, 327 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	7	0.0049	220267	0.381
20-29	6	0.0045	200708	0.411	110-119	4	0.0027	121520	0.501
30-39	129	0.0983	4384158	0.121	120-129	1	0.0011	46909	1.000
40-49	137	0.0980	4368630	0.114	130-139	2	0.0012	55251	0.708
50-59	187	0.1309	5837833	0.097	140-149	3	0.0021	93812	0.585
60-69	187	0.1293	5768283	0.078	150-250	1	0.0006	26726	1.000
70-79	81	0.0553	2465847	0.125	0-64	555	0.3982	17758004	0.055
80-89	33	0.0234	1043256	0.187	65-250	235	0.1626	7252539	0.069
90-99	12	0.0085	377343	0.291	0-250	790	0.5608	25010543	0.044

Bering shelf survey, 1986, IPHC Area 4A (part), 1097789 hectares, 8 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	1	0.0268	29452	1.000
30-39	0	0.0000	0	0.000	120-129	1	0.0268	29452	1.000
40-49	0	0.0000	0	0.000	130-139	1	0.0261	28660	1.000
50-59	5	0.1363	149667	0.393	140-149	0	0.0000	0	0.000
60-69	14	0.3772	414049	0.395	150-250	0	0.0000	0	0.000
70-79	5	0.1322	145088	0.434	0-64	9	0.2458	269882	0.306
80-89	8	0.2155	236599	0.347	65-250	29	0.7739	849617	0.233
90-99	3	0.0788	86532	0.578	0-250	38	1.0198	1119499	0.192

Bering shelf survey, 1986, IPHC Area 4C, 3293367 hectares, 24 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0089	29242	1.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	4	0.0379	124813	0.612	120-129	0	0.0000	0	0.000
40-49	17	0.1569	516584	0.358	130-139	0	0.0000	0	0.000
50-59	27	0.2466	812139	0.265	140-149	0	0.0000	0	0.000
60-69	24	0.2124	699413	0.229	150-250	0	0.0000	0	0.000
70-79	10	0.0887	292238	0.310	0-64	60	0.5475	1802962	0.175
80-89	0	0.0000	0	0.000	65-250	28	0.2491	820407	0.205
90-99	5	0.0452	148940	0.537	0-250	88	0.7966	2623369	0.136

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1986, IPHC Area 4D, 17976294 hectares, 131 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	1	0.0016	28943	1.000	110-119	1	0.0016	28641	1.000
30-39	3	0.0048	86954	0.573	120-129	0	0.0000	0	0.000
40-49	17	0.0273	490021	0.241	130-139	0	0.0000	0	0.000
50-59	27	0.0455	818412	0.229	140-149	0	0.0000	0	0.000
60-69	38	0.0677	1216996	0.189	150-250	0	0.0000	0	0.000
70-79	29	0.0493	887088	0.192	0-64	73	0.1227	2206038	0.127
80-89	14	0.0226	405558	0.284	65-250	61	0.1050	1887016	0.145
90-99	4	0.0073	130441	0.509	0-250	134	0.2277	4093054	0.096

Bering shelf survey, 1986, IPHC Area 4E, 10703442 hectares, 78 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	61	0.1898	2031942	0.299	100-109	1	0.0029	30971	1.000
20-29	58	0.1818	1945434	0.289	110-119	1	0.0028	29594	1.000
30-39	14	0.0432	462768	0.286	120-129	0	0.0000	0	0.000
40-49	86	0.2567	2747309	0.122	130-139	0	0.0000	0	0.000
50-59	37	0.1105	1182487	0.169	140-149	0	0.0000	0	0.000
60-69	34	0.1016	1087768	0.187	150-250	0	0.0000	0	0.000
70-79	27	0.0804	860402	0.196	0-64	276	0.8409	9000648	0.104
80-89	14	0.0439	470413	0.268	65-250	68	0.2049	2192789	0.130
90-99	11	0.0322	344349	0.392	0-250	344	1.0458	11193437	0.088

Bering shelf survey, 1986, IPHC Closed Area, 11526784 hectares, 84 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	7	0.0207	238847	0.429	100-109	2	0.0054	61873	0.707
20-29	5	0.0138	159103	0.541	110-119	0	0.0000	0	0.000
30-39	7	0.0192	221499	0.378	120-129	0	0.0000	0	0.000
40-49	24	0.0641	739153	0.227	130-139	1	0.0025	28923	1.000
50-59	46	0.1265	1457879	0.147	140-149	0	0.0000	0	0.000
60-69	73	0.1935	2229881	0.127	150-250	0	0.0000	0	0.000
70-79	53	0.1388	1600074	0.155	0-64	132	0.3590	4137584	0.094
80-89	23	0.0629	724872	0.207	65-250	119	0.3157	3638991	0.098
90-99	10	0.0273	314471	0.345	0-250	251	0.6747	7776575	0.068

Bering shelf survey, 1986, All IPHC areas, 44597676 hectares, 325 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	68	0.0509	2270789	0.272	100-109	4	0.0027	122086	0.500
20-29	64	0.0478	2133480	0.267	110-119	3	0.0020	87687	0.577
30-39	28	0.0201	896034	0.202	120-129	1	0.0007	29452	1.000
40-49	144	0.1007	4493067	0.097	130-139	2	0.0013	57583	0.707
50-59	142	0.0991	4420584	0.094	140-149	0	0.0000	0	0.000
60-69	183	0.1266	5648107	0.084	150-250	0	0.0000	0	0.000
70-79	124	0.0849	3784890	0.096	0-64	550	0.3905	17417114	0.063
80-89	59	0.0412	1837442	0.131	65-250	305	0.2105	9388820	0.063
90-99	33	0.0230	1024733	0.203	0-250	855	0.6011	26805934	0.047

Bering shelf survey, 1987, IPHC Area 4A (part), 1125493 hectares, 8 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0546	61465	0.707
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	2	0.0582	65496	0.708	150-250	0	0.0000	0	0.000
70-79	1	0.0265	29845	1.000	0-64	1	0.0281	31620	1.000
80-89	3	0.0824	92749	0.548	65-250	9	0.2390	269037	0.329
90-99	2	0.0454	51102	0.707	0-250	10	0.2671	300657	0.312

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1987, IPHC Area 4C, 3657854 hectares, 26 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0111	40497	1.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	12	0.1335	488489	0.401	120-129	1	0.0111	40497	1.000
40-49	32	0.3129	1144675	0.239	130-139	2	0.0221	80994	0.707
50-59	18	0.1620	592399	0.275	140-149	0	0.0000	0	0.000
60-69	20	0.1848	676087	0.229	150-250	1	0.0084	30635	1.000
70-79	10	0.0849	310720	0.338	0-64	69	0.6735	2463419	0.156
80-89	9	0.0737	269467	0.328	65-250	41	0.3702	1353998	0.161
90-99	4	0.0391	142957	0.500	0-250	110	1.0436	3817417	0.116

Bering shelf survey, 1987, IPHC Area 4D, 17726521 hectares, 126 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0064	113385	0.501
20-29	0	0.0000	0	0.000	110-119	1	0.0017	29979	1.000
30-39	10	0.0176	311834	0.315	120-129	0	0.0000	0	0.000
40-49	8	0.0139	246195	0.353	130-139	0	0.0000	0	0.000
50-59	30	0.0524	928912	0.214	140-149	0	0.0000	0	0.000
60-69	32	0.0569	1009463	0.194	150-250	0	0.0000	0	0.000
70-79	32	0.0551	976120	0.192	0-64	66	0.1168	2070569	0.134
80-89	17	0.0282	500028	0.257	65-250	70	0.1188	2105744	0.131
90-99	2	0.0034	60397	0.707	0-250	136	0.2356	4176313	0.094

Bering shelf survey, 1987, IPHC Area 4E, 10270127 hectares, 73 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0032	33169	1.000	100-109	3	0.0087	89278	0.584
20-29	26	0.0766	786865	0.232	110-119	4	0.0116	119074	0.497
30-39	102	0.3106	3189650	0.125	120-129	0	0.0000	0	0.000
40-49	22	0.0665	683424	0.221	130-139	0	0.0000	0	0.000
50-59	34	0.1033	1060750	0.179	140-149	0	0.0000	0	0.000
60-69	27	0.0802	824046	0.200	150-250	0	0.0000	0	0.000
70-79	24	0.0699	717884	0.202	0-64	198	0.5998	6159700	0.084
80-89	12	0.0354	363427	0.288	65-250	63	0.1841	1890726	0.125
90-99	6	0.0178	182859	0.409	0-250	261	0.7839	8050426	0.071

Bering shelf survey, 1987, IPHC Closed Area, 11536307 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	3	0.0080	92293	0.743	100-109	4	0.0103	119227	0.502
20-29	4	0.0106	122261	0.791	110-119	2	0.0049	57021	0.708
30-39	38	0.1075	1240521	0.194	120-129	1	0.0024	27602	1.000
40-49	17	0.0490	565601	0.245	130-139	0	0.0000	0	0.000
50-59	41	0.1305	1505379	0.199	140-149	0	0.0000	0	0.000
60-69	52	0.1440	1661613	0.158	150-250	0	0.0000	0	0.000
70-79	43	0.1142	1317715	0.153	0-64	122	0.3654	4215072	0.109
80-89	21	0.0580	668934	0.230	65-250	119	0.3113	3591520	0.096
90-99	15	0.0371	428425	0.256	0-250	241	0.6767	7806592	0.074

Bering shelf survey, 1987, All IPHC areas, 44597675 hectares, 317 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	4	0.0028	125462	0.607	100-109	15	0.0101	451750	0.260
20-29	30	0.0204	909126	0.227	110-119	7	0.0046	206074	0.377
30-39	162	0.1173	5230494	0.099	120-129	3	0.0023	102275	0.584
40-49	79	0.0592	2639895	0.134	130-139	2	0.0018	80994	0.707
50-59	123	0.0917	4087440	0.107	140-149	0	0.0000	0	0.000
60-69	133	0.0950	4236705	0.095	150-250	1	0.0007	30635	1.000
70-79	110	0.0752	3352284	0.098	0-64	456	0.3350	14940380	0.056
80-89	62	0.0425	1894605	0.131	65-250	305	0.2087	9307275	0.060
90-99	30	0.0202	899916	0.183	0-250	761	0.5437	24247655	0.042

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1988, IPHC Area 4A (part), 841466 hectares, 6 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0403	33905	1.000
20-29	0	0.0000	0	0.000	110-119	1	0.0300	25283	1.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	4	0.1506	126723	0.506	150-250	0	0.0000	0	0.000
70-79	3	0.1209	101715	0.577	0-64	1	0.0344	28944	1.000
80-89	10	0.3373	283852	0.342	65-250	20	0.7192	605164	0.231
90-99	2	0.0744	62630	0.650	0-250	21	0.7536	634108	0.225

Bering shelf survey, 1988, IPHC Area 4C, 3786595 hectares, 27 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0095	36093	1.000	100-109	2	0.0186	70521	0.707
20-29	5	0.0542	205144	0.529	110-119	2	0.0237	89793	0.727
30-39	3	0.0325	123086	0.745	120-129	0	0.0000	0	0.000
40-49	11	0.1047	396516	0.336	130-139	0	0.0000	0	0.000
50-59	30	0.2747	1040125	0.219	140-149	0	0.0000	0	0.000
60-69	28	0.2579	976577	0.222	150-250	0	0.0000	0	0.000
70-79	25	0.2454	929355	0.225	0-64	64	0.5981	2264804	0.147
80-89	8	0.0810	306688	0.354	65-250	59	0.5890	2230284	0.146
90-99	8	0.0848	321190	0.393	0-250	123	1.1871	4495088	0.103

Bering shelf survey, 1988, IPHC Area 4D, 17670777 hectares, 126 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0072	127679	0.502
20-29	2	0.0040	70264	0.709	110-119	1	0.0020	34904	1.000
30-39	4	0.0076	133731	0.502	120-129	1	0.0021	37972	1.000
40-49	18	0.0367	647989	0.284	130-139	1	0.0018	31499	1.000
50-59	16	0.0317	560651	0.267	140-149	2	0.0037	65621	0.719
60-69	21	0.0433	764469	0.230	150-250	1	0.0020	36192	1.000
70-79	26	0.0530	936432	0.205	0-64	50	0.1011	1785750	0.158
80-89	7	0.0143	252333	0.379	65-250	64	0.1288	2275858	0.128
90-99	10	0.0205	361872	0.323	0-250	114	0.2298	4061608	0.100

Bering shelf survey, 1988, IPHC Area 4E, 11079297 hectares, 79 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	20	0.0678	751592	0.268	100-109	3	0.0096	105955	0.583
20-29	41	0.1289	1427940	0.194	110-119	2	0.0062	69224	0.715
30-39	43	0.1383	1531774	0.208	120-129	0	0.0000	0	0.000
40-49	74	0.2591	2870522	0.134	130-139	0	0.0000	0	0.000
50-59	19	0.0707	782858	0.283	140-149	0	0.0000	0	0.000
60-69	36	0.1217	1348518	0.207	150-250	1	0.0023	25222	1.000
70-79	12	0.0383	424310	0.290	0-64	208	0.7050	7810566	0.086
80-89	10	0.0309	342780	0.317	65-250	58	0.1857	2057593	0.143
90-99	5	0.0169	187464	0.454	0-250	266	0.8907	9868159	0.074

Bering shelf survey, 1988, IPHC Closed Area, 11219541 hectares, 80 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0035	39123	1.000	100-109	5	0.0139	156042	0.454
20-29	0	0.0000	0	0.000	110-119	2	0.0047	52323	0.707
30-39	11	0.0342	383404	0.303	120-129	3	0.0076	85127	0.588
40-49	57	0.1801	2020527	0.144	130-139	0	0.0000	0	0.000
50-59	26	0.0816	915942	0.204	140-149	1	0.0035	39553	1.000
60-69	37	0.1108	1243256	0.218	150-250	1	0.0033	36845	1.000
70-79	54	0.1475	1654521	0.149	0-64	111	0.3477	3901041	0.108
80-89	32	0.0907	1017516	0.263	65-250	133	0.3726	4180807	0.104
90-99	14	0.0390	437669	0.281	0-250	244	0.7203	8081848	0.075

Swept-area estimates of halibut abundance from NMFS trawl surveys.

