

# MEMORANDUM

## State Of Alaska Department of Fish and Game

TO: Kevin Duffy  
Deputy Commissioner  
Juneau

DATE: September 20, 2002

THRU: Rob Bentz  
Deputy Director  
Division of Sport Fish  
Juneau

TELEPHONE NO: 465-6187

FROM: Allen E. Bingham  
Chief Biometrician  
Research and Technical Services  
Division of Sport Fish  
Anchorage

TELEPHONE NO: 267-2327

SUBJECT: Response to data request letter from  
Chris Oliver, North Pacific Fishery  
Management Council, his letter to you  
dated August 13, 2002

This memorandum summarizes the results of the data and analyses requested by the North Pacific Fishery Management Council (NPFMC) in Chris Oliver's letter to you of August 13, 2002. The following pages of the memo cover each of the bulleted items in the NPFMC letter. The data and analysis as summarized in this memo are complete, and each item has been addressed to the extent feasible given constraints related to the corresponding data sets. We have outlined the nature of the constraints whenever an item could not be completely addressed. An executive summary follows:

### **Executive Summary**

The primary purpose of the requested analyses was to look for meaningful misreporting of Pacific halibut harvest in the logbook program during 1998 and 1999. By necessity, the records used in this analysis were limited to vessel trips with both a logbook entry and an on-site interview for the same day. These matching records therefore did not represent a random sample of all charter trips. In 1998, the matched records made up only 4.8% of trips in IPHC Area 2C and 4.0% of trips in Area 3A; in 1999 the matched records made up 5.7% and 5.0% of trips in the two areas, respectively. The majority of individual vessels were interviewed fewer than ten times per year, and matched records were only available from approximately 30% of charter vessels operating during both years and in both areas. Accordingly, any misreporting of harvest by the remaining 70% of the charter vessels, a group whose membership was determined by circumstance and not design, cannot be evaluated.

Logbook data was not expected to be substantially different from interview data because most charter operators were interviewed within a few minutes of docking, that is, just before or just after being required to record their harvest in their logbooks. The low percentage of trips that were observed and the non-independence of logbook and interview data severely compromise the validity of any conclusions concerning the presence or absence of misreporting of harvest from this analysis.

Although matching logbook and interview data were expected to be similar, a substantial percentage of the records did not agree, particularly in Area 3A. In this area in 1998, the number of halibut reported kept in the logbook did not agree with the number reported in interviews more than half the time. The degree of agreement increased to 69% in 1999.

Even though many records did not agree exactly, the differences were distributed relatively evenly around zero in both areas, and the average differences were not appreciably different from zero. Very few vessels under or over-reported at a statistically significant level. Therefore, there is little evidence to support or deny any appreciable or consistent patterns of under- or over-reporting by individual charter vessel operators during 1998 and 1999 in either region (mostly due to insufficient sample sizes).

Results of this analysis do not necessarily refute the previous comparison of logbook data to the independent data from the Statewide Harvest Survey because logbook and interview data are not independent, and matching interviews represented a very small fraction of logged charter trips.

Feel free to call me and/or Rob regarding any questions you might have in regards to the results summarized in this memorandum.

cc (via email):	Scott Meyer	Mike Jaenicke	Bob Clark
	Rocky Holmes	Dave Bernard	Doug Vincent-Lang
	Kelly Hepler		

## INTRODUCTION

This document summarizes the results of the data and analyses requested by the North Pacific Fishery Management Council (NPFMC) in Chris Oliver's letter to you of August 13, 2002. The bulleted items in the NPFMC request are addressed in separate sections that follow this short introduction. The bulleted item is quoted at the beginning of each section for clarity sake. The data and analysis as summarized below are complete, and each item has been addressed to the extent feasible given constraints related to the data sets. We have outlined the nature of the constraints whenever an item could not be completely addressed due to such constraints.

The NPFMC requested that, if feasible, all summaries be limited to vessel-trips for registered guide businesses that meet the proposed Individual Fishing Quota (IFQ) eligibility criteria (i.e., submitted at least one page of logbook data with bottomfish effort in either 1998 or 1999 and at least one page of logbook data with bottomfish effort in 2000). Limiting the analysis to these criteria was not feasible (primarily due to some difficulties in correctly matching logbook data to business license data for 1998).<sup>1</sup> Accordingly the analyses described in this document apply to all logbook records for trips on active<sup>2</sup> days.

## INTERVIEW SAMPLING PROCEDURES AND CONSTRAINTS

- *Short description of the interview sampling procedures with an identification of pertinent issues that might constrain the comparisons (e.g., voluntary interviews w/o verification of the accuracy of information in many cases). This description will include the coverage by port and periods of the year (by year).*

The interview and sampling procedures are summarized separately for the two separate ADF&G management regions that encompass International Halibut Commission IPHC Areas 2C and 3A, followed by a section on the constraints to the comparisons that were common to both regions.

## INTERVIEW PROCEDURES IN SOUTHCENTRAL ALASKA (KODIAK TO PWS)

Charter skippers (and non-charter anglers) were interviewed in 1998 and 1999 as part of the Southcentral Halibut and Groundfish Harvest Assessment Project. This ongoing harvest monitoring project describes the sport fishery landings of halibut, rockfish, lingcod, and sharks from major ports in southcentral Alaska. The primary purpose of the interviews was to estimate the spatial distribution of effort and harvest of halibut and other groundfish at each sampled port. Interview data were also used to estimate the proportion of the sport halibut harvest that was cleaned (and carcasses disposed of) at sea. Interview data have also proven useful for evaluating local area management plan (LAMP) proposals.

Interviews were not designed or conducted for the purpose of validating logbook entries. Port samplers had very limited enforcement authority and their primary responsibility was to gather data. If they witnessed a violation, they were instructed to gather evidence and report to the local Fish and

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<sup>1</sup> This requested restriction for the analysis was one of the bulleted items in the data analysis request. It is not repeated in the remainder of this document since it was determined to not be feasible.

<sup>2</sup> The logbook datasets include records for inactive days and trip s within days in which the charter vessel fished with clients. The analyses presented in this document did not involve use of inactive records. The previously reported logbook evaluation memorandum (September 21, 2001, memo from Bingham to Duffy) included an evaluation of the inactive records as well (e.g., did vessels report inactivity during days in which they were sampled on-site by creel or catch sampling programs?).

Wildlife Protection Trooper. Port samplers in southcentral Alaska were instructed not to routinely check logbooks, but if a charter operator expressed uncertainty about any answer, the port samplers were told to ask the charter operator what they recorded in their logbook. This was effective at flushing out operators that had not yet recorded data in their logbook or that didn't have a logbook on the vessel. This practice was most prevalent in 1998, the first year of the logbook program.

Charter operators consulted their logbook to provide answers to interview questions only very rarely in 1998 and 1999. Although not recorded, staff estimate this occurred less than 5% of the time. Staff also estimate that in 1998 about 25-50% of the time charter operators in Southcentral Alaska had not yet completed their logbooks at the time of the interview (even though in most cases they were required to). When that was detected, the charter operators were advised to complete the logbook but technicians did not remain with the charter operator to ensure completion.

### Sampling Design

One fishery technician was stationed at each of the following ports: Kodiak, Homer, Seward, Whittier, and Valdez. In addition, a single technician covered the Deep Creek and Anchor Point beaches (Central Cook Inlet fishery). Interviews were conducted in the small boat harbors, at boat ramps, and at beach launching sites. The length of the sampling season varied by port (Table 1).

**Table 1.-Summary of sampling season for the Southcentral Halibut and Groundfish Harvest Assessment Project during 1998 and 1999.**

Year	Kodiak	Homer	Central			
			Cook Inlet	Seward	Whittier	Valdez
1998	5/21-9/07	5/18-9/07	5/18-8/30	6/04-9/07	8/03-9/07	6/25-9/06
1999	5/21-9/07	5/17-9/10	5/17-8/26	5/27-9/06	5/29-9/06	5/27-9/06

Sampling designs also varied by port. Interviews were conducted concurrently with collection of biological data from harvested fish at Kodiak and Whittier. At all other ports, interviews were conducted only two randomly selected days per week. Three landing sites were sampled in Kodiak (two boat harbors and U.S. Coast Guard boat ramp). The Kodiak technician chose the first site to sample at random and then rotated through the sites during each shift, staying long enough at each to interview returning anglers and sample available fish. At Homer, Seward, and the Deep Creek beach, the harbors and beach were too large for the technician to contact all returning boats. In these cases, the harbors and beach were divided into three to five sections and each section was sampled systematically such that equal sampling effort was expended in each section. At these ports, therefore, only about one-third to one-fifth of returning boats were contacted during interview shifts.

Work shifts also varied by port. At all ports except Deep Creek and Anchor Point, sampling was conducted during the late afternoon and evening hours when the majority of boats were returning. Work shifts in the Central Cook Inlet fishery were structured around tides because vessels tend to leave the water 2 hours or more following high slack tide. At other ports, charter vessels that returned to port early because they were half-day charters, or overnight trips, or caught their limit early, or were blown off the water, would have been missed at most ports. The majority of interviews were obtained during the period 1500-2100 hours during 1998 and 1999 (Table 2).

Because only one technician was assigned to each port, the probability of an individual vessel being contacted for an interview was lowest in the ports with the most fishing effort. For example, it wasn't unusual in smaller ports such as Kodiak or Valdez to interview a vessel 10-20 times or more

during a season. But in the larger fisheries such as Homer and Central Cook Inlet, few vessels were interviewed more than a half-dozen times.

**Table 2.- Frequency of charter vessel-trip interviews by hour of the day (24-hour clock) and port, for the Southcentral Halibut and Groundfish Harvest Assessment Project during 1998 and 1999.**

Year/Hour	Central Cook						Total
	Kodiak	Inlet	Homer	Seward	Whittier	Valdez	
<b>1998</b>							
11	0	1	0	0	0	0	1
12	0	4	0	0	0	0	4
13	0	15	0	0	0	0	15
14	0	32	50	0	1	0	83
15	14	39	71	3	0	0	127
16	47	44	96	12	2	0	201
17	67	14	77	30	1	10	199
18	57	6	51	32	3	23	172
19	53	8	27	14	15	35	152
20	23	28	7	6	4	34	102
21	18	30	0	0	1	22	71
22	2	0	0	0	0	1	3
23	3	0	0	0	0	0	3
Total	284	221	379	97	27	125	1,133
<b>1999</b>							
11	0	16	0	0	0	0	16
12	0	20	0	0	0	0	20
13	0	12	0	0	0	0	12
14	1	19	57	4	0	0	81
15	3	35	69	6	0	0	113
16	5	47	90	25	1	2	170
17	19	34	100	72	16	7	248
18	14	55	53	60	11	45	238
19	12	33	21	61	15	91	233
20	11	20	7	27	16	63	144
21	3	15	0	0	0	33	51
22	2	0	0	0	0	1	3
23	0	0	0	0	0	0	0
Total	70	306	397	255	59	242	1,329

### Interview Procedure

Interviews with charter boats were normally conducted within 5 or 10 minutes of when the charter logbook was required to be completed. In most cases this was after the vessel had docked or been pulled up onto the beach, and the clients had been offloaded. In Seward, charter captains were sometimes interviewed at the fuel dock, up to 1 hour after landing fish. Interviews were solicited from captains of any vessel that targeted halibut (regardless of success) or caught halibut while targeting other species. Interviews were done on a voluntary basis, though only a small proportion

of charter operators refused to cooperate. Captains or crew on charter boats were interviewed (rather than clients) to obtain accurate reporting of statistical areas and species. The following information was recorded for each boat-trip:

- Hour of the interview
- Area of the harbor (Kodiak, Homer, Deep Creek, and Seward only)
- User group (e.g. charter, private)
- CFEC vessel license number and boat name (charter only)
- Single or multiple-day trip
- Primary ADF&G groundfish statistical area fished
- Number of anglers that fished (including crew)
- Target species category
- Number of halibut kept, number released, and number of halibut cleaned at sea
- Numbers of lingcod, pelagic rockfish, non-pelagic rockfish, salmon sharks, Pacific sleeper sharks, and spiny dogfish kept and released.

Target categories included halibut only, rockfish only, lingcod only, any combination of halibut or other groundfishes (“bottomfish”), halibut or other bottomfish in conjunction with salmon (“bottomfish and salmon”), or salmon only.

Interview data were recorded in the field on Mark Sense Marine Interview forms (Version 1.0). During the interview the technicians recorded the responses using shorthand codes, then coded the bubbles on the form as time allowed. This facilitated spotting and correcting errors during editing.

Mark Sense forms were scanned and edited at the end of the season. Editing consisted of examining frequency listings and data file printouts for obvious errors and correcting the data files. Following initial editing, each data file was subjected to two more error-checking programs. The first checked for and flagged the following possible data recording and editing errors:

- Incorrect record length
- Record marked for deletion and not deleted
- Data recorded in fields that are supposed to be left blank
- Variables outside of valid range
- Missing data
- Unauthorized user group reported for a particular port
- Number of fish reported kept or released repeated incorrectly
- Apparent bag limit violation
- Impossible statistical area recorded

The second program verified all recorded CFEC vessel license numbers by comparing them to the CFEC license file available on the CFEC web site. Once all possible errors identified by these programs were addressed, the file was ready for analysis.

