

Special Publication No. 09-12

**An Evaluation of Estimates of Sport Fish Harvest
from the Alaska Statewide Harvest Survey, 1996-2006**

by

Robert A. Clark

September 2009

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the following reports by the Divisions of Sport Fish and of Commercial Fisheries: Fishery Manuscripts, Fishery Data Series Reports, Fishery Management Reports, and Special Publications. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

| | | | | | |
|---|--------------------|--|---|---|-------------------------|
| Weights and measures (metric) | | General | | Measures (fisheries) | |
| centimeter | cm | Alaska Administrative Code | AAC | fork length | FL |
| deciliter | dL | all commonly accepted abbreviations | e.g., Mr., Mrs., AM, PM, etc. | mid-eye to fork | MEF |
| gram | g | all commonly accepted professional titles | e.g., Dr., Ph.D., R.N., etc. | mid-eye to tail fork | METF |
| hectare | ha | at | @ | standard length | SL |
| kilogram | kg | compass directions: | | total length | TL |
| kilometer | km | east | E | | |
| liter | L | north | N | Mathematics, statistics | |
| meter | m | south | S | <i>all standard mathematical signs, symbols and abbreviations</i> | |
| milliliter | mL | west | W | alternate hypothesis | H _A |
| millimeter | mm | copyright | © | base of natural logarithm | <i>e</i> |
| | | corporate suffixes: | | catch per unit effort | CPUE |
| Weights and measures (English) | | Company | Co. | coefficient of variation | CV |
| cubic feet per second | ft ³ /s | Corporation | Corp. | common test statistics | (F, t, χ^2 , etc.) |
| foot | ft | Incorporated | Inc. | confidence interval | CI |
| gallon | gal | Limited | Ltd. | correlation coefficient (multiple) | R |
| inch | in | District of Columbia | D.C. | correlation coefficient (simple) | r |
| mile | mi | et alii (and others) | et al. | covariance | cov |
| nautical mile | nmi | et cetera (and so forth) | etc. | degree (angular) | ° |
| ounce | oz | exempli gratia | e.g. | degrees of freedom | df |
| pound | lb | (for example) | | expected value | <i>E</i> |
| quart | qt | Federal Information Code | FIC | greater than | > |
| yard | yd | id est (that is) | i.e. | greater than or equal to | ≥ |
| | | latitude or longitude | lat. or long. | harvest per unit effort | HPUE |
| Time and temperature | | monetary symbols | | less than | < |
| day | d | (U.S.) | \$, ¢ | less than or equal to | ≤ |
| degrees Celsius | °C | months (tables and figures): first three letters | Jan, ..., Dec | logarithm (natural) | ln |
| degrees Fahrenheit | °F | registered trademark | ® | logarithm (base 10) | log |
| degrees kelvin | K | trademark | ™ | logarithm (specify base) | log ₂ , etc. |
| hour | h | United States (adjective) | U.S. | minute (angular) | ' |
| minute | min | United States of America (noun) | USA | not significant | NS |
| second | s | U.S.C. | United States Code | null hypothesis | H ₀ |
| | | U.S. state | use two-letter abbreviations (e.g., AK, WA) | percent | % |
| Physics and chemistry | | | | probability | P |
| all atomic symbols | | | | probability of a type I error (rejection of the null hypothesis when true) | α |
| alternating current | AC | | | probability of a type II error (acceptance of the null hypothesis when false) | β |
| ampere | A | | | second (angular) | " |
| calorie | cal | | | standard deviation | SD |
| direct current | DC | | | standard error | SE |
| hertz | Hz | | | variance | |
| horsepower | hp | | | population | Var |
| hydrogen ion activity (negative log of) | pH | | | sample | var |
| parts per million | ppm | | | | |
| parts per thousand | ppt, ‰ | | | | |
| volts | V | | | | |
| watts | W | | | | |

SPECIAL PUBLICATION NO. 09-12

**AN EVALUATION OF ESTIMATES OF SPORT FISH HARVEST FROM
THE ALASKA STATEWIDE HARVEST SURVEY, 1996-2006**

by

Robert A. Clark,
Alaska Department of Fish and Game,
Division of Sport Fish, Anchorage

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1599

September 2009

This investigation was partially financed by the Sport Fish Restoration Act (16 U.S.C. 777-777K) under Project F-10-23 Job No. RT-13.

The Special Publication series was established by the Division of Sport Fish in 1991 for the publication of techniques and procedures manuals, informational pamphlets, special subject reports to decision-making bodies, symposia and workshop proceedings, application software documentation, in-house lectures, and became a joint divisional series in 2004 with the Division of Commercial Fisheries. Special Publications are intended for fishery and other technical professionals. Special Publications are available through the Alaska State Library, Alaska Resources Library and Information Services (ARLIS) and on the Internet: <http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm>. This publication has undergone editorial and peer review.

*Robert A. Clark,
Alaska Department of Fish and Game, Division of Sport Fish,
333 Raspberry Road, Anchorage, Alaska, USA*

This document should be cited as:

Clark, R. A. 2009. An evaluation of estimates of sport fish harvest from the Alaska statewide harvest survey, 1996-2006. Alaska Department of Fish and Game, Special Publication No. 09-12, Anchorage.

The Alaska Department of Fish and Game (ADF&G) administers all programs and activities free from discrimination based on race, color, national origin, age, sex, religion, marital status, pregnancy, parenthood, or disability. The department administers all programs and activities in compliance with Title VI of the Civil Rights Act of 1964, Section 504 of the Rehabilitation Act of 1973, Title II of the Americans with Disabilities Act (ADA) of 1990, the Age Discrimination Act of 1975, and Title IX of the Education Amendments of 1972.

If you believe you have been discriminated against in any program, activity, or facility please write:

ADF&G ADA Coordinator, P.O. Box 115526, Juneau, AK 99811-5526

U.S. Fish and Wildlife Service, 4401 N. Fairfax Drive, MS 2042, Arlington, VA 22203

Office of Equal Opportunity, U.S. Department of the Interior, 1849 C Street NW MS 5230, Washington DC 20240

The department's ADA Coordinator can be reached via phone at the following numbers:

(VOICE) 907-465-6077, (Statewide Telecommunication Device for the Deaf) 1-800-478-3648, (Juneau TDD) 907-465-3646, or (FAX) 907-465-6078

For information on alternative formats and questions on this publication, please contact:

ADF&G Division of Sport Fish, Research and Technical Services, 333 Raspberry Road, Anchorage AK 99518 (907) 267-2375.

TABLE OF CONTENTS

| | Page |
|---|-------------|
| LIST OF TABLES..... | ii |
| LIST OF APPENDICES | ii |
| ABSTRACT | 1 |
| INTRODUCTION | 1 |
| METHODS..... | 2 |
| Evaluation of Accuracy | 2 |
| Selection of Comparisons | 2 |
| Statistical Analysis..... | 3 |
| Evaluation of Precision..... | 3 |
| RESULTS..... | 4 |
| Evaluation of Accuracy | 4 |
| Juneau Marine Boat Survey..... | 4 |
| Sitka Marine Boat Survey..... | 7 |
| Ketchikan Marine Boat Survey..... | 7 |
| Gastineau Hatchery Shoreline Survey | 7 |
| Situk River Chinook Salmon Survey..... | 8 |
| Lower Kenai River Chinook Salmon Survey | 8 |
| Evaluation of Precision..... | 8 |
| DISCUSSION AND RECOMMENDATIONS..... | 10 |
| ACKNOWLEDGEMENTS..... | 11 |
| REFERENCES CITED | 11 |
| APPENDIX A SOURCE CITATIONS FOR ONSITE SURVEYS | 15 |
| APPENDIX B STATEWIDE HARVEST SURVEY LOCATION CODES USED IN COMPARISONS..... | 21 |
| APPENDIX C ESTIMATES OF HARVEST BY YEAR FOR ONSITE AND STATEWIDE HARVEST SURVEYS .. | 31 |
| APPENDIX D PLOTS COMPARING HARVEST ESTIMATES FROM THE SWHS AND ONSITE SURVEYS | 51 |
| APPENDIX E PLOTS OF PRECISION ON NUMBER OF RESPONSES AND MAGNITUDE OF HARVEST .. | 71 |

LIST OF TABLES

| Table | Page |
|--|------|
| 1. Summary of hypothesis tests of association and equal medians, and the mean absolute percent difference (MAPD) of harvest estimates from onsite surveys compared to the Statewide Harvest Survey. | 5 |
| 2. Lowest number of responses and smallest estimate with an observed CV of estimated harvest of several species at reported locations in the 2006 Statewide Harvest Survey..... | 9 |