"#Fish" is the actual number of fish caught on the survey. "Abundance" is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1988, All IPHC areas, 44597676 hectares, 318 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	22	0.0185	826808	0.252	100-109	15	0.0111	494102	0.261
20-29	48	0.0382	1703348	0.177	110-119	8	0.0061	271527	0.367
30-39	61	0.0487	2171995	0.165	120-129	4	0.0028	123099	0.510
40-49	160	0.1331	5935554	0.090	130-139	1	0.0007	31499	1.000
50-59	91	0.0740	3299576	0.121	140-149	3	0.0024	105174	0.585
60-69	126	0.1000	4459543	0.108	150-250	3	0.0022	98259	0.585
70-79	120	0.0907	4046333	0.099	0-64	434	0.3541	15791105	0.057
80-89	67	0.0494	2203169	0.153	65-250	334	0.2545	11349706	0.061
90-99	39	0.0307	1370825	0.169	0-250	768	0.6086	27140811	0.042

Bering shelf survey, 1989, IPHC Area 4A (part), 1061849 hectares, 8 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0253	26911	1.000
20-29	0	0.0000	0	0.000	110-119	3	0.0758	80450	0.577
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	1	0.0299	31745	1.000
50-59	1	0.0276	29306	1.000	140-149	0	0.0000	0	0.000
60-69	3	0.0897	95235	0.577	150-250	1	0.0276	29306	1.000
70-79	5	0.1385	147024	0.448	0-64	3	0.0874	92796	0.578
80-89	5	0.1285	136399	0.434	65-250	21	0.5681	603186	0.218
90-99	4	0.1126	119606	0.503	0-250	24	0.6554	695982	0.204

Bering shelf survey, 1989, IPHC Area 4C, 3318279 hectares, 25 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0083	27528	1.000	100-109	7	0.0641	212765	0.387
20-29	1	0.0083	27528	1.000	110-119	1	0.0083	27528	1.000
30-39	14	0.1160	385018	0.413	120-129	0	0.0000	0	0.000
40-49	20	0.1692	561566	0.330	130-139	0	0.0000	0	0.000
50-59	24	0.2120	703568	0.267	140-149	2	0.0166	55056	0.707
60-69	13	0.1304	432674	0.301	150-250	0	0.0000	0	0.000
70-79	7	0.0596	197809	0.377	0-64	69	0.5927	1966584	0.165
80-89	3	0.0305	101369	0.603	65-250	25	0.2386	791691	0.209
90-99	1	0.0078	25866	1.000	0-250	94	0.8312	2758275	0.132

Bering shelf survey, 1989, IPHC Area 4D, 18449634 hectares, 139 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0017	31094	1.000	100-109	5	0.0078	144113	0.448
20-29	5	0.0081	149958	0.447	110-119	2	0.0038	70366	0.717
30-39	10	0.0164	302876	0.347	120-129	0	0.0000	0	0.000
40-49	35	0.0579	1067621	0.274	130-139	1	0.0016	28681	1.000
50-59	32	0.0516	951108	0.187	140-149	0	0.0000	0	0.000
60-69	15	0.0262	483464	0.264	150-250	1	0.0017	31003	1.000
70-79	21	0.0390	719413	0.252	0-64	89	0.1457	2687367	0.139
80-89	5	0.0084	155446	0.455	65-250	51	0.0900	1659971	0.151
90-99	7	0.0115	212195	0.383	0-250	140	0.2356	4347338	0.104

Bering shelf survey, 1989, IPHC Area 4E, 10883957 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	239	0.7228	7866622	0.214	100-109	3	0.0077	84341	0.576
20-29	166	0.4772	5193659	0.172	110-119	1	0.0025	27321	1.000
30-39	26	0.0733	797628	0.196	120-129	1	0.0028	30475	1.000
40-49	32	0.0898	977173	0.190	130-139	2	0.0056	60609	0.709
50-59	39	0.1111	1209736	0.167	140-149	0	0.0000	0	0.000
60-69	32	0.0927	1009474	0.192	150-250	0	0.0000	0	0.000
70-79	6	0.0161	174689	0.409	0-64	526	1.5433	16797002	0.116
80-89	9	0.0235	256283	0.332	65-250	37	0.0999	1086768	0.165
90-99	7	0.0180	195760	0.377	0-250	563	1.6431	17883770	0.109

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual estimate number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1989, IPHC Closed Area, 10883957 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	6	0.0159	172526	0.629	100-109	4	0.0104	113120	0.498
20-29	23	0.0604	657267	0.266	110-119	4	0.0101	109866	0.501
30-39	35	0.0920	1001255	0.180	120-129	2	0.0051	55567	0.707
40-49	30	0.0768	835808	0.209	130-139	0	0.0000	0	0.000
50-59	74	0.1912	2081286	0.141	140-149	0	0.0000	0	0.000
60-69	40	0.1026	1117158	0.252	150-250	0	0.0000	0	0.000
70-79	21	0.0544	592592	0.217	0-64	184	0.4779	5201072	0.087
80-89	24	0.0632	688252	0.240	65-250	90	0.2322	2527525	0.141
90-99	11	0.0279	303900	0.321	0-250	274	0.7101	7728597	0.075

Bering shelf survey, 1989, All IPHC areas, 44597676 hectares, 336 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	247	0.1816	8097770	0.208	100-109	20	0.0130	581250	0.226
20-29	195	0.1352	6028412	0.151	110-119	11	0.0071	315531	0.304
30-39	85	0.0558	2486777	0.123	120-129	3	0.0019	86042	0.578
40-49	117	0.0772	3442168	0.125	130-139	4	0.0027	121035	0.501
50-59	170	0.1116	4975004	0.089	140-149	2	0.0012	55056	0.707
60-69	103	0.0704	3138005	0.125	150-250	2	0.0014	60309	0.707
70-79	60	0.0411	1831527	0.138	0-64	871	0.5997	26744821	0.077
80-89	46	0.0300	1337749	0.162	65-250	224	0.1495	6669141	0.077
90-99	30	0.0192	857327	0.188	0-250	1095	0.7492	33413962	0.063

Bering shelf survey, 1990, IPHC Area 4A (part), 1118437 hectares, 8 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	17	0.5044	564191	0.377	120-129	0	0.0000	0	0.000
40-49	9	0.2671	298689	0.484	130-139	0	0.0000	0	0.000
50-59	4	0.1187	132751	0.612	140-149	0	0.0000	0	0.000
60-69	2	0.0593	66376	0.707	150-250	1	0.0249	27899	1.000
70-79	3	0.0843	94275	0.579	0-64	32	0.9495	1062007	0.258
80-89	1	0.0238	26565	1.000	65-250	8	0.2165	242095	0.349
90-99	3	0.0835	93356	0.554	0-250	40	1.1660	1304102	0.220

Bering shelf survey, 1990, IPHC Area 4C, 3495116 hectares, 25 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0406	141774	0.506
20-29	0	0.0000	0	0.000	110-119	1	0.0081	28368	1.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	9	0.0823	287667	0.446	130-139	0	0.0000	0	0.000
50-59	14	0.1262	440924	0.342	140-149	0	0.0000	0	0.000
60-69	12	0.1059	370098	0.328	150-250	0	0.0000	0	0.000
70-79	7	0.0778	271792	0.388	0-64	29	0.2608	911382	0.231
80-89	7	0.0723	252819	0.385	65-250	27	0.2709	946880	0.206
90-99	2	0.0185	64820	0.707	0-250	56	0.5317	1858262	0.155

Bering shelf survey, 1990, IPHC Area 4D, 17894992 hectares, 128 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	3	0.0061	108909	0.608
20-29	2	0.0031	56322	0.707	110-119	2	0.0065	116551	0.708
30-39	2	0.0033	58850	0.708	120-129	2	0.0050	89126	0.709
40-49	7	0.0146	261128	0.389	130-139	1	0.0027	48928	1.000
50-59	8	0.0167	298754	0.370	140-149	1	0.0018	31456	1.000
60-69	18	0.0364	650830	0.244	150-250	1	0.0017	30498	1.000
70-79	15	0.0333	596397	0.264	0-64	27	0.0535	958110	0.200
80-89	7	0.0165	294413	0.387	65-250	48	0.1059	1895823	0.148
90-99	6	0.0118	211771	0.411	0-250	75	0.1595	2853933	0.119

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1990, IPHC Area 4E, 10625152 hectares, 76 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	33	0.1096	1164787	0.284	100-109	2	0.0079	83636	0.716
20-29	336	1.1176	11875059	0.106	110-119	1	0.0029	30601	1.000
30-39	353	1.2061	12815221	0.121	120-129	3	0.0085	89929	0.578
40-49	43	0.1350	1434719	0.167	130-139	0	0.0000	0	0.000
50-59	25	0.0794	843396	0.260	140-149	0	0.0000	0	0.000
60-69	40	0.1255	1333674	0.154	150-250	0	0.0000	0	0.000
70-79	15	0.0450	478369	0.256	0-64	808	2.7024	28713516	0.072
80-89	7	0.0210	222953	0.377	65-250	56	0.1777	1888416	0.140
90-99	6	0.0216	229588	0.557	0-250	864	2.8801	30601932	0.068

Bering shelf survey, 1990, IPHC Closed Area, 11463979 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0026	29726	1.000	100-109	2	0.0050	57192	0.708
20-29	77	0.2052	2352372	0.186	110-119	3	0.0083	94709	0.577
30-39	212	0.5607	6427368	0.144	120-129	0	0.0000	0	0.000
40-49	39	0.1050	1203436	0.172	130-139	0	0.0000	0	0.000
50-59	24	0.0641	735018	0.210	140-149	0	0.0000	0	0.000
60-69	28	0.0766	878549	0.186	150-250	0	0.0000	0	0.000
70-79	25	0.0700	803021	0.212	0-64	365	0.9710	11132051	0.096
80-89	34	0.0905	1037881	0.179	65-250	93	0.2531	2901636	0.106
90-99	13	0.0361	414415	0.275	0-250	458	1.2242	14033687	0.079

Bering shelf survey, 1990, All IPHC areas, 44597676 hectares, 319 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	34	0.0268	1194513	0.278	100-109	11	0.0088	391511	0.310
20-29	415	0.3203	14283753	0.093	110-119	7	0.0061	270229	0.397
30-39	584	0.4454	19865630	0.092	120-129	5	0.0040	179055	0.457
40-49	107	0.0782	3485639	0.111	130-139	1	0.0011	48928	1.000
50-59	75	0.0550	2450843	0.137	140-149	1	0.0007	31456	1.000
60-69	100	0.0740	3299527	0.101	150-250	2	0.0013	58397	0.708
70-79	65	0.0503	2243854	0.128	0-64	1261	0.9592	42777066	0.055
80-89	56	0.0411	1834631	0.139	65-250	232	0.1766	7874850	0.068
90-99	30	0.0227	1013950	0.201	0-250	1493	1.1358	50651916	0.048

Bering shelf survey, 1991, IPHC Area 4A (part), 951780 hectares, 7 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	1	0.0302	28736	1.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	1	0.0324	30831	1.000	150-250	0	0.0000	0	0.000
70-79	1	0.0324	30831	1.000	0-64	0	0.0000	0	0.000
80-89	3	0.0834	79348	0.578	65-250	9	0.2652	252443	0.334
90-99	3	0.0869	82697	0.579	0-250	9	0.2652	252443	0.334

