

Methodology for ISER Surveys of Alaska Halibut Fishermen

by

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Summary

In 1998, the University of Alaska Institute of Social and Economic Research (ISER) conducted two telephone surveys of Alaska halibut fishermen about the effects of Individual Fishing Quota (IFQ) management of the Alaska halibut fishery. Funding for the surveys was provided by the Alaska Sea Grant College Program. This paper, one of a series of working papers reporting on results of the surveys, discusses sample selection, response rates, and weighting for the surveys.

The *Captains Resurvey* was a resurvey of halibut captains ISER surveyed in 1994, just before the IFQ program went into effect. The purpose of the Captains Resurvey was to gather information about how the introduction of IFQ management in the Alaska halibut fishery in 1995 had affected the halibut fishery and those who fished for halibut before the program was introduced.

The *Permit Holders Survey* was a survey of a random sample of 1997 State of Alaska halibut permit holders. The purpose of the Permit Holders Survey was to gather information about the 1997 halibut fishery from a random sample of participants, including persons who did not fish for halibut before IFQ management.

The table below summarizes sample sizes, response rates, and number of interviews for each survey. The samples for both surveys were stratified by vessel size. Except where noted otherwise, the survey results reported in this working paper series are weighted to adjust for this stratification.

Survey Sample Sizes, Response Rates, and Numbers of Interviews

	Captains Resurvey	Permit Holders Survey
Sample size	249	200
Respondents contacted	208	134
Response rate = (respondents contacted)/(sample size)	84%	67%
Number of interviews*		
Captains Resurvey, Total	208	
1993 captains who fished in 1997*	93	
1993 captains who did not fish in 1997*	91	
1993 respondents were vessel owners but not captains	19	
1993 respondents who fished in 1997 under a CDQ allocation	5	
Permit Holders Survey, Total		134
1997 permit holders who fished vessels listed on their permits*		97
1997 permit holders who fished other vessels*		11
1997 permit holders who did not participate in IFQ fishery		26

*Most of the survey analysis is based on the responses of the groups marked with a * and with numbers shown in bold font.

File: Survey summary.

The estimated 1997 harvest based on Permit Holders Survey weighted responses was 90% of the actual harvest reported by the International Pacific Halibut Commission, while the estimated number of boats based on survey responses was 94% of the number reported by the Commission. This suggests that the survey respondents' vessels were reasonably, although not perfectly, representative of vessels in the 1997 halibut fishery.

Introduction

In 1998, the University of Alaska Institute of Social and Economic Research (ISER) conducted two telephone surveys of Alaska halibut fishermen about the effects of Individual Fishing Quota (IFQ) management of the Alaska halibut fishery.

- The *Captains Resurvey* was a resurvey of halibut captains ISER surveyed in 1994, just before the IFQ program went into effect. The purpose of the Captains Resurvey was to gather information about how the introduction of IFQ management in the Alaska halibut fishery in 1995 had affected the halibut fishery and those who fished for halibut before the program was introduced.
- The *Permit Holders Survey* was a survey of a random sample of 1997 State of Alaska halibut permit holders. The purpose of the Permit Holders Survey was to gather information about the 1997 halibut fishery from a random sample of participants, including persons who did not fish for halibut before IFQ management.

Funding for the surveys was provided by the Alaska Sea Grant College Program. This paper, one of a series of working papers reporting on results of the surveys, discusses sample selection, response rates, and weighting for the surveys.^{1, 2}

In order to discuss sampling the Captains Resurvey, it is first necessary to discuss the survey of halibut captains conducted by ISER in 1994 before the IFQ program went into effect. Because that previous survey asked about halibut fishing during the 1993 season, in this paper we refer to it as the *1993 Survey*.

Throughout this paper (as well as other papers in this series), we refer to the surveys by the names shown in italics above.³ Copies of the survey instruments are available upon request from the author of this paper.

1993 Survey

In order to understand sample selection, response rates and weighting for the Captains Resurvey, it is necessary first to discuss these issues for the 1993 Survey.⁴ The purpose

¹A list of working papers in this series may be found at the ISER web site at <http://www.iser.uaa.alaska.edu>. Copies of these papers may be downloaded from this site in pdf format.

²A growing body of research discusses effects of IFQ management in Alaska and elsewhere. In these working papers, we do not attempt to describe this research, or to compare results of the ISER surveys with other sources of information about effects of IFQ management. Our purpose is simply to report the results of the ISER surveys. At the end of this paper, we have included a list of references about the Alaska IFQ program.