## **INTERVIEW PROCEDURES IN SOUTHEAST ALASKA (KETCHIKAN TO YAKUTAT)**

Charter skippers and non-charter anglers were interviewed in 1998 and 1999 as part of the Southeast Marine Harvest Studies Project. This ongoing harvest monitoring project describes the sport fishery effort and catch of the five species of Pacific salmon, halibut, rockfish, and lingcod from major ports in southeast Alaska. At the three major ports (Ketchikan, Juneau, and Sitka) and Haines there was a full-scale randomized creel survey conducted, while at five other ports (Craig/Klawock,

Petersburg, Wrangell, Skagway and Yakutat) a more simplified catch sampling program was conducted. The primary purpose of the interviews was to estimate the total effort, harvest and catch of salmon, halibut, rockfish and lingcod at each sampled port. Interview data may prove useful for evaluating future local area management plan (LAMP) proposals.

It is important to reiterate that interviews were not designed or conducted for the purpose of validating logbook entries. Port samplers had very limited enforcement authority and their primary responsibility was to gather data. If they witnessed a violation, they were instructed to gather evidence and report to the local Fish and Wildlife Protection Trooper. Port samplers in southeast Alaska were instructed not to check logbooks.

During sampling in Southeast Alaska fishery technicians on the docks/boat launches attempted to see every possible fish harvested by returning anglers (both charter and private boats). Beyond the need to verify fish species identification, our technicians also were looking for coded wire tagged chinook and coho salmon as well as collecting lengths from harvested halibut and lingcod. Therefore, the fishery technicians conducted the interview directly with the charter operator to collect the information on the effort and catch for that particular trip and visually inspect the harvested fish. The creel samplers are not suspected to have intentionally “prompted” charter vessel operators/skippers to recall their boat’s catch/harvest by asking them to check their logbooks.

### **Sampling Design**

At all Southeast Alaska sampled ports, both interviews and biological data were collected at the same time. Creel interviews were conducted in the boat harbors and boat ramps. The number of fishery technicians sampling at the various ports was in part dependent on the sport fishery effort at each individual port, thus there were more fishery technicians at the large ports of Juneau, Ketchikan and Sitka than the smaller ports (Table 3).

At the three largest communities in Southeast Alaska (Juneau, Ketchikan, and Sitka) and Haines, a full-scale creel survey was conducted on a randomized basis at the main boat docks and boat ramps (i.e., fishery exit points). Number of fishery technician conducting the creel surveys ranged from 1 (Haines) to 4 (Sitka and Ketchikan) to 5 (Juneau) in 1998 and 1999 (Table 3). Each sampling day was typically divided into 2 to 4 time periods, and the sampling schedule (day, harbor, and time for sampling) was generated prior to the beginning of each creel survey season. At each of the three full-scale creel survey sites, we also had one additional sampler for increasing sample size of sampled harvested fish (i.e., specifically searching for Coded Wire Tagged salmon and collecting halibut lengths). The extra sampler **did not** collect interview information, such as whether angler was charter or private, CFEC number from charter boats, hours fished, and fish released.

The creel sampling programs at Craig/Klawock, Petersburg, Wrangell, Skagway and Yakutat were scheduled to maximize the chance of interviewing returning anglers, which generally occur in the late morning to late afternoon when the majority of boats were returning. This generally meant that both half-day and full-day charter trips could be sampled; however, charter boats that returned to port earlier in the morning and very late at night would have been missed. Note that at the ports of Haines and Skagway, the CFEC numbers from interviewed charter boats **were not** collected/recorded during the creel interview process. Also, the Haines creel survey ended prior to July 1, so charter activity after July 1 was not sampled. In Yakutat, the ADF&G charter vessel logbook number instead of CFEC number was recorded/collected during creel interviews from charter boats.

Examination of the Southeast creel survey interviews during 1998 and 1999 indicate that nearly all the charter vessel interviews at the various ports occurred between the hours of 1100 and 2000, with the majority occurring between 1400 and 1800 (Table 4).

At all Southeast Alaska ports in which a creel survey or creel sampling program was conducted, not all returning charter boats could be sampled. The reasons for not being sampled included: 1) the charter vessel used a private dock or facility which did not allow creel sampling on the private property, or 2) the charter vessel used a dock or facility which was not selected as one of the sampled major fishery exit points at the port.

### **Interview Procedure**

Interviews with charter boats were normally conducted within 5 or 10 minutes of when the charter logbook was required to be completed. In most cases this was after the vessel had docked and the clients had been offloaded. Interviews were solicited from captains of any vessel that had targeted bottomfish or salmon (regardless of success). Interviews were done on a voluntary basis, though only a small proportion of charter operators refused to cooperate. Captains or crew on charter boats were interviewed (rather than clients) to obtain accurate reporting of fishing areas and species. The following information was recorded for each boat-trip:

- Name of the harbor sampled
- User group (e.g. charter, private)
- Target species category
- Primary creel survey area fished
- Hour of the interview
- Single or multiple-day trip
- Number of rods that were fished
- Number of hours fished (excluding running time and other non-fishing time)
- Number of halibut kept, number released, and number of halibut cleaned at sea (the latter collected in 1999 only in Sitka)
- Number of other bottomfish and salmon kept or released.

Target categories included bottomfish only (any combination of halibut, lingcod, or rockfish) or salmon only. If the boating party had targeted both salmon and halibut on a trip, then a separate interview line was recorded for each targeted species (location, effort, catch and harvest). The CFEC vessel license number was recorded for each charter vessel interviewed, and in many cases the port samplers also recorded boat names for verification.

Interview data were recorded in the field on Mark Sense Marine Interview forms (Version 1.0). During the interview the technicians recorded the responses using shorthand codes, then coded the bubbles on the form as time allowed. This facilitated spotting and correcting errors during editing.



**Table 3.-Summary of marine harvest programs (survey period, number of technicians, and docks/ramps sampled) at the nine sampled ports in Southeast Alaska during 1998-1999.**

	Year	Ketchikan	Juneau	Sitka	Craig/ Klawock	Petersburg	Wrangell	Haines	Skagway	Yakutat
<b>Type of survey</b>	1998 & 1999	Creel survey	Creel survey	Creel survey	Catch sampling	Catch sampling	Catch sampling	Creel survey	Catch sampling	Catch sampling
<b>Information Collected</b>	1998 & 1999	Interview data and halibut lengths	Interview data and halibut lengths	Interview data and halibut lengths	Interview data and halibut lengths	Interview data and halibut lengths	Interview data and halibut lengths	Interview data and king salmon lengths only	Interview data and king salmon lengths only	Interview data and halibut lengths
<b>Charter vessel CFEC No. collected</b>	1998 & 1999	YES	YES	YES	YES	YES	YES	NO	NO	NO <sup>a</sup>
<b>Sampling Time</b>	1998 & 1999	7-hr periods (early or late shifts)	7-hr periods (early or late shifts)	3-hr periods (early, middle, late)	Optimum periods of day	Optimum periods of day	Optimum periods of day	5-11 hr periods (early or late shifts)	Optimum periods of day	Optimum periods of day
<b>Survey Period</b>	1998 & 1999	4/27-9/27 4/26-9/26	4/27-9/27 4/26-9/26	4/27-9/27 4/26-9/26	4/27-9/13 4/26-9/12	5/04-7/19 5/03-7/11	4/27-6/15 4/26-7/04	5/11-6/28 5/10-6/27	6/9-7/14 6/17-7/28	4/22-9/27 4/15-9/18
<b>Number of Technicians</b>	1998 & 1999	5 <sup>b</sup>	6 <sup>b</sup>	4	1	1	1	2	1 <sup>d</sup>	1
<b>Number of docks/ramps sampled</b>	1998 & 1999	10	12	8	2	4	4	3	1	2

<sup>a</sup> In Yakutat, the ADF&G charter vessel logbook number instead of CFEC number was recorded/collected during creel interviews from charter boats.

<sup>b</sup> Included one additional sampler for increasing sample size of sampled harvested fish. Extra sampler **did not** collect interview information, such as whether angler was charter or private, CFEC no. from charter boats, hours fished, and fish released.

<sup>c</sup> In 1999, we hired an extra person and began interviewing anglers (private and charter) at five sites in Klawock..

<sup>d</sup> Creel sampling in Skagway during 1998 and 1999 was done on an infrequent basis (approximately one day a week).

**Table 4.**-Frequency of charter vessel-trip interviews by hour of the day (24-hour clock) and port, for the Southeast Marine Harvest Studies Project during 1998 and 1999. The frequencies for the port of Yakutat were not available.

Year/ Hour	Sitka	Juneau	Ketchikan	Petersburg	Wrangell	Craig	Klawock	Haines	Skagway	Total
<b>1998</b>										
9	0	0	0	0	0	0	NA	0	0	0
10	3	0	3	0	0	0	NA	0	0	6
11	34	4	9	1	0	0	NA	0	3	51
12	58	36	65	3	0	0	NA	0	24	186
13	36	41	50	12	0	8	NA	2	6	155
14	69	12	27	6	1	6	NA	3	0	124
15	165	13	70	16	2	10	NA	1	1	278
16	248	35	120	42	3	14	NA	7	1	470
17	193	58	88	31	1	22	NA	2	0	395
18	68	66	52	21	5	17	NA	3	0	232
19	19	46	13	4	3	4	NA	1	0	90
20	6	13	7	0	5	5	NA	0	0	36
21	1	2	1	0	0	0	NA	1	0	5
22	0	2	1	0	0	0	NA	0	0	3
23	0	1	0	0	0	0	NA	0	0	1
Total	900	329	506	136	20	86		20	35	2,032
<b>1999</b>										
9	0	1	1	0	0	0	0	0	0	2
10	2	1	2	0	0	0	0	0	0	5
11	41	2	3	0	0	0	0	0	2	48
12	44	40	23	2	0	2	13	1	26	151
13	31	38	83	4	0	1	19	0	6	182
14	82	22	31	7	2	14	21	0	0	179
15	192	24	99	15	2	19	32	0	0	383
16	408	43	78	32	2	30	20	3	1	617
17	231	61	134	27	2	32	8	5	10	510
18	57	49	40	13	2	12	9	1	0	183
19	21	29	38	3	1	7	0	1	0	100
20	7	21	7	0	2	0	0	1	0	38
21	1	11	1	0	0	0	0	2	0	15
22	0	0	0	0	0	0	0	0	0	0
23	0	0	0	0	0	0	0	0	0	0
Total	1,117	342	540	103	13	117	122	14	45	2,413

Biological data of halibut were recorded on the Alternative Age-Weight-Length forms (Version 1.0). In addition to the total length measurement (down to the nearest 5 mm), the creel area where the fish was harvested and angler type (charter or private) was recorded.

Mark Sense forms were scanned and edited during the season, and then re-edited line-by-line at the end of the season. Editing consisted of examining frequency listings and data file printouts for obvious errors and correcting the data files. During the final re-editing process, the following possible errors were found and corrected:

### **Marine Interview Forms**

- Record marked for deletion and not deleted
- Data recorded in fields that are supposed to be left blank
- Variables outside of valid range
- Missing data
- Number of fish reported kept or released repeated incorrectly
- Apparent bag limit violation
- Invalid creel area recorded

### **Age-Weight Length forms**

- Variables (total lengths, harvest area, angler type) outside of valid range
- Missing data

A program was then run on the marine Interview data to verify all recorded CFEC vessel license numbers by comparing them to the CFEC license file available on the CFEC web site. Once all possible errors identified by these programs were addressed, the file was ready for analysis.

## **ISSUES THAT CONSTRAIN COMPARISONS BETWEEN ON-SITE SURVEY AND LOGBOOK DATA**

The following are issues that constrain comparisons between charter vessel on-site interviews and charter vessel logbook data:

1. Lack of creel or catch-sampling interview data from certain individual charter boats. Charter vessels which would never have been encountered or interviewed by our on-site survey program, include the following charter businesses:
  - a) Operated and made landings only at unsampled ports or remote lodges.
  - b) Operated and made landings at one of the sampled ports but only at an unsampled fishery exit point. The fishery exit point may not have been sampled either because ADF&G was not allowed to sample at a particular private facility or because lack of ability to sample all possible exit points at a given port.
2. Even if a charter vessel did make landings at a sampled fishery exit point at one of the ports which had on-site survey programs, a certain amount of their chartered fishing trips would not have been sampled because they made a landing:
  - a) before or after the survey season at a particular port (see Table 1 and Table 3);
  - b) during the survey season but not on a scheduled on-site sampling day for that particular dock; or
  - c) during the sampling day but not during the scheduled sampling period for that particular dock and day.

3. Data errors in the on-site interview or logbook databases may result in problems with comparing individual records. Sources of error could include the following:
  - a) The ADF&G technician incorrectly recorded the vessel CFEC license number but the incorrect number was still a valid one.
  - b) The charter vessel operator may have made a mistake in recording their charter fishing information on their logbook page. This may have included recording information on the wrong date line of the page, such as recording the information for a trip on Monday incorrectly on the Tuesday line.
  - c) Similarly, on-site survey technicians may have incorrectly recorded the date they interviewed charter vessels.
  - d) The charter skipper recorded the data in a logbook that was not the logbook for the vessel being used. This could easily happen if (1) a business owned more than one vessel, the vessels were not always run by the same skipper, and the skippers kept their logbooks with them instead of with the vessel, or (2) a second vessel was borrowed or leased because the primary (logbook) vessel was down for maintenance.
  - e) During 1998, the charter vessel logbook data booklets had separate data sheets in the back of the booklet for recording of crew and skipper harvest. There is substantive evidence of a widespread failure of operators to record crew and skipper harvest during 1998.
4. Logbook data may not have been recorded for a charter vessel trip due to the following issues:
  - a) The interviewed vessel did not have a logbook checked out to it (operator not aware of or not complying with the requirement).
  - b) The charter skipper neglected to record the trip data.
5. Finally, the comparisons are constrained in that they are not independent measures of the characteristics of interest. In both cases (logbook and on-site) much of the information is reported by the same agents (skippers). As reported above, technicians either were instructed to not inspect logbooks (Southeast Alaska) or did not routinely inspect logbooks (Southcentral Alaska). That said the individuals reporting information either to a technician or in the logbook would be expected to report similar information as performing one act of reporting is likely to be remembered and repeated when reporting again.