Bering shelf survey, 1991, IPHC Area 4C, 3399213 hectares, 25 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0484	164403	0.651
20-29	1	0.0138	46910	1.000	110-119	1	0.0138	46910	1.000
30-39	74	1.0124	3441312	0.334	120-129	0	0.0000	0	0.000
40-49	86	1.1518	3915140	0.319	130-139	0	0.0000	0	0.000
50-59	9	0.1134	385524	0.425	140-149	0	0.0000	0	0.000
60-69	7	0.0893	303542	0.444	150-250	0	0.0000	0	0.000
70-79	15	0.1493	507442	0.317	0-64	175	2.3519	7994545	0.214
80-89	3	0.0372	126552	0.745	65-250	28	0.3161	1074399	0.226
90-99	3	0.0386	131209	0.580	0-250	203	2.6680	9068944	0.191

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1991, IPHC Area 4D, 18355751 hectares, 135 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	9	0.0129	236818	0.478	100-109	7	0.0124	226948	0.392
20-29	2	0.0033	61368	0.707	110-119	4	0.0067	122785	0.510
30-39	36	0.0602	1104983	0.209	120-129	0	0.0000	0	0.000
40-49	81	0.1371	2515967	0.132	130-139	0	0.0000	0	0.000
50-59	19	0.0296	543996	0.245	140-149	0	0.0000	0	0.000
60-69	6	0.0087	159652	0.408	150-250	0	0.0000	0	0.000
70-79	8	0.0117	215494	0.354	0-64	150	0.2475	4542736	0.098
80-89	5	0.0081	148869	0.451	65-250	31	0.0495	908469	0.183
90-99	4	0.0062	114325	0.501	0-250	181	0.2970	5451205	0.087

Bering shelf survey, 1991, IPHC Area 4E, 10741513 hectares, 79 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	72	0.2103	2258582	0.189	100-109	8	0.0242	259734	0.353
20-29	41	0.1195	1283675	0.198	110-119	1	0.0026	28255	1.000
30-39	470	1.3845	14871361	0.094	120-129	0	0.0000	0	0.000
40-49	537	1.6021	17209480	0.096	130-139	0	0.0000	0	0.000
50-59	56	0.1599	1717034	0.145	140-149	1	0.0026	28342	1.000
60-69	21	0.0601	645844	0.228	150-250	0	0.0000	0	0.000
70-79	39	0.1106	1188528	0.283	0-64	1191	3.5192	37801560	0.059
80-89	26	0.0747	802444	0.201	65-250	89	0.2540	2727950	0.147
90-99	8	0.0220	236231	0.353	0-250	1280	3.7732	40529510	0.056

Bering shelf survey, 1991, IPHC Closed Area, 11149419 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	5	0.0119	132311	0.450
20-29	15	0.0380	423707	0.336	110-119	6	0.0131	146057	0.553
30-39	150	0.3865	4309141	0.133	120-129	1	0.0025	27787	1.000
40-49	126	0.3262	3637373	0.127	130-139	2	0.0050	55601	0.703
50-59	25	0.0642	716272	0.208	140-149	0	0.0000	0	0.000
60-69	26	0.0630	702899	0.268	150-250	0	0.0000	0	0.000
70-79	28	0.0746	831508	0.215	0-64	327	0.8392	9356283	0.083
80-89	24	0.0554	617653	0.338	65-250	86	0.2133	2378664	0.137
90-99	5	0.0121	134638	0.444	0-250	413	1.0525	11734947	0.072

Bering shelf survey, 1991, All IPHC areas, 44597676 hectares, 328 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	81	0.0560	2495400	0.177	100-109	24	0.0176	783396	0.226
20-29	59	0.0407	1815660	0.164	110-119	13	0.0084	372743	0.320
30-39	730	0.5320	23726797	0.081	120-129	1	0.0006	27787	1.000
40-49	830	0.6116	27277960	0.079	130-139	2	0.0012	55601	0.703
50-59	109	0.0754	3362826	0.107	140-149	1	0.0006	28342	1.000
60-69	61	0.0413	1842768	0.154	150-250	0	0.0000	0	0.000
70-79	91	0.0622	2773803	0.152	0-64	1843	1.3385	59695124	0.050
80-89	61	0.0398	1774866	0.164	65-250	243	0.1646	7341925	0.082
90-99	23	0.0157	699100	0.212	0-250	2086	1.5032	67037049	0.045

Bering shelf survey, 1992, IPHC Area 4A (part), 1290608 hectares, 9 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0336	43401	1.000
20-29	0	0.0000	0	0.000	110-119	1	0.0210	27149	1.000
30-39	2	0.0459	59242	1.000	120-129	0	0.0000	0	0.000
40-49	38	0.8721	1125598	0.355	130-139	0	0.0000	0	0.000
50-59	4	0.0918	118484	0.500	140-149	0	0.0000	0	0.000
60-69	13	0.2984	385073	0.468	150-250	0	0.0000	0	0.000
70-79	9	0.2042	263588	0.481	0-64	47	1.0787	1392187	0.296
80-89	2	0.0566	73022	0.720	65-250	26	0.6224	803228	0.291
90-99	3	0.0774	99858	0.591	0-250	73	1.7011	2195415	0.216

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1992, IPHC Area 4C, 4015225 hectares, 28 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0075	30214	1.000
20-29	2	0.0150	60428	0.707	110-119	0	0.0000	0	0.000
30-39	12	0.0976	391947	0.380	120-129	0	0.0000	0	0.000
40-49	74	0.6269	2517029	0.225	130-139	1	0.0078	31153	1.000
50-59	33	0.3041	1220954	0.236	140-149	0	0.0000	0	0.000
60-69	5	0.0512	205778	0.448	150-250	0	0.0000	0	0.000
70-79	3	0.0308	123751	0.578	0-64	123	1.0629	4267861	0.154
80-89	4	0.0362	145304	0.502	65-250	14	0.1337	536782	0.269
90-99	2	0.0194	78085	0.707	0-250	137	1.1966	4804643	0.140

Bering shelf survey, 1992, IPHC Area 4D, 17064706 hectares, 119 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	5	0.0088	150177	0.452
20-29	8	0.0144	246561	0.354	110-119	1	0.0016	27050	1.000
30-39	9	0.0156	265684	0.333	120-129	3	0.0058	99117	0.591
40-49	77	0.1468	2504873	0.128	130-139	0	0.0000	0	0.000
50-59	67	0.1215	2073250	0.146	140-149	0	0.0000	0	0.000
60-69	20	0.0341	582459	0.224	150-250	0	0.0000	0	0.000
70-79	12	0.0205	349437	0.290	0-64	170	0.3140	5358492	0.087
80-89	9	0.0151	257549	0.337	65-250	49	0.0863	1472731	0.145
90-99	8	0.0161	275066	0.367	0-250	219	0.4003	6831223	0.075

Bering shelf survey, 1992, IPHC Area 4E, 10468265 hectares, 73 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0060	63203	0.703	100-109	2	0.0064	66697	0.707
20-29	41	0.1402	1467549	0.280	110-119	1	0.0028	28898	1.000
30-39	47	0.1544	1615981	0.152	120-129	1	0.0029	30653	1.000
40-49	206	0.6664	6975692	0.082	130-139	0	0.0000	0	0.000
50-59	168	0.5435	5689598	0.090	140-149	0	0.0000	0	0.000
60-69	15	0.0494	516613	0.272	150-250	0	0.0000	0	0.000
70-79	5	0.0182	190148	0.517	0-64	473	1.5395	16116373	0.057
80-89	7	0.0228	238159	0.377	65-250	32	0.1046	1094958	0.187
90-99	10	0.0313	328140	0.344	0-250	505	1.6441	17211331	0.054

Bering shelf survey, 1992, IPHC Closed Area, 11758873 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0103	121538	0.503
20-29	1	0.0027	32117	1.000	110-119	1	0.0026	30914	1.000
30-39	34	0.0985	1158318	0.216	120-129	2	0.0072	84982	0.751
40-49	161	0.4600	5409566	0.105	130-139	0	0.0000	0	0.000
50-59	103	0.2966	3487845	0.124	140-149	0	0.0000	0	0.000
60-69	26	0.0683	802843	0.203	150-250	0	0.0000	0	0.000
70-79	18	0.0459	539275	0.234	0-64	312	0.8909	10476104	0.073
80-89	24	0.0700	823501	0.218	65-250	76	0.2114	2486277	0.119
90-99	14	0.0401	471482	0.274	0-250	388	1.1023	12962381	0.063

Bering shelf survey, 1992, All IPHC areas, 44597677 hectares, 311 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0014	63203	0.703	100-109	13	0.0092	412027	0.281
20-29	52	0.0405	1806655	0.234	110-119	4	0.0026	114011	0.501
30-39	104	0.0783	3491172	0.113	120-129	6	0.0048	214752	0.428
40-49	556	0.4156	18532758	0.060	130-139	1	0.0007	31153	1.000
50-59	375	0.2823	12590131	0.063	140-149	0	0.0000	0	0.000
60-69	79	0.0559	2492766	0.130	150-250	0	0.0000	0	0.000
70-79	47	0.0329	1466199	0.163	0-64	1125	0.8433	37611017	0.040
80-89	46	0.0345	1537535	0.154	65-250	197	0.1434	6393976	0.078
90-99	37	0.0281	1252631	0.172	0-250	1322	0.9867	44004993	0.036

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1993, IPHC Area 4A (part), 1087748 hectares, 8 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0181	19699	1.000
20-29	0	0.0000	0	0.000	110-119	1	0.0181	19699	1.000
30-39	1	0.0244	26575	1.000	120-129	1	0.0243	26481	1.000
40-49	11	0.2687	292328	0.417	130-139	0	0.0000	0	0.000
50-59	3	0.0733	79726	0.745	140-149	0	0.0000	0	0.000
60-69	3	0.0733	79725	0.577	150-250	0	0.0000	0	0.000
70-79	3	0.0756	82277	0.578	0-64	17	0.4153	451779	0.317
80-89	6	0.1488	161889	0.398	65-250	21	0.4880	530805	0.217
90-99	8	0.1785	194185	0.351	0-250	38	0.9033	982584	0.187

Bering shelf survey, 1993, IPHC Area 4C, 3399213 hectares, 25 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	3	0.0243	82718	0.573
20-29	0	0.0000	0	0.000	110-119	3	0.0244	83046	0.768
30-39	7	0.0668	227128	0.524	120-129	1	0.0079	26781	1.000
40-49	17	0.1595	542248	0.301	130-139	1	0.0092	31112	1.000
50-59	43	0.3529	1199562	0.200	140-149	0	0.0000	0	0.000
60-69	38	0.3129	1063549	0.237	150-250	0	0.0000	0	0.000
70-79	15	0.1170	397697	0.364	0-64	88	0.7596	2581877	0.137
80-89	5	0.0409	139196	0.447	65-250	54	0.4231	1438198	0.199
90-99	9	0.0668	227038	0.496	0-250	142	1.1826	4020075	0.113

Bering shelf survey, 1993, IPHC Area 4D, 18491719 hectares, 136 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	8	0.0117	215912	0.353
20-29	2	0.0028	52111	0.708	110-119	10	0.0144	266746	0.317
30-39	98	0.1443	2668322	0.177	120-129	7	0.0103	190600	0.379
40-49	90	0.1333	2464942	0.182	130-139	3	0.0043	79274	0.578
50-59	231	0.3393	6274003	0.130	140-149	1	0.0013	23250	1.000
60-69	85	0.1193	2206409	0.135	150-250	0	0.0000	0	0.000
70-79	28	0.0402	743080	0.190	0-64	478	0.6997	12938753	0.083
80-89	23	0.0322	595261	0.208	65-250	126	0.1788	3306850	0.092
90-99	18	0.0252	465693	0.248	0-250	604	0.8785	16245603	0.069

Bering shelf survey, 1993, IPHC Area 4E, 10333608 hectares, 76 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0034	34824	1.000	100-109	11	0.0294	304160	0.301
20-29	10	0.0269	277928	0.340	110-119	0	0.0000	0	0.000
30-39	81	0.2186	2258870	0.178	120-129	0	0.0000	0	0.000
40-49	132	0.3518	3635770	0.118	130-139	2	0.0051	52694	0.708
50-59	382	1.0590	10943644	0.083	140-149	2	0.0060	61979	0.709
60-69	179	0.5045	5213680	0.121	150-250	0	0.0000	0	0.000
70-79	23	0.0639	660571	0.282	0-64	729	2.0083	20752612	0.059
80-89	17	0.0459	473917	0.268	65-250	121	0.3336	3447212	0.105
90-99	10	0.0273	281787	0.315	0-250	850	2.3419	24199824	0.053

