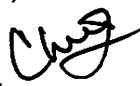


MEMORANDUM

ESTIMATED TIME
1 HOUR

TO: Council, SSC, and AP Members

FROM: Chris Oliver 
Executive Director

DATE: January 17, 2003

SUBJECT: Halibut Management

ACTION REQUIRED

Receive SSC report on data reconciliation for initial allocation of halibut charter quota shares

BACKGROUND

Council staff is seeking clarification by the Council on the scientific validity of using Alaska Department of Fish & Game (ADF&G) logbook data for initial allocation of quota shares (QS) to halibut charter operators, as adopted in the Council's April 2001 preferred alternative to incorporate the charter sector into the current halibut QS program. Clarification of Council intent on the use of the data in question would result in preparation of the regulatory amendment package for Secretarial review. This clarification would respond to a September 6, 2002 letter from NMFS to the Council (Item C-8(a)) which identified concerns related to the quality of the Sport Charter Vessel Logbook Program data, as identified in a memorandum dated September 21, 2001 from the ADF&G Sportfish Division to Kevin Duffy (Item C-8(b)). Council staff requested that ADF&G staff further examine the data quality issues identified in its memo of August 13, 2002 (Item C-8(c)). The October 2002 ADF&G report on the potential use of the data for the specific purpose of initial allocations to qualified participants was inconclusive (Item C-8(d)).

The Council has deferred determination on the suitability and appropriateness of using the logbook data to the SSC. In summary, the SSC deferred any recommendations to the Council because it had not reviewed the September 2001 ADF&G report that contained ADF&G's original caution regarding the use of the data for management purposes. In October 2002, the SSC posed additional points for consideration by ADF&G staff for its review at this meeting (Item C-8(e)). A letter of request was sent to ADF&G on October 29, 2002. The January 2003 ADF&G report was mailed to you on January 17, 2003, and is attached to the memo (Item C-8(f)).



September 6, 2002

Mr. David Benton
Chairman, North Pacific
Fishery Management Council
605 West 4th Street
Anchorage, Alaska 99501-2252

RECEIVED
SEP - 9 2002
N.P.F.M.C

Dear Dave,

The Council has recommended two different measures to limit Pacific halibut harvests in the guided recreational fishery (guided fishery). The first program adopted by the Council in February 2000, would establish a guideline harvest level (GHL) and a system of harvest reduction measures for the guided fishery. The second program adopted in April 2001, would integrate the guided fishery into the existing individual fishing quota (IFQ) Program.

A thorough review of recent court decisions regarding the requirements under the Administrative Procedure Act (APA) and recent changes in the data collection methods used by the State of Alaska (State) causes us to request further clarification or action by the Council before we officially consider these programs for approval or disapproval by the Secretary of Commerce. This letter clarifies some of the recent developments that may affect the approval decision, and provides possible suggestions on how to proceed in the implementation of measures to meet the Council's intent.

Guideline Harvest Level

Federal rules implementing the proposed GHL and associated harvest reduction measures may be vulnerable to legal challenge as currently structured. A proposed rule for the GHL was published on January 28, 2002 (67 FR 3867). The proposed rule states that the Council envisioned that "[o]nce NMFS has preliminary data indicating that the level of harvests from a previous season exceeded the GHL, the appropriate harvest reduction measures would be triggered [to be in effect] for the following season." These measures "to reduce guided recreational harvests would be implemented by notification." This notification process would supercede the regular Administrative Procedure Act (APA) rulemaking process. It would minimize potential delays between exceeding the GHL and implementing measures to reduce the guided fishery harvests by establishing a "framework" of measures that are automatically implemented.



NOAA-General Counsel, Alaska Region, has informed us that implementing the harvest reduction measures likely would require the APA rulemaking process. The proposed framework as conceived by the Council and NMFS would expose the agency to an unacceptable risk of a successful legal challenge. The APA requires that any regulatory action provide prior notice and opportunity for public comment before becoming effective. This requirement can be waived only for "good cause."

The harvest reduction measures in the proposed rule likely could not be implemented under the "good cause" exemption of the APA. The APA provides for a "good cause" finding only when the agency finds that notice and opportunity for public comment would be impracticable, unnecessary, or contrary to the public interest (5 U.S.C. 553(b)(B)). These terms are narrowly defined. Because this "good cause" finding would need to be made at the time the harvest reduction measures are implemented, we cannot guarantee now that a "good cause" finding would exist in every instance the GHL was exceeded and harvest reduction measures triggered. Accordingly, we believe a strong likelihood exists that proposed and final rulemaking would be required when implementing any of the proposed harvest reduction measures.

Case law from courts reflects a discontent for agency actions that do not permit public participation. A recent appellate court case provided additional guidance to Federal agencies when using the "good cause" waiver. This case, *Utility Solid Waste Activities Group v. E.P.A.*, 236 F.3d (749 (D.C. Cir. 2001), warned agencies that the good cause exception to notice and public comment requirements is to be "narrowly construed and only reluctantly countenanced" and used only in emergency situations. The Ninth Circuit Court of Appeals, which includes Alaska in its jurisdiction, has made the same pronouncement in *Independent Guard Ass'n. of Nevada, Local No. 1 v. O'Leary*, 57 F.3d 766 (9th Cir. 1995). In another recent case, *National Resources Defense Council v. Evans*, No. C 01-0421, Aug. 2, 2001, N.D.Cal., the court found that significant agency actions with legal consequences should not be taken out of the realm of public notice and comment. The agency determination to "install" a harvest reduction measure constitutes an action with legal consequences under the APA that should receive public notice and comment.

The proposed rule could be approved only if it were changed to explicitly provide for an opportunity for public comment prior to the implementation of any harvest reduction measures. This would increase the amount of time between when the GHL is exceeded and the implementation of any harvest reduction measures.

Additionally, the APA rulemaking process would require an analysis of alternatives to the proposed harvest reduction measures recommended by the Council under the requirements of the Regulatory Flexibility Act, the National Environmental Policy Act, E.O. 12826 (the Regulatory Impact Review), and other applicable laws. Complying with this APA requirement would substantially change the proposed halibut guided fishery management program from what was originally conceived by the Council.

A second issue which may affect the implementation of the GHF is the inability of existing data collection methods to adequately monitor several of the reduction measures envisioned in the proposed rule. As described in the proposed rule, NMFS envisioned the possible use of data collection methods already employed by the State, including the Statewide Harvest Survey (SWHS), and the Saltwater Charter Vessel Logbook (Logbook). Notwithstanding the State's recent decision to discontinue the Logbook, citing concerns over the statistical reliability of the data, the proposed rule states that "the information collected by the logbook would not alone be sufficient to monitor compliance with the harvest reduction measures. NMFS would require additional information on times and dates of the end of fishing trips, as well as information identifying each individual angler and his or her total harvests aboard guided recreational vessels."

The existing SWHS also does not meet all the monitoring and enforcement data needs required by the GHF program as recommended by the Council. First, the time required to collect and compile data from the SWHS would result in at least a two-year delay when implementing or relieving frameworked harvest reductions on the guided fishery. Second, the SWHS does not collect information necessary to monitor annual harvest limits on individual sports fishermen, which is one of the harvest reduction measures recommended by the Council. Unless NMFS develops a new data collection system, this measure could not be monitored and enforced.

To proceed with either the GHF or Charter IFQ Program, a new data collection system will be required. We do not have an adequate data collection system in place now, nor do we have the specific expertise in designing a recreational fishery data collections system. Therefore, we are preparing a contract to assist us in the development of a data collection system that can gather data from the guided fishery. As noted in the proposed rule "[t]he ability of NMFS to adequately monitor and enforce a program is an important consideration when NMFS decides whether to approve recommendations of the Council."

Appendix 1 to this letter provides an example of the implementation of the GHL under the existing proposed rule structure using the SWHS. Appendix 2 provides an example of the implementation of this rule under APA rulemaking procedures using the SWHS. Appendix 3 provides an example of implementation of this rule under APA rulemaking with a new data collection system that could provide more timely data.

If the Council wishes to proceed with the implementation of the GHL, then NMFS will have to publish a new proposed rule that incorporates APA rulemaking. As described in Appendices 2 and 3, this would cause a significant delay in the implementation of harvest reduction measures when the GHL is exceeded. Similarly, action to remove harvest reduction measures once they are in place would require time consuming rulemaking. These delays compromise the original goal of the program to provide timely controls on guided fishery harvests. Given these factors, the Council may wish to consider rescinding the GHL and proceed with the proposed Charter IFQ Program. As noted in the GHL proposed rule, "[i]f approved by the Secretary, a halibut guided recreational IFQ program would supersede the management of the fishery under the GHL."

Charter IFQ Program

The State has discontinued the Logbook, based on concerns raised in a September 21, 2001, memorandum from the State Division of Sportfish. This memorandum stated that "data from the 1999 and 2000 logbook programs are believed to be artificially inflated and should not be used in any management decision making process" in IPHC Area 3A. Council staff are working with the State for additional clarification of these concerns.

The lack of the Logbook poses three potential problems that the Council may wish to consider. First, the lack of the Logbook further limits the existing data collection systems available for use and increases the need to develop a separate data collection method. Appendix II provides an example of the limits of using the SWHS that may exist under APA rulemaking. Second, the State's concerns over the use of Logbook data collected during one of the years on which initial allocations of quota share would be based could compromise the Council action. Third, the absence of Logbook data may make it difficult to consider "recent participation" during the Secretarial review.

Some of these questions may be addressed through additional clarification by the State of its September 21, 2001, memorandum.

As mentioned in the September memorandum, the State did plan to "provide the results of these additional analyses" to the Council.

Alternatively, the Council may wish to reconsider its proposed method for initial allocation and avoid the use of Logbook data. As currently structured, the Council's motion on Charter IFQ assigns the overall allocation to the guided recreational fleet using data from the SWHS with individual allocations made to vessel operators based on Logbook data. While this method has traditionally been used in IFQ management programs, alternative methods may be used. As an example, using Logbook data the Council could choose to allocate quota share based on the number of years of participation in the fishery rather than the specific individual harvests. While such an allocation method may not reflect past harvests, it may reduce the potential concerns about artificial inflation of data and provide a means to equitably consider recent participation. Other methods for distribution of initial quota share may also exist.

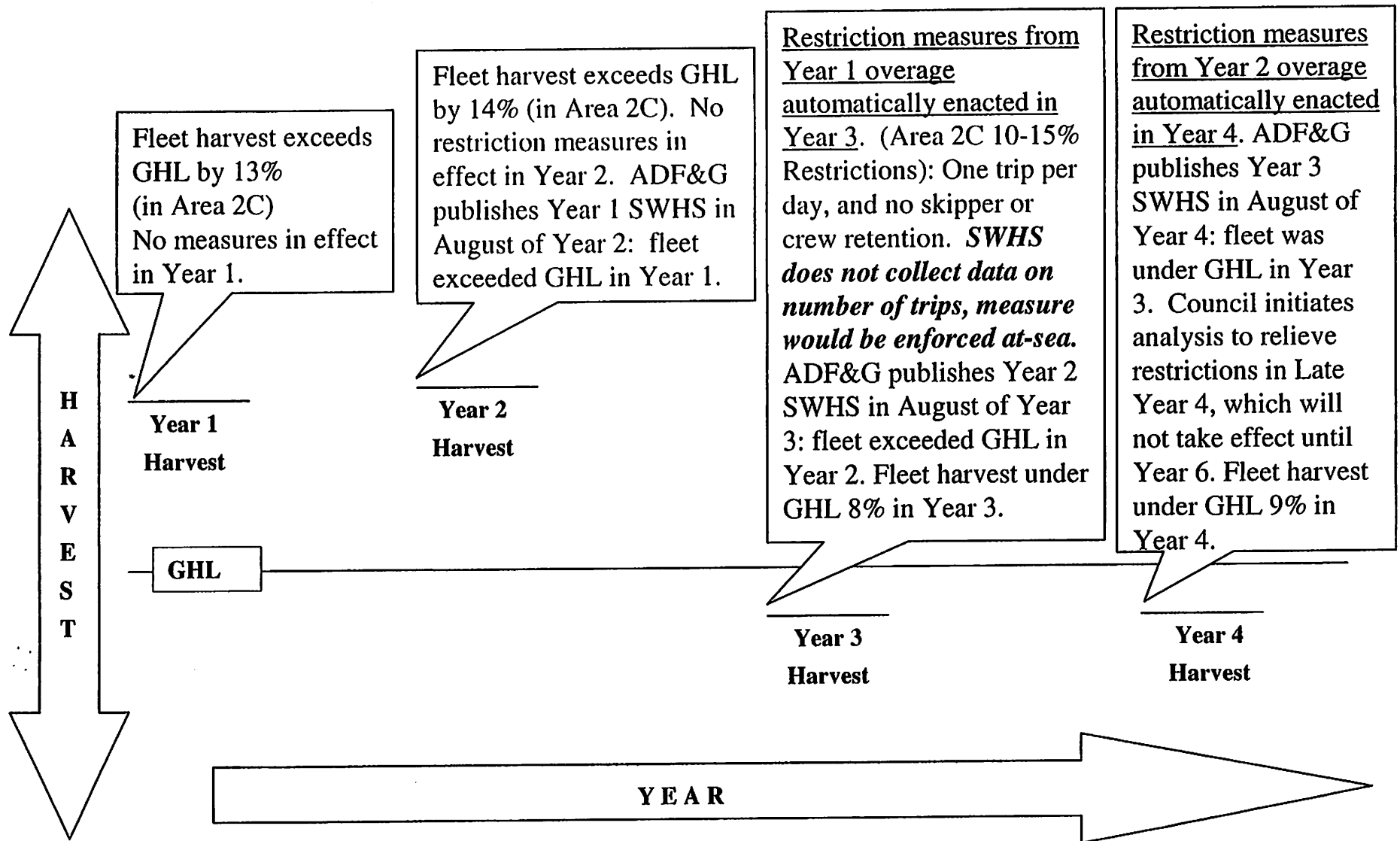
We look forward to working with the Council to address these issues and establish management measures that meet the Council's intent of controlling the harvests in the guided recreational halibut fishery.