As noted above, procedures were used both in the Southcentral and Southeast Alaska survey programs to detect and correct errors made by on-site technicians. However, errors of these types may still exist in the data sets used for comparisons, and hence matching of the data sets may be imperfect due to any remaining errors.

## DEGREE OF COVERAGE

- *Summary of the degree of coverage in terms of what proportion of the logbook trips are "matchable" with on-site interview data broken down by port and IPHC area. Coverage in this sense includes (1) ports that are **not** sampled at all so that charter operators who operate out of these ports could not be included in any comparisons described below, as well as a (2) summary of the relative coverage in terms of proportion of trips that would be expected to be intercepted at ports at which on-site sampling did occur.*

A substantial portion of charter vessels accessed the fisheries via ports not covered by one of the on-site sampling programs. Accordingly, the consistency of logbook data from these ports could not be assessed through comparison with the on-site data. In addition, since the on-site sampling programs did not cover all locations during all hours of the day throughout the season, the percentage of trips actually observed through on-site sampling was quite low.

In International Pacific Halibut Commission (IPHC) Area 3A, 75.5% to 80.6% of all charter vessel trips operated out of ports in 1998 and 1999 that were covered by on-site catch sampling during the dates sampled (Table 5). Coverage<sup>3</sup> in IPHC Area 2C was relatively less comprehensive, varying from 57.7% to 60.0% in 1998 and 1999, partially due to not sampling at a number of locations throughout the area. Coverage of trips classified as "Bottomfish"<sup>4</sup> was relatively less comprehensive than for all trips in Area 2C (at 47.8% to 48.8%), indicating that more than half of all bottomfish trips conducted in Area 2C could not have been directly observed to evaluate the consistency of logbook data recording by operators conducting these trips.

Although coverage rates were relatively high in both IPHC areas, the percentage of all charter vessel trips interviewed during 1998 and 1999 was relatively low (Table 5). During 1998, only 4.8% of all charter vessel trips in Area 2C were sampled (or 1,330 interviews out of 27,516 trips). A slightly greater sampling rate occurred during 1999 in this same area (5.7%). Slightly lower sampling rates were achieved in Area 3A, with 4.0% of the trips sampled in 1998, increasing to 5.0% in 1999.

Coverage rates as defined above relate to vessel-trips that ended in those ports and during those periods of the year with on-site surveys. An appreciable portion of the "covered" vessel-trips that filled out logbooks in 1998 and 1999 were conducted by vessels that were never observed during on-site sampling (Table 5). About 12% of all trips reported in Area 2C that terminated at ports and during periods of the year that were covered by on-site sampling were never observed during on-site sampling within a year. Similarly, about 16-17% of trips reported in Area 3A were classified as "covered" but were never interviewed. Failure to observe vessel-trips that would have been expected to be covered could result from a variety of reasons, including but not limited to: (1) vessels landed at individual access locations (e.g., un-sampled parts of the harbor, small or remote boat launches) and/or periods of the day that were not sampled by the on-site surveys; (2) vessels were operated relatively infrequently so that the probability of observing the trips was so low as to preclude observation; or (3) non-matching of records due to data discrepancies/errors.

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<sup>3</sup> Coverage was defined as the fraction of vessel-trips that ended at a port covered by one of the on-site surveys within the dates of sampling. Covered trips were not necessarily sampled.

<sup>4</sup> Defined as a trip with at least one measure of directed bottomfish effort as defined by rods or hours directed at bottomfishing by either the clients or crew.

The preceding results examined coverage in terms of vessel-trips. In terms of unique vessels, 23% to 25% of all vessels operating within each IPHC area were classified as covered but not sampled in either 1998 and 1999 (Table 6). Overall, nearly 68-71% of all active vessels (Table 6) and 95-96% of all trips (Table 5) reported in the logbooks were not observed during on-site sampling in any year.

**Table 5.-Summary of the degree of sampling coverage of on-site catch sampling or creel surveys conducted by the Alaska Department of Fish and Game (ADF&G) compared to all saltwater charter vessel logbook trips during 1998 and 1999, summarized by International Pacific Halibut (IPHC) area.**

1998						1999					
Trip Type or Type of Coverage	Covered? <sup>a</sup>	IPHC Area				Trip Type or Type of Coverage	Covered? <sup>a</sup>	IPHC Area			
		2C		3A				2C		3A	
		Number of Trips	%	Number of Trips	%			Number of Trips	%	Number of Trips	%
Bottomfish Trip	Not Covered	7,871	52.2	4,223	24.5	Bottomfish	Not Covered	7,790	51.2	3,631	19.7
	Covered	7,199	47.8	13,034	75.5		Covered	7,433	48.8	14,801	80.3
Salmon only Trip	Not Covered	3,601	29.6	756	24.5	Salmon only	Not Covered	3,908	28.0	538	18.3
	Covered	8,564	70.4	2,335	75.5		Covered	10,071	72.0	2,407	81.7
Unknown Trip Type	Not Covered	177	63.0	104	26.1	Unknown	Not Covered	69	35.9	42	15.3
	Covered	104	37.0	294	73.9		Covered	123	64.1	233	84.7
All Trip Types Not Covered		11,649	42.3	5,083	24.5	All Trip Types Not Covered		11,767	40.0	4,211	19.4
All trip Types Covered	Trips by Vessels Never Sampled	3,290	12.0	3,386	16.3	All trip Types Covered	Trips by Vessels Never Sampled	3,639	12.4	3,678	17.0
	Un-sampled Trips by Vessels OBSERVED at Least Once	11,247	40.9	11,439	55.2		Un-sampled Trips by Vessels OBSERVED at Least Once	12,313	41.9	12,678	58.6
	<b>Sampled Trips<sup>b</sup></b>	<b>1,330</b>	<b>4.8</b>	<b>838</b>	<b>4.0</b>		<b>Sampled Trips<sup>b</sup></b>	<b>1,675</b>	<b>5.7</b>	<b>1,085</b>	<b>5.0</b>

<sup>a</sup> Trips that end at a port that are covered by one of the on-site sampling projects that occurred within the time frame of sampling were classified as "Covered". Covered trips are not necessarily sampled.

<sup>b</sup> Sampled trips represent a summary of the number of matched records among the combined on-site and logbook data sets.

## NON-MATCHING LOGBOOK RECORDS ANALYSIS

- *Analysis of the non-matching logbook records (i.e., interview data observed for a charter operator with no matching log book data or visa-versa [sic]) that are attributable to operators who failed to turn in any logbook records for the year in question (i.e., non-compliant participants).*

**Constraint:** Note that the *vice-versa* as described above turns out to be paradoxical in that the opposite of *interview data observed for a charter operator with no matching log book data* would be *interview data observed for a charter operator with matching logbook data*, and by definition these operators are compliant.

For reference, recall that compliance, as measured by the fraction of vessel-trip interviews with corresponding logbook entries for the same day, ranged from 80% to 87% in Areas 2C and 3A in 1998 and 1999 (memorandum from Bingham to Duffy, dated September 21, 2001). The following text describes statistics associated with the records that do not match.

“Non-compliant” vessels were defined as those interviewed that did not have a matching logbook record for that day. Hence, the terms “non-compliance” and “non-matching” are equivalent. Some operators were therefore identified earlier as non-compliant when in fact they simply had “non-matching” records.

In Southcentral Alaska, nearly half of the operators with non-matching records in 1998 never turned in a logbook page for the entire year (Table 7). This rate improved somewhat in 1999 terms of the number of operators, however about 40% of the non-matching vessel-trips were by operators who failed to turn in any logbook pages for that vessel that year. About 35% of the “non-compliant” operators observed in on-site surveys in Southeast Alaska during 1998 failed to turn in any logbook pages. Somewhat fewer operators with non-matching vessel-trips in Southeast Alaska failed to submit any logbook data in 1999.

## **DIFFERENCE BETWEEN HARVEST REPORTED VIA LOGBOOK AND ON-SITE SAMPLING RECORDS**

- *Summary of the frequency distribution as well as the average with confidence intervals of the difference between harvest reported via logbook records versus matching on-site interview data summarized by year, IPHC area, and port. Included in this summary will be comparisons for harvest of not only Pacific halibut, but also chinook and coho salmon as well as rockfish and lingcod. The analysis will include an evaluation as to whether any trends are evident in terms of consistent under or over-reporting by individual vessels.*

**Constraint:** Harvest information regarding chinook and coho salmon harvest was only consistently collected for the Southeast Alaska on-site projects. Accordingly, comparisons made below for these species are limited to this region.

Since data collected by both of the on-site survey programs did not distinguish between client and crew harvest in terms of data recording, all of the comparisons that follow involve combining the client and crew harvest information as reported in the logbooks.

As identified previously in 1998 substantive evidence exists indicating that operators failed to report crew and skipper harvest due to difficulties associated with the logbook booklets (i.e., separate data sheets for reporting the harvest in 1998). The evidence relates to the proportion of total vessel harvest attributed to the crew or skipper between years. The average percent harvested by the crew and skipper of 4.63% for Pacific halibut in 1999 was substantially larger than the reported percentage of 0.70% in 1998. Similar apparent under-reporting of crew harvest occurred for the other species in which any crew harvest was reported at all (Table 8).

**Table 6.-Sampling coverage by ADF&G on-site surveys of unique vessels during 1998 and 1999, summarized by International Pacific Halibut (IPHC) area.**

	1998				1999			
	IPHC Area				IPHC Area			
	2C		3A		2C		3A	
Charter Vessel Coverage	Number of Vessels	%	Number of Vessels	%	Number of Vessels	%	Number of Vessels	%
Vessels that Landed Only in Locations or Periods of the Year that were NOT Covered By On-Site Sampling Projects	325	46.4	366	46.4	317	42.7	343	42.7
Vessels that Landed in Locations Covered By On-Site Sampling Projects – BUT NOT Sampled	160	22.9	197	25.0	187	25.2	201	25.0
<b>Vessels That Were Sampled During On-Site Sampling</b>	<b>215</b>	<b>30.7</b>	<b>225</b>	<b>28.6</b>	<b>238</b>	<b>32.1</b>	<b>260</b>	<b>32.3</b>

**Table 7.-Percentages of vessel operators and vessel trips that were interviewed but failed to submit any logbook records in 1998 or 1999.**

Region	Year	No. of Unique Operators with Non-matching vessel trips	Operators		Vessel-trips	
			Never turned in logbook data		Never turned in logbook data	
			Number of Operators	Percent of Total	No. of Non-matching Vessel-trips	Percent of Total
Southcentral	1998	128	61	47.7	108	50.5
	1999	158	65	41.1	131	42.4
Southeast	1998	131	46	35.1	123	43.6
	1999	125	38	30.4	123	39.6

<sup>a</sup> Rates as previously reported (memorandum from Bingham to Duffy, dated September 21, 2001).