Bering shelf survey, 1993, IPHC Closed Area, 11285387 hectares, 83 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0040	45248	0.707	100-109	8	0.0218	245935	0.367
20-29	2	0.0045	50338	0.703	110-119	1	0.0024	26551	1.000
30-39	13	0.0363	409765	0.476	120-129	1	0.0023	26234	1.000
40-49	57	0.1618	1826536	0.187	130-139	4	0.0096	107892	0.502
50-59	90	0.2223	2509066	0.135	140-149	0	0.0000	0	0.000
60-69	39	0.1035	1168169	0.222	150-250	0	0.0000	0	0.000
70-79	15	0.0375	423242	0.263	0-64	181	0.4794	5410520	0.101
80-89	27	0.0712	804061	0.211	65-250	91	0.2299	2594573	0.123
90-99	13	0.0321	362056	0.285	0-250	272	0.7093	8005093	0.079

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1993, All IPHC areas, 44597675 hectares, 328 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	3	0.0018	80072	0.591	100-109	31	0.0195	868424	0.182
20-29	14	0.0085	380377	0.283	110-119	15	0.0089	396042	0.280
30-39	200	0.1254	5590660	0.118	120-129	10	0.0061	270096	0.317
40-49	307	0.1965	8761824	0.084	130-139	10	0.0061	270972	0.317
50-59	749	0.4710	21006001	0.061	140-149	3	0.0019	85229	0.583
60-69	344	0.2182	9731532	0.081	150-250	0	0.0000	0	0.000
70-79	84	0.0517	2306867	0.130	0-64	1493	0.9448	42135541	0.042
80-89	78	0.0488	2174324	0.120	65-250	413	0.2538	11317638	0.057
90-99	58	0.0343	1530759	0.145	0-250	1906	1.1986	53453179	0.035

Bering shelf survey, 1994, IPHC Area 4A (part), 1347362 hectares, 10 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0199	26762	1.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	2	0.0430	57923	0.710	130-139	0	0.0000	0	0.000
50-59	12	0.2780	374630	0.491	140-149	0	0.0000	0	0.000
60-69	7	0.1530	206177	0.426	150-250	0	0.0000	0	0.000
70-79	11	0.2351	316819	0.343	0-64	20	0.4506	607059	0.338
80-89	9	0.1849	249157	0.316	65-250	23	0.4841	652215	0.220
90-99	1	0.0206	27806	1.000	0-250	43	0.9346	1259274	0.199

Bering shelf survey, 1994, IPHC Area 4C, 3233668 hectares, 24 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0174	56184	0.694
20-29	0	0.0000	0	0.000	110-119	1	0.0091	29499	1.000
30-39	6	0.0656	212290	0.624	120-129	3	0.0308	99559	0.767
40-49	84	0.8787	2841530	0.254	130-139	1	0.0088	28462	1.000
50-59	103	1.0437	3375080	0.175	140-149	0	0.0000	0	0.000
60-69	66	0.6427	2078422	0.171	150-250	0	0.0000	0	0.000
70-79	22	0.2074	670587	0.216	0-64	232	2.3805	7697598	0.129
80-89	8	0.0723	233905	0.474	65-250	64	0.5962	1927920	0.136
90-99	0	0.0000	0	0.000	0-250	296	2.9767	9625518	0.107

Bering shelf survey, 1994, IPHC Area 4D, 18324121 hectares, 136 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	8	0.0122	223047	0.354	100-109	7	0.0109	200303	0.378
20-29	3	0.0046	84130	0.578	110-119	7	0.0107	195996	0.378
30-39	6	0.0093	170108	0.565	120-129	5	0.0076	139609	0.447
40-49	59	0.0953	1747012	0.160	130-139	0	0.0000	0	0.000
50-59	76	0.1170	2143786	0.126	140-149	0	0.0000	0	0.000
60-69	110	0.1683	3083700	0.108	150-250	1	0.0016	28615	1.000
70-79	34	0.0514	941229	0.179	0-64	209	0.3254	5963406	0.080
80-89	17	0.0261	477522	0.256	65-250	133	0.2026	3713142	0.093
90-99	9	0.0132	241491	0.365	0-250	342	0.5281	9676548	0.061

Bering shelf survey, 1994, IPHC Area 4E, 10509422 hectares, 78 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0029	30945	1.000	100-109	1	0.0025	26492	1.000
20-29	38	0.1161	1219839	0.257	110-119	1	0.0026	27383	1.000
30-39	23	0.0688	722966	0.257	120-129	4	0.0114	119297	0.496
40-49	94	0.2732	2871550	0.114	130-139	0	0.0000	0	0.000
50-59	155	0.4512	4741714	0.092	140-149	0	0.0000	0	0.000
60-69	208	0.6135	6447213	0.085	150-250	0	0.0000	0	0.000
70-79	70	0.2086	2192429	0.132	0-64	432	1.2706	13353791	0.059
80-89	7	0.0204	214735	0.377	65-250	175	0.5151	5413669	0.084
90-99	5	0.0145	152897	0.448	0-250	607	1.7858	18767460	0.049

Swept-area estimates of halibut abundance from NMFS trawl surveys.

"#Fish" is the actual number of fish caught on the survey. "Abundance" is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1994, IPHC Closed Area, 11183103 hectares, 83 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0051	56733	0.707
20-29	0	0.0000	0	0.000	110-119	1	0.0024	26302	1.000
30-39	7	0.0193	215542	0.427	120-129	0	0.0000	0	0.000
40-49	29	0.0774	865388	0.190	130-139	4	0.0098	109723	0.499
50-59	94	0.2736	3059251	0.117	140-149	0	0.0000	0	0.000
60-69	123	0.3574	3997362	0.106	150-250	0	0.0000	0	0.000
70-79	54	0.1457	1629687	0.145	0-64	199	0.5723	6399619	0.081
80-89	21	0.0600	671170	0.231	65-250	155	0.4342	4855656	0.089
90-99	19	0.0558	624117	0.247	0-250	354	1.0065	11255275	0.060

Bering shelf survey, 1994, All IPHC areas, 44597676 hectares, 331 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	9	0.0057	253992	0.334	100-109	13	0.0082	366474	0.276
20-29	41	0.0292	1303969	0.244	110-119	10	0.0063	279180	0.316
30-39	42	0.0296	1320906	0.200	120-129	12	0.0080	358465	0.321
40-49	268	0.1880	8383403	0.102	130-139	5	0.0031	138185	0.446
50-59	440	0.3071	13694461	0.064	140-149	0	0.0000	0	0.000
60-69	514	0.3546	15812874	0.054	150-250	1	0.0006	28615	1.000
70-79	191	0.1289	5750751	0.078	0-64	1092	0.7629	34021473	0.043
80-89	62	0.0414	1846489	0.137	65-250	550	0.3714	16562602	0.047
90-99	34	0.0235	1046311	0.184	0-250	1642	1.1342	50584075	0.033

Bering shelf survey, 1995, IPHC Area 4A (part), 1219997 hectares, 9 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0440	53623	0.710
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	2	0.0407	49606	0.707
40-49	2	0.0476	58048	0.707	130-139	1	0.0209	25557	1.000
50-59	14	0.3258	397488	0.360	140-149	0	0.0000	0	0.000
60-69	12	0.2705	329949	0.351	150-250	0	0.0000	0	0.000
70-79	7	0.1602	195486	0.371	0-64	24	0.5547	676691	0.261
80-89	7	0.1619	197522	0.373	65-250	25	0.5579	680602	0.206
90-99	2	0.0410	50014	0.707	0-250	49	1.1125	1357293	0.166

Bering shelf survey, 1995, IPHC Area 4C, 3253326 hectares, 24 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	5	0.0427	138854	0.450
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	1	0.0087	28148	1.000
40-49	1	0.0216	70294	1.000	130-139	1	0.0216	70294	1.000
50-59	13	0.1626	528965	0.306	140-149	1	0.0216	70294	1.000
60-69	28	0.2889	939866	0.280	150-250	0	0.0000	0	0.000
70-79	15	0.1301	423384	0.338	0-64	23	0.3167	1030242	0.282
80-89	6	0.0734	238764	0.461	65-250	51	0.4865	1582620	0.164
90-99	3	0.0320	103999	0.591	0-250	74	0.8031	2612862	0.149

Bering shelf survey, 1995, IPHC Area 4D, 18435513 hectares, 136 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0055	102215	0.499
20-29	0	0.0000	0	0.000	110-119	2	0.0033	60070	0.714
30-39	5	0.0071	131631	0.529	120-129	4	0.0056	104112	0.497
40-49	11	0.0188	345804	0.311	130-139	1	0.0015	27393	1.000
50-59	44	0.0698	1286452	0.165	140-149	2	0.0045	82498	0.752
60-69	72	0.1056	1947061	0.135	150-250	1	0.0015	27015	1.000
70-79	53	0.0738	1359693	0.156	0-64	90	0.1396	2573224	0.115
80-89	27	0.0382	704572	0.211	65-250	149	0.2152	3967848	0.092
90-99	13	0.0197	362556	0.301	0-250	239	0.3548	6541072	0.072

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1995, IPHC Area 4E, 10573309 hectares, 78 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	11	0.0321	339517	0.347	100-109	2	0.0057	59947	0.707
20-29	16	0.0434	459399	0.555	110-119	2	0.0052	54482	0.707
30-39	28	0.0774	818148	0.206	120-129	1	0.0027	28852	1.000
40-49	69	0.1878	1986193	0.218	130-139	0	0.0000	0	0.000
50-59	151	0.4219	4461155	0.122	140-149	0	0.0000	0	0.000
60-69	156	0.4326	4573824	0.103	150-250	1	0.0028	29937	1.000
70-79	101	0.2790	2950127	0.140	0-64	369	1.0255	10843226	0.079
80-89	23	0.0656	693477	0.205	65-250	201	0.5561	5880288	0.092
90-99	9	0.0254	268456	0.372	0-250	570	1.5817	16723514	0.060

Bering shelf survey, 1995, IPHC Closed Area, 11115530 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	3	0.0077	85350	0.577	100-109	6	0.0151	167529	0.408
20-29	3	0.0077	85185	0.577	110-119	5	0.0125	138400	0.437
30-39	33	0.0845	939483	0.199	120-129	3	0.0074	82421	0.579
40-49	13	0.0397	441620	0.325	130-139	0	0.0000	0	0.000
50-59	50	0.1408	1564966	0.169	140-149	0	0.0000	0	0.000
60-69	95	0.2493	2771307	0.150	150-250	0	0.0000	0	0.000
70-79	95	0.2450	2723565	0.141	0-64	141	0.3819	4245335	0.097
80-89	28	0.0720	800795	0.194	65-250	203	0.5259	5845413	0.097
90-99	10	0.0261	290127	0.349	0-250	344	0.9078	10090748	0.070

Bering shelf survey, 1995, All IPHC areas, 44597675 hectares, 329 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	14	0.0095	424867	0.300	100-109	19	0.0117	522168	0.230
20-29	19	0.0122	544584	0.477	110-119	9	0.0057	252952	0.330
30-39	66	0.0424	1889262	0.138	120-129	11	0.0066	293139	0.302
40-49	96	0.0651	2901959	0.164	130-139	3	0.0028	123244	0.646
50-59	272	0.1847	8239026	0.082	140-149	3	0.0034	152792	0.614
60-69	363	0.2368	10562007	0.070	150-250	2	0.0013	56952	0.708
70-79	271	0.1716	7652255	0.081	0-64	647	0.4343	19368718	0.054
80-89	91	0.0591	2635130	0.110	65-250	629	0.4026	17956771	0.051
90-99	37	0.0241	1075152	0.179	0-250	1276	0.8369	37325489	0.037

Bering shelf survey, 1996, IPHC Area 4A (part), 1238824 hectares, 9 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0257	31847	1.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	1	0.0216	26792	1.000
40-49	1	0.0257	31847	1.000	130-139	0	0.0000	0	0.000
50-59	4	0.0991	122791	0.501	140-149	0	0.0000	0	0.000
60-69	12	0.2952	365652	0.395	150-250	0	0.0000	0	0.000
70-79	2	0.0477	59097	0.709	0-64	11	0.2754	341123	0.350
80-89	3	0.0673	83400	0.578	65-250	22	0.5177	641346	0.242
90-99	9	0.2107	261043	0.314	0-250	33	0.7931	982469	0.199

Bering shelf survey, 1996, IPHC Area 4C, 3441179 hectares, 25 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0324	111652	0.495
20-29	0	0.0000	0	0.000	110-119	4	0.0382	131431	0.507
30-39	1	0.0083	28541	1.000	120-129	0	0.0000	0	0.000
40-49	13	0.1130	388855	0.389	130-139	0	0.0000	0	0.000
50-59	6	0.0535	183996	0.462	140-149	2	0.0215	73878	0.713
60-69	19	0.1695	583139	0.254	150-250	0	0.0000	0	0.000
70-79	23	0.2187	752498	0.228	0-64	32	0.2821	970647	0.219
80-89	9	0.0880	302958	0.334	65-250	53	0.4985	1715441	0.145
90-99	4	0.0375	129140	0.500	0-250	85	0.7806	2686088	0.122

Swept-area estimates of halibut abundance from NMFS trawl surveys.

"#Fish" is the actual number of fish caught on the survey. "Abundance" is the swept-area estimate. "C.V." is the coefficient of variation.