Sincerely

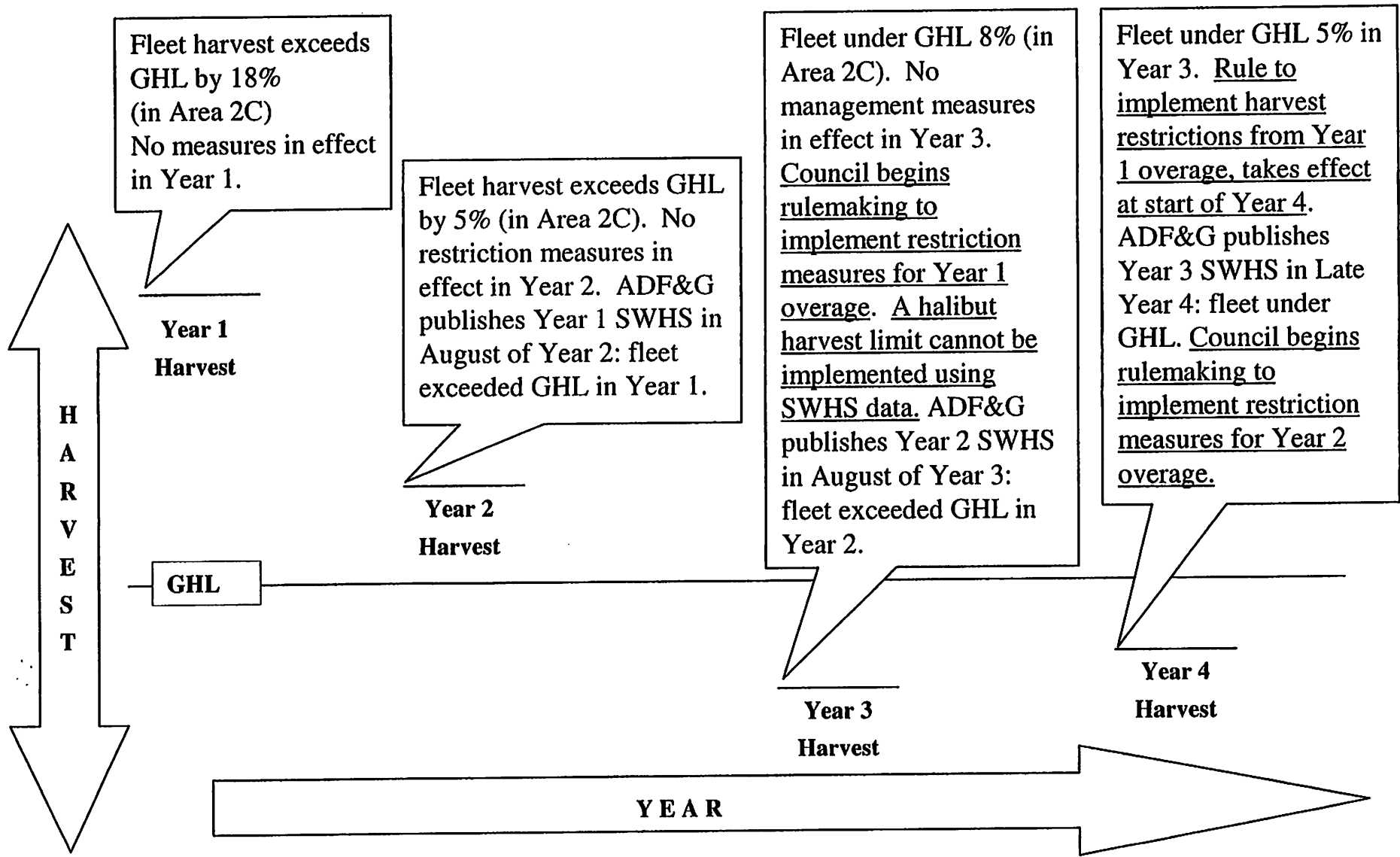


James W. Balsiger
Administrator, Alaska Region

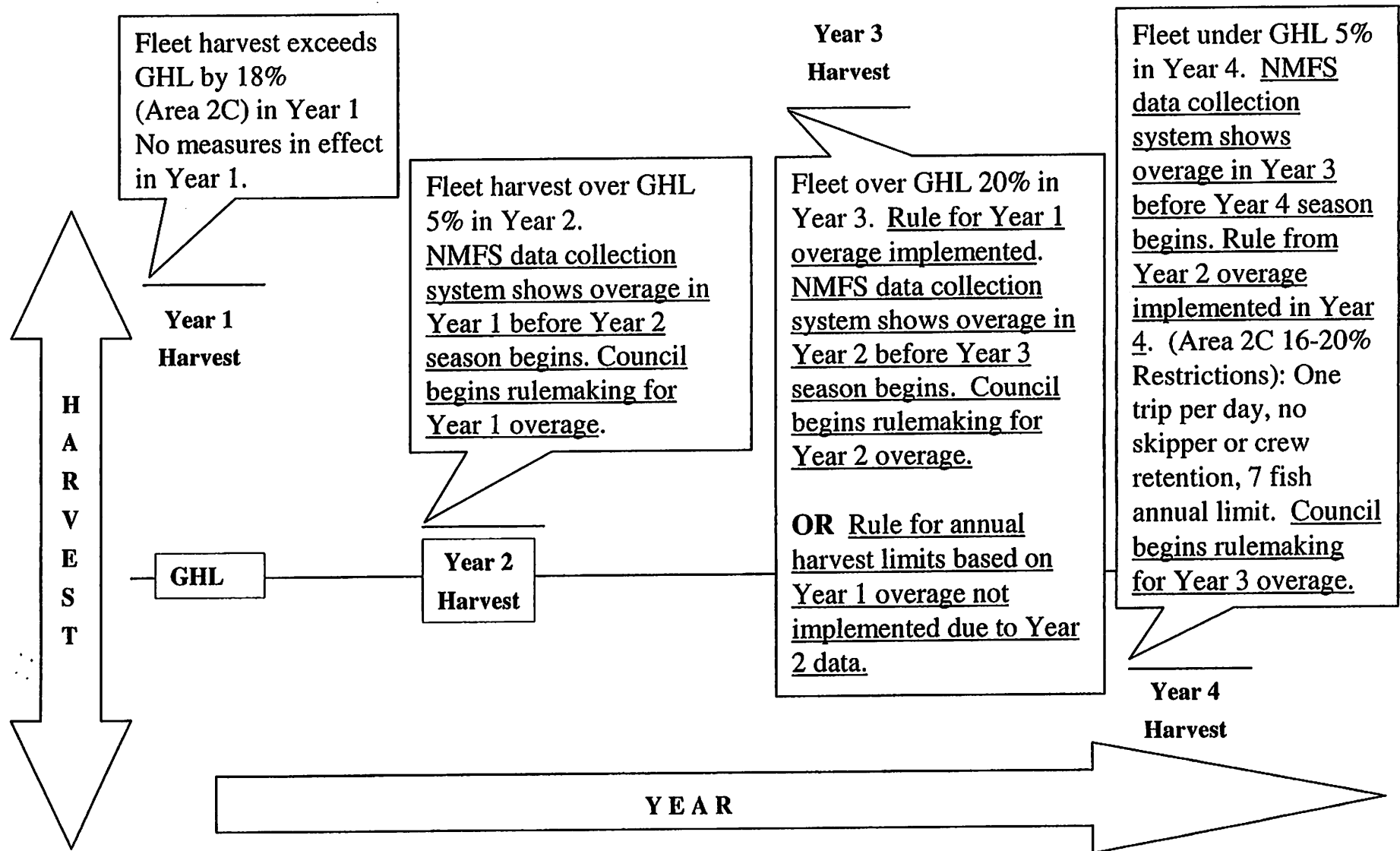
Enclosures (3)
Appendices 1, 2, & 3



Appendix 1: The Potential Effects of Current Proposed Rule Regulations with SWHS Data Collection System



Appendix 2: The Potential Effect of APA Rulemaking using the SWHS



Appendix 3: The Potential Effect of APA Rulemaking with a NMFS Data Collection System

MEMORANDUM

State Of Alaska

Department of Fish and Game

TO: Kevin Duffy
Deputy Commissioner
Juneau

DATE: September 21, 2001

AGENDA C-8(b)
JANUARY 2003

THRU: Rob Bentz
Deputy Director
Division of Sport Fish
Juneau

TELEPHONE 465-6187
NO:

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

TELEPHONE 267-2327
NO:

SUBJECT: Initial evaluation of the Alaska
Department of Fish and Game Saltwater
Sportfishing Charter Vessel Logbook
Program 1998-2000

In February 1998 the Alaska Board of Fisheries (BOF) adopted regulations requiring logbooks for saltwater charter vessels statewide. The BOF took this action to meet several information needs including: 1) inseason estimates of Southeast sport charter harvest of chinook salmon, 2) individual vessel-based sport charter information, 3) effort and harvest information beyond that obtained through the angler-based statewide sport fish postal survey and on-site creel surveys, 4) North Pacific Fishery Management Council (Council) needs in relation to allocation of Pacific halibut, and 5) BOF needs in deliberation of regulatory and local management plan proposals.

This memo summarizes the results of our initial evaluation of the logbook program in regards to the reliability of reported harvest of Pacific halibut taken by guided sport anglers in IPHC areas 2C and 3A for the first three years of the program (1998-2000). The final results of our evaluation will eventually be published in one of our Division's peer reviewed publications (most likely the Fishery Manuscript series). The results presented in this memo are final (i.e., not expected to change with further analyses). However, the final results will include the results some additional analyses we plan on conducting over the next few months. We will provide the results of some of these additional analyses prior to the October meeting of the Council.

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

Attachments

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

INTRODUCTION

Each harvest assessment program has its strengths and limitations. Creel surveys provide valuable first hand observations of the fishery but they are very expensive and lack full geographical coverage. Port sampling (catch sampling) provides biological information and important fishery statistics including areas of landings and fishing effort, but is expensive and does little to help assess total area harvest. The Department's charter logbook program was initiated in 1998 and as with any new program, it needs to be "ground truthed" to evaluate the accuracy of the data. The Statewide Postal Survey (SWHS), a postseason survey, is a long time series data set that provides excellent geographical coverage, is reasonably accurate and cost effective but the estimates of harvest are not available for up to one year after the fishing season in question.

This document provides a summary of the results of our initial evaluation ("ground truthing") of the logbook program with regards to the reliability of reported harvest of Pacific halibut taken by guided sport anglers in International Pacific Halibut Commission (IPHC) areas 2C and 3A for the first three years of the logbook program (1998-2000).

OBJECTIVES

1. The primary objective was to compare and contrast the harvest of Pacific halibut as estimated by the Statewide Harvest Survey with the reported harvest from the logbook program for 1998-2000.
2. A secondary objective was to compare the harvest of other species (i.e., chinook and coho salmon, rockfish, and lingcod).
3. Finally, logbook data was compared with on-site sampling projects (i.e., the groundfish catch sampling project in Southcentral Alaska, and the creel/catch sampling projects in Southeast Alaska).

SUMMARY OF RESULTS

Comparison with SWHS Estimates-Pacific halibut Harvests

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 (Figure 1). Most of the discrepancy for Pacific halibut in 2C is related to the discrepancy between estimates for SWHS Area B (Prince of Wales Island) and Area D (Sitka). Differences for Pacific halibut are minimal for the other SWHS areas in 2C (i.e., A, C, D-G). 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 (SWHS areas H-Q) 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. Nearly all of the discrepancy for IPHC area 3A is due to the discrepancy for SWHS Area P (saltwater surrounding Kenai Peninsula).

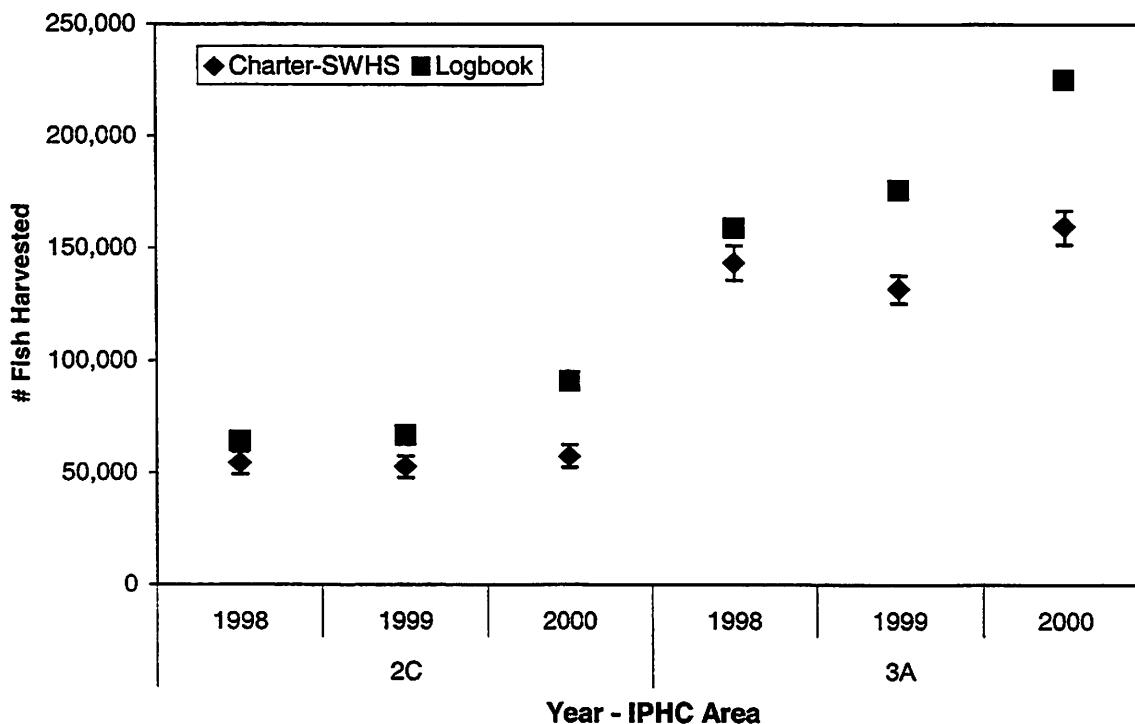


Figure 1.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of Pacific halibut by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2000.

Comparison with SWHS Estimates-Other Species Harvests

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 (Figures 2-5). The logbook reported harvest for lingcod matches with the SWHS estimates for IPHC area 2C (Figure 6).

The reported harvest for each of these species generally matches quite closely with the estimates from the SWHS for IPHC area 3A (Figures 2-6). 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, see Figure 1) is not repeated for these other species.

Comparison with On-site Creel and Catch Sampling Programs.

Comparison of individual records from on-site creel and catch sampling projects with matching records from the logbook program were made that essentially involves a one-to-one comparison of vessel-trip information. The comparison was conducted to evaluate (1) the degree of compliance with the program, i.e., do charter operators complete a logbook report for each active chartered/guided sport fishing trip; and (2) measure the degree of agreement or disagreement between reported harvests by species as well as effort statistics. Note that non-matching may be due to true non-reporting or due to inefficient matching (due for example to incorrectly recorded dates of activity). Accordingly the non-matching rates reported here are assumed to be estimates of the maximum non-reporting rate.

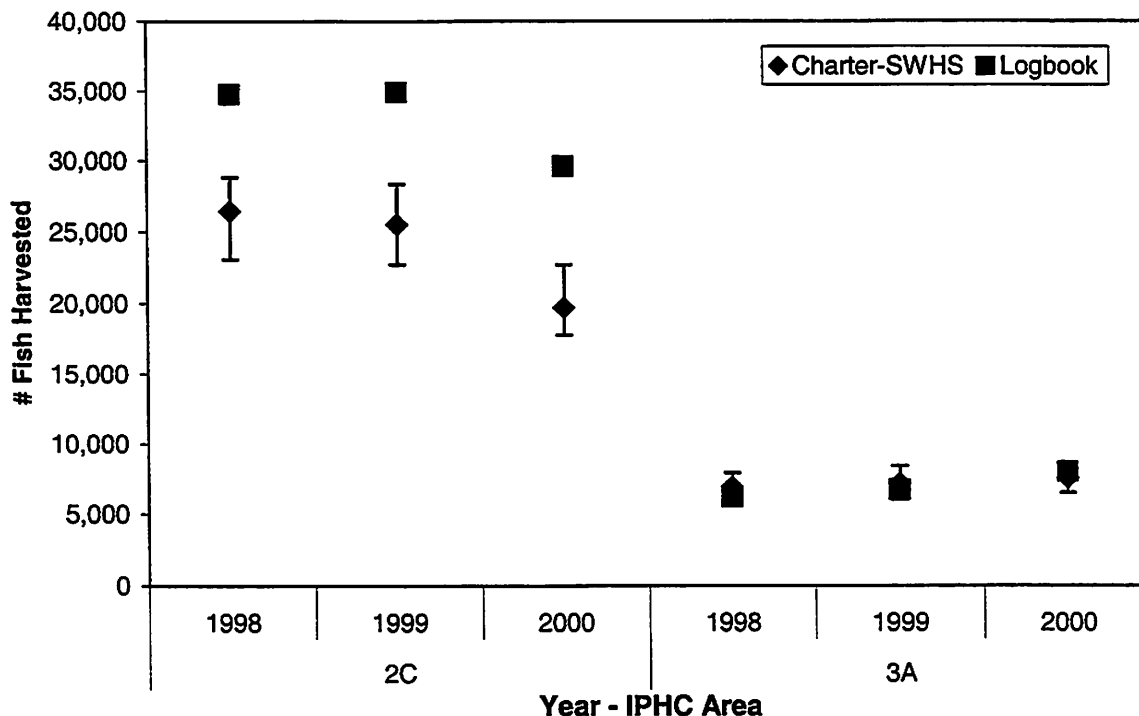


Figure 2.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of chinook salmon by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2000.