**Table 8.-Average percentage of reported harvest attributable to harvest by crew or skippers for 1998 and 1999 for Southeast and Southcentral Alaska.**

ADF&G Region	Year	Number of Vessel-trips with Crew Information Submitted	Halibut	Rockfish	Lingcod	Chinook	Coho
			Average Percentage of Harvest by Crew	Average Percentage of Harvest by Crew	Average Percentage of Harvest by Crew	Average Percentage of Harvest by Crew	Average Percentage of Harvest by Crew
Southcentral	1998	807	0.92	0.07	0.12	0.00	0.23
	1999	18,393	6.65	2.37	3.81	0.00	3.53
Southeast	1998	268	0.44	0.05	0.15	0.00	0.12
	1999	17,118	2.12	0.63	0.65	0.00	0.76
Total	1998	1,075	0.70	0.06	0.14	0.00	0.14
	1999	35,511	4.63	1.29	1.29	0.00	1.23

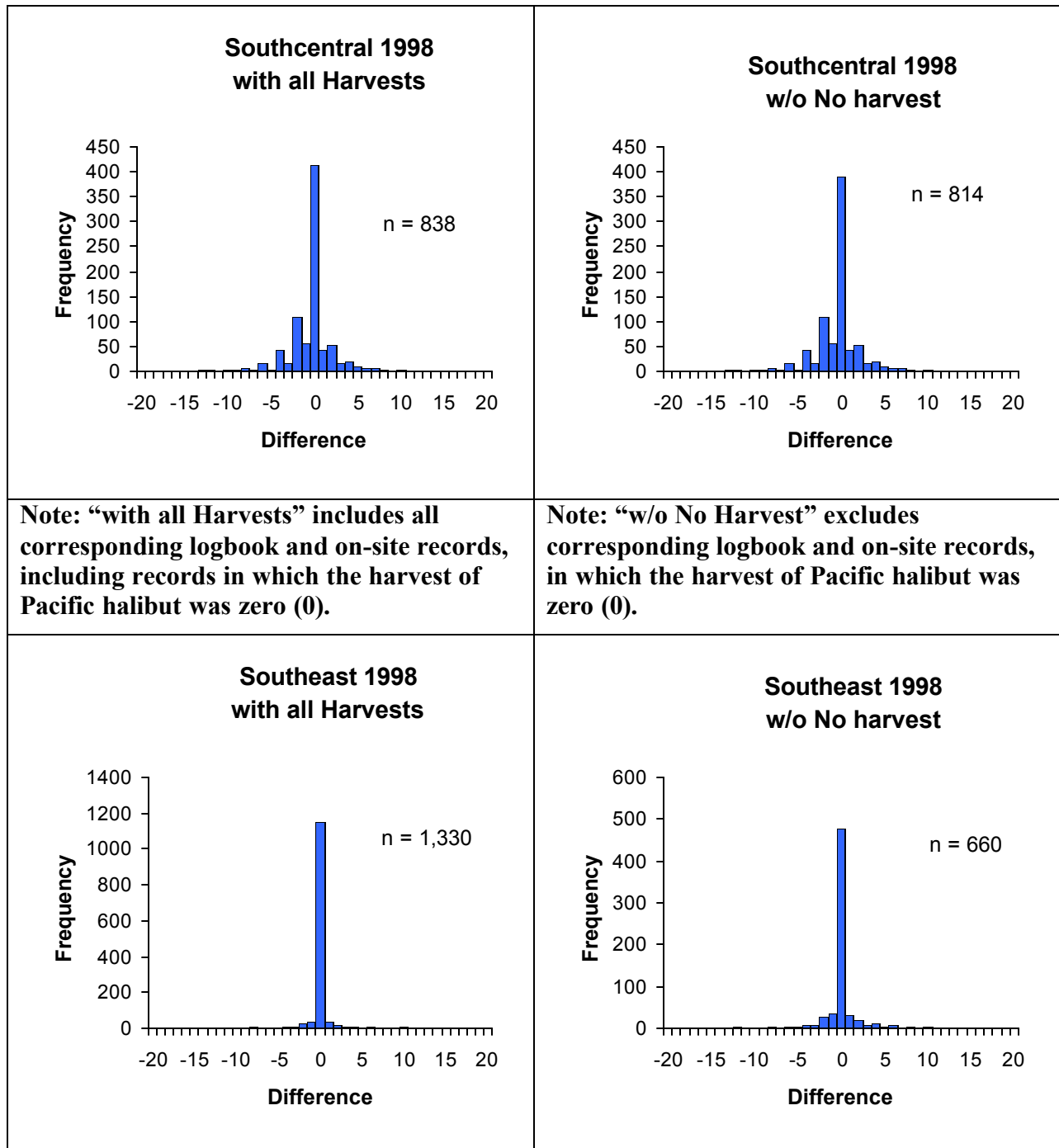
### PACIFIC HALIBUT

For on-site interviews with corresponding logbook data, there was a generally high level of agreement in the numbers of halibut reported kept, especially in Southeast Alaska (Figure 1 and Figure 2). In Southcentral Alaska in 1998, the number of halibut reported kept in the logbook did not agree with the number reported in interviews more than half of the time. Discrepancies were weighted toward under-reporting the harvest in the logbooks. The degree of agreement improved in Southcentral Alaska in 1999, with 68.6% of the records in agreement.

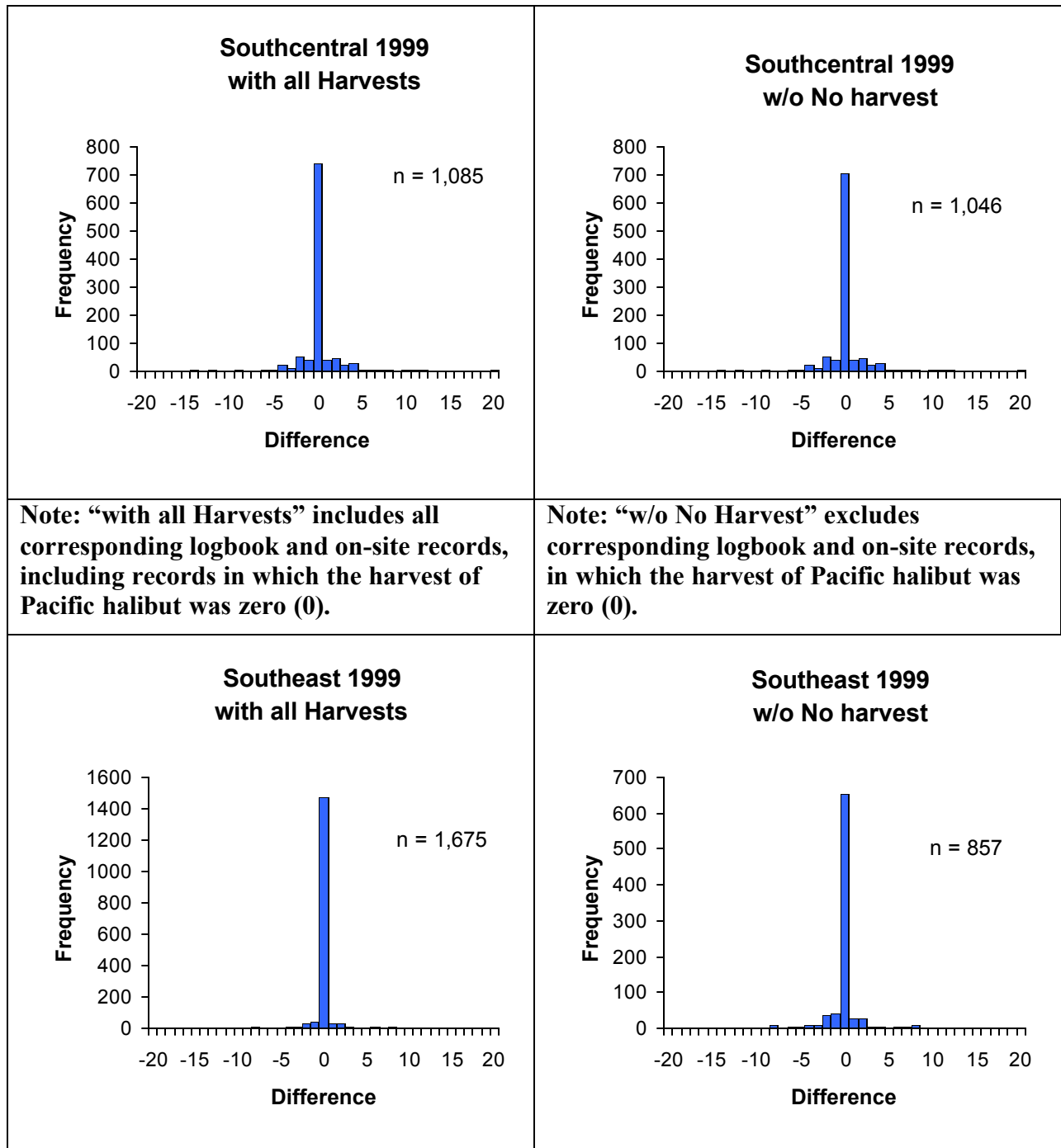
The average difference in reported harvest of halibut for matched records was not significantly different from zero in Southeast Alaska both in 1998 and 1999 (Figure 3), whereas the difference was significantly different from zero in Southcentral Alaska for 1998 and 1999, with apparent under-reporting suggested for 1998 versus over-reporting for 1999. Although statistically significant, none of the differences were appreciably different from zero (i.e., greater than 0.5 or less than -0.5 fish). Very few individual vessels under- or over-reported at a statistically significant level (at the 95% probability level) (Figure 4)<sup>5</sup>. Only two vessels in Southeast Alaska had statistically significant mean differences in their Pacific halibut harvest for matched records during 1998, whereas no vessels were significantly different from zero for the mean difference in 1999 (Figure 5). Due to the relatively low sampling rate (Table 5) for vessel-trips, the ability to detect consistent under- or over-reporting was not appreciable in that the majority of vessels were interviewed fewer than ten times per year (Table 9).

<sup>5</sup> Comparisons were limited to vessels which had at least five-matching logbook and on-site records, as any fewer matches had little power to detect significant differences.

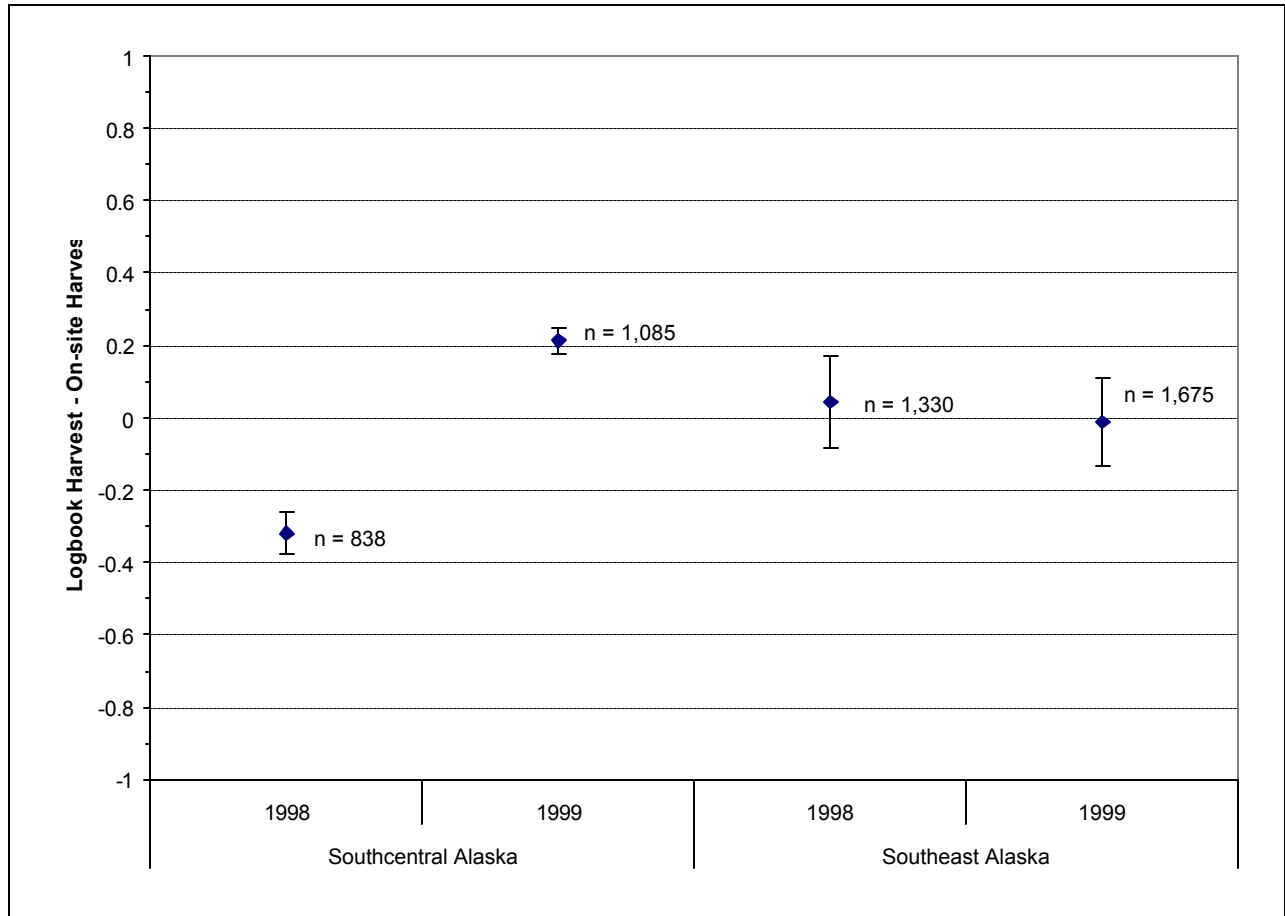
**Figure 1.-Frequency histograms of the difference (logbook minus interview) in reported Pacific halibut harvest between matched on-site interviews and logbooks during 1998, summarized by ADF&G Region.**