Bering shelf survey, 1996, IPHC Area 4D, 18031776 hectares, 131 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	16	0.0262	472720	0.251
20-29	0	0.0000	0	0.000	110-119	8	0.0138	249026	0.358
30-39	1	0.0016	28613	1.000	120-129	5	0.0076	137403	0.448
40-49	3	0.0047	84748	0.576	130-139	2	0.0032	57343	0.707
50-59	22	0.0354	638172	0.222	140-149	1	0.0016	29608	1.000
60-69	65	0.1035	1866939	0.141	150-250	2	0.0033	58837	0.707
70-79	101	0.1585	2857286	0.113	0-64	58	0.0934	1684090	0.140
80-89	65	0.1031	1859294	0.135	65-250	251	0.3979	7174415	0.069
90-99	18	0.0288	518516	0.236	0-250	309	0.4913	8858505	0.062

Bering shelf survey, 1996, IPHC Area 4E, 10598830 hectares, 77 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	21	0.0615	651360	0.338	100-109	4	0.0120	127512	0.500
20-29	27	0.0767	813217	0.254	110-119	2	0.0056	59499	0.707
30-39	23	0.0637	674654	0.224	120-129	0	0.0000	0	0.000
40-49	36	0.1025	1086564	0.172	130-139	0	0.0000	0	0.000
50-59	82	0.2347	2487542	0.120	140-149	0	0.0000	0	0.000
60-69	118	0.3459	3665795	0.109	150-250	0	0.0000	0	0.000
70-79	67	0.1926	2041044	0.123	0-64	254	0.7329	7768166	0.075
80-89	32	0.0907	961603	0.182	65-250	170	0.4868	5159443	0.079
90-99	12	0.0339	358819	0.286	0-250	424	1.2197	12927609	0.055

Bering shelf survey, 1996, IPHC Closed Area, 11287066 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0052	58519	0.708	100-109	10	0.0263	297255	0.316
20-29	11	0.0299	337684	0.373	110-119	2	0.0051	57965	0.708
30-39	9	0.0230	259627	0.333	120-129	0	0.0000	0	0.000
40-49	17	0.0461	520246	0.253	130-139	0	0.0000	0	0.000
50-59	23	0.0606	684017	0.215	140-149	0	0.0000	0	0.000
60-69	72	0.1924	2171177	0.118	150-250	0	0.0000	0	0.000
70-79	71	0.1866	2106341	0.122	0-64	87	0.2325	2623960	0.113
80-89	34	0.0869	981181	0.168	65-250	180	0.4703	5308369	0.075
90-99	16	0.0406	458317	0.248	0-250	267	0.7028	7932329	0.063

Bering shelf survey, 1996, All IPHC areas, 44597675 hectares, 324 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	23	0.0159	709879	0.315	100-109	35	0.0233	1040986	0.169
20-29	38	0.0258	1150901	0.210	110-119	16	0.0112	497921	0.253
30-39	34	0.0222	991435	0.180	120-129	6	0.0037	164195	0.409
40-49	70	0.0474	2112260	0.133	130-139	2	0.0013	57343	0.707
50-59	137	0.0923	4116518	0.092	140-149	3	0.0023	103486	0.584
60-69	286	0.1940	8652702	0.067	150-250	2	0.0013	58837	0.707
70-79	264	0.1753	7816266	0.066	0-64	442	0.3002	13387986	0.055
80-89	143	0.0939	4188436	0.087	65-250	676	0.4484	19999014	0.041
90-99	59	0.0387	1725835	0.129	0-250	1118	0.7486	33387000	0.033

Bering slope survey, 1991, IPHC Area 4A (part), 1582276 hectares, 54 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	3	0.0114	17982	0.577
20-29	0	0.0000	0	0.000	110-119	1	0.0042	6631	1.000
30-39	0	0.0000	0	0.000	120-129	1	0.0038	5994	1.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	0	0.0000	0	0.000	150-250	1	0.0038	5994	1.000
70-79	4	0.0158	25058	0.500	0-64	0	0.0000	0	0.000
80-89	10	0.0394	62306	0.314	65-250	29	0.1130	178775	0.191
90-99	9	0.0346	54810	0.365	0-250	29	0.1130	178775	0.191

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Bering slope survey, 1991, IPHC Area 4D, 1025550 hectares, 35 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0161	16562	0.738
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	1	0.0060	6105	1.000
40-49	1	0.0061	6274	1.000	130-139	0	0.0000	0	0.000
50-59	2	0.0133	13634	0.697	140-149	0	0.0000	0	0.000
60-69	4	0.0317	32494	0.501	150-250	0	0.0000	0	0.000
70-79	1	0.0066	6746	1.000	0-64	7	0.0511	52402	0.379
80-89	2	0.0167	17162	0.730	65-250	6	0.0454	46575	0.423
90-99	0	0.0000	0	0.000	0-250	13	0.0965	98977	0.283

Bering slope survey, 1991, All IPHC areas, 2607826 hectares, 89 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	5	0.0132	34544	0.464
20-29	0	0.0000	0	0.000	110-119	1	0.0025	6631	1.000
30-39	0	0.0000	0	0.000	120-129	2	0.0046	12099	0.707
40-49	1	0.0024	6274	1.000	130-139	0	0.0000	0	0.000
50-59	2	0.0052	13634	0.697	140-149	0	0.0000	0	0.000
60-69	4	0.0125	32494	0.501	150-250	1	0.0023	5994	1.000
70-79	5	0.0122	31804	0.447	0-64	7	0.0201	52402	0.379
80-89	12	0.0305	79468	0.292	65-250	35	0.0864	225350	0.175
90-99	9	0.0210	54810	0.365	0-250	42	0.1065	277752	0.159

Aleutians survey, 1991, IPHC Area 4A (part), 1521967 hectares, 82 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0017	2585	1.000	100-109	20	0.0557	84780	0.211
20-29	15	0.0456	69464	0.319	110-119	7	0.0113	17210	0.384
30-39	419	0.8785	1336975	0.149	120-129	4	0.0125	18970	0.249
40-49	464	0.9734	1481543	0.090	130-139	2	0.0088	13357	0.187
50-59	140	0.2915	443686	0.104	140-149	4	0.0165	25126	0.353
60-69	159	0.3898	593256	0.091	150-250	2	0.0063	9549	0.783
70-79	81	0.1932	294083	0.118	0-64	1127	2.4073	3663862	0.068
80-89	46	0.1143	173962	0.135	65-250	264	0.6566	999322	0.065
90-99	27	0.0648	98638	0.213	0-250	1391	3.0639	4663184	0.055

Aleutians survey, 1991, IPHC Area 4B, 5157118 hectares, 257 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0007	3833	1.000	100-109	43	0.0384	197802	0.187
20-29	2	0.0015	7666	0.707	110-119	20	0.0190	98036	0.283
30-39	10	0.0148	76477	0.385	120-129	13	0.0115	59330	0.331
40-49	48	0.0560	288611	0.200	130-139	5	0.0047	24127	0.541
50-59	73	0.1179	608208	0.148	140-149	6	0.0096	49326	0.486
60-69	167	0.2216	1143003	0.109	150-250	7	0.0107	55089	0.573
70-79	135	0.1439	742179	0.121	0-64	202	0.2805	1446649	0.093
80-89	121	0.1020	526063	0.112	65-250	521	0.5294	2729974	0.061
90-99	72	0.0576	296873	0.153	0-250	723	0.8099	4176623	0.051

Aleutians survey, 1991, All IPHC areas, 6698100 hectares, 340 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0010	6418	0.720	100-109	63	0.0422	282582	0.145
20-29	17	0.0115	77130	0.296	110-119	27	0.0172	115246	0.247
30-39	429	0.2110	1413452	0.143	120-129	17	0.0117	78300	0.258
40-49	512	0.2643	1770154	0.082	130-139	7	0.0056	37484	0.355
50-59	213	0.1570	1051894	0.096	140-149	10	0.0111	74452	0.343
60-69	326	0.2592	1736259	0.078	150-250	9	0.0097	64638	0.502
70-79	216	0.1547	1036262	0.093	0-64	1329	0.7630	5110511	0.055
80-89	167	0.1045	700025	0.091	65-250	785	0.5568	3729296	0.048
90-99	99	0.0590	395511	0.126	0-250	2114	1.3197	8839807	0.038

Swept-area estimates of halibut abundance from NMFS trawl surveys.

"#Fish" is the actual number of fish caught on the survey. "Abundance" is the swept-area estimate. "C.V." is the coefficient of variation.

Aleutians survey, 1994, IPHC Area 4A (part), 1556287 hectares, 95 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0020	3117	1.000	100-109	38	0.0808	125818	0.190
20-29	39	0.0927	144208	0.245	110-119	13	0.0229	35715	0.294
30-39	68	0.1508	234684	0.180	120-129	10	0.0171	26672	0.333
40-49	279	0.5688	885264	0.083	130-139	9	0.0277	43070	0.223
50-59	912	1.8559	2888264	0.051	140-149	9	0.0182	28301	0.357
60-69	589	1.1206	1743988	0.066	150-250	6	0.0120	18752	0.458
70-79	258	0.4800	746974	0.083	0-64	1682	3.4159	5316056	0.038
80-89	136	0.2565	399179	0.102	65-250	777	1.4701	2287888	0.045
90-99	92	0.1799	279938	0.118	0-250	2459	4.8860	7603944	0.030

Aleutians survey, 1994, IPHC Area 4B, 5175580 hectares, 293 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	64	0.0445	230158	0.142
20-29	9	0.0118	60933	0.549	110-119	39	0.0327	168984	0.215
30-39	13	0.0133	68802	0.345	120-129	20	0.0144	74572	0.269
40-49	23	0.0200	103618	0.254	130-139	13	0.0080	41249	0.302
50-59	258	0.2176	1125949	0.084	140-149	7	0.0045	23362	0.401
60-69	529	0.4195	2170933	0.057	150-250	5	0.0053	27678	0.541
70-79	284	0.2271	1175426	0.075	0-64	577	0.4776	2472077	0.057
80-89	169	0.1262	653364	0.103	65-250	985	0.7549	3907114	0.040
90-99	129	0.0878	454163	0.107	0-250	1562	1.2326	6379191	0.033

Aleutians survey, 1994, All IPHC areas, 6745600 hectares, 389 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0005	3117	1.000	100-109	102	0.0528	355976	0.114
20-29	48	0.0304	205141	0.237	110-119	52	0.0303	204699	0.184
30-39	81	0.0450	303486	0.160	120-129	30	0.0150	101244	0.217
40-49	302	0.1466	988882	0.079	130-139	22	0.0125	84319	0.186
50-59	1170	0.5951	4014213	0.044	140-149	16	0.0077	51663	0.267
60-69	1119	0.5808	3917927	0.043	150-250	11	0.0069	46430	0.372
70-79	543	0.2854	1925406	0.056	0-64	2259	1.1546	7788133	0.032
80-89	305	0.1560	1052543	0.074	65-250	1764	0.9193	6201014	0.030
90-99	221	0.1088	734101	0.080	0-250	4023	2.0738	13989147	0.022

Gulf of Alaska survey, 1984, IPHC Area 2C, 1818066 hectares, 86 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	9	0.0283	51537	0.387
20-29	0	0.0000	0	0.000	110-119	8	0.0264	47910	0.413
30-39	0	0.0000	0	0.000	120-129	7	0.0352	64013	0.412
40-49	83	0.2403	436903	0.314	130-139	10	0.0327	59431	0.556
50-59	289	0.8705	1582623	0.302	140-149	4	0.0177	32132	0.595
60-69	289	0.8820	1603474	0.302	150-250	5	0.0181	32914	0.578
70-79	99	0.3206	582898	0.289	0-64	550	1.6581	3014512	0.214
80-89	22	0.0941	171102	0.263	65-250	293	0.9664	1756958	0.180
90-99	18	0.0586	106533	0.274	0-250	843	2.6245	4771470	0.150

Gulf of Alaska survey, 1984, IPHC Area 3A, 16137189 hectares, 261 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	50	0.0950	1532961	0.294	100-109	108	0.1309	2112356	0.194
20-29	76	0.1407	2270250	0.168	110-119	79	0.0655	1056611	0.141
30-39	344	0.5131	8279347	0.102	120-129	44	0.0361	581995	0.221
40-49	633	0.8974	14481229	0.112	130-139	30	0.0374	603312	0.514
50-59	301	0.4615	7446645	0.122	140-149	19	0.0154	247755	0.321
60-69	177	0.2978	4806421	0.143	150-250	35	0.0309	499136	0.247
70-79	79	0.1151	1857216	0.160	0-64	1508	2.2882	36925114	0.060
80-89	100	0.1265	2041704	0.129	65-250	673	0.7784	12561059	0.066
90-99	106	0.1034	1669235	0.140	0-250	2181	3.0666	49486173	0.048