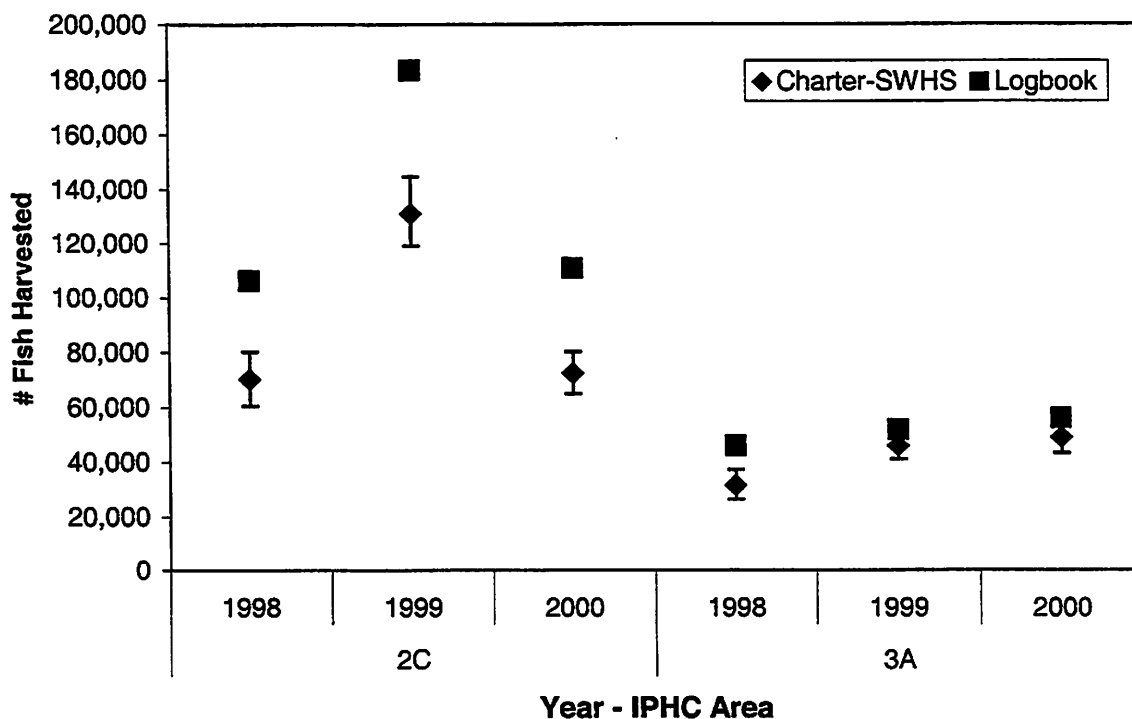


Figure 3.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of coho salmon by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2000.

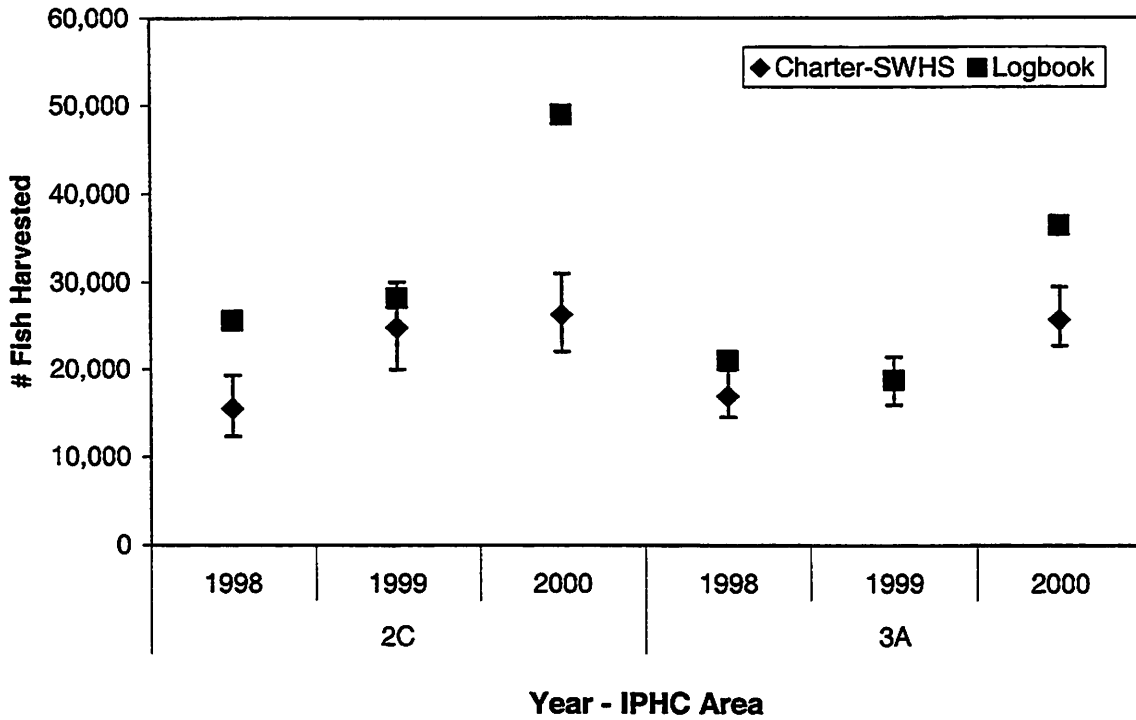


Figure 5.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of rockfish by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2000.

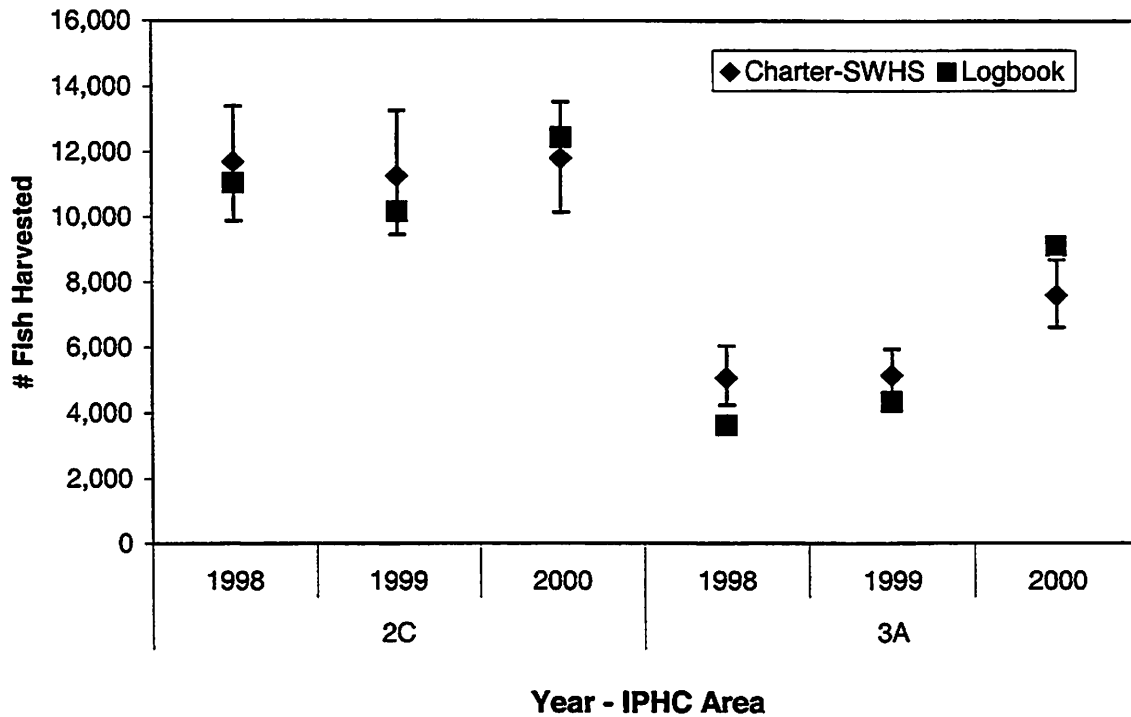


Figure 6.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of lingcod by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2000.

Comparisons were made to the information collected by the ongoing creel surveys conducted for the Juneau, Ketchikan, and Sitka saltwater sport fisheries, as well as the catch sampling projects conducted in Craig/Klawock, Petersburg, Wrangell, and Yakutat. Both the creel and the catch sampling programs are designed primarily to estimate parameters associated with the chinook salmon fishery. Comparisons were also made to the information collected by the ongoing groundfish catch sampling conducted in Southcentral Alaska.

Non-matching/Non-reporting Rates. The matching rate between logbook and onsite interview data in Southeast Alaska was incomplete though relatively high, increasing from 83% in 1998 to 87% in 1999 to 92% in 2000 (Table 1). A portion of the records that were classified as "non-matching" were due to trips for which the charter operator recorded being "inactive" for the day in the logbooks, yet the creel survey indicated that an active trip occurred: 4% of trips in 1998 and 1999, and 2.4% in 2000.

The matching rate in Southcentral Alaska was similar to those observed in Southeast Alaska: 84% in 1998, 80% in 1999, and 93% in 2000 (Table 1). Again a number of records that the charter operator recorded as being "inactive" for the day matched against interview data that indicated that the vessel was active (ranging from 2.5% to 7.6%).

Table 1.-Logbook non-matching rates in comparison with on-site creel and catch sampling programs. Comparisons made on a one-to-one basis matching individual vessel-trip records. Non-matching may be due to true non-reporting or due to inefficient matching (due for example incorrectly recorded dates of activity).

Parameter	Year	Compared to SE Alaska Creel and catch Sampling Projects	Compared to SC Alaska Groundfish Catch Sampling Project
Records in logbook database	1998	100,437	
	1999	111,758	
	2000	126,986	
Records in interview database	1998	1,934	1,100
	1999	2,327	1,409
	2000	2,668	1,601
Estimated Matching rate ^a	1998	83%	84%
	1999	87%	80%
	2000	92%	93%
% of interviews classified as "inactive" ^b	1998	4.0%	3.4%
	1999	4.0%	7.6%
	2000	2.4%	2.5%

^a Matching rate does not include matching records in which the charter operator reported an inactive day.

^b There were several matching records where there was interview data but the logbook database classified the vessel as "inactive" for that day.

Pacific halibut Harvest Comparison. The degree of agreement in reported harvest of Pacific halibut in Southeast Alaska indicated that 85-87% of records agreed exactly and 90-91% were

within one fish. Comparatively, the reported harvest in Southcentral Alaska indicated that substantially fewer records matched exactly (Table 2), with some indication that agreement improved from 1998 to 2000.

Table 2.-Agreement of logbook data with onsite interview data for Pacific halibut harvest in Southcentral Alaska.

Maximum Error (number of fish)	Halibut Harvested (Year)		
	1998	1999	2000
0	47%	54%	66%
± 1	58%	62%	74%
± 2	76%	73%	84%
± 5	90%	84%	90%

Average harvest per vessel-trip were nearly equal for matching records for the Southeast Alaska on-site comparisons. Conversely, average harvest per vessel-trip for the matching Southcentral Alaska records were comparatively larger for the on-site versus the logbook data (Table 3).

Table 3.-Average harvest per vessel trip as reported from on-site interview data minus the matching harvest reported on the logbook, in Southcentral Alaska.

Mean Difference (interview - logbook)	Halibut Harvested		
	1998	1999	2000
	0.79	0.87	0.17

DISCUSSION

Pacific halibut harvested by guided anglers as reported in the logbook program are in general substantially larger than independent estimates of the harvest as provided by the SWHS. The discrepancy increased over time for both IPHC areas 2C and 3A (Figure 1). A partial explanation for the increasing size of the discrepancy could include the decreasing maximum non-reporting rate (Table 1). Conversely, matching on-site data for IPHC Area 3A indicates that (at least for matching data) charter operators are underreporting their harvest of Pacific halibut in their logbook entries in comparison to what they are reporting to on-site survey staff (Table 3). The increasing discrepancy between the logbook reported harvest for Pacific halibut and SWHS estimates was not observed for other fish species in IPHC Area 3A, and was somewhat less in magnitude for the Area 2C fisheries (Figures 2-6).

The halibut harvest data collected from 1998 and 1999 logbooks in IPHC area 2C appears to be reasonable when compared with the SWHS and on-site creel survey estimates. However, we believe the halibut harvest reported in the 2000 logbooks from 2C is artificially inflated. For example, the reported logbook harvest for charter vessels located in Sitka during 2000 is approximately 3,000 fish higher than the Sitka creel survey estimate for both charter and private anglers. We do not believe the 2000 logbook data should be used in any management decision making process.

In IPHC area 3A the 1998 logbook data on halibut harvested on charter vessels appears to be reasonable when compared with SWHS estimates, but data from the 1999 and 2000 logbook programs are believed to be artificially inflated and should not be used in any management decision making process.

Additional analyses are planned to more fully evaluate the reliability and accuracy of the logbook data that may identify possible explanations to the discrepancies summarized above. All results of this 3-year comparison will be published in a Department of Fish and Game Fisheries Manuscript Report.

North Pacific Fishery Management Council

David Benton, Chairman
Chris Oliver, Executive Director



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Visit our website: www.fakr.noaa.gov/npfmc

AGENDA C-8(c)
JANUARY 2003

August 13, 2002

Mr. Kevin Duffy
Alaska Department of Fish and Game
P.O. Box 25526
Juneau, AK 99802-5526

Dear Kevin:

In February 2002, ADF&G staff notified the Council of their preliminary analysis of the ADF&G Saltwater Sportfishing Charter Vessel Logbook Program regarding the reliability of reported harvest of Pacific halibut taken by guided sport anglers (memo dated September 21, 2001 from Allen Bingham to you). The analysis suggested that some of the logbook data records are "artificially inflated and should not be used in any management decision making."

Council staff is currently completing the final draft of the analysis to implement an individual fishing quota (IFQ) program for the halibut charter fleet, as recommended by the North Pacific Council in April 2001. Jane DiCosimo has consulted with ADF&G Sportfish Division staff on an approach to determine whether the data quality issues identified in the preliminary analysis affect the Council's preferred alternative for determining individual allocations to charter vessel owners or lessees. The allocation between the commercial and charter sectors was based on the Statewide Harvest Survey and is unaffected by the aforementioned data quality issues. Ultimately, the Secretary of Commerce must be satisfied that the data used to determine the initial distribution of quota shares is not arbitrary or capricious (i.e., that persons are not receiving a greater allocation because they over-reported their harvest of Pacific halibut in their logbook entries when compared with what they reported to on-site survey staff).


Council and ADF&G Sportfish Division staffs have agreed to the proposed ADF&G research plan outlined below. The elements and summary of the analysis will be limited to 1998 and 1999 only and completed by September 13, 2002.

- Short description of the interview sampling procedures with an identification of pertinent issues that might constrain the comparisons (e.g., voluntary interviews without verification of the accuracy of information in many cases). This description will include the coverage by port and periods of the year (by year).
- Summary of the degree of coverage in terms of what proportion of the log book trips are "matchable" with on-site interview data broken down by port and IPHC area. Coverage 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.

- 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) that are attributable to operators who failed to turn in any logbook records for the year in question (i.e., non-compliant participants).
- 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.
- Evaluation of the results including any conclusions that can be definitively reached (i.e., what does it mean?).
- If feasible the analysis will be limited to vessel-trips for registered guide business that meet the criteria that at least one page of logbook data indicating bottomfish effort was expended in either 1998 or 1999 along with at least one page of logbook data indicating bottomfish was also turned in during 2000.
- 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 retained fish in the same manner? Do they handle captain and crew catch in the same manner?
- Report sample sizes, as this will assist in the determination of statistical significance.

The above research plan should be sufficient to determine whether and to what degree the logbook data matches the creel and port surveys. Council staff will then incorporate those results into the final analysis for NMFS review, in preparation for submission to the Secretary. The analysis can be submitted to the Secretary if the individual allocation formula is determined to be appropriate. If the data discrepancy is determined to have led to individual allocations that the Secretary may deem to be arbitrary and capricious, then the Council may wish to consider alternate allocation formulas. A discussion of the research plan and the need for possible future action will be scheduled for discussion at the October Council meeting, when we will receive a status report from NMFS. The assistance of Sportfish Division staff Allen Bingham, Scott Meyer, and Mike Jaenicke is gratefully acknowledged.