LIST OF APPENDICES

| Appendix | Page |
|--|------|
| A1. List of source citations by year for the Juneau, Sitka, and Ketchikan marine boat creel surveys, 1996-2006..... | 16 |
| A2. List of source citations by year for the Gastineau Hatchery shoreline creel survey, 1996-2003..... | 17 |
| A3. List of source citations by year for the Situk River creel survey, 1998-2006..... | 18 |
| A4. List of source citations by year for the lower Kenai River creel survey, 1996-2006. | 19 |
| B1. Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Juneau Marine Boat creel survey, 1996-2006. | 22 |
| B2. Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Sitka Marine Boat creel survey, 1996-2006. | 24 |
| B3. Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Ketchikan Marine Boat creel survey, 1996-2006. | 26 |
| B4. Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Gastineau Hatchery shoreline creel survey, 1996-2003. | 29 |
| B5. Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Situk River creel survey, 1998-2006. | 29 |
| B6. Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Lower Kenai River creel survey, 1996-2006..... | 29 |
| C1. Juneau marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006..... | 32 |
| C2. Juneau marine boat Pacific halibut harvests, 1996-2006..... | 32 |
| C3. Juneau marine boat chum salmon harvests, 1996-2006. | 33 |
| C4. Juneau marine boat pink salmon harvests, 1996-2006. | 33 |
| C5. Juneau marine boat rockfish species harvests, 1996-2006. | 34 |
| C6. Juneau marine boat coho salmon harvests, 1996-2006. | 34 |
| C7. Juneau marine boat lingcod harvests, 1996-2006..... | 35 |
| C8. Juneau marine boat sockeye salmon harvests, 1996-2006. | 35 |
| C9. Sitka marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. | 36 |
| C10. Sitka marine boat Pacific halibut harvests, 1996-2006. | 36 |
| C11. Sitka marine boat chum salmon harvests, 1996-2006. | 37 |
| C12. Sitka marine boat pink salmon harvests, 1996-2006. | 37 |
| C13. Sitka marine boat rockfish species harvests, 1996-2006. | 38 |
| C14. Sitka marine boat coho salmon harvests, 1996-2006. | 38 |
| C15. Sitka marine boat lingcod harvests, 1996-2006..... | 39 |
| C16. Sitka marine boat sockeye salmon harvests, 1996-2006. | 39 |
| C17. Ketchikan marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. | 40 |
| C18. Ketchikan marine boat Pacific halibut harvests, 1996-2006. | 40 |
| C19. Ketchikan marine boat chum salmon harvests, 1996-2006. | 41 |
| C20. Ketchikan marine boat pink salmon harvests, 1996-2006. | 41 |
| C21. Ketchikan marine boat rockfish species harvests, 1996-2006. | 42 |
| C22. Ketchikan marine boat coho salmon harvests, 1996-2006. | 42 |
| C23. Ketchikan marine boat lingcod harvests, 1996-2006. | 43 |
| C24. Ketchikan marine boat sockeye salmon harvests, 1996-2006. | 43 |
| C25. Gastineau Hatchery shoreline survey Chinook salmon harvests, 1996-2003..... | 44 |
| C26. Gastineau Hatchery shoreline survey chum salmon harvests, 1996-2003..... | 44 |

LIST OF APPENDICES (Continued)

| Appendix | Page |
|---|-------------|
| C27. Gastineau Hatchery shoreline survey pink salmon harvests, 1996-2003. | 45 |
| C28. Gastineau Hatchery shoreline survey coho salmon harvests, 1996-2003. | 45 |
| C29. Situk River Chinook salmon harvests, 1998-2006. | 46 |
| C30. Lower Kenai River Chinook salmon harvests, 1996-2006. | 46 |
| C31. Lower Kenai River non-guided Chinook salmon harvests, 1996-2006. | 47 |
| C32. Lower Kenai River guided Chinook salmon harvests, 1996-2006. | 47 |
| C33. Lower Kenai River Chinook salmon harvests prior to July 1, 1996-2006. | 48 |
| C34. Lower Kenai River Chinook salmon harvests after June 30, 1996-2006. | 48 |
| C35. Lower Kenai River non-guided Chinook salmon harvests prior to July 1, 1996-2006. | 49 |
| C36. Lower Kenai River guided Chinook salmon harvests prior to July 1, 1996-2006. | 49 |
| C37. Lower Kenai River non-guided Chinook salmon harvests after June 30, 1996-2006. | 50 |
| C38. Lower Kenai River guided Chinook salmon harvests after June 30, 1996-2006. | 50 |
| D1. Juneau marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 52 |
| D2. Juneau marine boat Pacific halibut harvests, 1996-2006. Error bars are 95% confidence intervals. | 52 |
| D3. Juneau marine boat chum salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 53 |
| D4. Juneau marine boat pink salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 53 |
| D5. Juneau marine boat rockfish species harvests, 1996-2006. Error bars are 95% confidence intervals. | 54 |
| D6. Juneau marine boat coho salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 54 |
| D7. Juneau marine boat lingcod harvests, 1996-2006. Error bars are 95% confidence intervals. | 55 |
| D8. Juneau marine boat sockeye salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 55 |
| D9. Sitka marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 56 |
| D10. Sitka marine boat Pacific halibut harvests, 1996-2006. Error bars are 95% confidence intervals. | 56 |
| D11. Sitka marine boat chum salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 57 |
| D12. Sitka marine boat pink salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 57 |
| D13. Sitka marine boat rockfish species harvests, 1996-2006. Error bars are 95% confidence intervals. | 58 |
| D14. Sitka marine boat coho salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 58 |
| D15. Sitka marine boat lingcod harvests, 1996-2006. Error bars are 95% confidence intervals. | 59 |
| D16. Sitka marine boat sockeye salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 59 |
| D17. Ketchikan marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 60 |
| D18. Ketchikan marine boat Pacific halibut harvests, 1996-2006. Error bars are 95% confidence intervals. | 60 |
| D19. Ketchikan marine boat chum salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 61 |
| D20. Ketchikan marine boat pink salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 61 |
| D21. Ketchikan marine boat rockfish species harvests, 1996-2006. Error bars are 95% confidence intervals. | 62 |
| D22. Ketchikan marine boat coho salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 62 |
| D23. Ketchikan marine boat lingcod harvests, 1996-2006. Error bars are 95% confidence intervals. | 63 |
| D24. Ketchikan marine boat sockeye salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 63 |
| D25. Gastineau Hatchery shoreline survey Chinook salmon harvests, 1996-2003. Error bars are 95% confidence intervals. | 64 |
| D26. Gastineau Hatchery shoreline survey chum salmon harvests, 1996-2003. Error bars are 95% confidence intervals. | 64 |
| D27. Gastineau Hatchery shoreline survey pink salmon harvests, 1996-2003. Error bars are 95% confidence intervals. | 65 |
| D28. Gastineau Hatchery shoreline survey coho salmon harvests, 1996-2003. Error bars are 95% confidence intervals. | 65 |
| D29. Situk River Chinook salmon harvests, 1998-2006. Error bars are 95% confidence intervals. | 66 |
| D30. Lower Kenai River Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 66 |
| D31. Lower Kenai River non-guided Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 67 |
| D32. Lower Kenai River guided Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals. | 67 |

LIST OF APPENDICES (Continued)

| Appendix | Page |
|---|-------------|
| D33. Lower Kenai River Chinook salmon harvests prior to July 1, 1996-2006. Error bars are 95% confidence intervals..... | 68 |
| D34. Lower Kenai River Chinook salmon harvests after June 30, 1996-2006. Error bars are 95% confidence intervals..... | 68 |
| D35. Lower Kenai River non-guided Chinook salmon harvests prior to July 1, 1996-2006. Error bars are 95% confidence intervals..... | 69 |
| D36. Lower Kenai River guided Chinook salmon harvests prior to July 1, 1996-2006. Error bars are 95% confidence intervals..... | 69 |
| D37. Lower Kenai River non-guided Chinook salmon harvests after June 30, 1996-2006. Error bars are 95% confidence intervals..... | 70 |
| D38. Lower Kenai River guided Chinook salmon harvests after June 30, 1996-2006. Error bars are 95% confidence intervals..... | 70 |
| E1. Coefficient of variation (CV) of harvest of Chinook salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 72 |
| E2. Coefficient of variation (CV) of harvest of coho salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 73 |
| E3. Coefficient of variation (CV) of harvest of sockeye salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 74 |
| E4. Coefficient of variation (CV) of harvest of pink salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 75 |
| E5. Coefficient of variation (CV) of harvest of chum salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 76 |
| E6. Coefficient of variation (CV) of harvest of Dolly Varden plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 77 |
| E7. Coefficient of variation (CV) of harvest of rainbow trout plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 78 |
| E8. Coefficient of variation (CV) of harvest of Arctic grayling plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 79 |
| E9. Coefficient of variation (CV) of harvest of Pacific halibut plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 80 |
| E10. Coefficient of variation (CV) of harvest of rockfish species plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006..... | 81 |

ABSTRACT

Estimates of sport fish harvest during 1996-2006 from the Alaska Department of Fish and Game, Division of Sport Fish statewide harvest survey (SWHS) were assessed for accuracy and precision. Accuracy was assessed by comparing estimates from the SWHS with those from onsite creel surveys thought to occur in the same geographic area. Precision was assessed by evaluating the decrease in coefficient of variation of harvest estimates as a function of the number of responses to the SWHS or magnitude of harvest. In general, estimates from the SWHS were significantly ($\alpha = 0.10$) associated with estimates from onsite surveys indicating consistency in estimation of harvests between the two independent methods over time. Lack of association was usually due to imprecision in estimates of small harvests (e.g., sockeye salmon) or for species that are known for misidentification by respondents (e.g., rockfish species and lingcod). In most cases estimates from the SWHS were dissimilar to estimates from onsite surveys, indicating potential bias in estimation from one or both of the independent methods or a lack of geographic correspondence between the SWHS and onsite surveys. In two areas (Juneau and Ketchikan marine boat surveys) estimates from the SWHS were always greater than estimates from onsite surveys, likely due to a lack of geographic correspondence between surveys. SWHS and onsite surveys were similar in two areas (Sitka marine boat and Situk River surveys) where geographic correspondence between SWHS and onsite surveys is easiest to attain. Results of tests of similarity were mixed in two areas (Gastineau Hatchery shoreline and Lower Kenai River surveys) where imprecision in the SWHS (Gastineau Hatchery shoreline survey) or confusion in respondents filling out the proper sector, timing, or location of harvests in the SWHS instrument (Lower Kenai River survey) could have biased the estimates in one direction or the other. Number of responses needed to increase precision in estimates of harvest varied markedly across species. The least number of responses were needed for Chinook and coho salmon, and Pacific halibut, and the greatest number of responses for pink salmon and rockfish. For chum salmon, Dolly Varden, and Arctic grayling, CV was never less than 0.20 regardless of the number of responses. Depending on species and location, reasonably small harvests could be precisely estimated for some fisheries from the SWHS.