³We chose these names for use in this report for purposes of brevity and contrast, and to refer to the year for which the surveys collected information (as opposed to the years in which they were administered). We used other names for the surveys at the time they were administered and on the survey instruments. We referred to the 1993 Survey as the "1994 Halibut-Sablefish Survey." We referred to the Captains Resurvey as the "1997 Sea Grant Survey, 1994 Reinterview Sample." We referred to the Permit Holders Survey as the "1997 Sea Grant Survey, 1997 Sample."

⁴Funding for the 1993 survey was provided under Saltonstall-Kennedy program grant #NA37FD0184. A description of the 1993 halibut fishery, based largely on that survey, is provided in a 20-page report by ISER researchers Matthew Berman and Linda Leask entitled "On the Eve of IFQs: Fishing for Alaska's

of the 1993 survey was to gather information about the halibut and sablefish fisheries prior to the implementation of IFQ management, as well as fishermen's expectations about and attitudes towards IFQ management.

The sampling goal for the 1993 Survey was to create a stratified sample of all vessels which fished for halibut and/or sablefish in Alaska in 1993.⁵ To select the sample, we began with two public data files:

(a) The Alaska Department of Fish and Game (ADF&G) 1993 public vessel license file. This file contains the following records, among others:

- Vessel ADF&G number
- Vessel name
- Vessel owner name and address
- Vessel length
- Gear types fished by the vessel

(b) The Commercial Fisheries Entry Commission (CFEC) public files for 1993 halibut and sablefish permits (all persons who held either B permits or statewide C permits, excluding the northern and southern southeast limited entry C permits). The permit file contains the following records, among others:

- Permit holder's name
- Permit holder's address
- Vessel ADF&G number for the vessel that the owner intends to fish with.

Under Alaska statute, the operators of fishing vessels are required to hold permits for all fisheries (species & gear combinations) in which the vessel participates.⁶ Usually, although not always, the permit is held by the vessel captain. In most cases, the vessel captain is also the vessel owner, but in some cases--more frequently for larger vessels--the captain and/or permit holder is different from the vessel owner.

The permit application form asks applicants to "write in the ADF&G number of the vessel you will be fishing." However, the vessel listed on the permit application is not always the

Halibut and Sablefish (1994). Copies of the report by Berman and Leask are available upon request from the author of this paper.

⁵Southeast Alaska limited entry sablefish fisheries were not included because these fisheries were not included in the IFQ program.

⁶Applicable statutes include the following:

SEC.16.43.140. PERMIT REQUIRED. (a) After January 1, 1974, no person may operate gear in the commercial taking of fishery resources without a valid entry permit or a valid interim-use permit issued by the commission.

(b) A permit is not required of a crewman or other person assisting in the operation of a unit of gear engaged in the commercial taking of fishery resources as long as the holder of the entry permit or the interim use permit for that particular unit of gear is at all times present and actively engaged in the operation of the gear.

(c) A person may hold more than one interim-use or entry permit issued or transferred under this chapter only for the following purposes:

- (1) fishing more than one type of gear;
- (2) fishing in more than one administrative area;
- (3) harvesting particular species for which separate interim-use or entry permits are issued.

vessel that is actually fished in the fishery. In addition, some people do not provide an ADF&G number.

We matched the permit files to the vessel file by vessel number. We also obtained some additional matches by matching the permit holder name and address to the vessel owner name and address. We refer to the matched halibut and/or sablefish permit holder/vessel combinations as the "matched file."

We divided the matched file into three strata:

- Vessels under 60' in length (4645 vessels)
- Vessels 60'-99' in length (249 vessels)
- Vessels 100' or longer (57 vessels)

We created a fourth stratum consisting of vessels that had longline gear indicated on the vessel license file but which did not match to a halibut and/or sablefish permit. We assumed that these were vessels which were likely to have fished for halibut and/or sablefish, but with permit holders who did not indicate on their permits that they would fish from these vessels. The reason that they did not match with permit holders may have been that the permit holder did not provide the vessel ADF&G number, or that the permit holder fished a different vessel than had been indicated on the permit application.