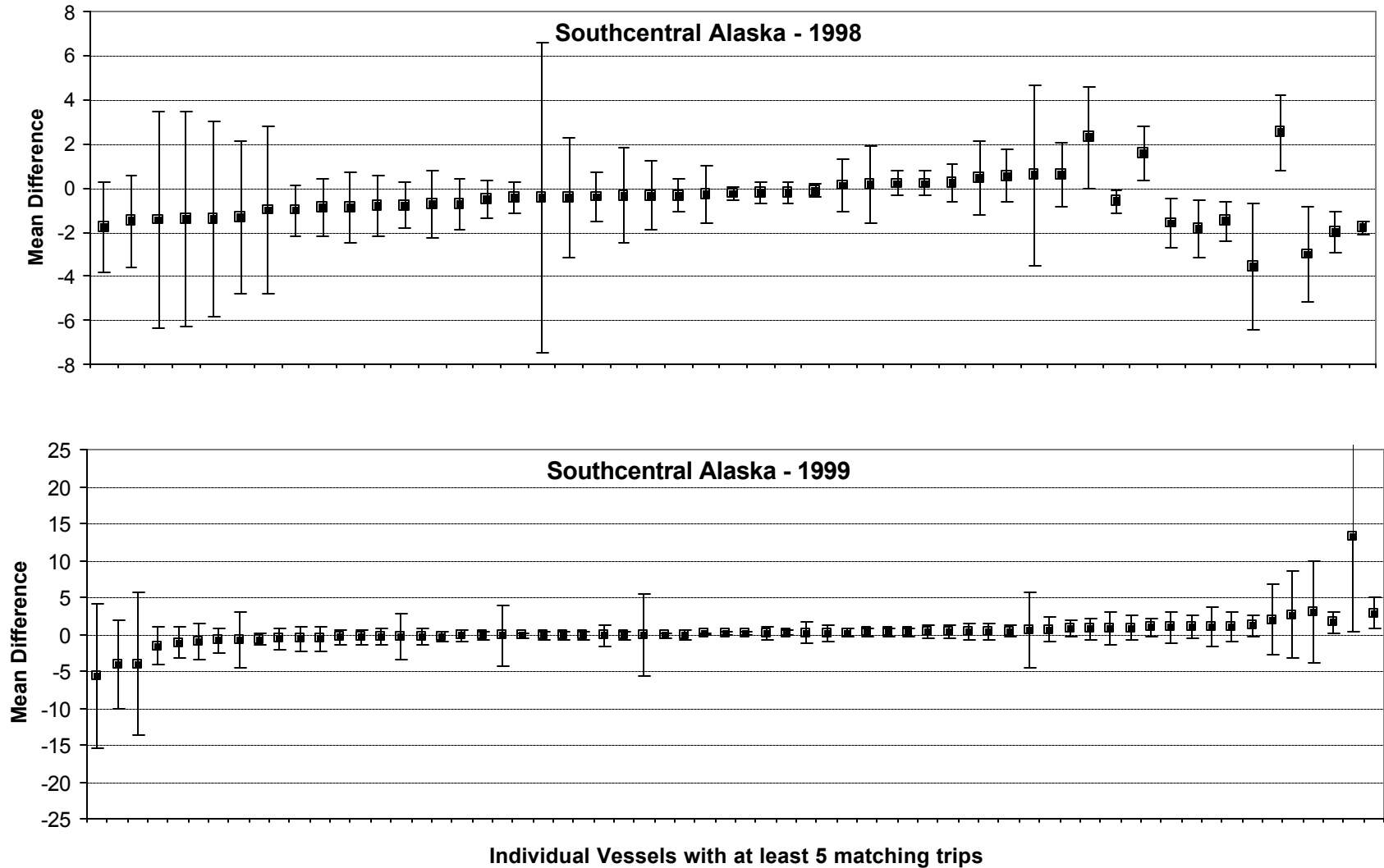
**Figure 2.-Frequency histograms of the difference (logbook minus interview) in reported Pacific halibut harvest between matched on-site interviews and logbooks during 1999, summarized by ADF&G Region.**



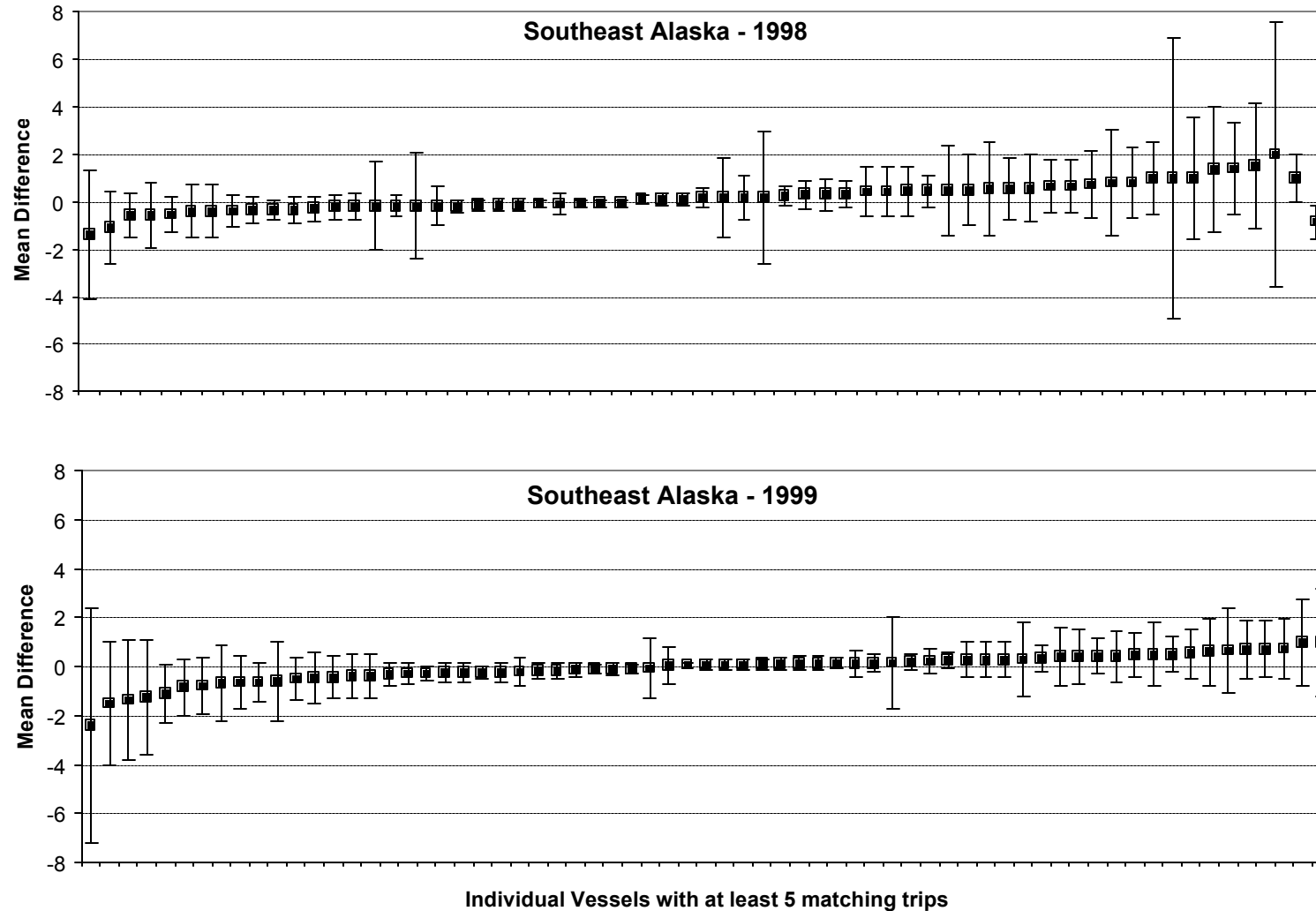
**Figure 3.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for Pacific halibut harvest during 1998 and 1999, summarized by ADF&G Region.**



**Figure 4.-Averages and 95% confidence intervals of the difference (logbook minus interview) in reported Pacific halibut harvest between interviews and logbooks in Area 3A during 1998 and 1999. Each point represents an individual vessel with at least five (5) matching records and non-zero average difference in reported harvest.**



**Figure 5.- Averages and 95% confidence intervals of the difference (logbook minus interview) in reported Pacific halibut harvest between interviews and logbooks in Area 2C during 1998 and 1999. Each point represents an individual vessel with at least five (5) matching records and non-zero average difference in reported harvest.**



**Table 9.-Frequency tabulation of the number of matching records between the logbook and on-site data sets per individual charter vessels for 1998 and 1999 for Southeast and Southcentral Alaska.**

**Year 1998**

# Matching Records	Southcentral Region			Southeast Region		
	Number of Vessels	%	Cumulative %	Number of Vessels	%	Cumulative %
1	64	28.3	28.3	33	15.3	15.3
2-4	112	49.6	77.9	62	28.7	44.0
5-9	36	15.9	93.8	75	34.7	78.7
10-15	5	2.2	96.0	37	17.1	95.8
16+	9	4.0	100.0	9	4.2	100.0

**Year 1999**

# Matching Records	Southcentral Region			Southeast Region		
	Number of Vessels	%	Cumulative %	Number of Vessels	%	Cumulative %
1	69	26.5	26.5	26	10.9	10.9
2-4	109	41.9	68.4	74	31.1	42.0
5-9	67	25.8	94.2	81	34.0	76.0
10-15	8	3.1	97.3	37	15.5	91.5
16+	7	2.7	100.0	20	8.5	100.0

### **OTHER BOTTOMFISH**

As with Pacific halibut, the vast majority of matching records indicate no difference in logbook reported harvest versus interview reported harvest for both rockfish and lingcod in 1998 and 1999 (Figure 6, Figure 7, Figure 8, and Figure 9). In particular the differences in the harvest reported for lingcod were not significantly different from zero for both years and both regions (Figure 10). During 1999 in Southeast Alaska an appreciable and significant apparent under-reporting for rockfish was observed, with the average difference being -0.64 fish (Figure 11).

### **SALMON**

Again the vast majority of matching records indicate that charter vessel operators consistently recorded harvest of chinook and coho salmon on their logbooks (Figure 12 and Figure 13). An apparent slight level of over-reporting was observed in both regions during 1999, with a similarly slight over-reporting observed in Southeast Alaska during 1998 (Figure 14).

## **DEFINITIONS OF CATCH AND ISSUES OF CAPTAIN/CREW DATA HANDLING**

- *Identify whether the logbook definition of catch is completely equivalent to the creel and port survey definitions of catch. For example, do they both address catch verses [sic] retained fish in the same manner? Do they handle captain and crew catch in the same manner.*

The term “catch” is defined in all Sport Fish Division surveys as the sum of the numbers of fish kept and released. The logbook did require operators to report the numbers of fish kept for all five salmon species, halibut, rockfish, and lingcod in 1998 and 1999. The logbook program **did not** collect

release information for the following fish species: coho salmon (1998 not collected); sockeye, pink, and chum salmon (not collected in 1998 or 1999); and lingcod (not collected in 1998). The creel survey program was designed to collect the numbers all sport fish species (salmon and bottomfish) kept and released, although when creel technicians were extremely busy on the docks doing interviews the number of released pink or chum salmon may occasionally have not been recorded. In Southcentral Alaska the salmon catch information (numbers kept and released) was not collected consistently and is therefore not comparable to the logbook.

The logbook program did not handle the captain and crew catch in the same manner as the creel and port survey program. The logbook program collected captain and crew fishing information (effort and catch) on a separate line from the client's effort and catch. In contrast, the creel survey and port survey interviews merged effort and catch of the captain, crew and clients into one record.

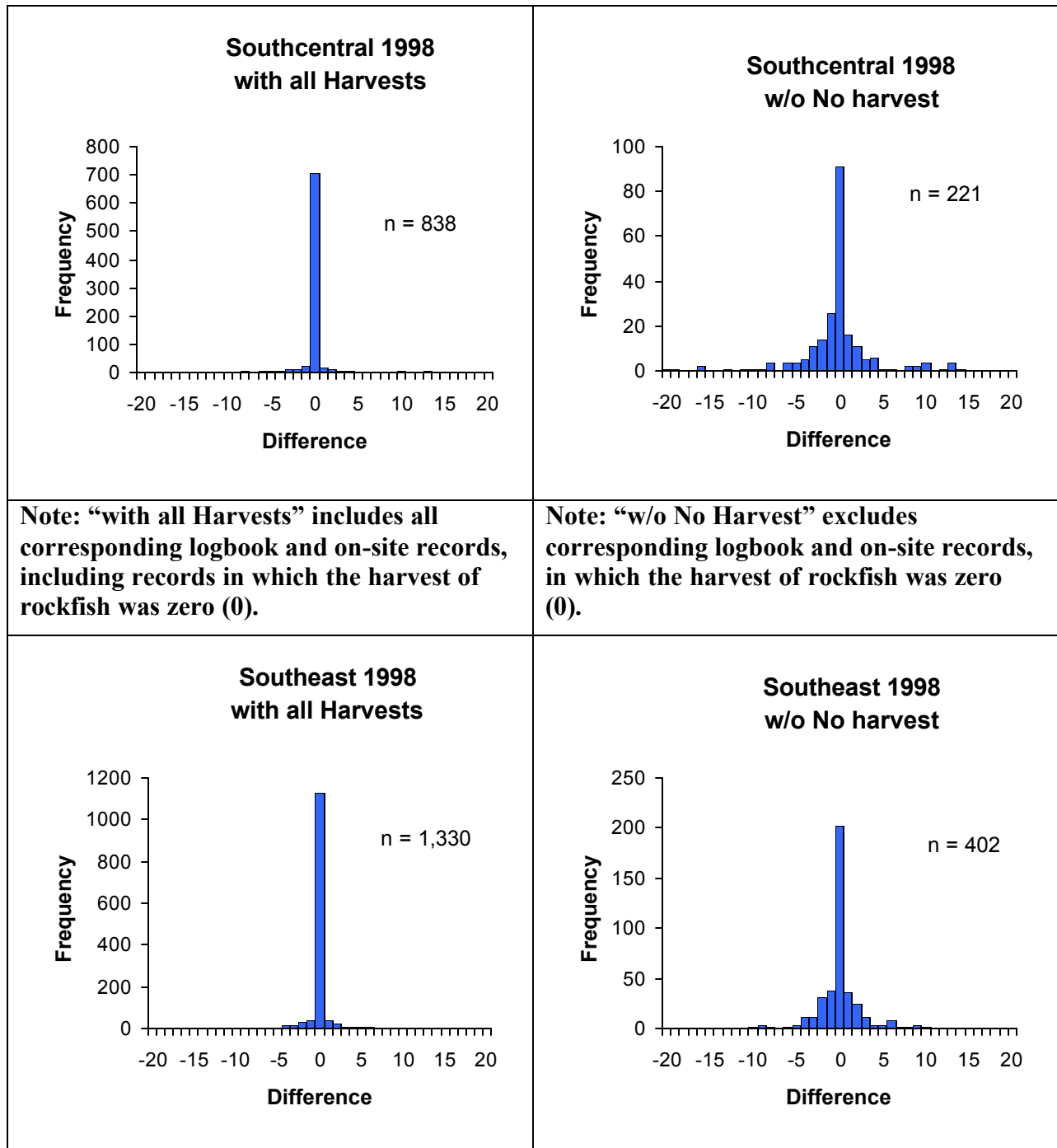
### **SAMPLE SIZES**

- *Report sample sizes, as this will assist in the determination of statistical significance.*