Regards,



Chris Oliver
Executive Director

cc: Jay Ginter
Phil Smith
Lisa Lindeman
Rob Bentz
Allen Bingham

MEMORANDUM

State Of Alaska Department of Fish and Game

AGENDA C-8(d)
JANUARY 2003

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
Rocky Holmes
Kelly Hepler

Mike Jaenicke
Dave Bernard

Bob Clark
Doug Vincent-Lang

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).¹ Accordingly the analyses described in this document apply to all logbook records for trips on active² 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

¹ 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.

² The logbook datasets include records for inactive days and trips 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	
1998							
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
1999							
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
Type of survey	1998 & 1999	Creel survey	Creel survey	Creel survey	Catch sampling	Catch sampling	Catch sampling	Creel survey	Catch sampling	Catch sampling
Information Collected	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
Charter vessel CFEC No. collected	1998 & 1999	YES	YES	YES	YES	YES	YES	NO	NO	NO ^a
Sampling Time	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
Survey Period	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
Number of Technicians	1998 & 1999	5 ^b 5 ^b	6 ^b 6 ^b	4 5 ^b	1 2 ^c	1 1	1 1	2 2	1 ^d 1 ^d	1 1
Number of docks/ramps sampled	1998 & 1999	10 10	12 12	8 8	2 7 ^b	4 4	4 4	3 3	1 1	2 2

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

^b 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.

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

^d 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
1998										
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
1999										
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). Coverage³ 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"⁴ 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.

³ 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.

⁴ 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 where 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? ^a	IPHC Area				Trip Type or Type of Coverage	Covered? ^a	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
	Sampled Trips ^b	1,330	4.8	838	4.0		Sampled Trips ^b	1,675	5.7	1,085	5.0

^a 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.

^b 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				
Charter Vessel Coverage	IPHC Area				Charter Vessel Coverage	IPHC Area			
	2C		3A			2C		3A	
	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	Vessels that Landed Only in Locations or Periods of the Year that were NOT Covered By On-Site Sampling Projects	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	Vessels that Landed in Locations Covered By On-Site Sampling Projects - BUT NOT Sampled	187	25.2	201	25.0
Vessels That Were Sampled During On-Site Sampling	215	30.7	225	28.6	Vessels That Were Sampled During On-Site Sampling	238	32.1	260	32.3

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	Operators			Vessel-trips	
		No. of Unique Operators with Non-matching 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

^a 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)⁵. 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).

⁵ 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.

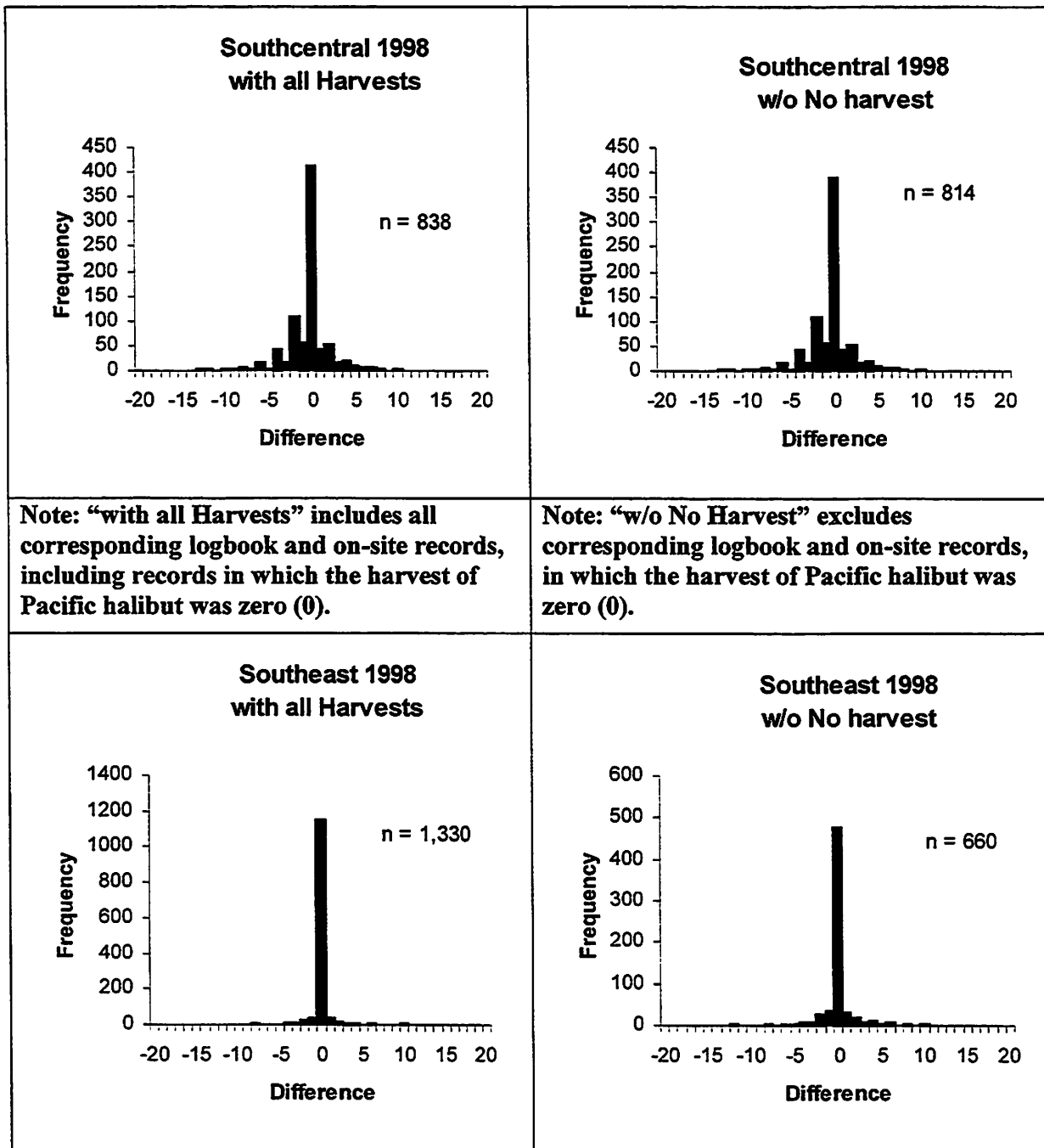


Figure 2.-Frequency histograms of the difference (logbook minus interview) in reported Pacific halibut harvest between matched on-site interviews and logbooks during 1999, summarized by ADF&G Region.

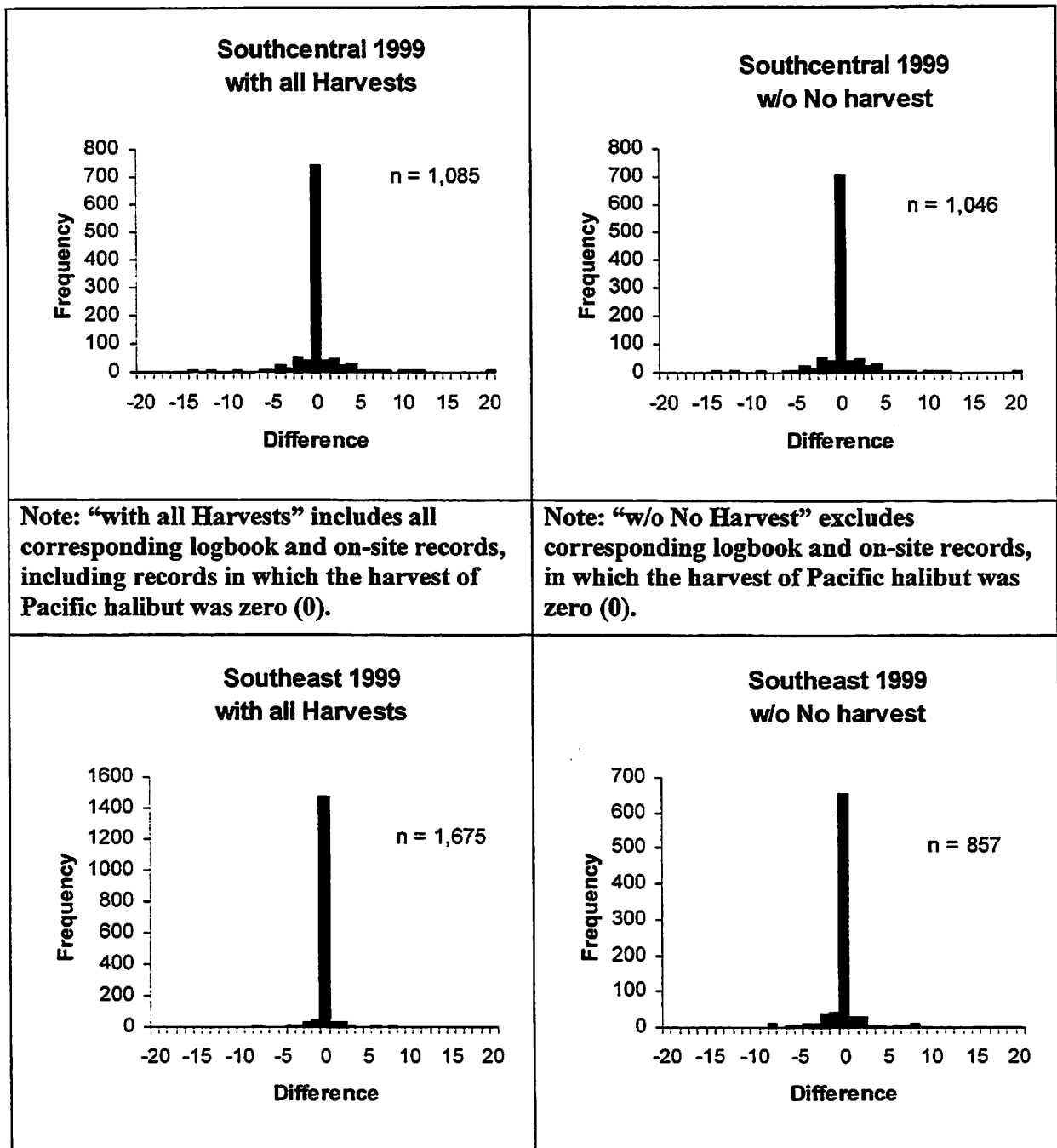


Figure 3.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for Pacific halibut harvest during 1998 and 1999, summarized by ADF&G Region.

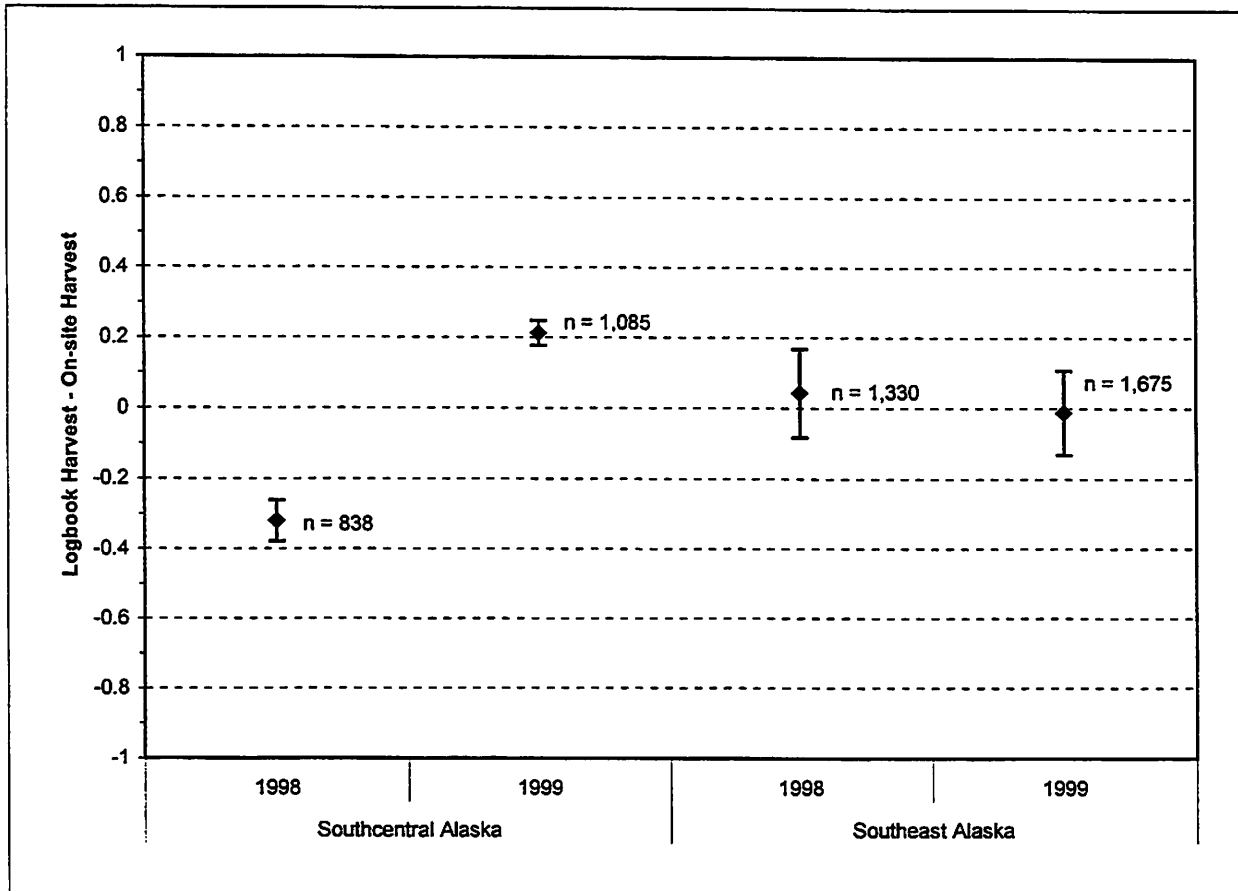


Figure 4.-Averages and 95% confidence intervals of the difference (logbook minus interview) in reported Pacific halibut harvest between interviews and logbooks in Area 3A during 1998 and 1999. Each point represents an individual vessel with at least five (5) matching records and non-zero average difference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

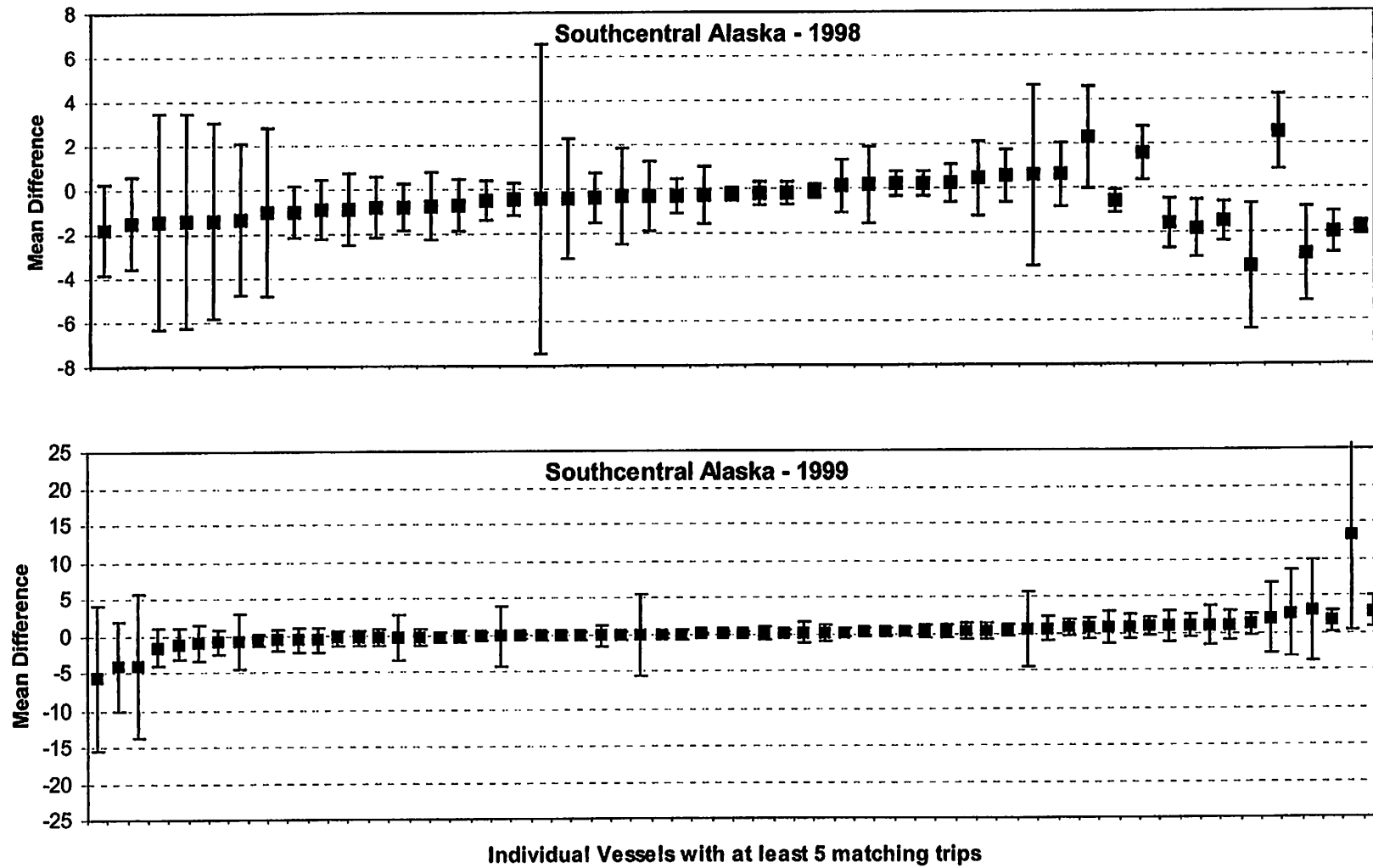


Figure 5.- Averages and 95% confidence intervals of the difference (logbook minus interview) in reported Pacific halibut harvest between interviews and logbooks in Area 2C during 1998 and 1999. Each point represents an individual vessel with at least five (5) matching records and non-zero average difference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