Based on tests of association, the SWHS has been shown to provide a consistent estimate of harvest for easily identified species where response rate is sufficient for a CV less than 0.30. Potential bias in the SWHS could not be fully examined due to a lack of geographic correspondence in some of the locations. In the future both SWHS and onsite surveys should be adjusted for better geographic correspondence, particularly in the Juneau and Ketchikan marine boat surveys, and the Lower Kenai River survey. The Gastineau Hatchery shoreline and Situk River onsite surveys should be continued if a higher precision and likely more accurate alternative to the SWHS is needed. The Sitka marine boat survey should be continued as designed to facilitate comparison with SWHS estimates. Relative to precision of the SWHS, I suggest that investigators ensure that CV's of harvest estimates from the SWHS are 0.30 or less before using these estimates for evaluating long term trends and are 0.20 or less before use in stock assessments.

Key words: accuracy, precision, Statewide Harvest Survey, SWHS, creel survey, mail survey, association, similarity

INTRODUCTION

Since 1977 the Alaska Department of Fish and Game, Division of Sport Fish has conducted an annual mail survey to estimate participation and harvest by anglers who sport fished in Alaska. The survey consists of postseason mailings of questionnaires to randomly selected anglers who hold a valid license to sport fish in Alaska. The methodology and results of this Statewide Harvest Survey (herein referred to as SWHS) during 1996-2006 can be found in Howe et al. (2001a-d), Walker et al. (2003), and Jennings et al. (2004, 2006a-b, 2007, 2009, and *in prep*). Due to the cost effectiveness and comprehensive coverage, estimates of participation and harvest from the SWHS are widely used by fishery managers, stakeholders, and policymakers to assess the status of stocks; to determine and assess allocations between user groups; and, to obtain funding, plan for and implement sport fishery programs in Alaska. Conversely, the utility and accuracy of the SWHS are frequently questioned when fishery management decisions made from these estimates are controversial or contentious. Questioning of the SWHS (and other survey-based estimates) frequently occurs in comparison to the direct measurement of commercial fishery catches via harvest tickets or other verifiable census-based accounting methods. These

questions generally boil down to: 1) the veracity of volunteered information from anglers and its effect on the accuracy of estimates of harvest; 2) the precision of information based on responses from a small subset (i.e., sample) of anglers; and, 3) the timeliness of these estimates relative to the need for inseason management action to effectuate a management objective. This report evaluates only the former two of these three questions, namely the accuracy and precision of the SWHS.

Mills and Howe (1992) evaluated the accuracy of the SWHS for the time period 1977 through 1990 by comparing estimates of harvest of selected species at selected locations to onsite creel surveys conducted at the same locations. For the species and locations evaluated, they found general agreement between estimates from the SWHS and onsite surveys with some positive bias observed in the SWHS for locations in southeast Alaska. Mills and Howe (1992) also made recommendations concerning the use of estimates of harvest relative to their precision. This report extends the evaluation of accuracy and recommendations of use of SWHS estimates for the time period 1996-2006 using methods similar to Mills and Howe (1992). The time period of 1990 through 1995 was not included in this evaluation report because of a change in data editing procedures and methods of review of preliminary estimates after 1995.

METHODS

Optimally, estimates of harvest derived from the SWHS would be both accurate and precise so that the confidence interval around the point estimate would encompass the true harvest at a location. However, in most cases we do not know the true harvest and can only compare two independent estimates for their association and similarity over time. Two independent estimates are associated when over time their paired point estimates or the ranks of their paired point estimates are positively correlated. Similarity occurs when the mean or median of a paired series of two independent estimates are equal. Precision of an estimate of harvest is largely driven by the number of anglers responding to the SWHS, but can also be dependent on the species harvested.

EVALUATION OF ACCURACY

Selection of Comparisons

Published SWHS reports from 1996 through 2006 (Howe et al. 2001a-d, Walker et al. 2003, and Jennings et al. 2004, 2006a-b, 2007, 2009 and *in prep*) were gleaned for comparisons between estimated harvests from the SWHS and onsite surveys that are conducted each year (e.g., Appendix A109 in Jennings et al. 2007). Comparisons of catch (harvest plus release) were not used. Depending on year, there were between 35 (2005 and 2006) and 40 (2003) combinations of location, species, size, timing (prior to versus after a specific date), and sector (guided versus non-guided) that were compared. From these combinations only those locations, species, timing, and sectors that had at least 5 years of harvest estimates to compare were selected for analysis. This resulted in at least 33 comparisons per year to use in the evaluation. In addition, where timing and sector were indicated in a comparison, an additional comparison was made using aggregated times or sectors (e.g., guided and non-guided combined). This resulted in 5 additional comparisons for a total of 38 comparisons each with 8 to 11 years of paired point estimates and 95% confidence intervals. Locations selected for comparison were from southeast Alaska (the Juneau, Sitka, Ketchikan marine boat surveys; the Gastineau Hatchery shoreline survey; and, the Situk River freshwater survey) and the Kenai River. Four locations were not selected for

comparison due to less than 5 years of data (Russian and Kasilof rivers in SWHS Area P, and Karluk and Ayakulik rivers in SWHS Area Q). Species used in comparisons are Chinook salmon 28 inches or greater, all Chinook salmon (*Oncorhynchus tshawytscha*), Pacific halibut (*Hippoglossus stenolepis*), chum salmon (*O. keta*), pink salmon (*O. gorbuscha*), rockfish species (*Sebastes* spp.), coho salmon (*O. kisutch*), lingcod (*Ophiodon elongatus*), and sockeye salmon (*O. nerka*). Source publications for each year of onsite survey at each location are in Appendix A.

In some of the aforementioned published comparisons (Juneau, Sitka, and Ketchikan), the aggregated harvest from SWHS location codes used to compare with onsite creel surveys changed over time, making meaningful comparisons difficult. To standardize the comparisons over time, harvests from the SWHS were re-aggregated using the same location codes for all years (see Appendix B for location codes used). Estimates of harvest were aggregated using queries from the data base of SWHS estimates at the Division of Sport Fish protected Intranet site (http://intra.sf.adfg.state.ak.us/databases/swhs_est). Estimates of harvest used in comparisons are in Appendix C.

Statistical Analysis

Outcomes of two nonparametric statistical tests were used to assess accuracy of the SWHS over time at each combination of location, species, time, and sector. Each time series of harvest estimates from SWHS and onsite surveys were compared for similarity and association. Similarity was evaluated with a Wilcoxon signed-ranks test of equal medians (Conover 1980) using a significance level of $\alpha = 0.10$. The hypothesis tested is that medians of each time series are equal so a significant test ($p < 0.05$ for a two-tailed test) indicates that the two time series are not similar. Association was evaluated with Kendall's coefficient of concordance (Conover 1980) using a significance level of $\alpha = 0.10$. The hypothesis tested is that there is no association between paired observations so a significant test ($p < 0.10$) indicates that the time series of observations are associated. The mean absolute percent difference (MAPD) was also calculated from the paired observations:

$$MAPD = \frac{\sum_{y=1}^n |onsite_y - SWHS_y|}{n} \text{ where;} \quad (1)$$

$onsite_y$ = estimated harvest from the onsite creel survey in year y ,

$SWHS_y$ = estimated harvest from the Statewide Harvest Survey in year y ; and,

n = the number of years of paired observations.

Time series of harvest estimates were plotted against year to visually corroborate the outcome of the statistical tests (Appendix D).

EVALUATION OF PRECISION

Mills and Howe (1992) evaluated precision of the SWHS by plotting the coefficient of variation (CV) of estimates of Chinook salmon harvest against the number of responses to the SWHS for a range of locations in one particular year. Rather than repeat this analysis for Chinook salmon at a few locations, the same graphical analysis was performed on 2006 SWHS data from all published locations that reported harvests greater than 0 and for all species with at least 88

(~20%) of the 439 possible published locations reporting. Based on this criterion, species selected for analysis were Chinook salmon, coho salmon, sockeye salmon, pink salmon, chum salmon, Dolly Varden/Arctic char (*Salvelinus malma* or *S. alpinus*), rainbow trout (*O. mykiss*), Arctic grayling (*Thymallus arcticus*), Pacific halibut, and rockfish species. The CV of estimates of harvest were also plotted against the estimated harvest for these same locations and species to examine the effect of magnitude of harvest on precision (Appendix E). A tabular summary of these plots was constructed by determining the smallest number of responses and smallest harvest magnitude that would produce relatively poor (CV less than or equal to 0.80, but greater than 0.50), acceptable (CV less than or equal to 0.50, but greater than 0.30), good (CV less than or equal to 0.30, but greater than 0.20), or excellent (CV less than or equal to 0.20) precision.

RESULTS

EVALUATION OF ACCURACY

In general, estimates of harvest from the SWHS were significantly ($\alpha = 0.10$) associated with estimates from onsite surveys (Table 1). Concordance between SWHS and onsite surveys ranged from 0.236 to 0.992, with highest values observed most often for salmon species and Pacific halibut. Twenty-eight of the 38 pairs of the time series of harvest estimates were significantly associated. Lowest concordances were observed most often for lingcod, rockfish species, and sockeye salmon (Table 1). Of the 10 pairs of time series that were not significantly associated, three were salmon species from the Gastineau Hatchery shoreline survey, one was from unguided Chinook salmon harvests in the Lower Kenai survey, and the remaining six were lingcod, rockfish species, and sockeye salmon from the Juneau and Ketchikan marine boat surveys.