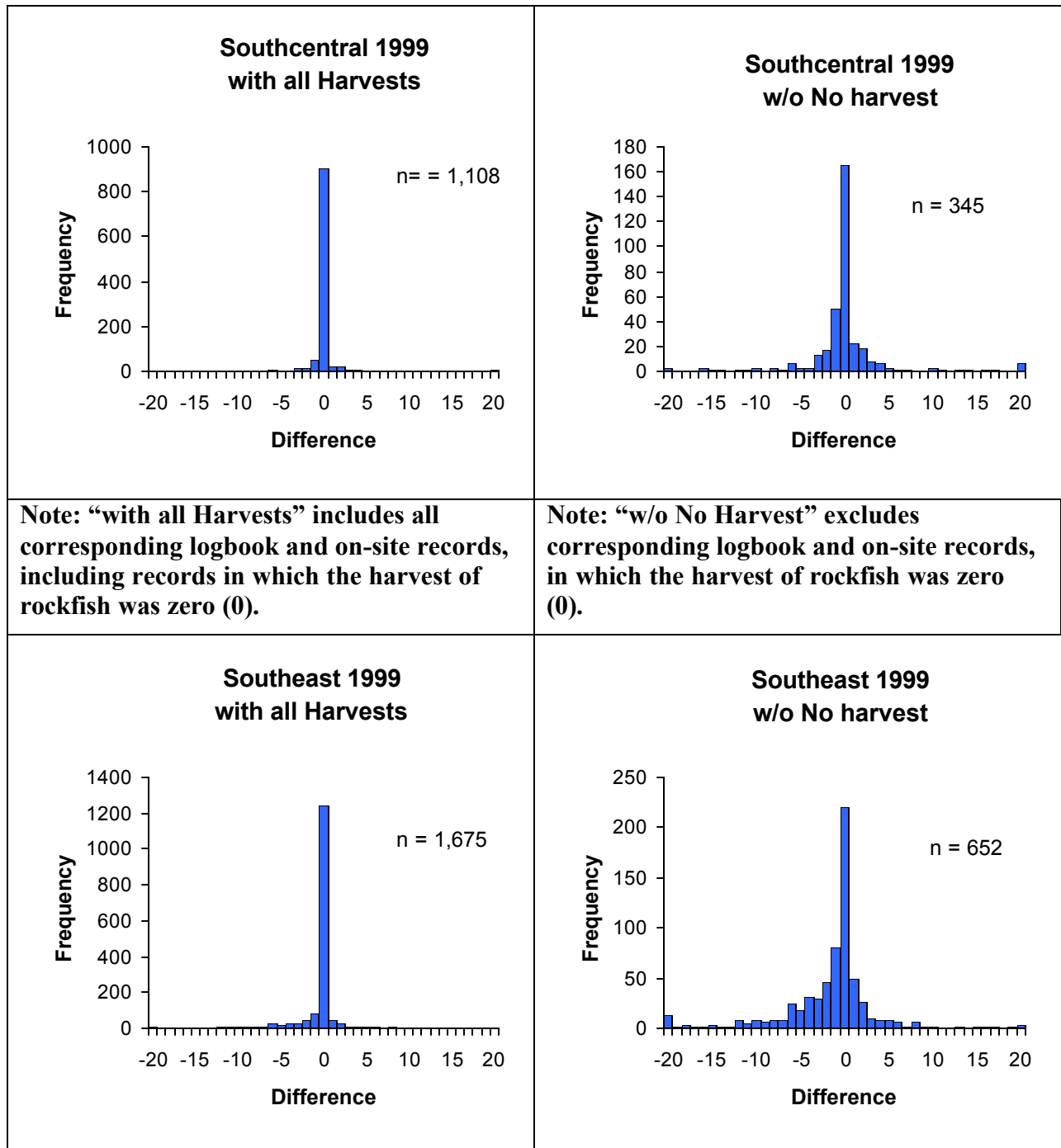
All sample sizes are reported in the various presentations above.



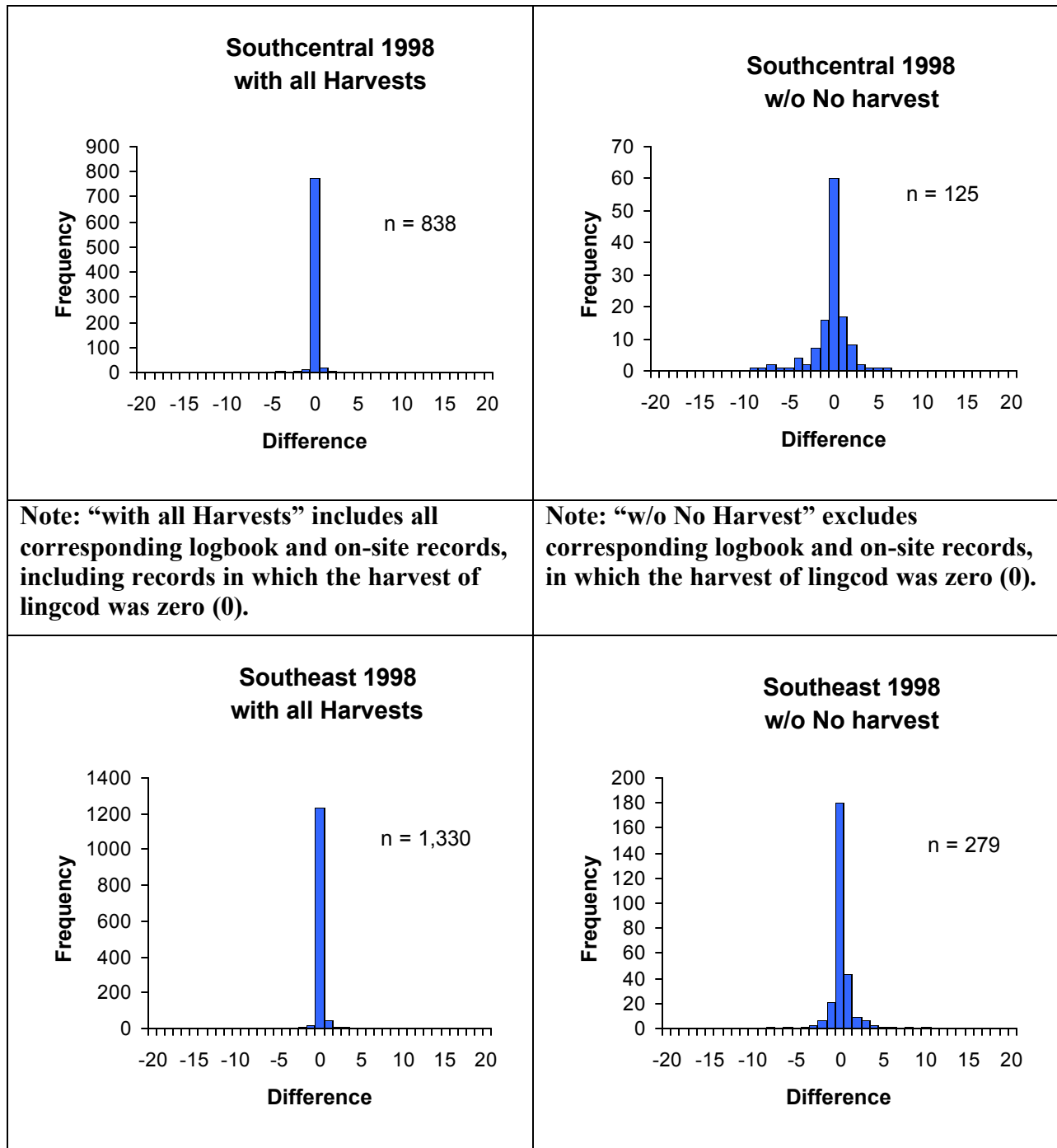
**Figure 6.- Frequency histograms of the difference (logbook minus interview) in reported rockfish harvest between matched on-site interviews and logbooks during 1998, summarized by ADF&G Region.**



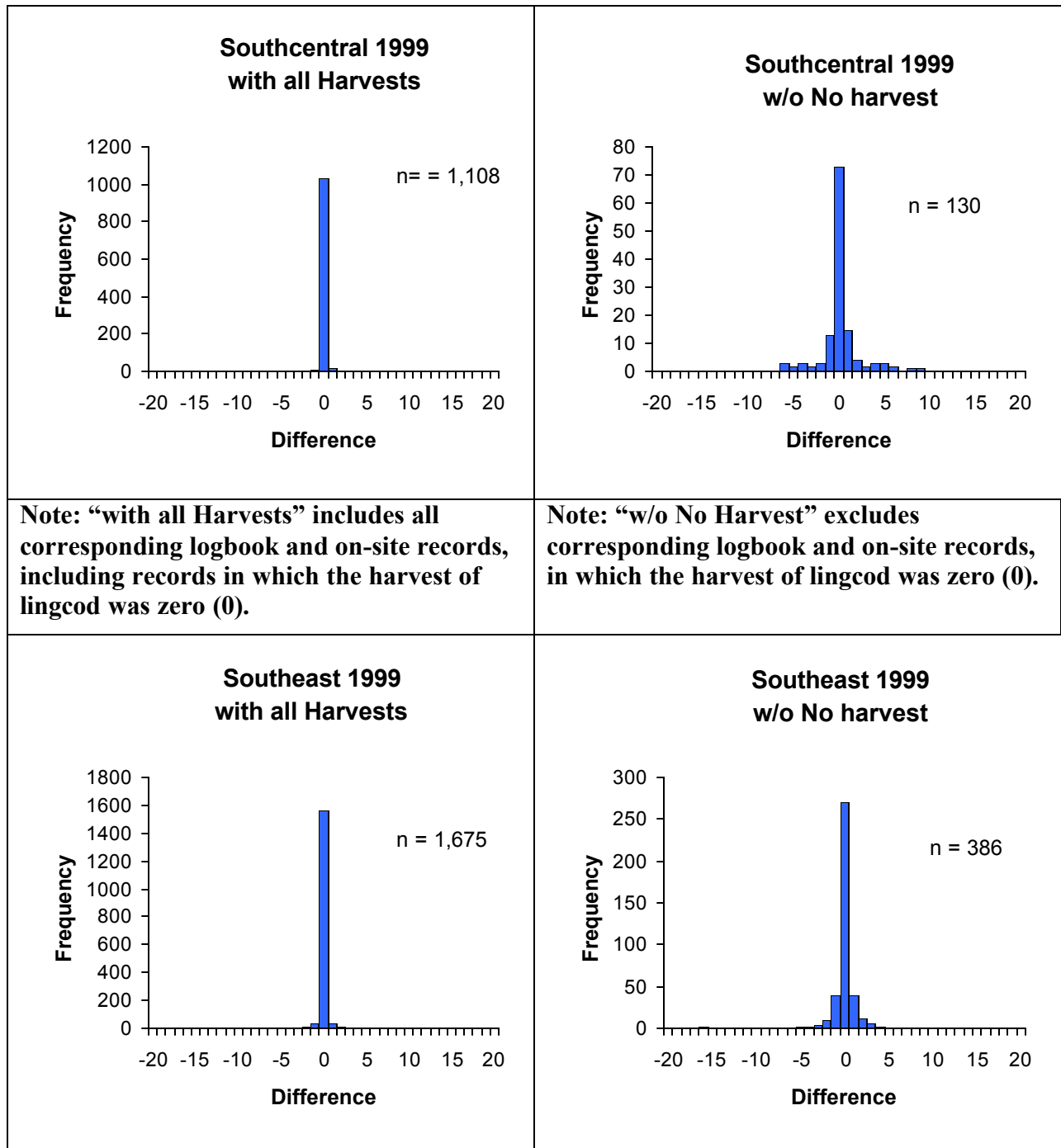
**Figure 7.-Frequency histograms of the difference (logbook minus interview) in reported rockfish harvest between matched on-site interviews and logbooks during 1999, summarized by ADF&G Region.**