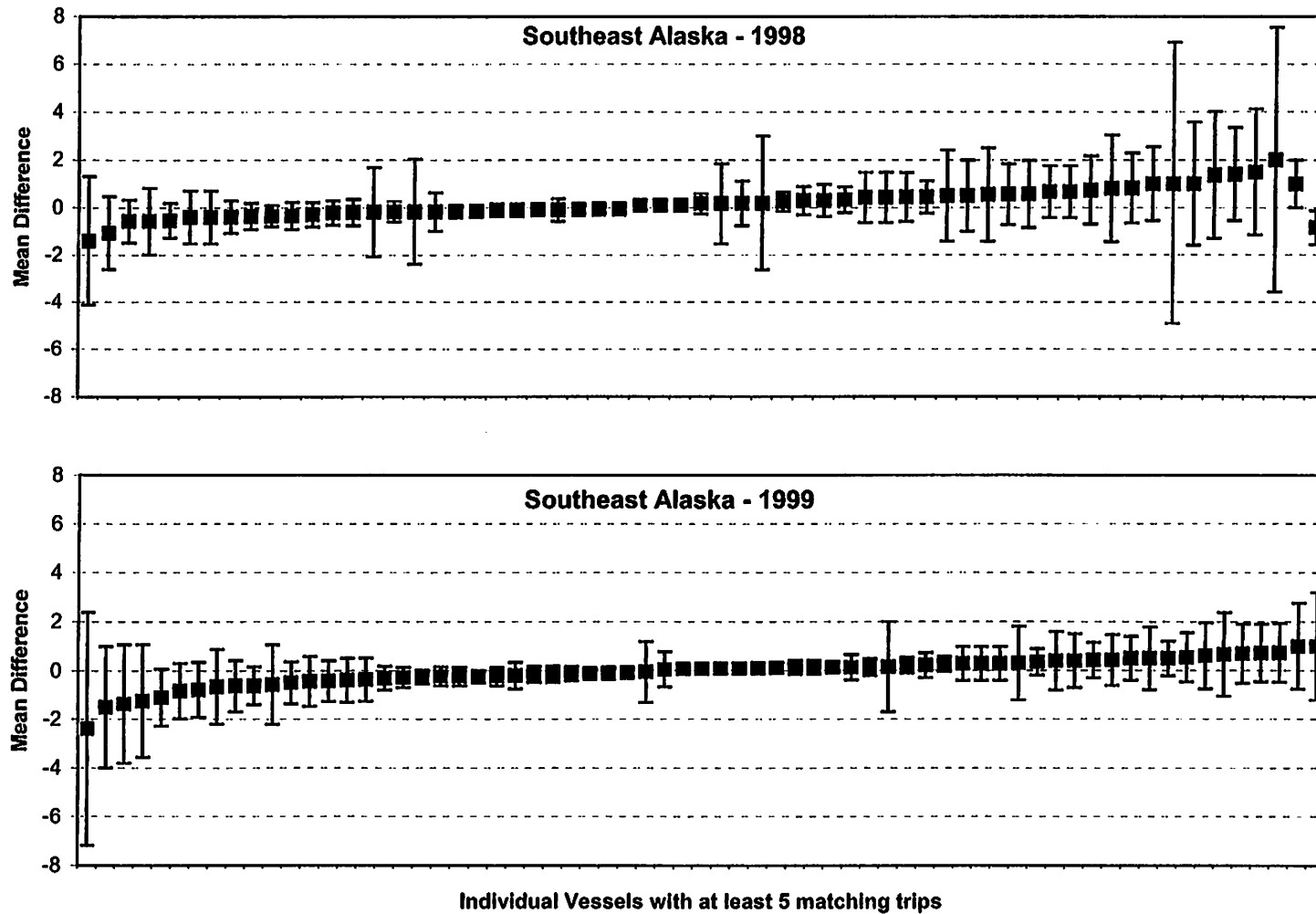


Table 9.-Frequency tabulation of the number of matching records between the logbook and on-site data sets per individual charter vessels for 1998 and 1999 for Southeast and Southcentral Alaska.

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 versus [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.

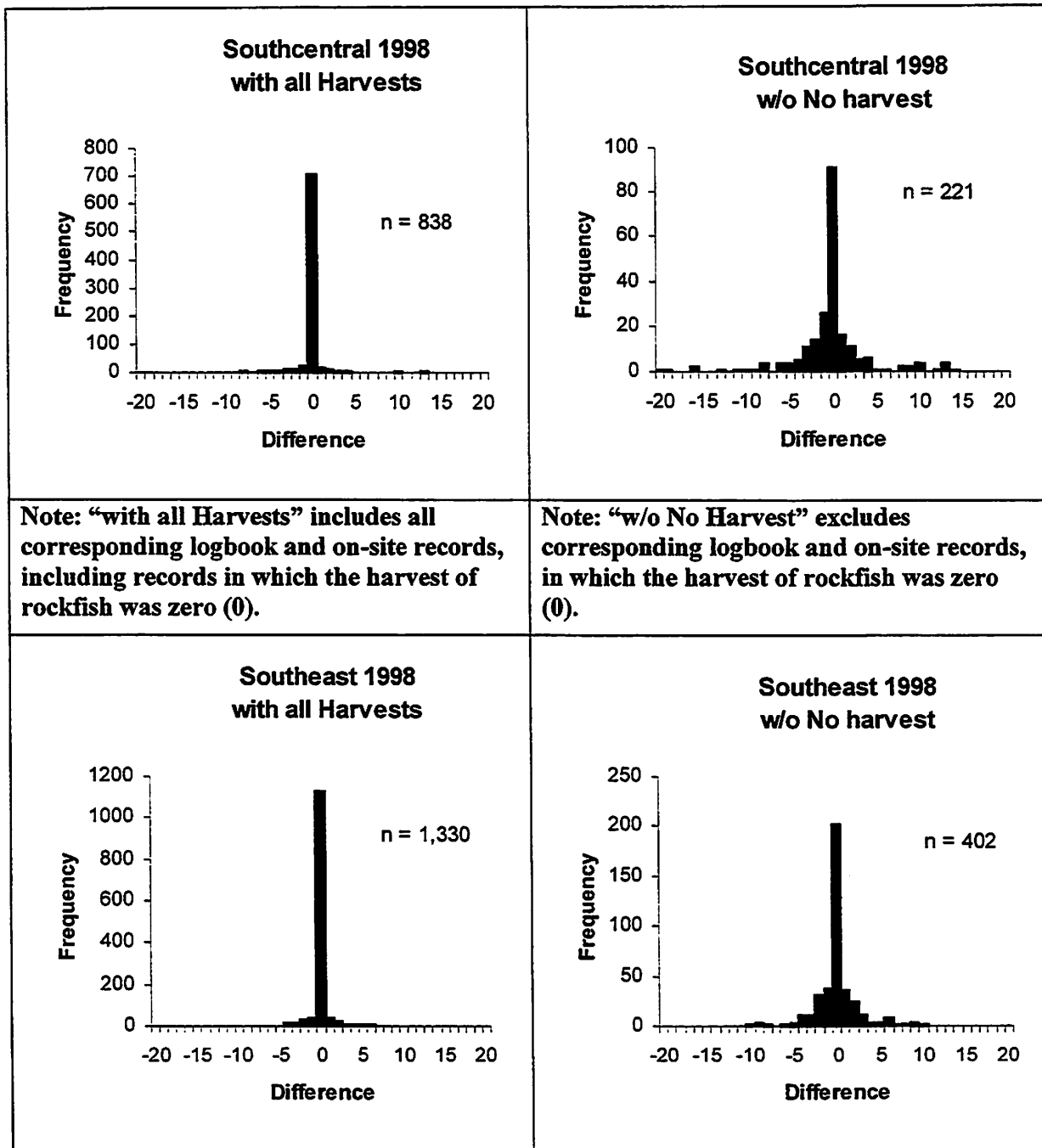


Figure 7.-Frequency histograms of the difference (logbook minus interview) in reported rockfish harvest between matched on-site interviews and logbooks during 1999, summarized by ADF&G Region.

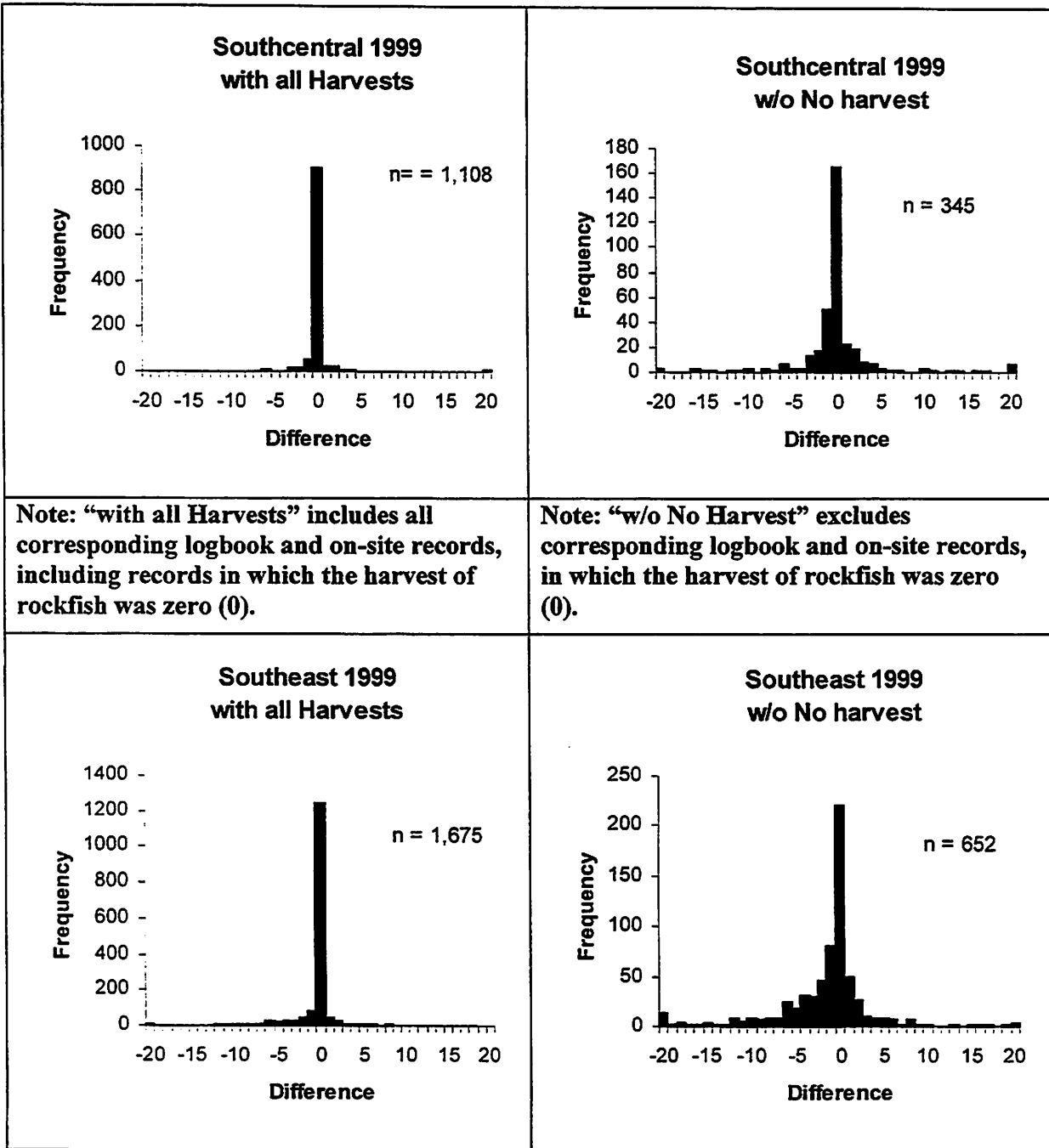


Figure 8.-Frequency histograms of the difference (logbook minus interview) in reported lingcod harvest between matched on-site interviews and logbooks during 1998, summarized by ADF&G Region.

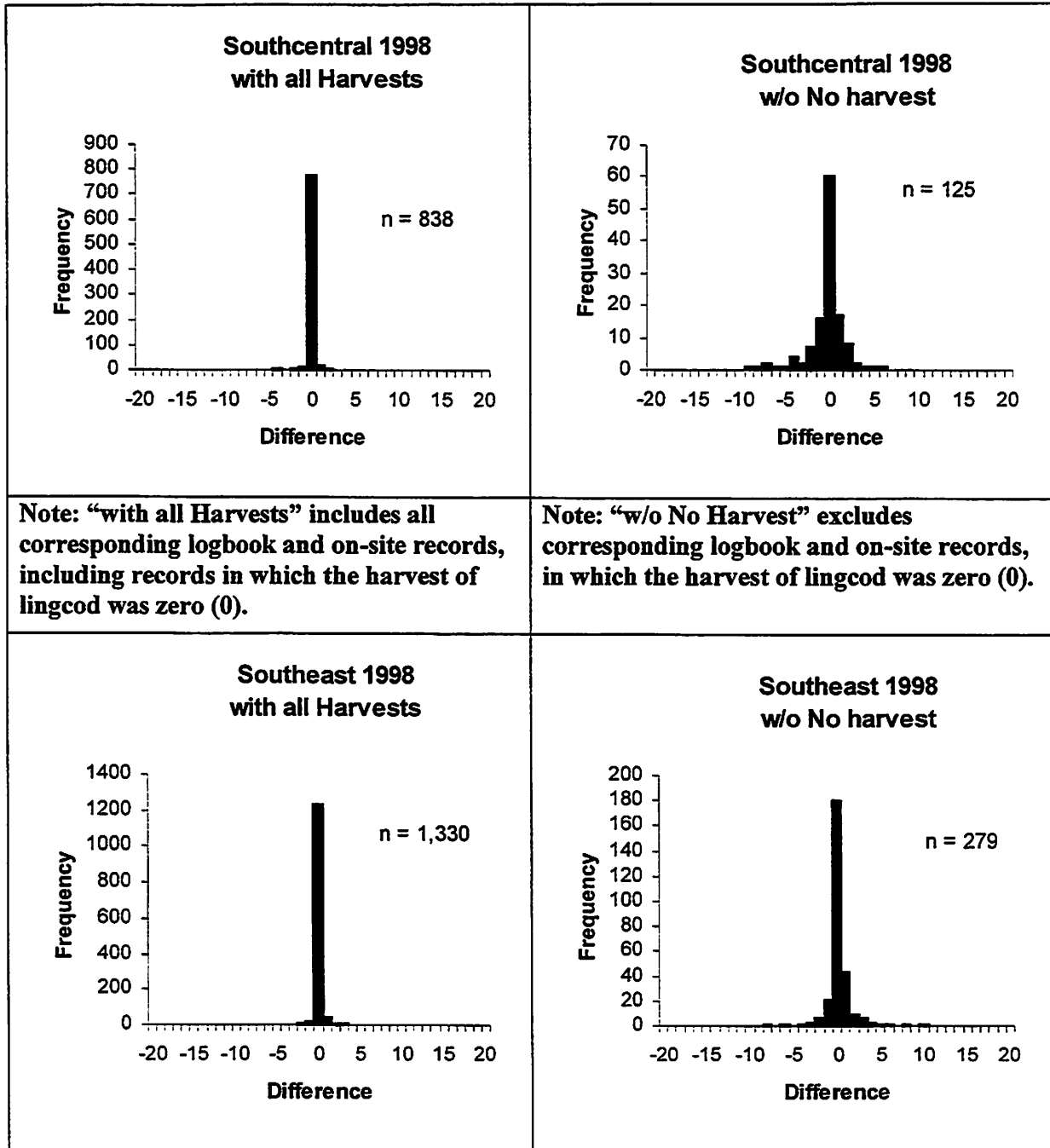


Figure 9.-Frequency histograms of the difference (logbook minus interview) in reported lingcod harvest between matched on-site interviews and logbooks during 1999, summarized by ADF&G Region.