Table 1 shows the number of vessels sampled in each stratum, the response rate, and the weights used to extrapolate the survey responses to the population. A total of 391 interviews were completed, and an additional 31 permit holders were contacted but not interviewed (for vessels which did not fish for halibut or sablefish during the period 1987-1993 or which sank prior to 1993), for a survey response rate of 70%. Responses reported were weighted to the total population in each of the four sample groups.

While the sample was based on the 1993 permit file, we conducted interviews for all vessels which fished for halibut or sablefish between 1987 and 1993. Of the 391 completed surveys, only 302 were for vessels which fished for halibut in 1993. As shown in Table 2, of these interviews, 278 were with persons who were the vessel owners, and 250 were with persons who were captains for halibut fishing in 1993. (Most of the persons interviewed were both vessel owners and captains). Thus, the 1993 Survey is representative of only 93% of 1993 vessel owners and 89% of 1993 captains.

Table 3 compares IPHC data for the number of vessels which participated in the 1993 halibut fishery with estimates derived from the survey, by vessel length category. This provides one indication of how representative the 302 surveys for vessels which fished for halibut in 1993 were of the approximately 3518 vessels which fished for halibut in 1993. Based on weighted survey responses, we would estimate that 3943 vessels participated in the 1993 halibut fishery. IPHC data (adjusted for double-counting of vessels which fished in multiple areas) indicate that approximately 3518 vessels actually fished for halibut. Thus our survey results overestimate the total number of vessels by about 12%. The ratios of the survey estimates to the IPHC data shown in the right-hand column of Table 3 indicate that the survey tends to overstate the number of vessels shorter than 40 feet and overstate the number of vessels longer than 40 feet.

Most of the questions for the 1993 Survey related to halibut and sablefish fishing activities in 1993, vessel expenditures and payment of captains and crew in the halibut and sablefish fisheries, participation and expenditures in other fisheries, and plans to purchase or sell quota share under different assumptions about prices for fish and quota share. Five questions about management preferences for halibut and expected effects of the halibut IFQ

program were asked at the end of the interview. Most respondents appeared interested in the survey and provided detailed answers. Many of the interviews lasted more than an hour.

Table 1
1993 Survey Sample Selection and Weights

	Population Sampled				Total
	Vessels for which the vessel file matched to the permit file			Vessels for which the vessel file did not match to the permit file	
	Vessels Under 60'	Vessels 60'-99'	Vessels 100' or longer		
Number of vessels in 1993 Survey universe	4645	249	57	645	5596
Sample size	400	100	57	50	607
Percent sampled	9%	40%	100%	8%	11%
Total vessels contacted	297	65	31	29	422
Number of completed interviews	280	63	29	19	391
Vessels contacted but which didn't fish or which sank	17	2	2	10	31
Vessels not contacted or which refused interviews	103	35	26	21	185
Response rate for 1993 Survey (a)	74%	65%	54%	58%	70%
Weight for 1993 Survey responses (WEIGHT1) (b)	15.64	3.83	1.84	22.24	

(a) (Completed interviews plus vessels contacted which didn't fish or sank) divided by sample size.

(b) Estimated number of vessels in sample divided by (completed interviews plus vessels contacted which didn't fish or sank).
File: 93 Sample.

Table 2
Percentage of 1993 Halibut Vessels, Owners and Captains Represented by Responses to the 1993 Survey

	Original Population Sampled for 1993 Survey				Total
	Vessels for which the vessel file matched to the permit file			Vessels for which the vessel file did not match to the permit file	
	Vessels Under 60'	Vessels 60'-99'	Vessels 100' or longer		
Weight for 1993 Survey responses (WEIGHT1)	15.64	3.83	1.84	22.24	
Unweighted responses representing:					
Vessels which fished for halibut in 1993	222	50	19	11	302
Owners of vessels which fished for halibut in 1993	209	43	16	10	278
Captains of vessels which fished for halibut in 1993	201	32	6	11	250
Weighted responses representing:					
Vessel	3472	192	35	245	3943
Person who was the vessel owner in 1993	3269	165	29	222	3685
Person who was the vessel captain in 1993	3144	123	11	245	3522
Percentage represented by weighted responses:					
Vessel	100%	100%	100%	100%	100%
Person who was the vessel owner in 1993	94%	86%	84%	91%	93%
Person who was the vessel captain in 1993	91%	64%	32%	100%	89%

Note: Assumes that the vessel responses were representative of the population.

File: 93 Sample.