With some exceptions, medians of estimates of harvest from the SWHS were significantly different than medians of estimates of harvest from onsite surveys (Table 1). Medians were significantly different between 27 of the 38 pairs of time series of harvest estimates. Observed differences in medians were not related to species, but were related to the location of the surveys. MAPD of these 27 pairs of time series ranged from 19% to 4562% (Table 1). Of the 11 pairs of time series where medians were not significantly different, five occurred in the Sitka marine boat survey. MAPD of these 11 pairs of time series ranged from 10% to 82% (Table 1). Where differences were observed, time series of estimates of harvest from the SWHS were almost always significantly larger (20 of the 27 pairs of time series) than the corresponding onsite survey. Results specific to individual survey locations follows.

Juneau Marine Boat Survey

There were significant associations between SWHS and onsite estimates of harvest of large Chinook salmon, Pacific halibut, chum salmon, pink salmon, and coho salmon, especially during 2000-2006 (Table 1, Appendices D1-D8). Concordance values ranged from 0.714 to 0.900 for these species either during the entire time frame or 2000-2006. Although average precision was good to excellent (CV \approx 0.20), association between surveys of rockfish species was low during 1996-2006. Associations between surveys were also low for lingcod and sockeye salmon, but harvests of these two species are small and average precision of both surveys was only acceptable (CV \approx 0.45).

Table 1.–Summary of hypothesis tests of association and equal medians, and the mean absolute percent difference (MAPD) of harvest estimates from onsite surveys compared to the Statewide Harvest Survey. Statistics in boldface indicate that the two surveys are significantly associated (T_2) and/or similar (T).

| Survey ^a | Species ^b | Years (n) | Association | | | Similarity | | | Average CV | |
|---------------------|----------------------|-----------|----------------|-----------------------------|------------------|------------|----------------|--------------|------------|-------|
| | | | W ^c | T ₂ ^d | p | MAPD | T ^e | p | Onsite | SWHS |
| Juneau | KSO | 1996-2006 | 0.891 | 8.167 | 0.001 | 68% | -2.934 | 0.002 | 0.085 | 0.103 |
| | HA | 1996-2006 | 0.714 | 2.492 | 0.083 | 122% | -2.934 | 0.002 | 0.100 | 0.087 |
| | CS | 1996-2006 | 0.900 | 9.000 | 0.001 | 126% | -2.845 | 0.002 | 0.165 | 0.191 |
| | PS | 1996-2006 | 0.696 | 2.284 | 0.104 | 172% | -2.934 | 0.002 | 0.152 | 0.164 |
| | PS | 2000-2006 | 0.857 | 6.000 | 0.023 | 239% | -2.366 | 0.009 | 0.165 | 0.151 |
| | RF | 1996-2006 | 0.618 | 1.619 | 0.230 | 320% | -2.934 | 0.002 | 0.211 | 0.194 |
| | SS | 1996-2006 | 0.782 | 3.583 | 0.028 | 71% | -2.934 | 0.002 | 0.103 | 0.081 |
| | LC | 1996-2006 | 0.471 | 1.020 | 0.488 | 2002% | -2.934 | 0.002 | 0.494 | 0.403 |
| | RS | 1996-2006 | 0.623 | 1.651 | 0.221 | 1183% | -2.934 | 0.002 | 0.420 | 0.403 |
| Sitka | KSO | 1996-2006 | 0.864 | 6.333 | 0.004 | 18% | -0.267 | 0.395 | 0.064 | 0.062 |
| | HA | 1996-2006 | 0.818 | 4.500 | 0.013 | 18% | 0.178 | 0.429 | 0.086 | 0.061 |
| | CS | 1996-2006 | 0.959 | 23.444 | <0.001 | 113% | -2.045 | 0.020 | 0.194 | 0.205 |
| | PS | 1996-2006 | 0.832 | 4.946 | 0.009 | 31% | -0.711 | 0.238 | 0.148 | 0.164 |
| | RF | 1996-2006 | 0.946 | 17.333 | <0.001 | 18% | -1.867 | 0.031 | 0.086 | 0.097 |
| | SS | 1996-2006 | 0.955 | 21.000 | <0.001 | 10% | 0.978 | 0.164 | 0.101 | 0.073 |
| | LC | 1996-2006 | 0.891 | 8.167 | 0.001 | 53% | -2.578 | 0.005 | 0.115 | 0.094 |
| | RS | 1996-2006 | 0.927 | 12.750 | <0.001 | 704% | -2.934 | 0.002 | 0.344 | 0.370 |
| Ketchikan | KSO | 1996-2006 | 0.991 | 109.000 | <0.001 | 67% | -2.934 | 0.002 | 0.100 | 0.118 |
| | HA | 1996-2006 | 0.741 | 2.860 | 0.056 | 93% | -2.934 | 0.002 | 0.099 | 0.088 |
| | CS | 1996-2006 | 0.959 | 23.444 | <0.001 | 193% | -2.934 | 0.002 | 0.204 | 0.150 |
| | PS | 1996-2006 | 0.791 | 3.783 | 0.024 | 30% | 0.178 | 0.429 | 0.198 | 0.098 |
| | RF | 1996-2006 | 0.646 | 1.821 | 0.179 | 104% | -2.934 | 0.002 | 0.106 | 0.118 |
| | SS | 1996-2006 | 0.800 | 4.000 | 0.020 | 91% | -2.934 | 0.002 | 0.119 | 0.090 |
| | LC | 1996-2006 | 0.555 | 1.245 | 0.368 | 362% | -2.934 | 0.002 | 0.197 | 0.154 |
| | RS | 1996-2006 | 0.236 | 0.433 | 0.898 | 4562% | -2.934 | 0.002 | 0.503 | 0.327 |

-continued-

Table 1.–Page 2 of 2.

| Survey ^a | Species ^b | Years (n) | Association | | | Similarity | | | Average CV | |
|---------------------|----------------------|-----------|----------------|-----------------------------|------------------|------------|----------------|--------------|------------|-------|
| | | | W ^c | T ₂ ^d | p | MAPD | T ^e | p | Onsite | SWHS |
| Ketchikan | KSO | 1996-2006 | 0.991 | 109.000 | <0.001 | 67% | -2.934 | 0.002 | 0.100 | 0.118 |
| | HA | 1996-2006 | 0.741 | 2.860 | 0.056 | 93% | -2.934 | 0.002 | 0.099 | 0.088 |
| | CS | 1996-2006 | 0.959 | 23.444 | <0.001 | 193% | -2.934 | 0.002 | 0.204 | 0.150 |
| | PS | 1996-2006 | 0.791 | 3.783 | 0.024 | 30% | 0.178 | 0.429 | 0.198 | 0.098 |
| | RF | 1996-2006 | 0.646 | 1.821 | 0.179 | 104% | -2.934 | 0.002 | 0.106 | 0.118 |
| | SS | 1996-2006 | 0.800 | 4.000 | 0.020 | 91% | -2.934 | 0.002 | 0.119 | 0.090 |
| | LC | 1996-2006 | 0.555 | 1.245 | 0.368 | 362% | -2.934 | 0.002 | 0.197 | 0.154 |
| | RS | 1996-2006 | 0.236 | 0.433 | 0.898 | 4562% | -2.934 | 0.002 | 0.503 | 0.327 |
| Gastineau | KS | 1996-2003 | 0.571 | 1.333 | 0.357 | 82% | 0.000 | 0.500 | 0.130 | 0.452 |
| | CS | 1996-2003 | 0.631 | 1.710 | 0.248 | 45% | 2.521 | 0.006 | 0.132 | 0.458 |
| | PS | 1996-2003 | 0.893 | 8.333 | 0.006 | 62% | 1.400 | 0.081 | 0.125 | 0.426 |
| | SS | 1996-2003 | 0.679 | 2.111 | 0.173 | 44% | 2.380 | 0.009 | 0.069 | 0.342 |
| Situk | KS | 1998-2006 | 0.992 | 119.000 | <0.001 | 19% | -1.836 | 0.033 | 0.187 | 0.368 |
| | KS | 2001-2006 | 0.971 | 34.000 | 0.001 | 15% | -0.734 | 0.232 | 0.197 | 0.433 |
| L. Kenai | KS | 1996-2006 | 0.946 | 17.333 | <0.001 | 17% | 2.756 | 0.003 | 0.106 | 0.086 |
| | KS-UG | 1996-2006 | 0.632 | 1.716 | 0.204 | 30% | 2.578 | 0.005 | 0.102 | 0.084 |
| | KS-G | 1996-2006 | 0.932 | 13.667 | <0.001 | 19% | -0.889 | 0.187 | 0.115 | 0.089 |
| | KSP | 1996-2006 | 0.986 | 72.333 | <0.001 | 38% | -0.800 | 0.212 | 0.175 | 0.133 |
| | KSA | 1996-2006 | 0.936 | 14.714 | <0.001 | 24% | 2.756 | 0.003 | 0.098 | 0.075 |
| | KSP-UG | 1996-2006 | 0.950 | 19.000 | <0.001 | 30% | 2.134 | 0.016 | 0.171 | 0.152 |
| | KSP-G | 1996-2006 | 0.909 | 10.000 | 0.001 | 215% | -2.837 | 0.002 | 0.203 | 0.128 |
| | KSA-UG | 1996-2006 | 0.714 | 2.492 | 0.083 | 31% | 2.667 | 0.004 | 0.091 | 0.072 |
| | KSA-G | 1996-2006 | 0.900 | 9.000 | 0.001 | 18% | 1.245 | 0.107 | 0.110 | 0.079 |

^a Juneau = Juneau marine boat survey; Sitka = Sitka marine boat survey; Ketchikan = Ketchikan marine boat survey; Gastineau = Gastineau Hatchery shoreline survey; Situk = Situk River survey; and, L. Kenai = Lower Kenai River survey.