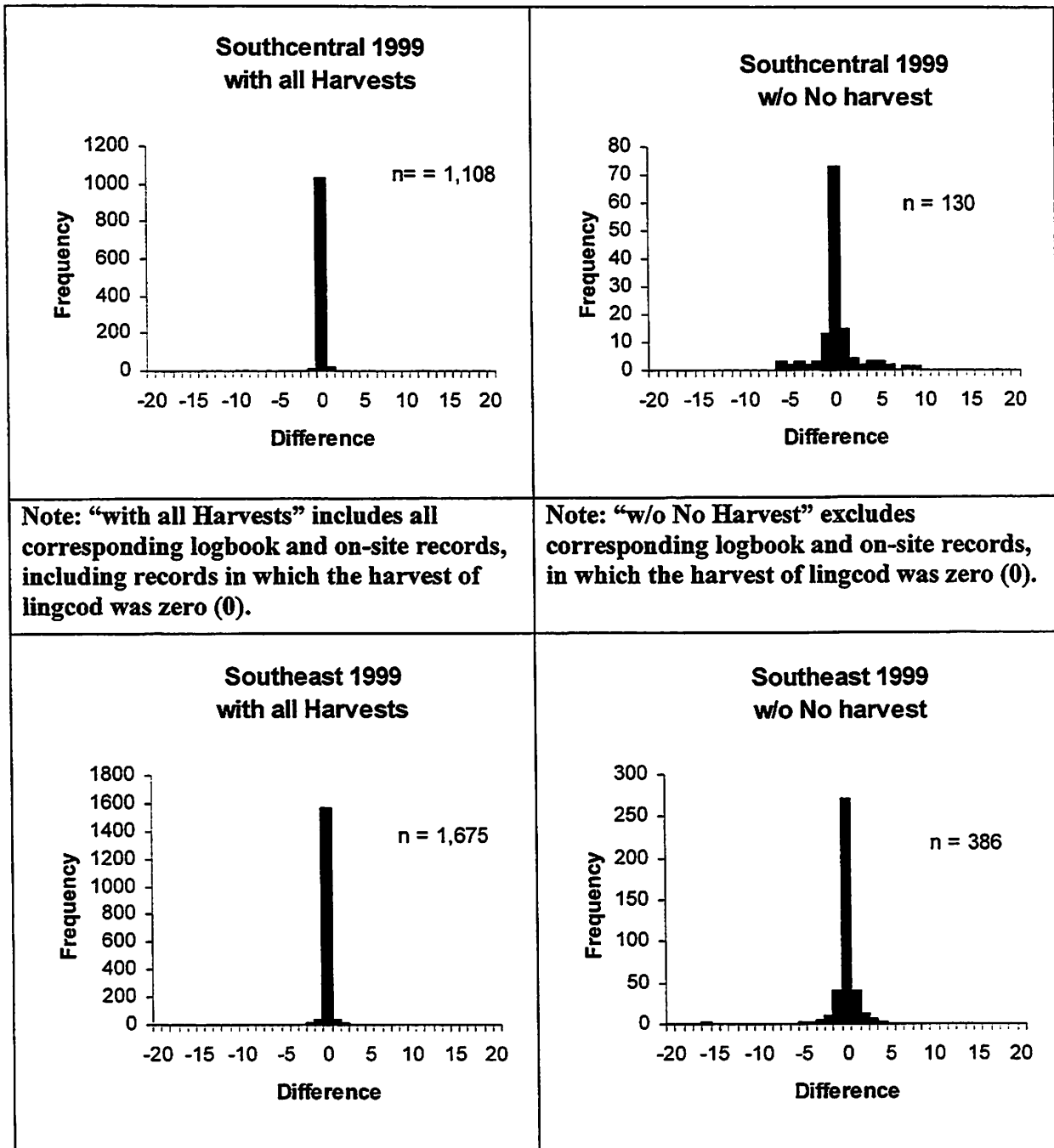


Figure 10.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for lingcod harvest during 1998 and 1999, summarized by ADF&G Region.

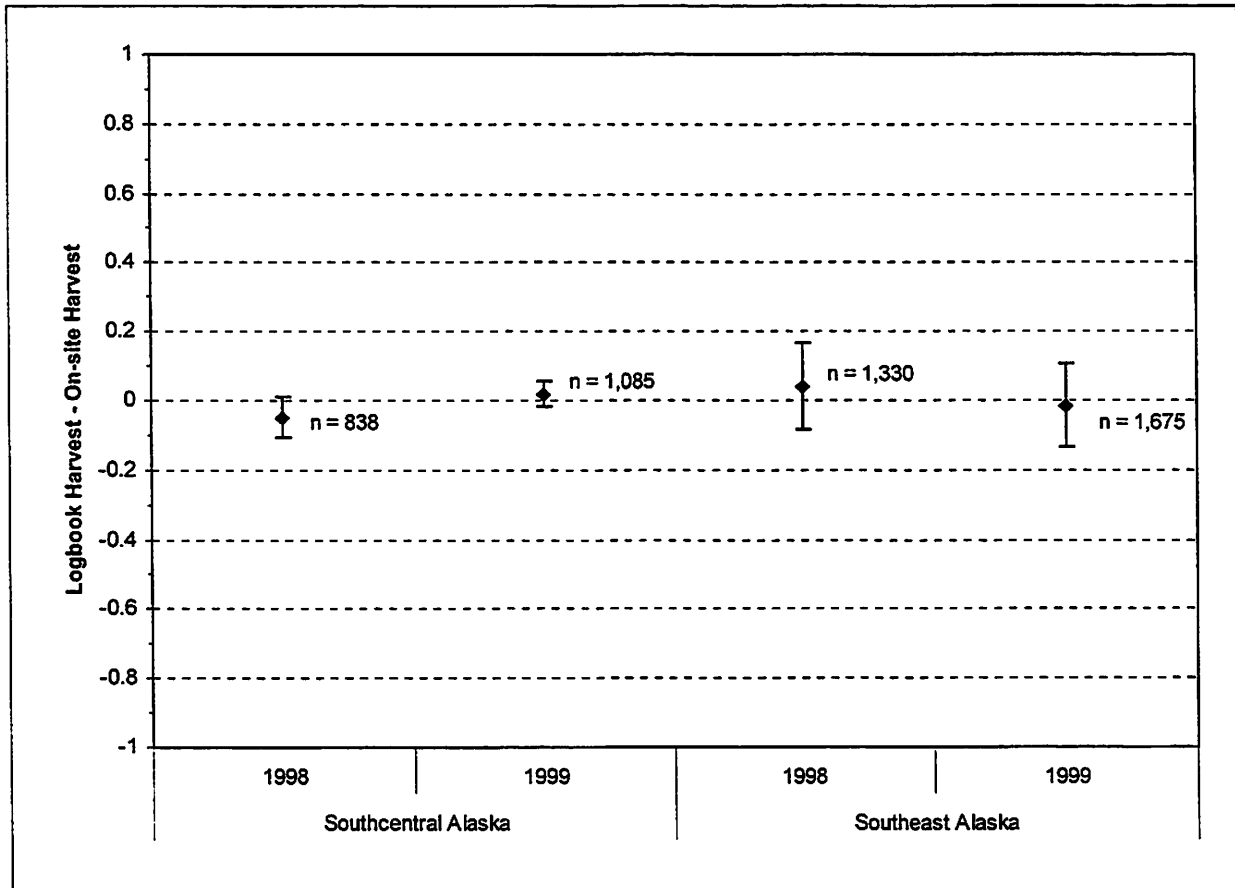


Figure 11.-Averages and 95% confidence intervals of the difference between matched on-site interview information and logbook records comparing individual charter vessel trips for rockfish harvest during 1998 and 1999, summarized by ADF&G Region.

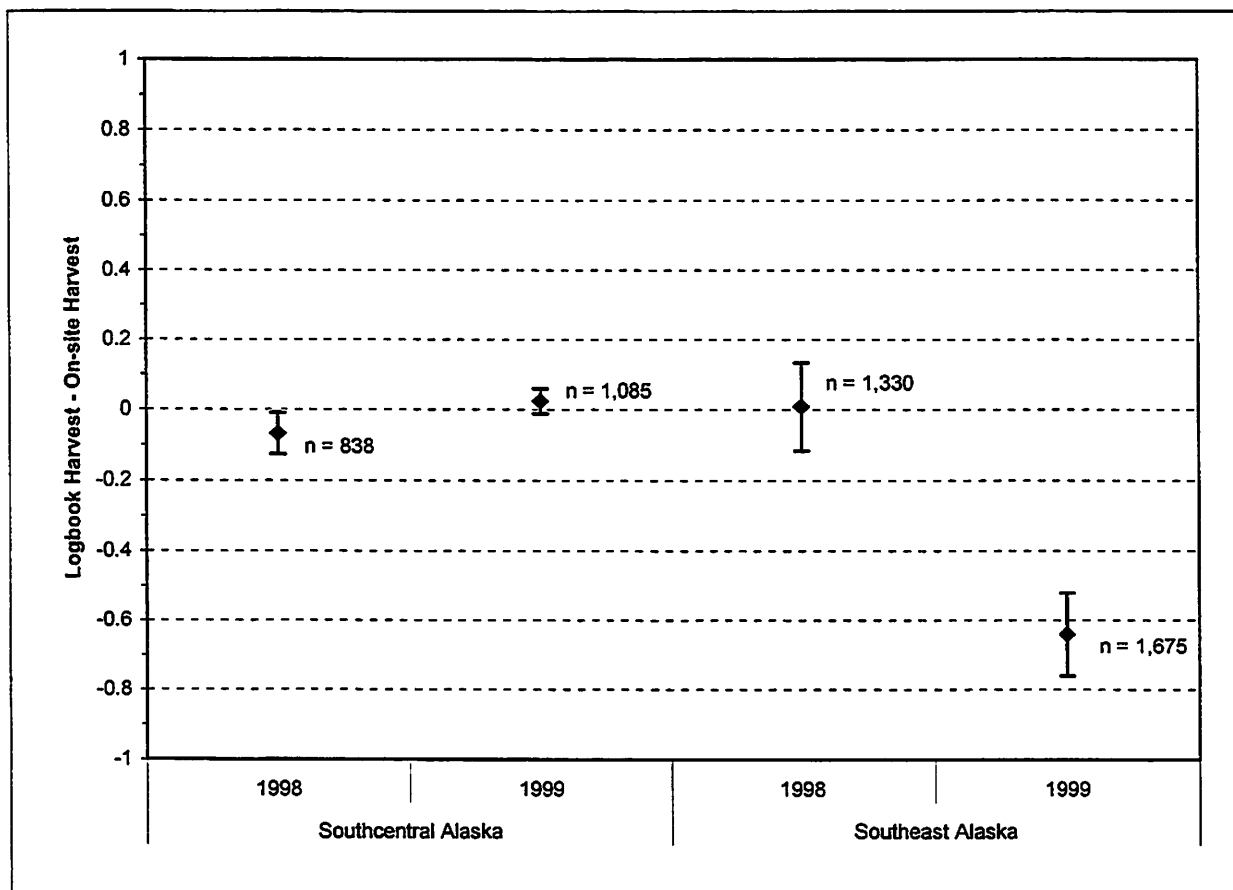


Figure 12.-Frequency histograms of the difference (logbook minus interview) in reported chinook and coho salmon harvest between matched on-site interviews and logbooks during 1998 for the Southeast ADF&G Region.