Table 3
Number of Vessels Participating in the 1993 Halibut Fishery
Comparison of IPHC Data and Survey Estimates

Vessel length	IPHC Vessel Count, 1993					Unadjusted total (b)	Adjusted total (c)	Weighted survey estimate (d)	Ratio, survey estimate to IPHC adj. total
	IPHC Vessel Count, by Area (a)								
	Area 2C	Area 3A	Area 3B	Area 4					
Unknown	10	14	2	9	35	60			
< 26 feet	295	146	5	67	513	501	960	1.92	
26 to 30 ft.	122	85	1	19	227	227	617	2.72	
31 to 35 ft.	205	202	46	50	503	463	639	1.38	
36 to 40 ft.	344	281	66	13	704	689	782	1.13	
41 to 45 ft.	220	210	55	22	507	457	297	0.65	
46 to 50 ft.	173	133	58	14	378	378	328	0.87	
51 to 55 ft.	73	91	19	10	193	193	47	0.24	
56+ ft.	135	367	148	99	749	550	273	0.50	
Total	1577	1529	400	303	3809	3518	3943	1.12	

(a) Source: IPHC 1993 Annual Report, Appendix I, Table 2.

(b) Not adjusted for double-counting of vessels which fished in more than one area.

(c) Adjustment was based on survey results for the number of vessels which off-loaded halibut at ports in more than one area (programming is in file NUMBOATS.LOG).

(d) Based on weighted number of vessels surveyed in each size class.

File: 1993 vessels.

Captains Resurvey

The goal of the Captains Resurvey was to resurvey respondents to the 1993 Survey to address two broad questions:

1. What happened to participants in the 1993 halibut fishery over the next four years (between 1993 and 1997), with the implementation of the IFQ management system?
2. How did the halibut fishery change between 1993 and 1997?

For this purpose, we wished to resurvey all respondents to the 1993 Survey who fished for halibut in 1993 and who provided substantive information about their halibut fishing in 1993. As shown in Table 4, of the 302 respondents to the 1993 Survey whose vessels fished for halibut in 1993, 255 provided information about their 1993 halibut fishing. We included 249 of these individuals in the sample for the 1997 captains survey,⁷ and we contacted and re-interviewed 203 of them, for a response rate of 84%.

As shown in Table 5, these 203 respondents, when weighted, represented 70% of the vessels which fished for halibut in 1993, 66% of the 1993 vessel owners, and 63% of the 1993 captains.

⁷The other six were omitted by mistake.

Table 4
Captains Resurvey Sample Selection and Response Rates

	Original Population Sampled for 1993 Survey				Total
	Vessels for which the vessel file matched to the permit file			Vessels for which the vessel file did not match to the permit file	
	Vessels Under 60'	Vessels 60'-99'	Vessels 100' or longer		
Number of 1993 Survey responses for vessels which fished for halibut in 1993 (a)	222	50	19	11	302
Number which responded in any way to 1993 Survey Section C, regarding first halibut opening fished	213	45	19	10	287
Number which provided substantive answers in Section C or D regarding halibut fishing operations (b)	192	40	15	8	255
Number included in Captains Resurvey sample	188	40	14	7	249
Number not interviewed					
No telephone number could be found	4	2	2		8
Telephone number was found but respondent could not be reached.	15	4	4		23
Respondent was not interviewed because 1997 fishing was under a CDQ allocation	5				5
Respondent was contacted but declined to be interviewed	6	4			10
Respondent was interviewed for Captains Resurvey	158	30	8	7	203
Response rate for Captains Resurvey (c)	87%	75%	57%	100%	84%

(a) Based on variable CHKPT1 (response to Part 1, Section A, question at top of page 2).

(b) Based on review of original survey questionnaires.

(c) Completed interviews plus respondents not interviewed because 1997 fishing was under a CDQ allocation, divided by number included in sample.

File: 93 Sample.