^b KSO = Chinook salmon 28" and larger, KS = Chinook salmon; KSP = Chinook salmon prior to July 1; KSA = Chinook salmon after June 30; HA = Pacific halibut; CS = chum salmon; PS = pink salmon; RF = rockfish species; SS = coho salmon; LC = lingcod; RS = sockeye salmon; UG = unguided sector; and, G = guided sector.

^c W = Kendall's coefficient of concordance.

^d T₂ = test statistic for W based on the F-distribution with (years-1) and (2-1) × (years-1) degrees of freedom. A p-value less than 0.10 was considered significant. The null hypothesis is that there is no association.

^e T = test statistic of the Wilcoxon signed ranks test for equal medians based on the normal distribution. A p-value less than 0.05 was considered significant. The null hypothesis is that medians are equal.

Median harvests of all species were significantly different between SWHS and onsite surveys during 1996-2006 or 2000-2006 (Table 1, Appendices D1-D8). In all comparisons estimated harvests from the SWHS were larger than harvests from the onsite survey, indicating significant bias in one or both of the surveys likely due to a lack of geographic correspondence in estimated harvests. Differences in harvests between surveys tended to increase during 2000-2006 relative to 1996-1999, especially for Pacific halibut and pink salmon (Appendices D1-D8). MAPD ranged from 68% to 2002% and was greater than 100% for 7 of the 9 estimates by species (Table 1).

Sitka Marine Boat Survey

There were significant associations between SWHS and onsite estimates of harvest of all species during 1996-2006 (Table 1, Appendices D9-D16). Concordance values ranged from 0.818 to 0.959 for all species indicating consistent association between the two surveys. Although average precision of estimated harvest was only acceptable ($CV \approx 0.35$) for sockeye salmon, association between surveys of this species was high.

Median harvests of large Chinook salmon, Pacific halibut, pink salmon, rockfish species, and coho salmon were not significantly different between SWHS and onsite surveys during 1996-2006 (Table 1, Appendices D9-D16). These results indicate that estimates from the SWHS for these species are consistently accurate over time and that geographic correspondence is good between the two surveys. Although average precision was excellent ($CV \leq 0.20$), there were significant differences in median harvest of coho salmon and lingcod between surveys during 1996-2006. Median sockeye salmon harvests were also significantly different between surveys, but both surveys had only acceptable average precision ($CV \approx 0.35$). MAPD ranged from 10% to 704% and was less than 50% for 5 of the 8 estimates by species (Table 1).

Ketchikan Marine Boat Survey

Similar to the Juneau marine boat survey, there were significant associations between SWHS and onsite estimates of harvest of large Chinook salmon, Pacific halibut, chum salmon, pink salmon, and coho salmon during 1996-2006 (Table 1, Appendices D17-D24). Concordance values ranged from 0.741 to 0.991 for these species during the entire time frame. Although average precision was excellent, association between surveys of rockfish species and lingcod were low during 1996-2006. Associations between surveys were also low for sockeye salmon, but harvests of this species were small and average precision of both surveys was only acceptable ($CV \approx 0.40$).

Median harvests of all species except pink salmon were significantly different between SWHS and onsite surveys during 1996-2006 (Table 1, Appendices D17-24). In all comparisons except pink salmon, estimated harvests from the SWHS were larger than harvests from the onsite survey, indicating significant bias in one or both of the surveys that is likely due to a lack of geographic correspondence in estimated harvests. MAPD ranged from 30% to 4562% and was greater than 50% for 8 of the 9 estimates by species (Table 1).

Gastineau Hatchery Shoreline Survey

There was no significant association between SWHS and onsite estimates of harvest of Chinook salmon, chum salmon, and coho salmon during 1996-2003 (Table 1, Appendices D25-D28). However, there was a significant association for pink salmon with a concordance value of 0.893. Concordance values for the other species ranged from 0.571 to 0.679. Average precision was only acceptable ($CV \approx 0.40$) for estimated harvests from the SWHS.

Median harvests of Chinook and pink salmon were not significantly different between SWHS and onsite surveys during 1996-2003 (Table 1, Appendices D25-D28). Conversely, median harvests of chum and coho salmon were significantly different. In all comparisons except for Chinook salmon, estimated harvests from the SWHS were smaller than harvests from the onsite survey, indicating significant bias in one or both of the surveys. MAPD ranged from 44% to 82% and was less than 50% for 2 of the 4 estimates by species (Table 1).

Situk River Chinook Salmon Survey

There was a significant association ($W = 0.992$, $p < 0.001$) between SWHS and onsite survey estimates of harvest of Chinook salmon during 1998-2006 (Table 1, Appendix D29). Median harvests were significantly different between the two survey types during 1998-2006, likely due to the imprecision in estimates from the SWHS ($CV = 0.368$). Despite this statistical result, MAPD was 19% (Table 1) and plots comparing estimates from the two surveys (Appendix D29) indicate that they were actually similar, especially during 2001-2006. Median harvests were not significantly different during 2001-2006 (Table 1).

Lower Kenai River Chinook Salmon Survey

There were significant associations between SWHS and onsite estimates of harvest of all four individual sectors and time periods during 1996-2006 (Table 1, Appendices D35-D38). Concordance values ranged from 0.714 to 0.950 for these four sectors and time periods indicating consistent association between the two surveys. Average precision of estimated harvest was good to excellent for both surveys. Four of the five combinations of sector and time period were also significantly associated during 1996-2006 (Table 1, Appendices D30 and D32-D34). Combined harvests of Chinook salmon by non-guided anglers (i.e., combining estimates from non-guided anglers across time periods) were not significantly associated between the two surveys (Table 1, Appendix D31).

Median harvests of Chinook salmon in the guided sector, prior to July 1 time period, and the guided sector after June 30 were not significantly different between SWHS and onsite surveys during 1996-2006 (Table 1, Appendices D30-D38). Of the remaining non-significant comparisons, all except the guided sector prior to July 1 had estimated harvests from the SWHS that were smaller than harvests from the onsite survey, indicating the potential for bias in one or both of the surveys most likely due to a lack of geographic and/or temporal correspondence between the two types of survey. MAPD ranged from 17% to 215% and was less than 50% for 8 of the 9 estimates by time period and sector (Table 1).

EVALUATION OF PRECISION

Depending on the species selected for evaluation, the number of responses necessary for a particular level of precision varied markedly between species and locations (Table 2, Appendices E1-E10). However, in general the minimum number of responses needed for a desired precision paralleled those found for Chinook salmon in Mills and Howe (1992). As few as 8 responses on average were needed for a CV of at most 0.80, 16 responses for a CV of 0.50, 59 responses for a CV of 0.30 and 91 responses for a CV of 0.20 (Table 2). The CV of estimates of harvest of chum salmon, Dolly Varden, and Arctic grayling were never at or below 0.20 (Appendices E5, E6 and E8). The magnitude of harvest also had an impact on the CV of the harvest estimate. Patterns were similar to those observed for CV versus the number of responses, with considerable variation among species and locations.

Table 2.—Lowest number of responses and smallest estimate with an observed CV of estimated harvest of several species at reported locations in the 2006 Statewide Harvest Survey. Number of reported locations with harvests greater than zero in parentheses.

| Species | Lowest responses for a CV less than or equal to: | | | | Smallest estimate with a CV less than or equal to: | | | |
|---------------------|--|----------------------|----------------|---------------------|--|----------------------|----------------|---------------------|
| | 0.80 (Poor) | 0.50 (Acceptable) | 0.30 (Good) | 0.20 (Excellent) | 0.80 (Poor) | 0.50 (Acceptable) | 0.30 (Good) | 0.20 (Excellent) |
| KS (228) | 3 | 16 | 28 | 63 | 26 | 103 | 289 | 1,136 |
| SS (313) | 3 | 11 | 21 | 64 | 27 | 95 | 445 | 1,020 |
| RS (209) | 14 | 21 | 64 | 79 | 21 | 122 | 928 | 2,173 |
| PS (214) | 11 | 12 | 77 | 210 | 24 | 90 | 755 | 1,574 |
| CS (138) | 13 | 39 | ND | ND | 26 | 97 | ND | ND |
| DV (243) | 5 | 8 | 77 | ND | 26 | 103 | 261 | ND |
| RT (127) | 11 | 14 | 74 | 90 | 19 | 104 | 380 | 954 |
| GR (88) | 8 | 14 | 66 | ND | 12 | 126 | 1,264 | ND |
| HA (101) | 4 | 11 | 17 | 38 | 35 | 223 | 843 | 1,327 |
| RF (99) | 4 | 12 | 109 | 94 | 55 | 100 | 810 | 1,975 |
| Average | 8 | 16 | 59 | 91 | 27 | 116 | 676 | 1,451 |
| Minimum | 3 | 8 | 17 | 38 | 12 | 90 | 261 | 954 |
| Maximum | 14 | 39 | 109 | 210 | 55 | 223 | 1,264 | 2,173 |
| Salmon ^a | 9 | 20 | 48 | 104 | 25 | 101 | 640 | 1,476 |
| Bottomfish | 4 | 12 | 63 | 66 | 45 | 162 | 827 | 1,651 |
| Resident | 8 | 12 | 72 | 90 | 19 | 111 | 635 | 954 |

^a Average of a species grouping (Salmon = KS,SS, RS, PS, CS; Bottomfish = HA, RF; Resident = DV, RT, GR). DV = Dolly Varden/Arctic char, RT = rainbow trout, and GR = Arctic grayling. All other species codes are found in Table 1.