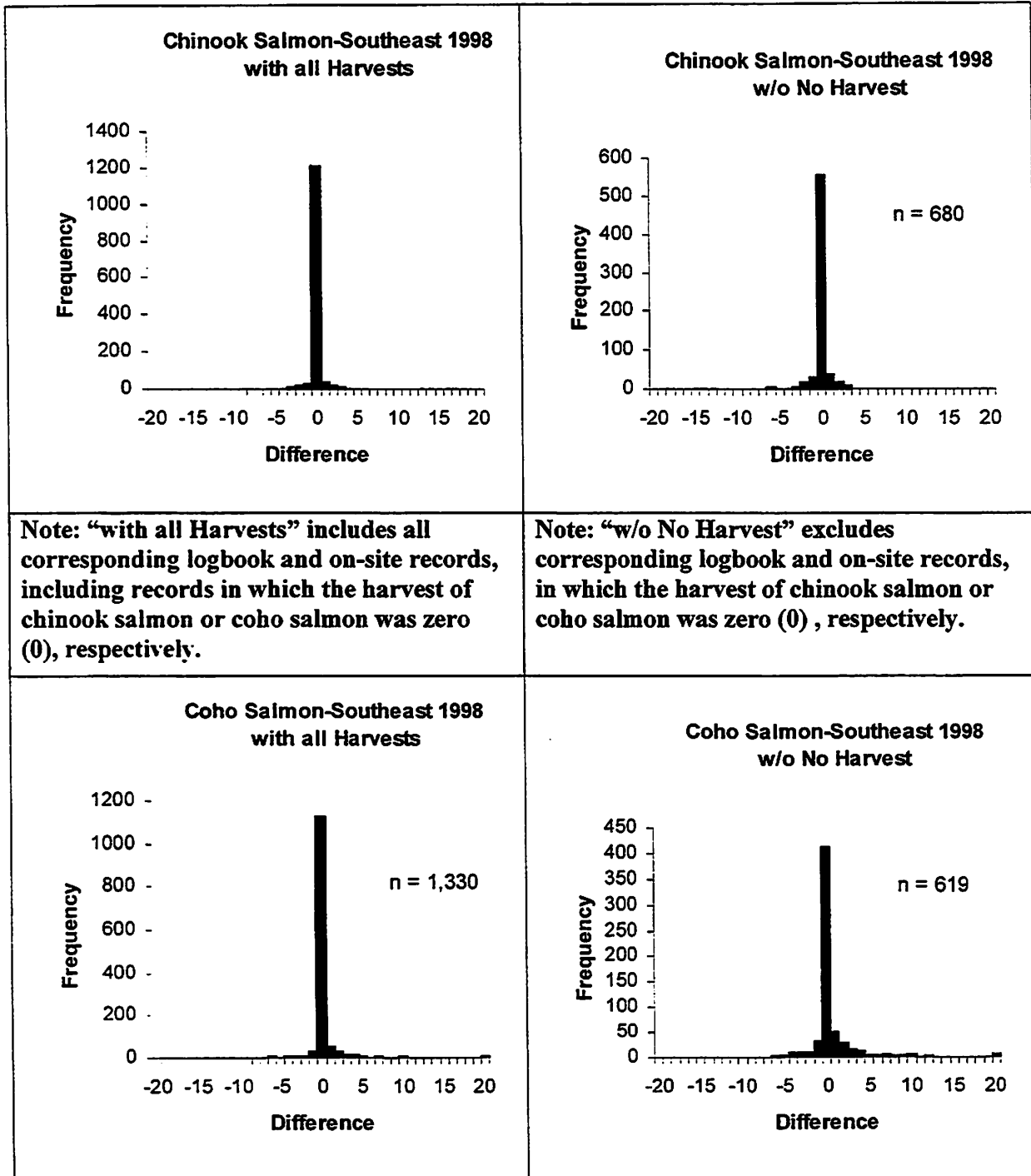
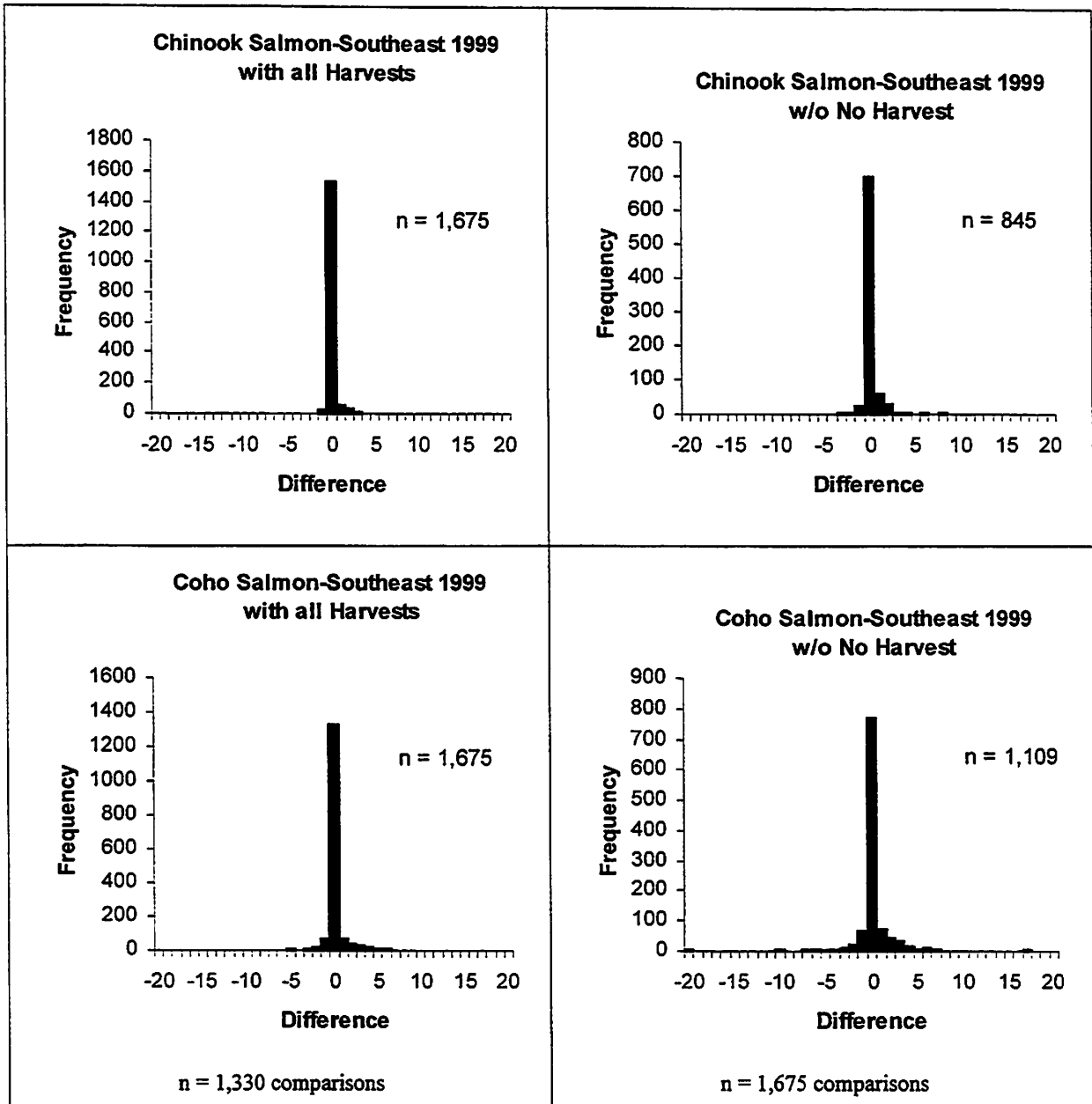
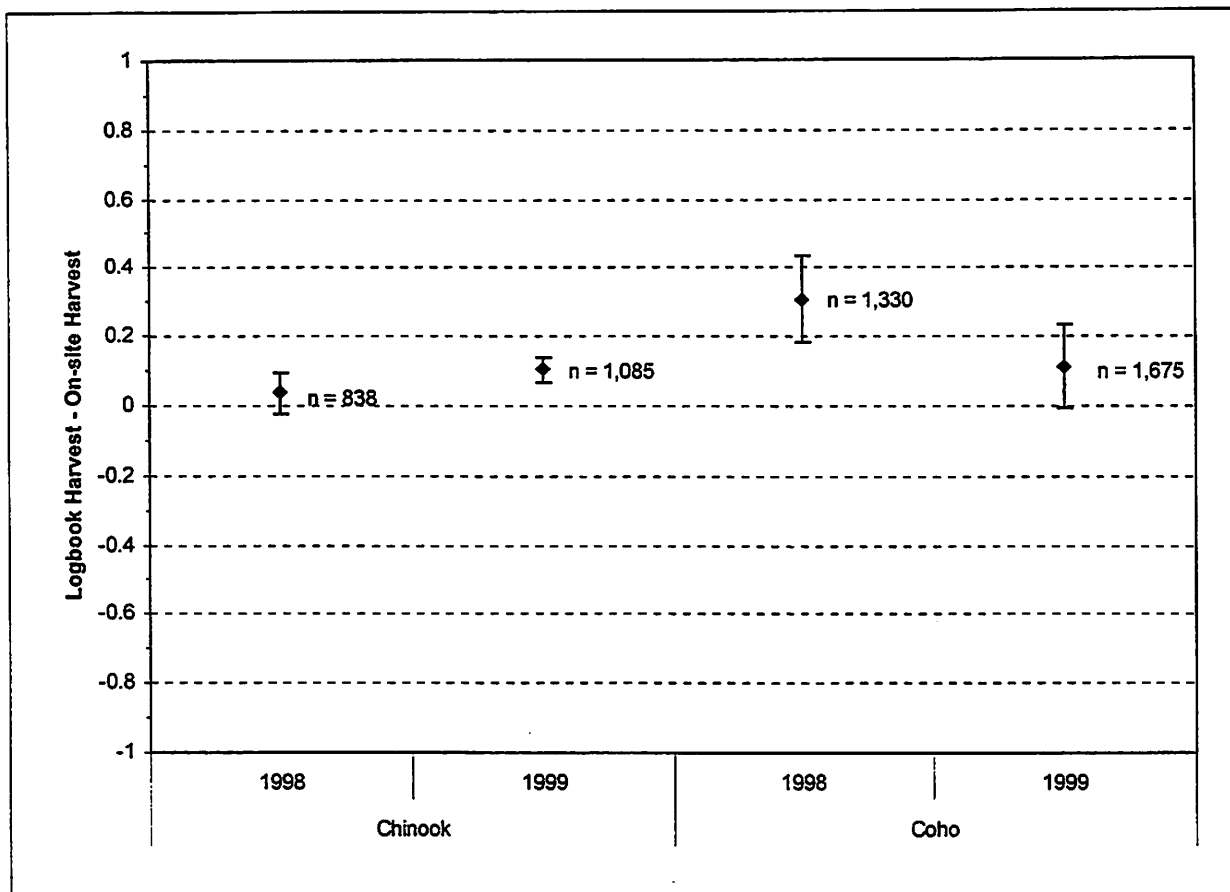


Figure 13.-Frequency histograms of the difference (logbook minus interview) in reported chinook and coho salmon harvest between matched on-site interviews and logbooks during 1999 for the Southeast ADF&G Region.



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 1999⁶. 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 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.

⁶ 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)⁷. 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)⁸. 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.

⁷ 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.

⁸ 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.

Excerpt from December SSC Minutes

C-10(a) HALIBUT MANAGEMENT

Rob Bentz and Allen Bingham (ADF&G) reported on a comparison of halibut harvests reported in the logbook entries with on-site survey reports. Jane DiCosimo (NPFMC) and Glen Merrill (NMFS-AK Region) provided staff response to questions related to the timing and actions required from the SSC in support of Council decision-making.

There appear to be two issues related to use of halibut charter logbook data and implementation of a Charter Halibut IFQ Program. The first is the appropriateness of using these data to establish whether or not a vessel was active in the fishery during the qualifying years (1998-1999). The second is whether logbook data are representative of the distribution of catch among participating charter vessels in those years, and suitable as documentation for a catch-history based initial allocation of quota shares. Finally, the suitability of the logbook data as a basis for GHL management is also in question. (emphasis added)

The analysis reported by ADF&G was not specifically designed to directly address these questions. Nevertheless, the analysis includes interesting observations on the frequency of inconsistent reporting of halibut landings and lack of compliance with the logbook requirement. Although the frequency of inconsistencies between logbook entries and on-site survey reports is troubling, that concern is offset in part by the lack of a systematic pattern of positive or negative deviation and the statistical insignificance of most of the deviations. The SSC notes that the veracity of the logbook recorded catch records and the on-site survey reports was not independently verified and thus it would be inappropriate to judge the logbook records as more or less accurate than the on-site survey reports. As such, use of the terms "over reporting" and "under reporting" should be avoided. All that is known is that logbook data match or do not match on-site survey reports. More over, as noted by the authors, the logbook and on-site data are not independent and should not be compared using standard statistical methods that assume independence.

The SSC did not have access to the September 2001 ADF&G comparison of harvest estimates derived from the logbook records and harvest estimates derived from the ADF&G statewide angler survey. As a result the SSC cannot comment on the question of the relative accuracy of the logbook data versus the statewide harvest estimates. It should be noted however that both rely on self-reported catches and neither are what would be generally considered to be independent sources of catch estimation. If the logbook data are indeed skewed, their utility in administering a GHL may be compromised. Similarly, skewed logbook data might undermine their utility as a basis for initial IFQ allocations unless all logbook entries are equally skewed. Regardless of the accuracy of logbooks as a measure of individual catch records, IFQ allocations could still be awarded. As noted in our October 2000 minutes, catch history need not be the primary basis for the initial allocation of quota shares:

The selection of any particular set of potential IFQ recipients (stakeholders) should be an explicit decision of the Council and should not be driven by data availability. Once the Council has decided which classes of stakeholders to recognize, criteria can be defined to identify members of those stakeholder classes. For example, while MSFCMA requires that limited entry allocations be based, at least in part, on previous participation in the fishery, the criteria for determining the magnitude of that allocation and the extent of past participation are not specified in law. Consequently, it would be consistent with MSFCMA to acknowledge a very broad set of stakeholders (e.g. skippers, owners, anglers) under mechanisms as varied as equal shares, random shares assigned by lottery, or shares proportional to historic days fished, catches, or landings.

MEMORANDUM

State Of Alaska Department of Fish and Game

TO: Kevin Duffy
Acting Commissioner
Juneau

DATE: January 15, 2003

AGENDA C-8(f)
JANUARY 2003

THRU: Rob Bentz
Deputy Director
Division of Sport Fish
Juneau

TELEPHONE 465-6187
NO:

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

TELEPHONE 267-2327
NO:

SUBJECT: Updated initial evaluation of the Alaska
Department of Fish and Game Saltwater
Sportfishing Charter Vessel Logbook
Program 1998-2001

We are providing an update to the initial evaluation of the logbook program in regards to the reliability of reported harvest of Pacific halibut taken by guided sport anglers in IPHC areas 2C and 3A, as originally described in a memorandum to you dated September 21, 2001. The update essentially extends the comparisons made for the first three years of the program (1998-2000), to include information from 2001. This update only includes a comparison of data reported via the logbook program with estimates from our annual mail survey of recreational anglers. This memorandum is not intended to stand on its own, in that the September 21, 2001 memorandum includes a more full evaluation of the logbook data for 1998 through 2000. Additionally, the memorandum dated September 20, 2002 should be referenced in regards to some further analyses in regards to the 1998 and 1999 logbook data that had been specifically requested by the North Pacific Fishery Management Council (Council).

The results are consistent with the conclusions reached in regards to the 1998-2000 evaluation, in that halibut harvest reported in 2001 is still substantially larger than the estimates from the independent mail survey, although the degree of discrepancy is slightly smaller than that observed for 2000.

The final results of our evaluation will eventually be published in one of our Division's peer reviewed publications (most likely the Fishery Manuscript series). The results presented in this memo are final (i.e., not expected to change with further analyses). However, the published evaluation will include some additional analyses that have yet to be finalized.

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

Attachment

cc (via email): Barry Stratton
Bob Clark
Doug Vincent-Lang

Rocky Holmes
Dave Bernard
Kelly Hepler

INTRODUCTION

In February 1998 the Alaska Board of Fisheries (BOF) adopted regulations requiring logbooks for saltwater charter vessels statewide. The BOF took this action to meet several information needs including: 1) inseason estimates of Southeast sport charter harvest of chinook salmon, 2) individual vessel-based sport charter information, 3) effort and harvest information beyond that obtained through the angler-based statewide sport fish mail survey and on-site creel surveys, 4) North Pacific Fishery Management Council (Council) needs in relation to allocation of Pacific halibut, and 5) BOF needs in deliberation of regulatory and local management plan proposals.

Each harvest assessment program has its strengths and limitations. Creel surveys provide valuable first hand observations of the fishery but they are very expensive and lack full geographical coverage. Port sampling (catch sampling) provides biological information and important fishery statistics including locations of catch and fishing effort, is less expensive than creel surveys, but cannot estimate total area harvest. As noted above, the Department's charter logbook program was initiated in 1998 and as with any new program, it needs to be "ground truthed" to evaluate the accuracy of the data. The Statewide Harvest Survey (SWHS) has provided a long-term time series that provides excellent geographical coverage, is reasonably accurate, and is cost effective. Because it is a post-season survey, estimates of harvest are not available for up to one year after the fishing season in question. The SWHS estimates are independent because the harvest is reported by charter clients, as opposed to logbook data reported by charter operators.

This document provides a summary of the results of an update to our initial evaluation ("ground truthing") of the logbook program with regards to the reliability of reported harvest of Pacific halibut taken by guided sport anglers in International Pacific Halibut Commission (IPHC) areas 2C and 3A, as originally described in a memorandum to you dated September 21, 2001. The update essentially extends the comparisons made for the first three years of the program (1998-2000) to include information from 2001. This update only includes a comparison of data reported via the logbook program with estimates from the SWHS. This memorandum is not intended to stand on its own, in that the September 21, 2001 memorandum includes a more full evaluation of the logbook data for 1998 through 2000. Additionally, the memorandum dated September 20, 2002 provided further analyses in regards to the 1998 and 1999 logbook data that had been specifically requested by the Council (Chris Oliver's letter to you dated August 13, 2002).

OBJECTIVES

1. Compare and contrast the harvest of Pacific halibut as estimated by the Statewide Harvest Survey with the reported harvest from the logbook program for 2001; and
2. Compare and contrast the estimated and reported harvest of other species (i.e., chinook and coho salmon, rockfish, and lingcod).

SUMMARY OF RESULTS

Pacific Halibut

Harvest of Pacific halibut as reported in the logbook program was generally larger (and in some cases) much larger than the charter/guided SWHS estimate in IPHC area 2C (Figure 1). During the first three years the discrepancy appears to have an increasing trend over the years of comparison (i.e., greater in 2000 than 1999 and greater than 1998). Whereas the discrepancy was reduced by a minor extent during 2001 in comparison to 2000.