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Gulf of Alaska survey, 1984, IPHC Area 3B, 10971874 hectares, 195 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	5	0.0071	77369	0.461	100-109	52	0.0581	637114	0.171
20-29	85	0.1221	1339892	0.149	110-119	35	0.0426	467050	0.198
30-39	226	0.4243	4655564	0.111	120-129	28	0.0405	444354	0.475
40-49	448	0.9519	10444045	0.103	130-139	21	0.0302	331165	0.238
50-59	238	0.4214	4624025	0.114	140-149	9	0.0108	118559	0.365
60-69	183	0.2747	3013964	0.106	150-250	13	0.0158	173493	0.304
70-79	162	0.2600	2852447	0.129	0-64	1105	2.0839	22864009	0.059
80-89	107	0.1372	1505204	0.157	65-250	622	0.8512	9339460	0.066
90-99	115	0.1385	1519224	0.174	0-250	1727	2.9351	32203469	0.046

Gulf of Alaska survey, 1984, IPHC Area 4A (part), 2413838 hectares, 52 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0024	5857	1.000	100-109	4	0.0193	46685	0.521
20-29	0	0.0000	0	0.000	110-119	5	0.0328	79077	0.517
30-39	7	0.0424	102278	0.437	120-129	5	0.0366	88446	0.853
40-49	55	0.3224	778340	0.172	130-139	2	0.0092	22111	0.732
50-59	108	0.5603	1352428	0.114	140-149	0	0.0000	0	0.000
60-69	72	0.3534	853061	0.143	150-250	0	0.0000	0	0.000
70-79	14	0.0742	179198	0.315	0-64	220	1.1700	2824121	0.082
80-89	12	0.0550	132696	0.346	65-250	70	0.3605	870211	0.157
90-99	5	0.0224	54155	0.464	0-250	290	1.5305	3694332	0.073

Gulf of Alaska survey, 1984, All IPHC areas, 31402489 hectares, 596 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	56	0.0515	1616187	0.280	100-109	173	0.0907	2847692	0.150
20-29	161	0.1150	3610142	0.119	110-119	127	0.0526	1650648	0.109
30-39	577	0.4152	13037189	0.076	120-129	84	0.0375	1178808	0.220
40-49	1219	0.8324	26140517	0.075	130-139	63	0.0324	1016019	0.317
50-59	936	0.4779	15005721	0.078	140-149	32	0.0127	398446	0.232
60-69	721	0.3273	10276920	0.088	150-250	53	0.0225	705543	0.192
70-79	355	0.1745	5478646	0.092	0-64	3383	2.0899	65627756	0.041
80-89	241	0.1226	3850706	0.094	65-250	1659	0.7813	24534575	0.045
90-99	244	0.1067	3349147	0.106	0-250	5042	2.8712	90162331	0.032

Gulf of Alaska survey, 1987, IPHC Area 2C, 2096471 hectares, 42 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	17	0.1265	265265	0.313
20-29	0	0.0000	0	0.000	110-119	7	0.0432	90545	0.452
30-39	0	0.0000	0	0.000	120-129	2	0.0112	23412	0.778
40-49	7	0.0500	104764	0.469	130-139	2	0.0134	28137	0.709
50-59	39	0.2746	575774	0.249	140-149	2	0.0099	20807	0.785
60-69	62	0.4909	1029230	0.216	150-250	1	0.0107	22524	1.000
70-79	63	0.6192	1298051	0.146	0-64	74	0.5765	1208691	0.175
80-89	50	0.4144	868781	0.154	65-250	197	1.6305	3418206	0.092
90-99	19	0.1429	299607	0.269	0-250	271	2.2070	4626897	0.082

Gulf of Alaska survey, 1987, IPHC Area 3A, 15140032 hectares, 209 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	6	0.0063	95300	0.692	100-109	44	0.0615	930829	0.195
20-29	124	0.1763	2668791	0.147	110-119	32	0.0500	756375	0.228
30-39	222	0.4050	6131109	0.139	120-129	16	0.0297	450355	0.340
40-49	406	0.6708	10155717	0.095	130-139	14	0.0163	246055	0.299
50-59	270	0.3748	5674206	0.114	140-149	8	0.0206	311706	0.460
60-69	218	0.3203	4848668	0.112	150-250	9	0.0143	217062	0.462
70-79	131	0.2196	3324944	0.130	0-64	1134	1.7858	27036527	0.057
80-89	69	0.1039	1573561	0.176	65-250	529	0.8140	12324170	0.065
90-99	94	0.1305	1976019	0.149	0-250	1663	2.5998	39360697	0.044

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Gulf of Alaska survey, 1987, IPHC Area 3B, 9974454 hectares, 110 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	11	0.0239	238006	0.393	100-109	26	0.0678	676742	0.255
20-29	85	0.1195	1192410	0.164	110-119	16	0.0469	468202	0.319
30-39	363	0.6196	6179729	0.109	120-129	7	0.0192	191284	0.623
40-49	279	0.5870	5855491	0.094	130-139	6	0.0113	113056	0.551
50-59	192	0.5072	5058777	0.123	140-149	5	0.0123	122668	0.681
60-69	164	0.4765	4752810	0.105	150-250	13	0.0207	206314	0.337
70-79	102	0.2845	2837773	0.143	0-64	1015	2.0916	20862906	0.055
80-89	38	0.0814	812348	0.187	65-250	323	0.8645	8623141	0.078
90-99	31	0.0782	780437	0.233	0-250	1338	2.9562	29486047	0.045

Gulf of Alaska survey, 1987, IPHC Area 4A (part), 1703401 hectares, 20 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	1	0.0237	40373	1.000
20-29	2	0.0380	64773	0.799	110-119	1	0.0103	17599	1.000
30-39	17	0.2019	343898	0.300	120-129	0	0.0000	0	0.000
40-49	99	1.2872	2192567	0.180	130-139	2	0.0235	40016	0.730
50-59	159	2.2609	3851211	0.259	140-149	0	0.0000	0	0.000
60-69	62	0.8145	1387396	0.191	150-250	1	0.0103	17599	1.000
70-79	21	0.2615	445507	0.226	0-64	308	4.2004	7154924	0.153
80-89	6	0.0729	124141	0.413	65-250	65	0.8339	1420440	0.157
90-99	2	0.0295	50284	0.707	0-250	373	5.0343	8575364	0.131

Gulf of Alaska survey, 1987, All IPHC areas, 29027964 hectares, 385 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	17	0.0115	333306	0.343	100-109	88	0.0659	1913209	0.140
20-29	211	0.1352	3925974	0.112	110-119	57	0.0464	1346649	0.173
30-39	602	0.4359	12654736	0.086	120-129	25	0.0229	665051	0.293
40-49	791	0.6307	18308539	0.065	130-139	24	0.0147	427264	0.240
50-59	660	0.5223	15159968	0.089	140-149	15	0.0157	455181	0.366
60-69	506	0.4140	12018104	0.068	150-250	24	0.0160	463499	0.270
70-79	317	0.2724	7906275	0.080	0-64	2531	1.9382	56263048	0.039
80-89	163	0.1164	3378831	0.103	65-250	1115	0.8888	25799885	0.043
90-99	146	0.1070	3106347	0.115	0-250	3646	2.8270	82062933	0.030

Gulf of Alaska survey, 1990, IPHC Area 2C, 1542029 hectares, 54 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	4	0.0273	42090	0.511
20-29	0	0.0000	0	0.000	110-119	3	0.0140	21652	0.633
30-39	0	0.0000	0	0.000	120-129	5	0.0259	39872	0.460
40-49	3	0.0173	26741	0.745	130-139	1	0.0062	9620	1.000
50-59	13	0.0751	115878	0.385	140-149	0	0.0000	0	0.000
60-69	6	0.0366	56481	0.459	150-250	1	0.0061	9404	1.000
70-79	2	0.0160	24715	0.716	0-64	21	0.1224	188687	0.288
80-89	7	0.0532	81996	0.385	65-250	27	0.1736	267657	0.199
90-99	3	0.0181	27895	0.581	0-250	48	0.2959	456344	0.167

Gulf of Alaska survey, 1990, IPHC Area 3A, 15166733 hectares, 351 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	35	0.0744	1128543	0.335	100-109	79	0.0497	754352	0.135
20-29	46	0.0736	1116313	0.189	110-119	64	0.0412	625224	0.235
30-39	83	0.0963	1461205	0.169	120-129	21	0.0191	289986	0.215
40-49	188	0.2474	3752727	0.118	130-139	10	0.0071	107682	0.372
50-59	287	0.3319	5034375	0.078	140-149	11	0.0074	112148	0.347
60-69	572	0.5444	8256781	0.079	150-250	26	0.0161	244286	0.221
70-79	415	0.3196	4847593	0.088	0-64	930	1.1043	16749081	0.054
80-89	195	0.1319	2000685	0.092	65-250	1207	0.9330	14150062	0.049
90-99	105	0.0770	1167243	0.139	0-250	2137	2.0373	30899143	0.037

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Gulf of Alaska survey, 1990, IPHC Area 3B, 10143092 hectares, 225 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	11	0.0218	221365	0.600	100-109	104	0.1091	1106943	0.133
20-29	83	0.2067	2096095	0.229	110-119	43	0.0425	431283	0.210
30-39	215	0.4382	4445116	0.187	120-129	26	0.0296	300374	0.248
40-49	213	0.4167	4226822	0.086	130-139	16	0.0122	123299	0.321
50-59	330	0.6337	6427700	0.107	140-149	6	0.0075	75882	0.495
60-69	345	0.6733	6828924	0.093	150-250	11	0.0156	158650	0.419
70-79	326	0.6221	6310325	0.130	0-64	1019	2.0457	20750111	0.063
80-89	217	0.2745	2783784	0.112	65-250	1120	1.6491	16727221	0.063
90-99	193	0.1913	1940770	0.102	0-250	2139	3.6949	37477332	0.045

Gulf of Alaska survey, 1990, IPHC Area 4A (part), 2514392 hectares, 67 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	11	0.0435	109357	0.305
20-29	15	0.0568	142802	0.279	110-119	11	0.0387	97354	0.305
30-39	167	0.6492	1632387	0.117	120-129	2	0.0073	18231	0.718
40-49	150	0.5496	1381845	0.094	130-139	1	0.0047	11710	1.000
50-59	226	0.8675	2181193	0.079	140-149	3	0.0109	27472	0.577
60-69	134	0.5287	1329376	0.097	150-250	1	0.0033	8381	1.000
70-79	78	0.3004	755401	0.115	0-64	626	2.3923	6015188	0.051
80-89	35	0.1422	357502	0.178	65-250	225	0.8827	2219476	0.071
90-99	17	0.0722	181653	0.255	0-250	851	3.2750	8234664	0.042

Gulf of Alaska survey, 1990, All IPHC areas, 29564402 hectares, 708 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	46	0.0457	1349908	0.297	100-109	200	0.0685	2025900	0.091
20-29	144	0.1135	3355210	0.157	110-119	121	0.0398	1175513	0.149
30-39	465	0.2550	7538708	0.118	120-129	54	0.0219	648463	0.154
40-49	554	0.3175	9388135	0.062	130-139	28	0.0085	252311	0.231
50-59	856	0.4654	13759146	0.059	140-149	20	0.0073	215502	0.262
60-69	1057	0.5571	16471562	0.056	150-250	39	0.0142	420721	0.206
70-79	821	0.4038	11938034	0.078	0-64	2596	1.4782	43703067	0.037
80-89	454	0.1767	5223967	0.071	65-250	2581	1.1290	33377574	0.038
90-99	318	0.1122	3317561	0.079	0-250	5177	2.6072	77080641	0.027

Gulf of Alaska survey, 1993, IPHC Area 2C, 1569583 hectares, 57 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0171	26786	0.707	100-109	6	0.0167	26278	0.491
20-29	0	0.0000	0	0.000	110-119	5	0.0261	40991	0.481
30-39	0	0.0000	0	0.000	120-129	3	0.0162	25443	0.647
40-49	0	0.0000	0	0.000	130-139	3	0.0209	32774	0.564
50-59	5	0.0456	71503	0.542	140-149	0	0.0000	0	0.000
60-69	8	0.0814	127737	0.532	150-250	0	0.0000	0	0.000
70-79	29	0.2744	430639	0.219	0-64	8	0.0721	113194	0.403
80-89	22	0.2024	317715	0.247	65-250	86	0.7103	1114869	0.135
90-99	11	0.0817	128197	0.364	0-250	94	0.7824	1228063	0.128