DISCUSSION AND RECOMMENDATIONS

Based on statistical (Tables 1 and 2) and graphical (Appendix D) comparisons, the SWHS provided a consistent (i.e., always associated, but not always similar) estimate of sport harvest of species in all locations when relative precision was excellent ($CV < 0.20$) and the species harvested could be readily identified. Although methods of comparison differed, these conclusions are similar to those found by Mills and Howe (1992) for estimates from 1977 to 1990. They concluded that SWHS harvest estimates averaged slightly higher than those from creel surveys over time, especially for Chinook salmon in southeast Alaska. As observed in this study, Mills and Howe (1992) also argued that the differences seen were due to a lack of complete geographic and/or temporal coverage of the fishery by the creel surveys. However, comparisons in this study encompassed a wider array of species and magnitude of harvests than Mills and Howe (1992). As a result, there were larger discrepancies between SWHS and creel estimates likely resulting from a variety of factors including: a greater lack of temporal and/or geographic coverage, species misidentification, or low precision due to a small harvest in relatively large fishery or a relatively small fishery with few survey responses.

Although many of these discrepancies were likely due to limitations of the creel surveys, accuracy of the SWHS could be improved through better methods of identification of species such as lingcod and rockfish. These species can be confused with similarly shaped, colored, or named fishes such as greenlings (*Hexagrammidae*), Pacific cod and Pacific tomcod (*Gadidae*), and sculpins (*Cottidae*). Improved identification materials (e.g., full color photos in the survey instrument) or inclusion of incidentally caught species in the survey instrument (e.g., sablefish *Anoplopoma fimbria* also known as black cod) may help to resolve species identification problems.

One major area of improvement in the evaluation of accuracy of SWHS estimates is an improved understanding of the relationship between geographic coverage of onsite creel surveys and what is reported in the SWHS by location code. To develop the comparisons used in past SWHS reports (e.g., Jennings et al. 2007), area managers were queried to judge whether a particular SWHS location code corresponded to areas fished and reported at onsite creel surveys. However, these judgments cannot be directly verified from the creel survey or SWHS responses due to the design constraints of each survey. This problem was most evident in marine creel surveys where anglers can potentially fish a variety of locations that may encompass more than one SWHS survey area. For example, anglers landing fish at ports in the city of Ketchikan may have fished in up to three different SWHS survey areas (A, B, or C) and multiple SWHS location codes (see Appendix E), but some would report all their harvest under a general site code such as "Terminal Harvest Area Near Ketchikan." A similar situation exists for ports in the city of Juneau. Geographic correspondence is a problem because the SWHS survey instrument provides a list of location codes within survey areas that may include multiple ports for anglers to report their household harvest, whereas the creel survey reports fish landed at a particular port, regardless of locations fished. Better geographic correspondence could be achieved by revising the SWHS survey instrument to report locations fished and landed at a particular port so that SWHS estimates could be generated by where the fish were landed as is typically done in onsite creel surveys.

In most cases, precision of SWHS harvest estimates increased as number of respondents increased as one would expect. Good precision could be attained with a relatively small number

of respondents for many species of fish harvested in recreational fisheries. For some species, excellent precision could not be attained because of a lack of respondents and/or a wide range of potential harvests due to a large daily bag limit (e.g., up to 5 per day for some Arctic grayling fisheries). Mills and Howe (1992) gave general results advising that harvests estimated from 12 to 30 respondents could be used to track long term trends, corresponding to CV's of 0.35 to 0.75. In this study at least good ($CV \leq 0.30$), but mostly excellent precision ($CV \leq 0.20$) was necessary for trends in harvest to correspond with those estimated from onsite creel surveys. However, good precision could be attained when the minimum number of respondents ranged from 17 to 109 depending on species and location of the fishery (Table 2). Although results of the two studies are similar, I suggest that investigators ensure that CV's of harvest estimates from the SWHS are 0.30 or less before using these estimates for evaluating long term trends and are 0.20 or less before being employed in stock assessments.

ACKNOWLEDGEMENTS

Many thanks go to Adam Craig for his help with the nonparametric test of concordance. Kathrin Sundet provided SWHS location codes used in the comparisons. The USFWS through the Sport Fish Restoration program has provided funding for the SWHS and many of the creel surveys from which the comparisons were made. As always, Joanne MacClellan provided superb editorial and publication support. Allen Bingham, Scott Meyer, Gretchen Jennings, Mike Jaenicke, William Romberg and Charles Swanton provided extremely helpful critical reviews of an earlier draft of this report. Lastly, this analysis would not have been possible without the dedication of staff from southeast and southcentral regions of the division in conducting consistent onsite harvest surveys over the years.

REFERENCES CITED

- Beers, D. E. 1997. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-32, Anchorage.
- Conover, W. J. 1980. Practical nonparametric statistics, second edition. John Wiley and sons, New York.
- Eskelin, A. 2007. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2005. Alaska Department of Fish and Game, Fishery Data Series No. 07-87, Anchorage.
- Eskelin, A. 2009. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2006. Alaska Department of Fish and Game, Fishery Data Series No. 09-38, Anchorage.
- Frenette, B. J. 1998. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1997. Alaska Department of Fish and Game, Fishery Data Series No. 98-16, Anchorage.
- Frenette, B. J. 1999. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-16, Anchorage.
- Howe, A. L., R. J. Walker, C. Olness, K. Sundet, and A. E. Bingham. 2001. Revised Edition: Harvest, catch, and participation in Alaska sport fisheries during 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-29 (revised), Anchorage.
- Howe, A. L., R. J. Walker, C. Olness, K. Sundet, and A. E. Bingham. 2001. Revised Edition: Harvest, catch, and participation in Alaska sport fisheries during 1997. Alaska Department of Fish and Game, Fishery Data Series No. 98-25 (revised), Anchorage.
- Howe, A. L., R. J. Walker, C. Olness, K. Sundet, and A. E. Bingham. 2001. Revised Edition: Participation, catch, and harvest in Alaska sport fisheries during 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-41 (revised), Anchorage.

REFERENCES CITED (Continued)

- Howe, A. L., R. J. Walker, C. Olnes, K. Sundet, and A. E. Bingham. 2001. Participation, catch, and harvest in Alaska sport fisheries during 1999. Alaska Department of Fish and Game, Fishery Data Series No. 01-08, Anchorage.
- Hubartt, D. J., A. E. Bingham, and B. J. Frenette. 2000. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1999. Alaska Department of Fish and Game, Fishery Data Series No. 00-17, Anchorage.
- Hubartt, D. J., A. E. Bingham, and P. M. Suchanek. 1997. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-16, Anchorage.
- Hubartt, D. J., A. E. Bingham, and P. M. Suchanek. 1998. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1997. Alaska Department of Fish and Game, Fishery Data Series No. 98-20, Anchorage.
- Hubartt, D. J., A. E. Bingham, and P. M. Suchanek. 1999. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-15, Anchorage.
- Hubartt, D. J., B. J. Frenette, and A. E. Bingham. 2001. Harvest estimates for selected marine sport fisheries in southeast Alaska during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-34, Anchorage.
- Hubartt, D. J. and M. J. Jaenicke. 2004. Harvest estimates for selected marine sport fisheries in southeast Alaska during 2002. Alaska Department of Fish and Game, Fishery Data Series No. 04-21, Anchorage.
- Hubartt, D. J., M. J. Jaenicke, and A. E. Bingham. 2002. Harvest estimates for selected marine sport fisheries in southeast Alaska during 2001. Alaska Department of Fish and Game, Fishery Data Series No. 02-30, Anchorage.
- Jaenicke, M. J. 2000. Harvest estimates for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1999. Alaska Department of Fish and Game, Fishery Data Series No. 00-27, Anchorage.
- Jaenicke, M. J. 2001. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-21, Anchorage.
- Jennings, G. B., K. Sundet, A. E. Bingham, and D. Sigurdsson. 2004. Participation, catch, and harvest in Alaska sport fisheries during 2001. Alaska Department of Fish and Game, Fishery Data Series No. 04-11, Anchorage.
- Jennings, G. B., K. Sundet, A. E. Bingham, and D. Sigurdsson. 2006. Participation, catch, and harvest in Alaska sport fisheries during 2002. Alaska Department of Fish and Game, Fishery Data Series 06-34, Anchorage.
- Jennings, G. B., K. Sundet, A. E. Bingham, and D. Sigurdsson. 2006. Participation, catch, and harvest in Alaska sport fisheries during 2003. Alaska Department of Fish and Game, Fishery Data Series 06-44, Anchorage.
- Jennings, G. B., K. Sundet, and A. E. Bingham. 2007. Participation, catch, and harvest in Alaska sport fisheries during 2004. Alaska Department of Fish and Game, Fishery Data Series 07-40, Anchorage.
- Jennings, G. B., K. Sundet, and A. E. Bingham. 2009. Estimates of participation, catch, and harvest in Alaska sport fisheries during 2005. Alaska Department of Fish and Game, Fishery Data Series No. 09-47, Anchorage.
- Jennings, G. B., K. Sundet, and A. E. Bingham. *In prep.* Estimates of participation, catch, and harvest in Alaska sport fisheries during 2006. Alaska Department of Fish and Game, Fishery Data Series, Anchorage.
- Johnson, R. E. 2001. Situk River Chinook and sockeye salmon sport harvest estimates, and Yakutat marine sport harvest sampling, 1998 and 1999. Alaska Department of Fish and Game, Fishery Data Series 01-13, Anchorage.
- Johnson, R. E. 2005. Situk River Chinook and sockeye salmon sport harvest estimates, 2000, 2001, 2002, and 2003. Alaska Department of Fish and Game, Fishery Data Series 05-06, Anchorage.
- Johnson, R. E. 2008. Situk River Chinook and sockeye salmon sport harvest estimates, 2004, 2005, 2006, and 2007. Alaska Department of Fish and Game, Fishery Data Series 08-12, Anchorage.
- King, M. A. 1997. Angler effort and harvest of chinook salmon by the recreational fisheries in the lower Kenai River, 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-9, Anchorage.
- Marsh, L. E. 1999. Angler effort and harvest of chinook salmon by the recreational fisheries in the lower Kenai River, 1997. Alaska Department of Fish and Game, Fishery Data Series No. 99-4, Anchorage.