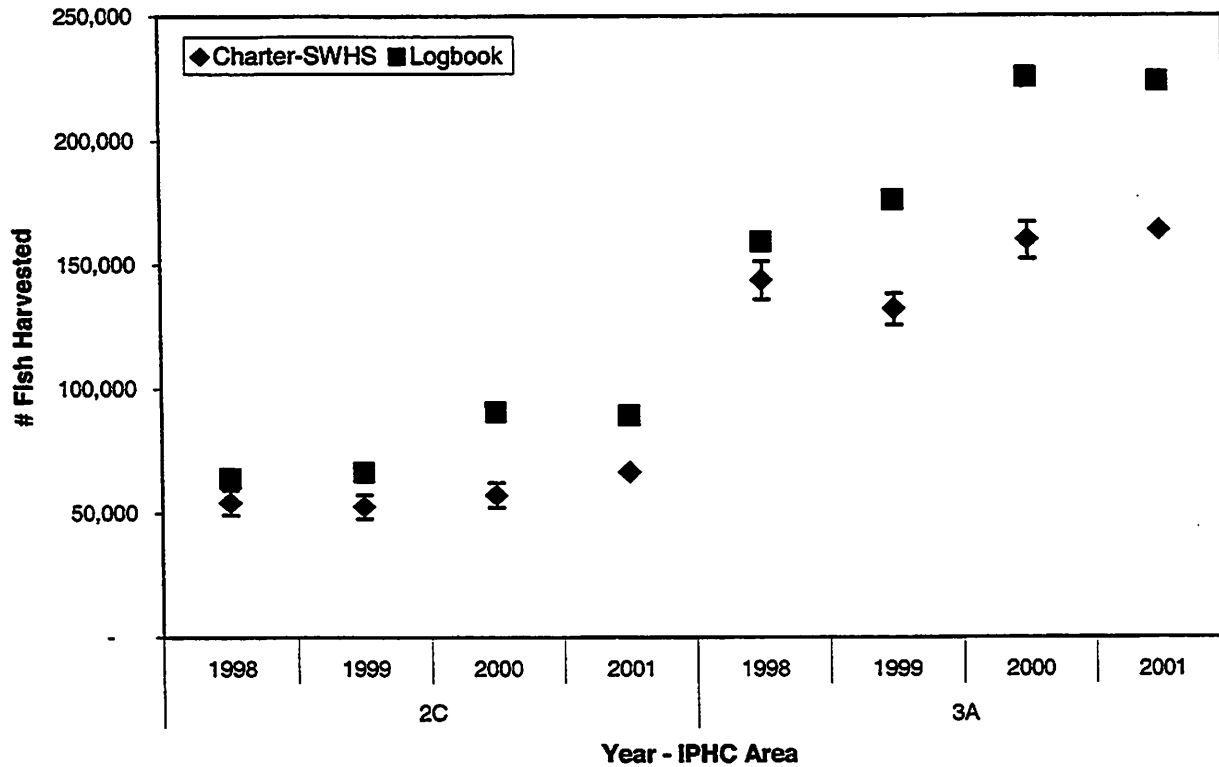


Figure 1.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of Pacific halibut by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2001. Note that confidence interval limits for the SWHS for 2001 are not currently available (however sample sizes were similar to previous years and hence the relative size of confidence intervals are expected to be similar to previous years).

Similarly for IPHC area 3A the Pacific halibut harvest reported in logbooks was substantially greater than the estimated charter/guided harvest from the SWHS, again with an increasing trend in the size of the discrepancy going from 1998 to 2000. Again the degree of the discrepancy reduced to a minor extent during 2001 in comparison to 2000 for IPHC area 3A.

Other Species

Harvest of chinook and coho salmon as reported in the logbook program are generally larger than the estimated harvest in IPHC area 2C for all four years (Figures 2). The logbook reported harvest for rockfish are generally comparable during 1998 and 1999 in both IPHC areas (Figure 3), whereas the reported harvests are substantially larger than the estimated harvest in both areas during 2000 and 2001. Comparatively, the logbook reported harvest for lingcod was generally in better agreement with the SWHS estimates for both IPHC areas during all four years (Figure 3).

The reported harvest for each of these species generally matches closely with the estimates from the SWHS for IPHC area 3A (Figures 2 and 3), especially during the first two years of the program. 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, see Figure 1) is not repeated to the same degree for these other species.

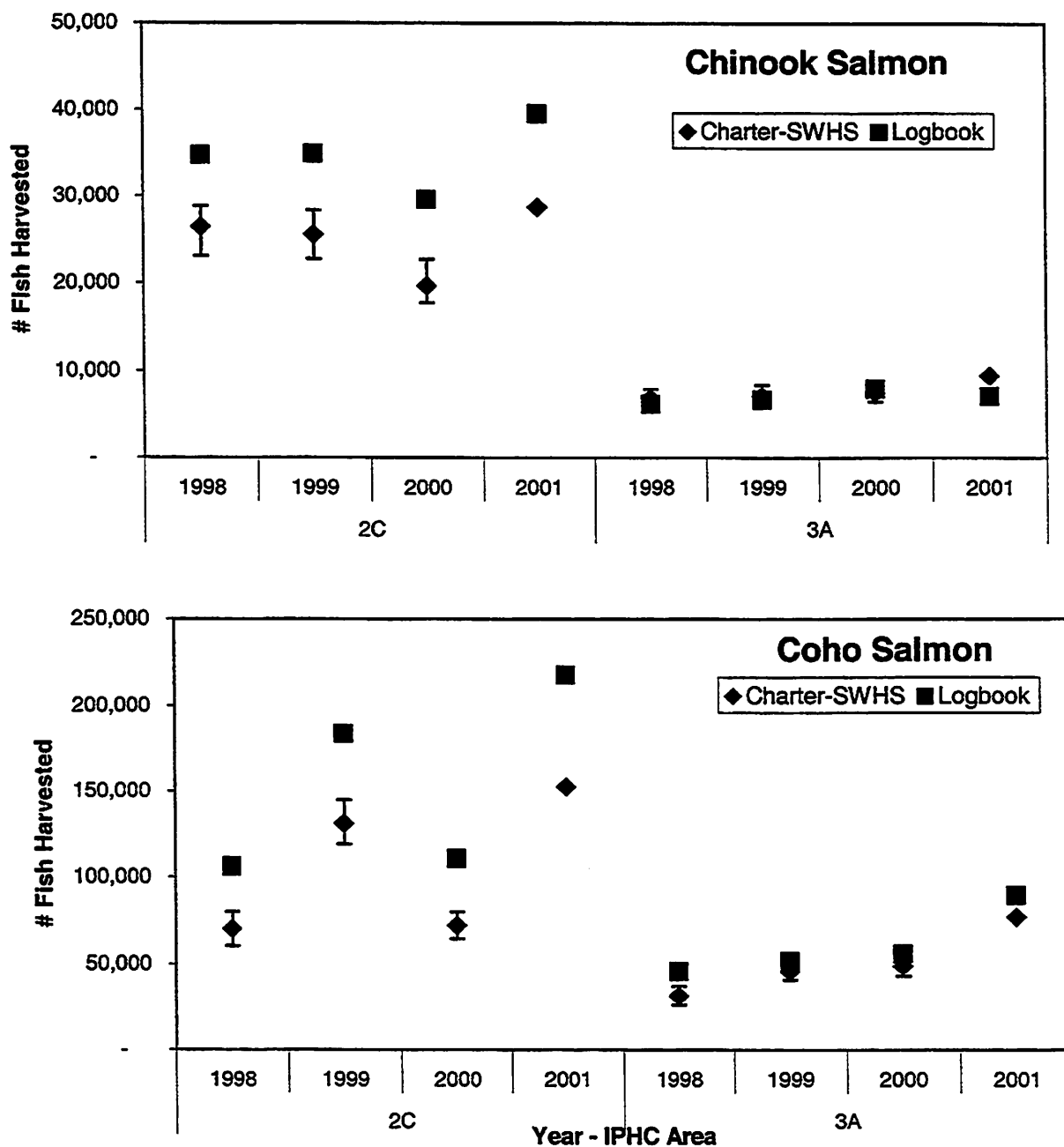


Figure 2.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of chinook salmon and coho salmon by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2001. Note that confidence interval limits for the SWHS for 2001 are not currently available (however sample sizes were similar to previous years and hence the relative size of confidence intervals are expected to be similar to previous years).

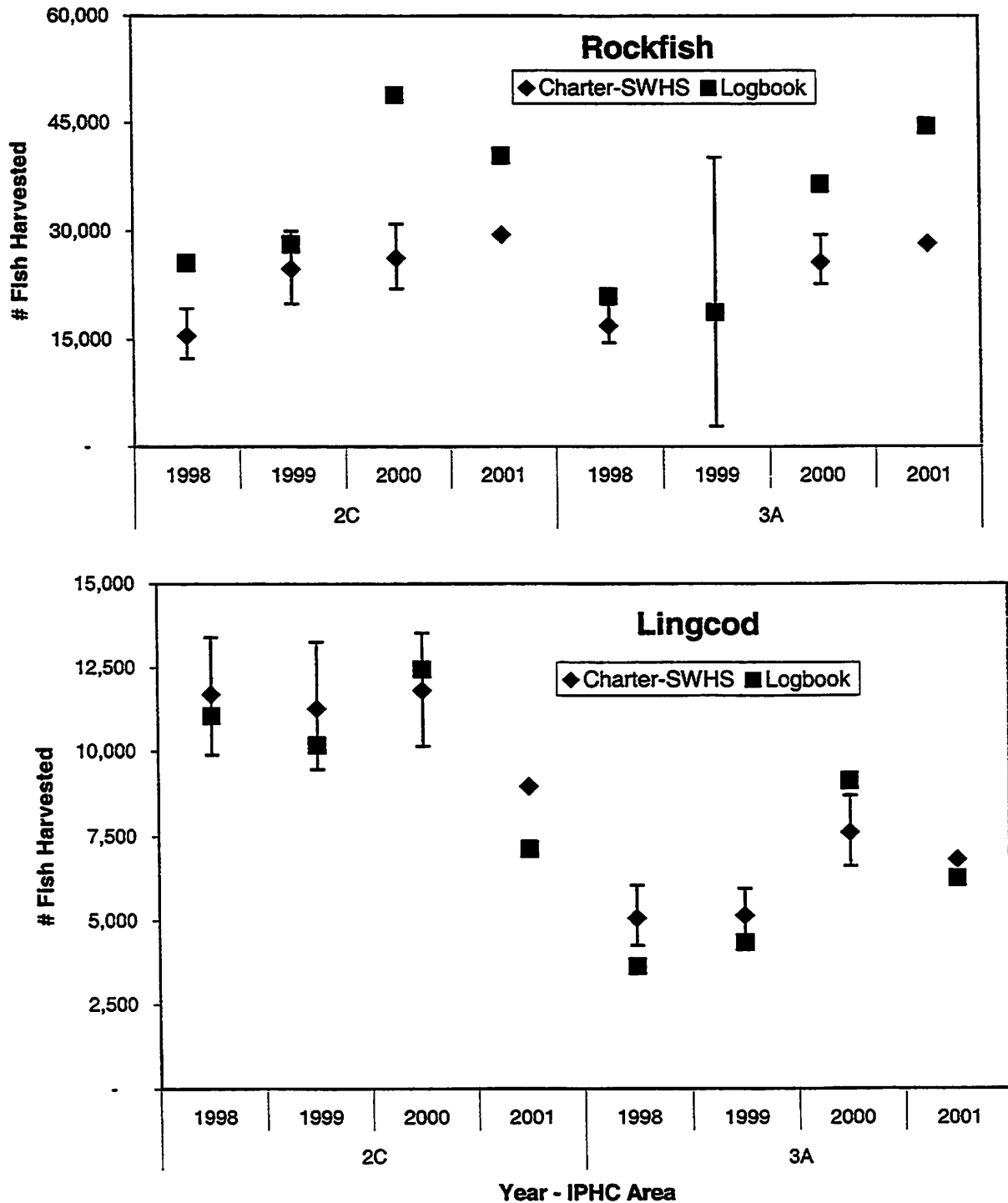


Figure 3.-Comparison of Statewide Annual Mail Survey estimates versus Saltwater Charter Logbook Reported Harvest of rockfish and lingcod by chartered/guided anglers for the International Pacific Halibut Commission (IPHC) Areas 2C and 3A, 1998-2001. Note that confidence interval limits for the SWHS for 2001 are not currently available (however sample sizes were similar to previous years and hence the relative size of confidence intervals are expected to be similar to previous years).

DISCUSSION

The harvests of Pacific halibut as reported in the charter vessel logbook program were substantially larger than independent estimates of the harvest from the SWHS. Discrepancies between the two sources of data increased from 1998 through 2000 in both IPHC areas 2C and 3A, with either a leveling off or slight reduction in the magnitude of the discrepancy in 2001 (Figure 1). The increasing discrepancy between the logbook reported harvest for Pacific halibut and SWHS estimates was not observed for other fish species in IPHC Area 3A. While there were discrepancies between logbook reports and SWHS estimates for some of the other species in Area 2C, the discrepancies were more variable and did not follow the increasing pattern over time (Figures 2 and 3).

The primary purpose of the analyses that was summarized in our recent memorandum (dated September 20, 2002) was to look for meaningful misreporting of Pacific halibut harvest in the logbook program during 1998 and 1999. Although this previously summarized analyses was limited in scope we repeat some of the results from that analyses below for informational purposes in relation to the primary analyses presented in this current memorandum (i.e., comparison of 2001 logbook reported harvest with mail survey estimated harvest).

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. A low percentage of trips were observed and the logbook and interview data was determined to be non-independent. A substantial percentage of the records did not agree. 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 was 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.

The purpose of such an analyses if made for 2000 or 2001 would be to detect meaningful misreporting of Pacific halibut harvest in the logbook program for the years in question. The appropriate sampling frame for this type of analysis is composed of the all the vessel trips in IPHC areas 2C and 3A in those two years. As with 1998 and 1999, 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 possible conclusions concerning the presence or absence of misreporting of harvest from this type of analysis.

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 did not strongly refute the discrepancies identified by comparing the independent SWHS estimates with logbook data.

Due to these limitations the analyses described above for 1998 and 1999 (reported in the September 20, 2002 memorandum) were not repeated for the more recent data (2000 or 2001).

CONCLUSIONS

The halibut harvest data collected from 1998 and 1999 logbooks in IPHC area 2C appears to be reasonable when compared with the SWHS (and on-site creel survey estimates as noted in the September 21, 2001 memorandum). However, we believe the halibut harvest reported in the 2000 logbooks from 2C is artificially inflated (as reported earlier: the reported logbook harvest for charter vessels located in Sitka during 2000 is approximately 3,000 fish higher than the Sitka creel survey estimate for both charter and private anglers). The results from the 2001 comparison do not strongly refute or support the apparent inflation of reported halibut harvest, in that halibut harvest reported in 2001 is still substantially larger than the estimates from the independent mail survey but the degree of discrepancy is slightly smaller than that observed for 2000 (Figure 1). Accordingly, we do not believe the 2000 or 2001 logbook data should be used for decision-making processes in regards to halibut harvest for area 2C.

As previously noted in the September 21, 2001 memorandum, in IPHC area 3A the 1998 logbook data on halibut harvested on charter vessels appears to be reasonable when compared with SWHS estimates, but data from the 1999 and 2000 logbook programs were believed to be artificially inflated and should not be used in any management decision making process. As was the case with IPHC area 2C, reported harvest for area 3A were still substantially larger than the mail survey estimates for 2001, although the degree of discrepancy is slightly smaller than that observed for 2000 (Figure 1), and hence we do not believe the 1999, 2000, or 2001 logbook data should be used for decision making processes in regards to halibut harvest for area 3A.

The SWHS estimates of halibut harvests are believed to be accurate. The SWHS has been conducted continuously since 1977. SWHS estimates match closely with inseason creel survey estimates at major fisheries throughout the state. The SWHS methodology has been peer reviewed and endorsed by the IPHC, the SSC, and North Pacific Fishery Management Council. Accordingly, the SWHS estimates should be used for making management decisions in regards to this fishery.

Additional analyses are planned to more fully evaluate the reliability and accuracy of the logbook data that may identify possible explanations to the discrepancies summarized above. All results of this 4-year comparison will be published in a Department of Fish and Game Fisheries Manuscript Report.