Gulf of Alaska survey, 1993, IPHC Area 3A, 15050199 hectares, 366 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	18	0.0181	272863	0.334	100-109	140	0.0791	1190517	0.094
20-29	103	0.1183	1781016	0.163	110-119	87	0.0492	739786	0.124
30-39	317	0.3176	4779430	0.111	120-129	43	0.0297	446732	0.171
40-49	1252	1.1150	16780523	0.204	130-139	18	0.0121	181484	0.249
50-59	3051	2.3986	36099779	0.142	140-149	19	0.0119	179027	0.254
60-69	2062	1.5296	23020501	0.094	150-250	20	0.0117	175528	0.249
70-79	1448	1.0212	15369467	0.073	0-64	5770	4.7467	71438995	0.090
80-89	521	0.3301	4968778	0.062	65-250	3612	2.4716	37198605	0.048
90-99	283	0.1762	2652169	0.076	0-250	9382	7.2183	108637600	0.062

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Gulf of Alaska survey, 1993, IPHC Area 3B, 10492562 hectares, 277 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	89	0.1128	1183836	0.508	100-109	98	0.0895	939283	0.114
20-29	450	0.5318	5580270	0.168	110-119	57	0.0562	590116	0.151
30-39	557	0.6294	6603947	0.095	120-129	42	0.0433	454288	0.168
40-49	1353	1.3101	13746009	0.062	130-139	19	0.0227	238370	0.307
50-59	1518	1.6648	17467720	0.062	140-149	12	0.0103	108343	0.299
60-69	668	0.7182	7535898	0.083	150-250	11	0.0096	101020	0.316
70-79	408	0.4097	4298522	0.065	0-64	4325	4.6265	48543915	0.040
80-89	250	0.2333	2448304	0.071	65-250	1365	1.3465	14128501	0.044
90-99	158	0.1312	1376490	0.087	0-250	5690	5.9730	62672416	0.032

Gulf of Alaska survey, 1993, IPHC Area 4A (part), 2331459 hectares, 68 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0036	8332	1.000	100-109	26	0.0948	221056	0.228
20-29	4	0.0139	32375	0.500	110-119	8	0.0284	66204	0.355
30-39	38	0.1421	331384	0.229	120-129	4	0.0144	33674	0.504
40-49	545	2.0248	4720782	0.070	130-139	2	0.0078	18093	0.697
50-59	686	2.5993	6060130	0.068	140-149	2	0.0067	15550	0.707
60-69	212	0.7692	1793249	0.079	150-250	3	0.0112	26191	0.579
70-79	134	0.4800	1119133	0.101	0-64	1369	5.1284	11956584	0.045
80-89	72	0.2550	594587	0.133	65-250	403	1.4458	3370781	0.058
90-99	35	0.1229	286625	0.195	0-250	1772	6.5742	15327365	0.038

Gulf of Alaska survey, 1993, All IPHC areas, 29564404 hectares, 775 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	110	0.0505	1491817	0.408	100-109	271	0.0805	2380743	0.069
20-29	557	0.2501	7393661	0.132	110-119	157	0.0486	1437097	0.092
30-39	912	0.3962	11714761	0.070	120-129	92	0.0325	960137	0.115
40-49	3150	1.1922	35247314	0.100	130-139	42	0.0159	470721	0.189
50-59	5260	2.0193	59699132	0.088	140-149	33	0.0102	302920	0.188
60-69	2950	1.0985	32477385	0.070	150-250	34	0.0102	302739	0.186
70-79	2022	0.7180	21228645	0.055	0-64	11472	4.4666	132052688	0.051
80-89	866	0.2819	8332993	0.045	65-250	5471	1.8884	55830858	0.034
90-99	487	0.1503	4443481	0.055	0-250	16943	6.3551	187883546	0.037

Gulf of Alaska survey, 1996, IPHC Area 2C, 1833097 hectares, 83 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	3	0.0105	19216	0.578	100-109	13	0.0559	102526	0.310
20-29	1	0.0034	6313	1.000	110-119	9	0.0387	71032	0.338
30-39	12	0.1196	219162	0.336	120-129	6	0.0270	49409	0.423
40-49	13	0.1337	245056	0.291	130-139	3	0.0153	27964	0.598
50-59	33	0.2003	367173	0.212	140-149	1	0.0058	10557	1.000
60-69	179	0.8023	1470609	0.120	150-250	3	0.0196	35895	0.684
70-79	153	0.6124	1122594	0.131	0-64	132	0.8326	1526252	0.115
80-89	59	0.2354	431507	0.156	65-250	379	1.5548	2850133	0.077
90-99	23	0.1077	197372	0.250	0-250	511	2.3874	4376385	0.064

Gulf of Alaska survey, 1996, IPHC Area 3A, 15212920 hectares, 332 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	5	0.0146	222865	0.519	100-109	55	0.0578	879925	0.168
20-29	126	0.2861	4352442	0.215	110-119	51	0.0483	735342	0.180
30-39	92	0.1973	3001315	0.231	120-129	17	0.0164	249673	0.295
40-49	360	0.5361	8155197	0.085	130-139	7	0.0071	107507	0.447
50-59	610	0.9990	15197516	0.154	140-149	6	0.0086	130171	0.440
60-69	777	1.5543	23646119	0.176	150-250	6	0.0108	164686	0.625
70-79	534	1.0452	15900101	0.161	0-64	1549	2.7086	41205953	0.090
80-89	208	0.2916	4435433	0.108	65-250	1400	2.4698	37572286	0.112
90-99	95	0.1052	1599947	0.144	0-250	2949	5.1784	78778239	0.071

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

Gulf of Alaska survey, 1996, IPHC Area 3B, 10595052 hectares, 293 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	17	0.0262	277187	0.278	100-109	104	0.1412	1496222	0.109
20-29	171	0.2380	2522115	0.113	110-119	56	0.0841	891259	0.153
30-39	131	0.1967	2083522	0.115	120-129	34	0.0493	522624	0.198
40-49	428	0.7119	7543059	0.071	130-139	13	0.0183	194238	0.309
50-59	723	1.2808	13569817	0.069	140-149	9	0.0108	114315	0.383
60-69	903	1.5311	16221944	0.075	150-250	12	0.0232	246081	0.300
70-79	555	0.9081	9621867	0.084	0-64	1934	3.2426	34355070	0.042
80-89	289	0.4476	4742595	0.081	65-250	1678	2.6399	27969888	0.046
90-99	167	0.2150	2278113	0.090	0-250	3612	5.8825	62324958	0.031

Gulf of Alaska survey, 1996, IPHC Area 4A (part), 2083015 hectares, 85 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	2	0.0136	28250	0.707	100-109	10	0.0505	105101	0.323
20-29	10	0.0609	126850	0.396	110-119	5	0.0229	47726	0.465
30-39	27	0.1810	376935	0.267	120-129	3	0.0154	32052	0.590
40-49	92	0.7393	1539883	0.126	130-139	4	0.0233	48612	0.495
50-59	173	1.0026	2088410	0.092	140-149	1	0.0032	6636	1.000
60-69	189	1.0145	2113232	0.091	150-250	2	0.0120	24978	0.707
70-79	62	0.3393	706715	0.145	0-64	437	2.7065	5637741	0.060
80-89	32	0.1508	314200	0.195	65-250	187	0.9966	2075954	0.082
90-99	12	0.0740	154115	0.326	0-250	624	3.7031	7713695	0.049

Gulf of Alaska survey, 1996, All IPHC areas, 29941005 hectares, 804 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	27	0.0183	547518	0.257	100-109	182	0.0863	2583774	0.087
20-29	308	0.2341	7007720	0.140	110-119	121	0.0583	1745359	0.110
30-39	262	0.1897	5680934	0.131	120-129	60	0.0285	853758	0.152
40-49	893	0.5839	17483195	0.052	130-139	27	0.0126	378321	0.217
50-59	1541	1.0434	31239070	0.081	140-149	17	0.0087	261679	0.279
60-69	2048	1.4513	43451904	0.100	150-250	23	0.0158	471640	0.276
70-79	1304	0.9135	27351277	0.098	0-64	4054	2.7635	82741170	0.048
80-89	589	0.3317	9930067	0.063	65-250	3645	2.3538	70474593	0.063
90-99	297	0.1413	4229547	0.075	0-250	7699	5.1173	153215763	0.039

West Coast survey, 1977, IPHC Area 2A, 3816474 hectares, 664 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	0	0.0000	0	0.000	150-250	0	0.0000	0	0.000
70-79	0	0.0000	0	0.000	0-64	0	0.0000	0	0.000
80-89	0	0.0000	0	0.000	65-250	0	0.0000	0	0.000
90-99	0	0.0000	0	0.000	0-250	0	0.0000	0	0.000

West Coast survey, 1977, All IPHC areas, 3816474 hectares, 664 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	0	0.0000	0	0.000	150-250	0	0.0000	0	0.000
70-79	0	0.0000	0	0.000	0-64	0	0.0000	0	0.000
80-89	0	0.0000	0	0.000	65-250	0	0.0000	0	0.000
90-99	0	0.0000	0	0.000	0-250	0	0.0000	0	0.000

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

West Coast survey, 1980, IPHC Area 2A, 3849625 hectares, 447 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.0000	100-109	0	0.0000	0	0.0000
20-29	0	0.0000	0	0.0000	110-119	0	0.0000	0	0.0000
30-39	0	0.0000	0	0.0000	120-129	0	0.0000	0	0.0000
40-49	0	0.0000	0	0.0000	130-139	0	0.0000	0	0.0000
50-59	0	0.0000	0	0.0000	140-149	0	0.0000	0	0.0000
60-69	1	0.0016	6143	1.0000	150-250	0	0.0000	0	0.0000
70-79	3	0.0034	12981	0.473	0-64	0	0.0000	0	0.0000
80-89	0	0.0000	0	0.0000	65-250	4	0.0050	19124	0.454
90-99	0	0.0000	0	0.0000	0-250	4	0.0050	19124	0.454

West Coast survey, 1980, IPHC Area 2B (part), 726240 hectares, 58 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.0000	100-109	1	0.0046	3351	1.000
20-29	0	0.0000	0	0.0000	110-119	0	0.0000	0	0.0000
30-39	0	0.0000	0	0.0000	120-129	0	0.0000	0	0.0000
40-49	0	0.0000	0	0.0000	130-139	1	0.0066	4783	1.000
50-59	0	0.0000	0	0.0000	140-149	0	0.0000	0	0.0000
60-69	3	0.0113	8201	0.607	150-250	0	0.0000	0	0.0000
70-79	8	0.0284	20661	0.365	0-64	0	0.0000	0	0.0000
80-89	2	0.0115	8384	0.707	65-250	15	0.0625	45380	0.271
90-99	0	0.0000	0	0.0000	0-250	15	0.0625	45380	0.271

West Coast survey, 1980, All IPHC areas, 4575865 hectares, 505 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.0000	100-109	1	0.0007	3351	1.000
20-29	0	0.0000	0	0.0000	110-119	0	0.0000	0	0.0000
30-39	0	0.0000	0	0.0000	120-129	0	0.0000	0	0.0000
40-49	0	0.0000	0	0.0000	130-139	1	0.0010	4783	1.000
50-59	0	0.0000	0	0.0000	140-149	0	0.0000	0	0.0000
60-69	4	0.0031	14344	0.551	150-250	0	0.0000	0	0.0000
70-79	11	0.0074	33642	0.289	0-64	0	0.0000	0	0.0000
80-89	2	0.0018	8384	0.707	65-250	19	0.0141	64504	0.233
90-99	0	0.0000	0	0.0000	0-250	19	0.0141	64504	0.233

West Coast survey, 1983, IPHC Area 2A, 3963451 hectares, 512 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.0000	100-109	3	0.0021	8507	0.589
20-29	0	0.0000	0	0.0000	110-119	1	0.0003	1028	1.000
30-39	0	0.0000	0	0.0000	120-129	0	0.0000	0	0.0000
40-49	0	0.0000	0	0.0000	130-139	1	0.0003	1162	1.000
50-59	3	0.0011	4217	0.590	140-149	1	0.0003	1316	1.000
60-69	30	0.0156	61861	0.221	150-250	0	0.0000	0	0.0000
70-79	58	0.0247	97939	0.164	0-64	14	0.0077	30571	0.299
80-89	18	0.0073	28981	0.295	65-250	112	0.0487	193098	0.118
90-99	11	0.0047	18658	0.398	0-250	126	0.0564	223669	0.110

West Coast survey, 1983, IPHC Area 2B (part), 751366 hectares, 49 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0021	1581	1.000	100-109	1	0.0056	4192	1.000
20-29	2	0.0126	9480	0.707	110-119	0	0.0000	0	0.0000
30-39	1	0.0062	4696	1.000	120-129	0	0.0000	0	0.0000
40-49	0	0.0000	0	0.0000	130-139	0	0.0000	0	0.0000
50-59	0	0.0000	0	0.0000	140-149	0	0.0000	0	0.0000
60-69	4	0.0222	16673	0.533	150-250	0	0.0000	0	0.0000
70-79	18	0.1028	77234	0.257	0-64	4	0.0210	15757	0.529
80-89	5	0.0320	24040	0.479	65-250	30	0.1762	132358	0.196
90-99	2	0.0136	10219	0.709	0-250	34	0.1971	148115	0.184