REFERENCES CITED (Continued)

- Marsh, L. E. 2000. Angler effort and harvest of chinook salmon by the recreational fisheries in the lower Kenai River, 1998. Alaska Department of Fish and Game, Fishery Data Series No. 00-21, Anchorage.
- Mills, M. J. and A. L. Howe. 1992. An evaluation of estimates of sport fish harvest from the Alaska statewide mail survey. Alaska Department of Fish and Game, Special Publication No. 92-02, Anchorage.
- Reimer, A. M. 2003. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2001. Alaska Department of Fish and Game, Fishery Data Series No. 03-01, Anchorage.
- Reimer, A. M. 2004a. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2002. Alaska Department of Fish and Game, Fishery Data Series No. 04-28, Anchorage.
- Reimer, A. M. 2004b. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2003. Alaska Department of Fish and Game, Fishery Data Series No. 04-32, Anchorage.
- Reimer, A. M. 2007. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2004. Alaska Department of Fish and Game, Fishery Data Series No. 07-65, Anchorage.
- Reimer, A. M., W. W. Jones, and L. E Marsh. 2002. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 1999 and 2000. Alaska Department of Fish and Game, Fishery Data Series No. 02-25, Anchorage.
- Walker, R. J., C. Olnes, K. Sundet, A. L. Howe, and A. E. Bingham. 2003. Participation, catch, and harvest in Alaska sport fisheries during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 03-05, Anchorage.
- White, B. A. 2003. Harvest estimates for the Macaulay (Gastineau) Hatchery roadside sport fishery in Juneau, Alaska during 2001. Alaska Department of Fish and Game, Fishery Data Series No. 03-10, Anchorage.
- White, B. A. 2003. Harvest estimates for the Macaulay (Gastineau) Hatchery roadside sport fishery in Juneau, Alaska during 2002. Alaska Department of Fish and Game, Fishery Data Series No. 03-24, Anchorage.
- White, B. A. 2004. Harvest estimates for the Macaulay (Gastineau) hatchery roadside sport fishery in Juneau, Alaska during 2003. Alaska Department of Fish and Game, Fishery Data Series No. 04-19, Anchorage.

APPENDIX A
SOURCE CITATIONS FOR ONSITE SURVEYS

Appendix A1.–List of source citations by year for the Juneau, Sitka, and Ketchikan marine boat creel surveys, 1996-2006.

| Year | Citation |
|------|---|
| 1996 | Hubartt, D. J., A. E. Bingham, and P. M. Suchanek. 1997. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-16, Anchorage. |
| 1997 | Hubartt, D. J., A. E. Bingham, and P. M. Suchanek. 1998. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1997. Alaska Department of Fish and Game, Fishery Data Series No. 98-20, Anchorage. |
| 1998 | Hubartt, D. J., A. E. Bingham, and P. M. Suchanek. 1999. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-15, Anchorage. |
| 1999 | Hubartt, D. J., A. E. Bingham, and B. J. Frenette. 2000. Harvest estimates for selected marine sport fisheries in southeast Alaska during 1999. Alaska Department of Fish and Game, Fishery Data Series No. 00-17, Anchorage. |
| 2000 | Hubartt, D. J., B. J. Frenette , and A. E. Bingham. 2001. Harvest estimates for selected marine sport fisheries in southeast Alaska during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-34, Anchorage. |
| 2001 | Hubartt, D. J., M. J. Jaenicke , and A. E. Bingham. 2002. Harvest estimates for selected marine sport fisheries in southeast Alaska during 2001. Alaska Department of Fish and Game, Fishery Data Series No. 02-30, Anchorage. |
| 2002 | Hubartt, D. J. and M. J. Jaenicke. 2004. Harvest estimates for selected marine sport fisheries in southeast Alaska during 2002. Alaska Department of Fish and Game, Fishery Data Series No. 04-21, Anchorage. |
| 2003 | Appendix A110 in Jennings, G. B., K. Sundet, A. E. Bingham, and D. Sigurdsson. 2006. Participation, catch, and harvest in Alaska sport fisheries during 2003. Alaska Department of Fish and Game, Fishery Data Series 06-44, Anchorage. |
| 2004 | Appendix A109 in Jennings, G. B., K. Sundet, and A. E. Bingham. 2007. Participation, catch, and harvest in Alaska sport fisheries during 2004. Alaska Department of Fish and Game, Fishery Data Series 07-40, Anchorage. |
| 2005 | This report. |
| 2006 | This report. |

Appendix A2.–List of source citations by year for the Gastineau Hatchery shoreline creel survey, 1996-2003.

| Year | Citation |
|------|--|
| 1996 | Beers, D. E. 1997. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-32, Anchorage. |
| 1997 | Frenette, B. J. 1998. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1997. Alaska Department of Fish and Game, Fishery Data Series No. 98-16, Anchorage. |
| 1998 | Frenette, B. J. 1999. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1998. Alaska Department of Fish and Game, Fishery Data Series No. 99-16, Anchorage. |
| 1999 | Jaenicke, M. J. 2000. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 1999. Alaska Department of Fish and Game, Fishery Data Series No. 00-27, Anchorage. |
| 2000 | Jaenicke, M. J. 2001. Harvest estimate for the Gastineau Hatchery roadside sport fishery in Juneau, Alaska during 2000. Alaska Department of Fish and Game, Fishery Data Series No. 01-21, Anchorage. |
| 2001 | White, B. A. 2003. Harvest estimates for the Macaulay (Gastineau) Hatchery roadside sport fishery in Juneau, Alaska during 2001. Alaska Department of Fish and Game, Fishery Data Series No. 03-10, Anchorage. |
| 2002 | White, B. A. 2003. Harvest estimates for the Macaulay (Gastineau) Hatchery roadside sport fishery in Juneau, Alaska during 2002. Alaska Department of Fish and Game, Fishery Data Series No. 03-24, Anchorage. |
| 2003 | White, B. A. 2004. Harvest estimates for the Macaulay (Gastineau) hatchery roadside sport fishery in Juneau, Alaska during 2003. Alaska Department of Fish and Game, Fishery Data Series No. 04-19, Anchorage. |

Appendix A3.–List of source citations by year for the Situk River creel survey, 1998-2006.

| Year | Citation |
|------|--|
| 1998 | Johnson, R. E. 2001. Situk River Chinook and sockeye salmon sport harvest estimates, and Yakutat marine sport harvest sampling, 1998 and 1999. Alaska Department of Fish and Game, Fishery Data Series 01-13, Anchorage. |
| 1999 | Johnson, R. E. 2001. Situk River Chinook and sockeye salmon sport harvest estimates, and Yakutat marine sport harvest sampling, 1998 and 1999. Alaska Department of Fish and Game, Fishery Data Series 01-13, Anchorage. |
| 2000 | Johnson, R. E. 2005. Situk River Chinook and sockeye salmon sport harvest estimates, 2000, 2001, 2002, and 2003. Alaska Department of Fish and Game, Fishery Data Series 05-06, Anchorage. |
| 2001 | Johnson, R. E. 2005. Situk River Chinook and sockeye salmon sport harvest estimates, 2000, 2001, 2002, and 2003. Alaska Department of Fish and Game, Fishery Data Series 05-06, Anchorage. |
| 2002 | Johnson, R. E. 2005. Situk River Chinook and sockeye salmon sport harvest estimates, 2000, 2001, 2002, and 2003. Alaska Department of Fish and Game, Fishery Data Series 05-06, Anchorage. |
| 2003 | Johnson, R. E. 2005. Situk River Chinook and sockeye salmon sport harvest estimates, 2000, 2001, 2002, and 2003. Alaska Department of Fish and Game, Fishery Data Series 05-06, Anchorage. |
| 2004 | Johnson, R. E. 2008. Situk River Chinook and sockeye salmon sport harvest estimates, 2004, 2005, 2006, and 2007. Alaska Department of Fish and Game, Fishery Data Series 08-12, Anchorage. |
| 2005 | Johnson, R. E. 2008. Situk River Chinook and sockeye salmon sport harvest estimates, 2004, 2005, 2006, and 2007. Alaska Department of Fish and Game, Fishery Data Series 08-12, Anchorage. |
| 2006 | Johnson, R. E. 2008. Situk River Chinook and sockeye salmon sport harvest estimates, 2004, 2005, 2006, and 2007. Alaska Department of Fish and Game, Fishery Data Series 08-12, Anchorage. |

Appendix A4.–List of source citations by year for the lower Kenai River creel survey, 1996-2006.