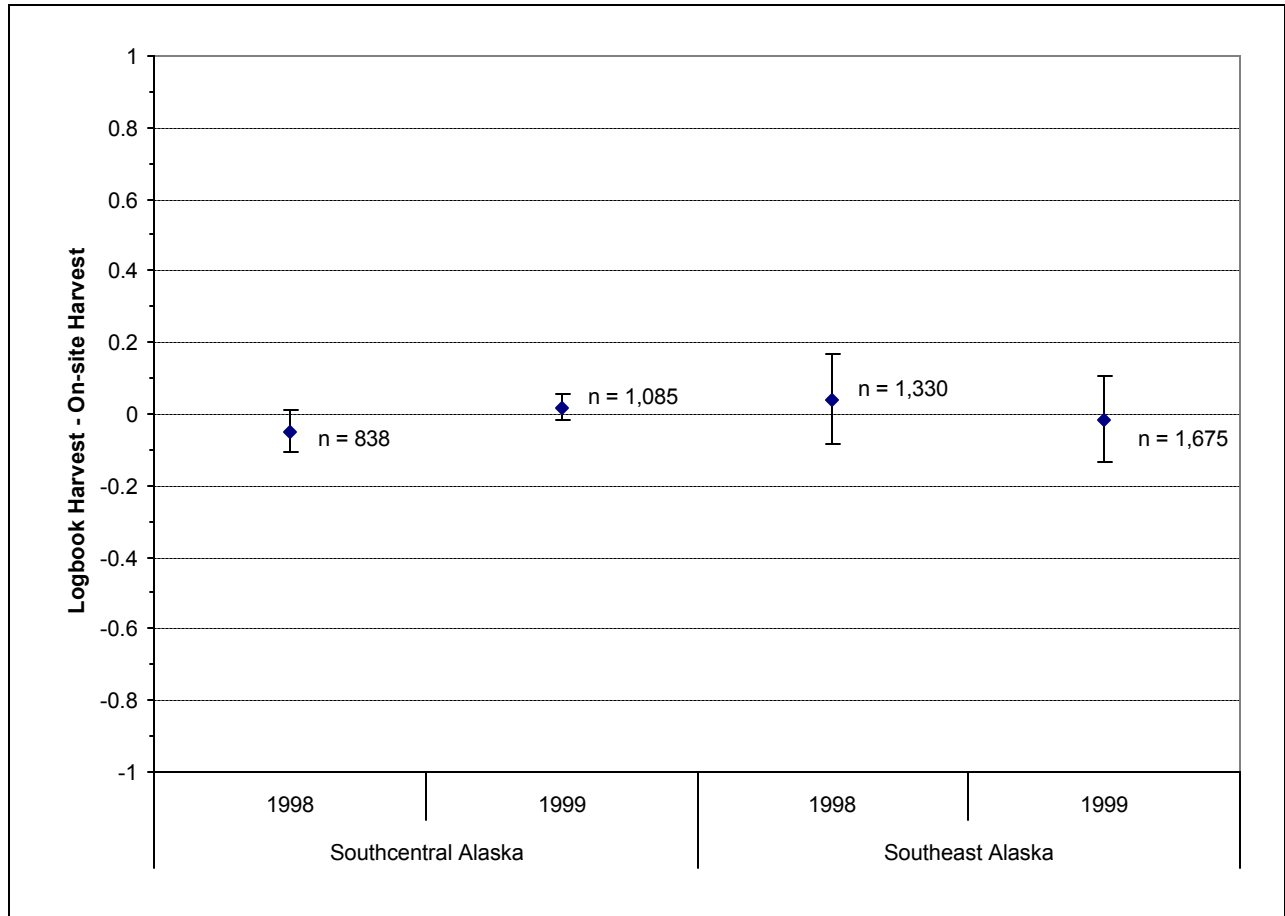
**Figure 8.-Frequency histograms of the difference (logbook minus interview) in reported lingcod harvest between matched on-site interviews and logbooks during 1998, summarized by ADF&G Region.**



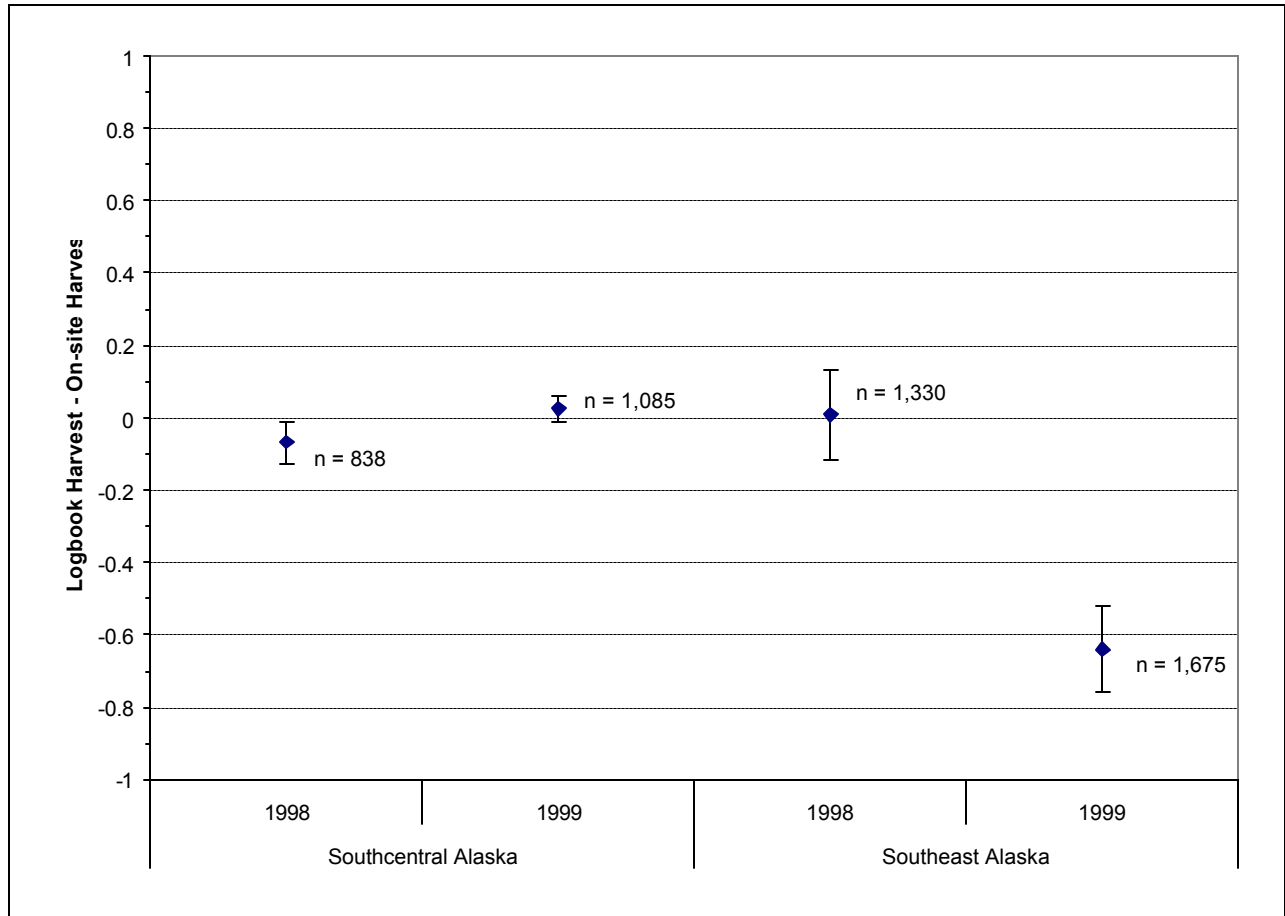
**Figure 9.-Frequency histograms of the difference (logbook minus interview) in reported lingcod harvest between matched on-site interviews and logbooks during 1999, summarized by ADF&G Region.**



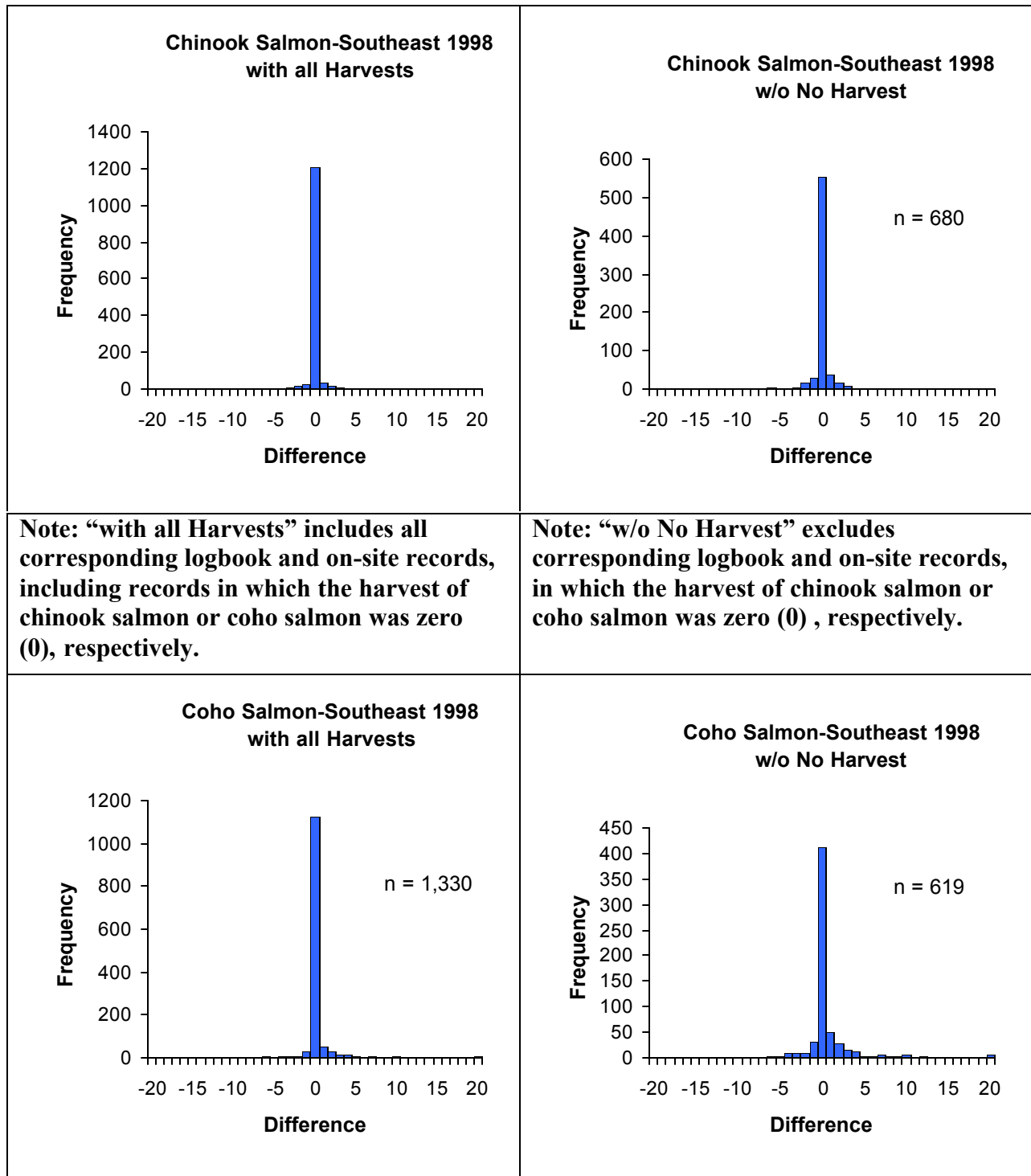
**Figure 10.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for lingcod harvest during 1998 and 1999, summarized by ADF&G Region.**



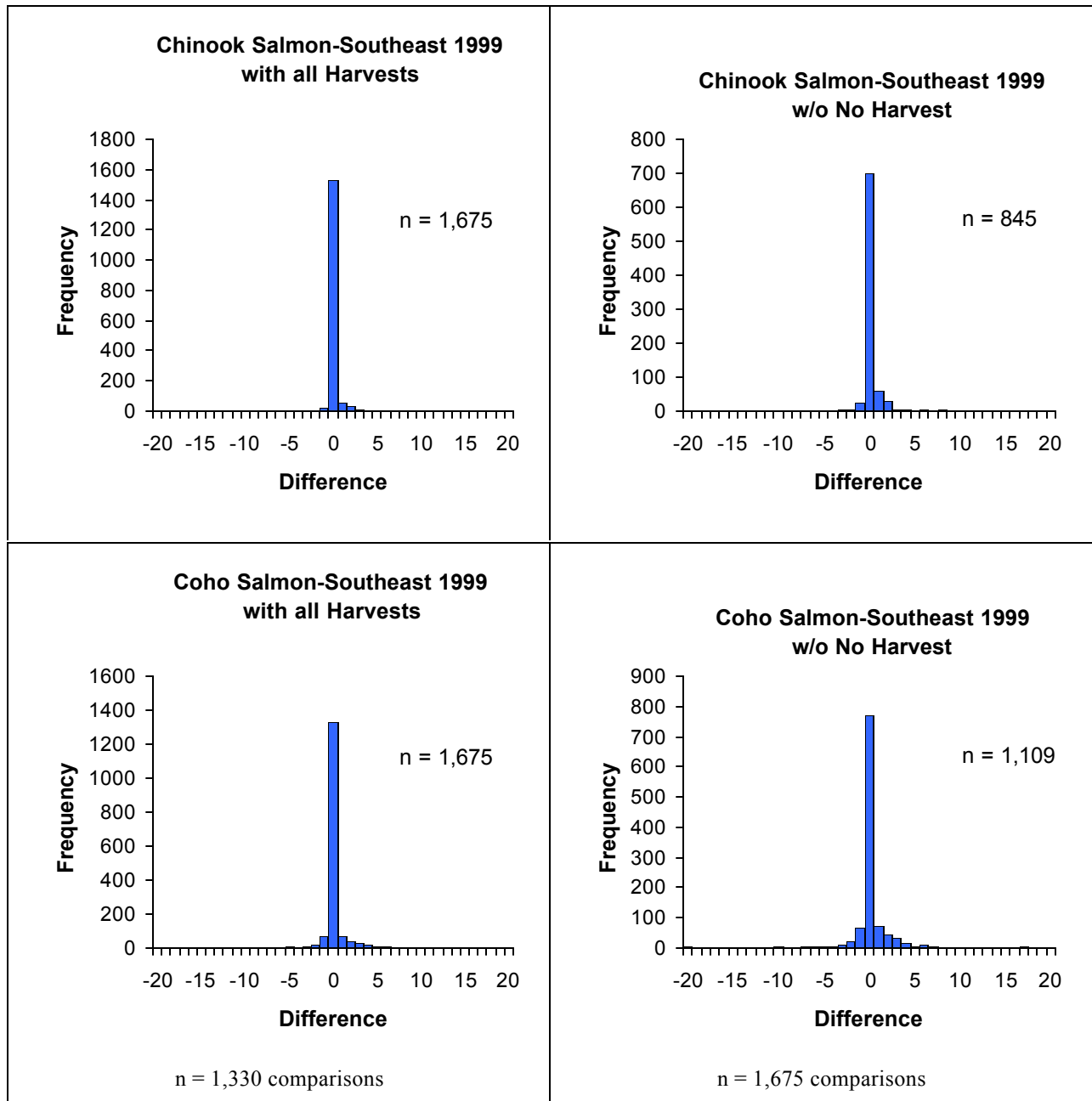
**Figure 11.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for rockfish harvest during 1998 and 1999, summarized by ADF&G Region.**