Table 5
Percentage of 1993 Halibut Vessels, Owners and Captains Represented by Responses to the Captains Resurvey

	Original Population Sampled for 1993 Survey				Total
	Vessels for which the vessel file matched to the permit file			Vessels for which the vessel file did not match to the permit file	
	Vessels Under 60'	Vessels 60'-99'	Vessels 100' or longer		
Weight for 1993 Survey responses (WEIGHT1)	15.64	3.83	1.84	22.24	
Unweighted responses to 1993 Survey representing vessels which fished for halibut in 1993	222	50	19	11	302
Unweighted responses to Captains Resurvey representing:					
Vessels which fished for halibut in 1993	158	30	8	7	203
Owners of vessels which fished for halibut in 1993	149	27	8	7	191
Captains of vessels which fished for halibut in 1993	145	20	1	7	173
Weighted responses to 1993 Survey representing vessels which fished for halibut in 1993	3472	192	35	245	3943
Unweighted responses to Captains Resurvey representing:					
Vessels which fished for halibut in 1993	2471	115	15	156	2756
Owners of vessels which fished for halibut in 1993	2330	103	15	156	2604
Captains of vessels which fished for halibut in 1993	2268	77	2	156	2502
Percentage represented by weighted responses					
Vessels which fished for halibut in 1993	71%	60%	42%	64%	70%
Owners of vessels which fished for halibut in 1993	67%	54%	42%	64%	66%
Captains of vessels which fished for halibut in 1993	65%	40%	5%	64%	63%

File: 93 Sample.

We reported responses to the Captains Resurvey separately for the four broad groups shown in Table 6. Most of our analysis is based on responses of the first two groups. For analysis of how the conduct of the halibut fishery changed between 1993 and 1997, and

captains' opinions about effects of IFQ management on the fishery, we relied primarily on the responses of the individuals who were vessel captains in 1993 and who continued to fish for halibut in an IFQ fishery in 1997. For analysis of effects of the IFQ program on vessel captains, as well as attitudes of 1993 vessel captains towards IFQ management, we used responses of both the 1993 captains who continued to fish for halibut in an IFQ fishery in 1997 as well as the 1993 captains who did not fish for halibut in 1997. We made less use of the 19 responses of individuals who were vessel owners but not captains in 1993. This is because (a) the number of respondents for this group was relatively small; (b) we assumed vessel captains were more knowledgeable about the conduct of the fishery than 1993 owners who did not captain their vessels; and (c) we were more interested in the attitudes towards IFQ management of vessel captains than those of vessel owners.

Table 6
Captains Resurvey Interviews, by Type of Respondent

Total interviews conducted	208
1993 captains who fished in 1997	93
1993 captains who did not fish in 1997	91
1993 respondents were vessel owners but not captains	19
1993 respondents who fished in 1997 under a CDQ allocation	5

File: Survey summary.

Permit Holders Survey

The goal of the Permit Holders Survey was to collect information about the conduct of the 1997 halibut fishery from a representative sample of permit holders.

All vessels participating in Alaska halibut longline fisheries are required to have a State of Alaska halibut permit holder aboard. The permit holder is usually, although not always, the vessel captain. The State of Alaska requirement to have a permit holder on board is unrelated to (and predates by many years) the IFQ management system, which is a federal program. Under the IFQ management system, vessel halibut landings are limited by IFQ holdings of persons on board (or, in some cases, hired captains). IFQ holders are not necessarily permit holders, or vice versa.

To select the sample for the survey, we began with the Commercial Fisheries Entry Commission (CFEC) public listing of 1997 halibut permit holders, which was posted at the following internet site:

http://www.cfec.state.ak.us/pmtlist/YR1997/FISHERY/INDEXES/FINDX_B.HTM

We downloaded the listings of halibut permit holders for the B06B fishery (halibut longline, vessel length under 60') and the B61B fishery (halibut longline, vessel length 60' or over). We then drew random samples of 100 permit holders from each fishery.

Table 7 shows the total number of permits holders in each fishery, the number and types of interviews conducted, and the survey weighting calculations. We conducted interviews with 134 permit holders, for a response rate of 67%. Of these, 26 permit holders (interview types 3 and 4) did not fish in an IFQ fishery in 1997. The analysis of the survey results is based on the remaining 108 interviews (interview types 1 and 2).

For weighting to the total population of permit holders who fished for halibut in 1997, we used the ratio of the total number of permit holders in each fishery to the number of persons

interviewed who participated in the 1997 IFQ fishery. We refer to this weight as WEIGHTPH.

For weighting to the total population of vessels which fished for halibut in 1997, we divided WEIGHTPH by the number of times the ADF&G vessel number listed on the permit application appeared on the permit file (ADFGFREQ). This is because the probability a vessel would be selected for the sample was proportional to ADFGFREQ. For example, responses of a permit holder for a vessel which appeared in the permit file three times were only given a weight of one-third of the weight given to the permit holder, because the vessel was three times as likely to be selected as the permit holder. For vessels in the sample, ADFGFREQ ranged between 1 and 4.