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

West Coast survey, 1983, All IPHC areas, 4714817 hectares, 561 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0003	1581	1.000	100-109	4	0.0027	12699	0.514
20-29	2	0.0020	9480	0.707	110-119	1	0.0002	1028	1.000
30-39	1	0.0010	4696	1.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	1	0.0002	1162	1.000
50-59	3	0.0009	4217	0.590	140-149	1	0.0003	1316	1.000
60-69	34	0.0167	78534	0.207	150-250	0	0.0000	0	0.000
70-79	76	0.0372	175173	0.146	0-64	18	0.0098	46328	0.267
80-89	23	0.0112	53021	0.271	65-250	142	0.0690	325456	0.106
90-99	13	0.0061	28877	0.359	0-250	160	0.0789	371784	0.099

West Coast survey, 1986, IPHC Area 2A, 3907041 hectares, 505 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0002	619	1.000	100-109	16	0.0076	29581	0.372
20-29	1	0.0002	619	1.000	110-119	5	0.0026	10079	0.527
30-39	1	0.0002	619	1.000	120-129	1	0.0007	2872	1.000
40-49	1	0.0002	619	1.000	130-139	3	0.0009	3401	0.766
50-59	15	0.0031	12120	0.458	140-149	1	0.0001	415	1.000
60-69	169	0.0452	176494	0.120	150-250	1	0.0011	4182	1.000
70-79	196	0.0664	259431	0.102	0-64	75	0.0160	62482	0.188
80-89	70	0.0307	119953	0.161	65-250	442	0.1581	617595	0.068
90-99	36	0.0151	59073	0.213	0-250	517	0.1741	680077	0.064

West Coast survey, 1986, IPHC Area 2B (part), 3092 hectares, 2 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	0	0.0000	0	0.000
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	0	0.0000	0	0.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	4	0.5382	1664	0.501	150-250	0	0.0000	0	0.000
70-79	3	0.4347	1344	0.577	0-64	1	0.1242	384	1.000
80-89	5	0.7248	2241	0.529	65-250	11	1.5734	4865	0.329
90-99	0	0.0000	0	0.000	0-250	12	1.6976	5249	0.313

West Coast survey, 1986, All IPHC areas, 3910133 hectares, 507 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0002	619	1.000	100-109	16	0.0076	29581	0.372
20-29	1	0.0002	619	1.000	110-119	5	0.0026	10079	0.527
30-39	1	0.0002	619	1.000	120-129	1	0.0007	2872	1.000
40-49	1	0.0002	619	1.000	130-139	3	0.0009	3401	0.766
50-59	15	0.0031	12120	0.458	140-149	1	0.0001	415	1.000
60-69	173	0.0456	178158	0.118	150-250	1	0.0011	4182	1.000
70-79	199	0.0667	260775	0.102	0-64	76	0.0161	62866	0.187
80-89	75	0.0313	122194	0.158	65-250	453	0.1592	622460	0.067
90-99	36	0.0151	59073	0.213	0-250	529	0.1753	685326	0.064

West Coast survey, 1989, IPHC Area 2A, 4336234 hectares, 473 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	21	0.0116	50206	0.241
20-29	1	0.0007	3107	1.000	110-119	5	0.0027	11648	0.462
30-39	2	0.0013	5536	0.707	120-129	2	0.0014	6242	0.756
40-49	1	0.0006	2768	1.000	130-139	3	0.0022	9688	0.612
50-59	2	0.0018	7951	0.726	140-149	0	0.0000	0	0.000
60-69	43	0.0283	122536	0.176	150-250	0	0.0000	0	0.000
70-79	75	0.0430	186366	0.134	0-64	22	0.0163	70541	0.229
80-89	52	0.0313	135848	0.170	65-250	216	0.1289	558881	0.079
90-99	31	0.0202	87526	0.188	0-250	238	0.1452	629422	0.074

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

West Coast survey, 1989, IPHC Area 2B (part), 879278 hectares, 67 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	11	0.0590	51873	0.396	100-109	4	0.0164	14383	0.500
20-29	4	0.0213	18728	0.605	110-119	1	0.0041	3591	1.000
30-39	4	0.0213	18728	0.534	120-129	0	0.0000	0	0.000
40-49	1	0.0040	3491	1.000	130-139	0	0.0000	0	0.000
50-59	10	0.0636	55940	0.418	140-149	0	0.0000	0	0.000
60-69	11	0.0462	40588	0.319	150-250	1	0.0049	4297	1.000
70-79	32	0.1282	112733	0.397	0-64	35	0.1882	165483	0.215
80-89	18	0.0834	73319	0.391	65-250	67	0.2845	250156	0.222
90-99	5	0.0204	17968	0.448	0-250	102	0.4727	415639	0.159

West Coast survey, 1989, All IPHC areas, 5215512 hectares, 540 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	11	0.0099	51873	0.396	100-109	25	0.0124	64589	0.218
20-29	5	0.0042	21835	0.538	110-119	6	0.0029	15239	0.424
30-39	6	0.0047	24264	0.443	120-129	2	0.0012	6242	0.756
40-49	2	0.0012	6259	0.712	130-139	3	0.0019	9688	0.612
50-59	12	0.0123	63891	0.377	140-149	0	0.0000	0	0.000
60-69	54	0.0313	163124	0.154	150-250	1	0.0008	4297	1.000
70-79	107	0.0573	299099	0.171	0-64	57	0.0453	236024	0.165
80-89	70	0.0401	209167	0.176	65-250	283	0.1551	809037	0.088
90-99	36	0.0202	105494	0.173	0-250	340	0.2004	1045061	0.077

West Coast survey, 1992, IPHC Area 2A, 4361211 hectares, 440 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	5	0.0048	21092	0.448	100-109	18	0.0124	54240	0.250
20-29	2	0.0020	8878	0.707	110-119	12	0.0077	33751	0.303
30-39	0	0.0000	0	0.000	120-129	5	0.0034	14852	0.471
40-49	0	0.0000	0	0.000	130-139	1	0.0004	1645	1.000
50-59	0	0.0000	0	0.000	140-149	0	0.0000	0	0.000
60-69	12	0.0071	31025	0.341	150-250	0	0.0000	0	0.000
70-79	43	0.0314	137148	0.181	0-64	14	0.0112	49048	0.287
80-89	56	0.0380	165633	0.156	65-250	176	0.1221	532291	0.087
90-99	36	0.0259	113075	0.198	0-250	190	0.1333	581339	0.084

West Coast survey, 1992, IPHC Area 2B (part), 854299 hectares, 62 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	2	0.0080	6858	0.707
20-29	0	0.0000	0	0.000	110-119	0	0.0000	0	0.000
30-39	0	0.0000	0	0.000	120-129	0	0.0000	0	0.000
40-49	0	0.0000	0	0.000	130-139	2	0.0081	6921	0.611
50-59	0	0.0000	0	0.000	140-149	1	0.0045	3883	1.000
60-69	6	0.0278	23733	0.406	150-250	0	0.0000	0	0.000
70-79	11	0.0450	38406	0.285	0-64	1	0.0047	4049	1.000
80-89	8	0.0314	26836	0.315	65-250	32	0.1348	115122	0.169
90-99	3	0.0147	12534	0.580	0-250	33	0.1395	119171	0.166

West Coast survey, 1992, All IPHC areas, 5215510 hectares, 502 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	5	0.0040	21092	0.448	100-109	20	0.0117	61098	0.236
20-29	2	0.0017	8878	0.707	110-119	12	0.0065	33751	0.303
30-39	0	0.0000	0	0.000	120-129	5	0.0028	14852	0.471
40-49	0	0.0000	0	0.000	130-139	3	0.0016	8566	0.530
50-59	0	0.0000	0	0.000	140-149	1	0.0007	3883	1.000
60-69	18	0.0105	54758	0.261	150-250	0	0.0000	0	0.000
70-79	54	0.0337	175554	0.154	0-64	15	0.0102	53097	0.276
80-89	64	0.0369	192469	0.141	65-250	208	0.1241	647413	0.078
90-99	39	0.0241	125609	0.187	0-250	223	0.1343	700510	0.075

Swept-area estimates of halibut abundance from NMFS trawl surveys.
 "#Fish" is the actual number of fish caught on the survey. "Abundance"
 is the swept-area estimate. "C.V." is the coefficient of variation.

West Coast survey, 1995, IPHC Area 2A, 4959815 hectares, 453 tows.

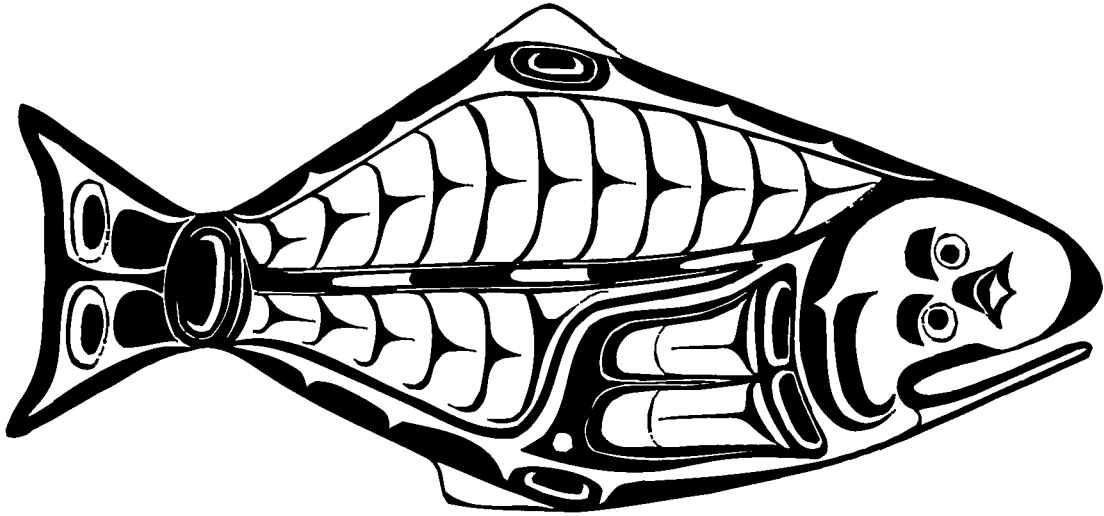
Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0006	3120	1.000	100-109	9	0.0059	29467	0.341
20-29	0	0.0000	0	0.000	110-119	13	0.0080	39860	0.287
30-39	0	0.0000	0	0.000	120-129	2	0.0012	5739	0.707
40-49	0	0.0000	0	0.000	130-139	4	0.0023	11546	0.500
50-59	15	0.0145	71778	0.474	140-149	0	0.0000	0	0.000
60-69	152	0.1383	686169	0.228	150-250	1	0.0005	2491	1.000
70-79	101	0.0844	418630	0.143	0-64	79	0.0733	363394	0.295
80-89	45	0.0340	168696	0.164	65-250	284	0.2297	1139480	0.121
90-99	20	0.0132	65378	0.253	0-250	363	0.3030	1502874	0.116

West Coast survey, 1995, IPHC Area 2B (part), 931682 hectares, 71 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	0	0.0000	0	0.000	100-109	10	0.0283	26378	0.335
20-29	0	0.0000	0	0.000	110-119	2	0.0088	8212	0.714
30-39	0	0.0000	0	0.000	120-129	1	0.0045	4146	1.000
40-49	0	0.0000	0	0.000	130-139	1	0.0037	3483	1.000
50-59	1	0.0045	4167	1.000	140-149	0	0.0000	0	0.000
60-69	23	0.0926	86297	0.208	150-250	0	0.0000	0	0.000
70-79	22	0.0787	73316	0.216	0-64	10	0.0424	39484	0.314
80-89	21	0.0691	64354	0.224	65-250	88	0.3055	284670	0.109
90-99	17	0.0577	53801	0.253	0-250	98	0.3479	324154	0.103

West Coast survey, 1995, All IPHC areas, 5891497 hectares, 524 tows.

Length	#Fish	Fish/ha	Abundance	C.V.	Length	#Fish	Fish/ha	Abundance	C.V.
0-19	1	0.0005	3120	1.000	100-109	19	0.0095	55845	0.240
20-29	0	0.0000	0	0.000	110-119	15	0.0082	48072	0.268
30-39	0	0.0000	0	0.000	120-129	3	0.0017	9885	0.587
40-49	0	0.0000	0	0.000	130-139	5	0.0026	15029	0.449
50-59	16	0.0129	75945	0.451	140-149	0	0.0000	0	0.000
60-69	175	0.1311	772466	0.204	150-250	1	0.0004	2491	1.000
70-79	123	0.0835	491946	0.126	0-64	89	0.0684	402878	0.267
80-89	66	0.0396	233050	0.134	65-250	372	0.2417	1424150	0.100
90-99	37	0.0202	119179	0.180	0-250	461	0.3101	1827028	0.097



HALIBUT CREST - adapted from designs used by Tlingit, Tsimshian and Haida Indians