**Figure 12.-Frequency histograms of the difference (logbook minus interview) in reported chinook and coho salmon harvest between matched on-site interviews and logbooks during 1998 for the Southeast ADF&G Region.**



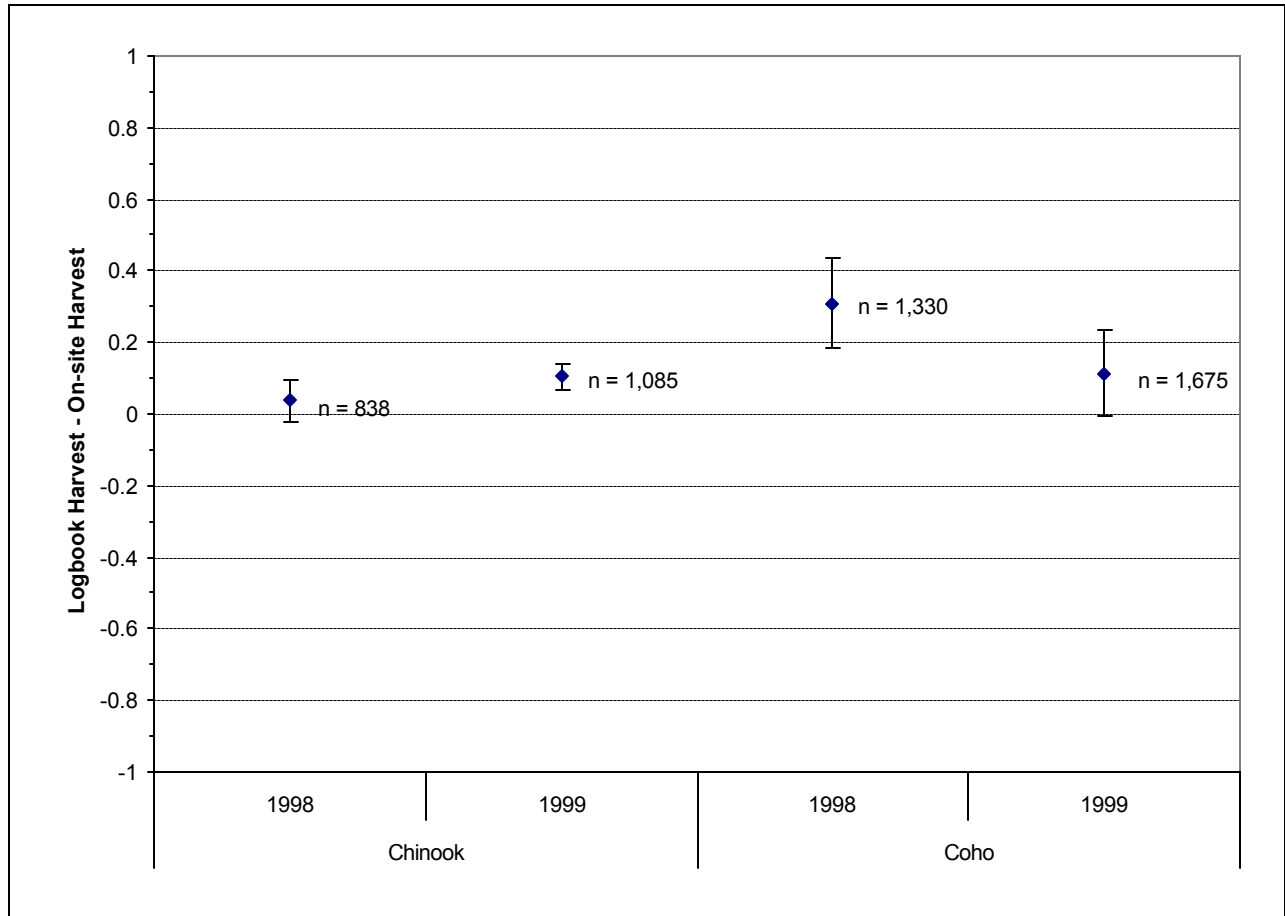
**Figure 13.-Frequency histograms of the difference (logbook minus interview) in reported chinook and coho salmon harvest between matched on-site interviews and logbooks during 1999 for the Southeast ADF&G Region.**



Note – “w/o No Harvest” excludes any matched record in which the recorded harvest for both logbook and on-site data equaled zero (i.e., no fish harvested on both records).



**Figure 14.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for chinook and coho salmon harvest during 1998 and 1999, in Southeast Alaska.**



## DISCUSSION AND CONCLUSIONS

- *Evaluation of the results including any conclusions that can be definitively reached (i.e., what does it mean?).*

A previous analysis (September 21, 2001 memo from Bingham to Duffy) looked at the number of on-site interviews for which we could find corresponding logbook entries (matching vessel numbers and dates). These “matching rates” ranged from 80% for Area 2C in 1999 to a high of 87% in Area 3A in 1999<sup>6</sup>. A substantial portion of the non-matching records were for operators that otherwise submitted logbooks during the year in question. In these cases our inability to match interviews with logbooks may have been due to a number of reasons listed previously. Conversely, many of the non-matching interviews were for vessels whose operators failed to turn in any logbooks for the year in question (Table 7). These operators could be classified as completely non-compliant (i.e., observed to conduct charter operations, but never turned in a logbook data sheet). In both Areas 2C and 3A the relative portion of completely non-compliant operators decreased from 1998 to 1999, possibly indicating an improvement in compliance with requirements to fill out and submit logbook data.

In Area 3A in 1998, the number of halibut reported kept in the logbook did not agree with the number reported in interviews more than half the time. The degree of agreement in Area 3A increased in 1999 to 69%. There was a much higher level of agreement in Area 2C both years (Figures 1-2). Average differences in reported levels of harvest for all species compared were not significantly different from zero, or only slightly different from zero (Figures 3, 10-11, and 14).

The appreciable and significant level of under-reporting observed for Pacific halibut (Figure 3) in Southcentral Alaska during 1998 was not observed to be due to any consistent under-reporting by individual operators (Figure 4). As noted in the constraints to matching section of this memorandum, the apparent under-reporting in 1998 may have been exacerbated by the issue of separate data sheets used for recording crew and skipper harvest that were not necessarily consistently used by operators in 1998. The comparatively low levels of crew harvest reported in 1998 in comparison to 1999 support this hypothesis (Table 8). The logbook form was redesigned in 1999 to address this issue (i.e., separate fields added to the primary reporting page for crew and skipper harvest).

As noted in the constraints to matching, it is not remarkable that matched records generally agree with each other (it would be remarkable if they did not match), since the sources of information are not independent measures of the characteristics of interest. It is expected that charter vessel operators that either fill out a logbook book prior to being interviewed are likely to remember their numbers and to report in a similar manner when being interviewed. Similarly, operators that had failed to fill out the logbook (even though they were required to do so) prior to being interviewed, would again be expected to remember their interview-reported data and to record similar information in their logbook. As noted in the section regarding interview and sampling procedures, information collected regarding harvests by charter vessel operators in Southeast Alaska during on-site surveys was generally verified by creel technicians by inspecting the harvest. However, since logbooks were not checked by technicians, then operators who did not fill-out their logbooks prior to being interviewed would again be suspected to record the harvest consistent with that recorded by creel technicians.

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<sup>6</sup> Also recall that matching rates improved to the low-90% level in 2000.

The matching records comparisons of reported harvest by species appear to indicate that, at least during 1999, operators made accurate reports or at least internally consistent reports (i.e., they do not contradict each other)<sup>7</sup>. However, the matched data represent only 4.8% to 5.7% of all trips in Area 2C and only 4.0% to 5.0% of all trips in Area 3A (Table 5)<sup>8</sup>. Note also that the matching records only represent approximately 30% of all vessels reporting trips in these two IPHC areas during 1998 and 1999 (Table 6). Accordingly, the accuracy or consistency of logbook reported behaviors by the remaining 70% of the charter operators cannot be evaluated by comparison with on-site matching data.

During 1998, and especially 1999, a relatively high level of agreement on average was observed between the two types of data (logbook versus on-site survey), for the matching records. Some of the disagreement between matching records may be due to data inconsistencies or errors (e.g., problems with recording crew and skipper data in 1998). There is little evidence to support or deny any appreciable or consistent patterns of under- or over-reporting by individual charter vessel operators during 1998 and 1999 in either region (mostly due to insufficient sample sizes). However, inferences from the matching data only relate to a relatively small subset of active charter vessel operators and their associated trips. Accordingly, broad conclusions regarding the quality of the logbook data that was not representatively “sampled” by matching to on-site surveys should not be made.

In the earlier-reported evaluation of logbook data (as reported in memorandum from Bingham to Duffy, dated September 21, 2001), comparisons of logbook reported harvests were made with independent estimates obtained by the Department’s annual mail survey of licensed sport anglers (also known as the Statewide Harvest Survey or SWHS). As opposed to the comparisons between matching logbook and on-site interview data, the logbook and SWHS estimates are independent (since anglers are interviewed by the mail survey as opposed to charter operators). Sampling and non-sampling errors associated with the mail survey exist, and therefore differences between the two sources of information (logbook versus SWHS) would have to be appreciably large so that detection of differences would be likely. Even so, differences were detected in a number of instances, we (partially) repeat some of the conclusions reached earlier:

Harvest of Pacific halibut as reported in the logbook program are generally larger (and in some cases) much larger than the estimated harvest in IPHC area 2C as measured by the SWHS. ... The discrepancy appears to have an increasing trend over the years of comparison (i.e., greater in 2000 than 1999 and greater than 1998).

Similarly for IPHC area 3A ... the Pacific halibut harvest reported in logbooks is substantially greater than the estimated charter/guided harvest from the SWHS, again with an increasing trend in the size of the discrepancy.

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<sup>7</sup> Note that the apparent under-reporting observed for Pacific halibut in 1998 in Southcentral Alaska (Figure 3) indicates that consistent reporting between the two data sources was not observed during that year for the harvest of this fish species.

<sup>8</sup> Sampled trips from Table 4 are assumed to “at best” be representative of covered -trips conducted by operators that were observed at least once during on-site sampling.

...

Harvest of chinook and coho salmon, and rockfish as reported in the logbook program are generally somewhat larger than the estimated harvest in IPHC area 2C. The logbook reported harvest for lingcod matches with the SWHS estimates for IPHC area 2C.

The reported harvest for each of these species generally matches quite closely with the estimates from the SWHS for IPHC area 3A. Accordingly, the discrepancy noted above for Pacific halibut for IPHC area 3A (i.e., higher reported harvest for the logbook program in comparison to the SWHS estimate) is not repeated for these other species.

Since, as noted above the on-site matching record comparison would only be deemed remarkable if differences were observed (since consistency is expected due to the non-independent nature of data collection), and since the matching data only represents an incomplete and non-representative sample of all charter vessel-trips and the associated vessels, then the matching analysis between on-site and logbook data do not strongly refute the discrepancies identified by comparing the independent SWHS estimates with logbook data.

The purpose of the analyses presented in this document was partially directed at detecting meaningful misreporting of Pacific halibut harvest in the logbook program for years 1998 and 1999 by comparing individual logbook entries with corresponding interviews from on-site creel and catch sampling surveys. The appropriate sampling frame for this analysis is composed of the all the vessel trips in IPHC areas 2C and 3A in those two years. Samples could not be randomly drawn from this frame, nor were matched interviews made independently of logbook entries. These circumstances severely compromise the validity of any conclusions concerning the presence or absence of misreporting of harvest from this analysis.