For purposes of weighting to the vessel population, we excluded responses by permit holders who fished on vessels other than that listed on their permit application. This is because we had no way of determining the proper weight for these responses. Thus weighted responses for the vessel population exclude vessels fished by permit holders who did not list the vessel on their permit applications.

Table 8 compares IPHC data for the number of vessels which participated in the 1997 halibut fishery with estimates derived from the survey, by vessel length category. This provides one indication of how representative the vessels fished by survey respondents were of the total population of vessels which fished for halibut in 1997. The survey estimate of the number of vessels participating in the 1997 fishery was 94% of the total reported by the IPHC. The survey estimate of the total harvest was 90% of the total reported by the IPHC. Slight underestimates were to be expected because the estimates are based only on responses of the 97 permit holders who fished vessels listed on their permits (interview type 1), and exclude the responses of those who fished vessels other than those listed on their permits (interview type 2).

For individual vessel size categories, the survey estimates are less accurate. This is to be expected because the sample sizes are much smaller for individual size categories.

Table 7
Permit Holders Survey Sampling and Weighting

	Permit Type		Total
	B06B	B61B	
Total number of permit holders	1759	1267	3026
Sample Size	100	100	200
No interview conducted	28	38	66
<i>Reasons:</i>			
No record of reason	7	6	13
No telephone number could be found	6	8	14
Telephone number was found but respondent could not be reached.	2	9	11
Respondent could not be recontacted after initial contact	7	8	15
Respondent was contacted but declined to be interviewed	2	5	7
Respondent was not available and only limited information was obtained from family members or associates	4	2	6
Interview conducted	72	62	134
<i>Type of interview:</i>			
1. Interview completed about 1997 fishery	48	49	97
2. Respondent fished a vessel different from that listed on permit.	7	4	11
3. Permit holder did not fish in 1997 (a)	15	7	22
4. 1997 fishing was under a CDQ allocation (a)	2	2	4
Response rate	72%	62%	67%
Weight for weighting to total permit holder population (WEIGHTPH = Total permit holders/total interviews)	24.43	20.44	
Weight for weighting to total vessels (WEIGHTVE = WEIGHTPH / N) <i>N=Number of times vessel appeared in permit holder file:</i>			
1	24.43	20.44	
2	12.22	10.22	
3	8.14	6.81	
4	6.11	5.11	

(a) No further information was collected after this was determined.

Notes on weighting: Weights for permit holders were extrapolated using WEIGHTPH to the total permit holder population that fished in the IFQ fishery in 1997, based on responses to interview types 1 and 2. Responses for vessels were extrapolated using WEIGHTVE to the total vessel population fished by permit holders who fished the vessel listed on their permit application (interview type 1 only). Thus weighted survey responses exclude vessels not listed on permit applications.

File: 97 PH Weighting.

Table 8
Vessels and Harvests in the 1997 Halibut Fishery
Comparison of IPHC Data and Permit Holders Survey Estimates

Vessel length	Number of vessels			Harvests (pounds)			
	IPHC preliminary data (a)	Weighted survey estimate (b)	Ratio, survey estimate to IPHC total	IPHC preliminary data (a)	Weighted survey estimate (b)	Ratio, survey estimate to IPHC total	Number of survey responses (c)
Unknown	89			179,000			
< 26 feet	338	269	0.80	849,000	267,337	0.31	12
26 to 30 ft.	199	45	0.23	1,124,000	560,630	0.50	2
31 to 35 ft.	314	302	0.96	3,653,000	2,346,874	0.64	13
36 to 40 ft.	338	567	1.68	3,893,000	9,119,404	2.34	25
41 to 45 ft.	265	318	1.20	4,569,000	9,370,347	2.05	15
46 to 50 ft.	201	69	0.34	5,332,000	2,258,316	0.42	3
51 to 55 ft.	92	118	1.28	3,112,000	3,408,825	1.10	6
56+ ft.	344	356	1.03	29,654,000	19,856,821	0.67	21
Total	2180	2044	0.94	52,365,000	47,188,554	0.90	97

(a) Source: IPHC 1997 Annual Report, Appendix I, Table 4.

(b) Excludes vessels not listed on permit application.

(c) Number of survey responses on which harvest estimates are based.

File: 1997 vessels.

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