| Year | Citation |
|------|--|
| 1996 | King, M. A. 1997. Angler effort and harvest of chinook salmon by the recreational fisheries in the lower Kenai River, 1996. Alaska Department of Fish and Game, Fishery Data Series No. 97-9, Anchorage. |
| 1997 | Marsh, L. E. 1999. Angler effort and harvest of chinook salmon by the recreational fisheries in the lower Kenai River, 1997. Alaska Department of Fish and Game, Fishery Data Series No. 99-4, Anchorage. |
| 1998 | Marsh, L. E. 2000. Angler effort and harvest of chinook salmon by the recreational fisheries in the lower Kenai River, 1998. Alaska Department of Fish and Game, Fishery Data Series No. 00-21, Anchorage. |
| 1999 | Reimer, A. M., W. W. Jones, and L. E Marsh. 2002. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 1999 and 2000. Alaska Department of Fish and Game, Fishery Data Series No. 02-25, Anchorage. |
| 2000 | Reimer, A. M., W. W. Jones, and L. E Marsh. 2002. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 1999 and 2000. Alaska Department of Fish and Game, Fishery Data Series No. 02-25, Anchorage. |
| 2001 | Reimer, A. M. 2003. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2001. Alaska Department of Fish and Game, Fishery Data Series No. 03-01, Anchorage. |
| 2002 | Reimer, A. M. 2004a. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2002. Alaska Department of Fish and Game, Fishery Data Series No. 04-28, Anchorage. |
| 2003 | Reimer, A. M. 2004b. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2003. Alaska Department of Fish and Game, Fishery Data Series No. 04-32, Anchorage. |
| 2004 | Reimer, A. M. 2007. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2004. Alaska Department of Fish and Game, Fishery Data Series No. 07-65, Anchorage. |
| 2005 | Eskelin, A. 2007. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2005. Alaska Department of Fish and Game, Fishery Data Series No. 07-87, Anchorage. |
| 2006 | Eskelin, A. 2009. Chinook salmon creel survey and inriver gillnetting study, lower Kenai River, Alaska, 2006. Alaska Department of Fish and Game, Fishery Data Series No. 09-38, Anchorage. |

APPENDIX B
STATEWIDE HARVEST SURVEY LOCATION CODES
USED IN COMPARISONS

Appendix B1.–Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Juneau Marine Boat creel survey, 1996-2006.

| Location Code | Site Label |
|---------------|---|
| D 0910 | False Bay - Chichagof Island (Boat) |
| E 0001 | Doty Cove to Berners Bay (Boat) |
| E 0720 | Saint James Bay (Boat) |
| E 0726 | Grave Point (Boat) |
| E 0730 | Auke Bay (Boat) |
| E 0734 | Shelter Island (Boat) |
| E 0736 | Aaron Island (Boat) |
| E 0738 | Hawk Inlet - Admiralty Island (Boat) |
| E 0744 | Sheep Creek Area (Thane Area) (Boat) |
| E 0746 | Danger Point (Boat) |
| E 0748 | Douglas Island (Boat) |
| E 0754 | Stephens Passage Lower (Boat) (below Doty Cove) |
| E 0768 | Point Couverden (Boat) |
| E 0770 | Funter Bay - Admiralty Island (Boat) |
| E 0774 | Port Snettisham (Boat) |
| E 0776 | Speel Arm (Boat) |
| E 0778 | Gastineau Channel (Boat) |
| E 0780 | Limestone Inlet (Boat) |
| E 0782 | Taku Harbor (Boat) |
| E 0784 | Lynn Canal (Boat) |
| E 0786 | Eagle Beach (Boat) (Eagle Creek Mouth) |
| E 0788 | Middle Point - Douglas Island (Boat) |
| E 0790 | Saint Terese (Boat) |
| E 0792 | Favorite Channel (Boat) (Breadline) |
| E 0798 | Portland Island (Boat) |
| E 0806 | North Pass (Boat) |
| E 0810 | Salmon Creek (Mouth) (Boat) |
| E 0812 | Piling Point - Admiralty Island (Boat) |
| E 0814 | Point Retreat - Admiralty Island (Boat) |
| E 0822 | Tee Harbor (Boat) |
| E 0824 | Lena Cove (Boat) |
| E 0828 | Hand Troller Cove - Shelter Island (Boat) |
| E 0830 | Young Bay - Admiralty Island (Boat) |
| E 0832 | Point Louisa (Boat) |
| E 0834 | Point Bishop (Boat) |
| E 0836 | Oliver Inlet - Admiralty Island (Boat) |
| E 0838 | Admiralty Cove - Admiralty Island (Boat) |
| E 0840 | Vanderbilt Reef (Boat) |
| E 0844 | Amalga Harbor (Boat) |
| E 0846 | South Island (Boat) |
| E 0860 | Point Hilda - Douglas Island (Boat) |
| E 0862 | Scull Island - Admiralty Island (Boat) |
| E 0864 | Hanus Reef (Boat) |
| E 0866 | Outer Point - Douglas Island (Boat) |
| E 0867 | Outer Point (Shore) |
| E 0868 | Point Howard (Boat) |
| E 0870 | Grand Island (Boat) |
| E 0874 | Fritz Cove - Douglas Island (Boat) |
| E 0880 | Benjamin Island (Boat) |
| E 0882 | False Point Retreat - Admiralty Island (Boat) |
| E 0884 | Station Point - Admiralty Island (Boat) |
| E 0888 | Lincoln Island (Boat) |
| E 0892 | Indian Island (Boat) |
| E 0896 | False Arden - Admiralty Island (Boat) |

-continued-

Appendix B1.-Page 2 of 2.

| Location Code | Site Label |
|---------------|---|
| E 0898 | Bridget Cove (Boat) |
| E 0900 | Sentinel Island (Boat) |
| E 0902 | Gilbert Bay (Boat) |
| E 0904 | Barlow Cove - Admiralty Island (Boat) |
| E 0908 | Kitten Island - Admiralty Island (Boat) |
| E 0910 | Horse Island - Admiralty Island (Boat) |
| E 0912 | Bird Island (Boat) |
| E 0914 | Coghlan Island (Boat) |
| E 0916 | Hump Island (Boat) |
| E 0920 | Sunset Cove (Boat) |
| E 0922 | Auke Creek Mouth (Boat) |
| E 0924 | Point Arden (Boat) |
| E 0930 | Georges Rock - Douglas Island (Boat) |
| E 0932 | Marmion Island - Douglas Island (Boat) |
| E 0934 | King Salmon Bay (Boat) |
| E 0936 | Ralston Island (Boat) |
| E 0938 | Macaulay Hatchery (Boat) (DIPAC), was Gastineau Hatchery |
| E 0944 | Taku Inlet (Boat) |
| E 0946 | William Henry Bay (Boat) |
| E 0952 | Cordwood Creek Area - Admiralty Island (Boat) |
| E 0954 | False Outer Point - Douglas Island (Boat) |
| E 0956 | Terminal Harvest Area (Inner Auke Bay, Upper Gast.) (Boat) |
| E 0957 | Terminal Harvest Area (Inner Auke Bay, Upper Gast.) (Shore) |
| G 0722 | Rocky Island (Boat) |
| G 0726 | Swanson Harbor (Boat) |
| G 0728 | Icy Strait (Boat) |
| G 0740 | Gustavus Area (Boat) |
| G 0744 | Pleasant Island (Boat) |
| G 0754 | Sisters Islands (Boat) |
| G 0762 | Point Gustavus (Boat) (Glacier Bay) |
| G 0764 | Porpoise Islands (Boat) |
| G 0906 | Point Adolphus (Boat) |
| G 0908 | Hoonah Area - Chichagof Island (Boat) |
| G 0914 | Spasski Bay - Chichagof Island (Boat) |
| G 0924 | Point Sophia - Chichagof Island (Boat) |
| G 0930 | Mud Bay - Chichagof Island (Boat) |
| G 0936 | Flynn Cove - Chichagof Island (Boat) |
| G 0944 | Spasski Island (Boat) |
| G 0952 | Whitestone Harbor - Chichagof Island (Boat) |
| G 0954 | Crist Point - Chichagof Island (Boat) |
| G 0968 | Icy Strait (excluding Glacier Bay National Park) - (Boat) |
| G 0969 | Icy Strait (excluding Glacier Bay National Park) - (Shore) |

Appendix B2.–Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Sitka Marine Boat creel survey, 1996-2006.

| Location Code | Site Label |
|---------------|--|
| D 0001 | Other Saltwater Areas - Boat |
| D 0011 | Starrigavan Bay - Sitka Sound (Boat) |
| D 0013 | Silver Bay - Sitka Sound (Boat) |
| D 0720 | Vitskari Island - Sitka Sound (Boat) |
| D 0724 | Sitka Sound (Boat) (inc Vitskari Is) (Sheldon Jackson) |
| D 0738 | Biorka Island - Sitka Sound (Boat) |
| D 0742 | Ushk Bay (Boat) |
| D 0744 | Baranof Island (Boat) |
| D 0754 | Redoubt Bay - Sitka Sound (Boat) |
| D 0756 | Nakwasina Passage/Sound - Sitka Sound (Boat) |
| D 0758 | Kruzof Island (Boat) |
| D 0760 | Long Island - Sitka Sound (Boat) |
| D 0766 | Salisbury Sound - Kruzof, Baranof Islands (Boat) |
| D 0780 | Point Amelia - Kruzof Island (Boat) |
| D 0782 | Katlial Bay - Sitka Sound (Boat) |
| D 0784 | Hoonah Sound (Boat) |
| D 0786 | Crescent Harbor Bay - Sheldon Jackson Hatchery Area - Sitka Sound (Boat) |
| D 0792 | Klag Bay (Boat) |
| D 0794 | Khaz Bay (Boat) |
| D 0798 | Eastern Channel - Sitka Sound (Boat) |
| D 0800 | Halibut Point - Sitka Sound (Boat) |
| D 0804 | Fish Bay - Baranof Island (Boat) |
| D 0806 | Cape Edgecumbe - Kruzof Island (Boat) |
| D 0808 | Hayward Strait - Sitka Sound (Boat) |
| D 0814 | Inner Point - Sitka Sound (Boat) |
| D 0824 | Whale Bay (Boat) |
| D 0836 | Camp Coogan Bay - Sitka Sound (Boat) |
| D 0848 | Degroff Bay - Sitka Sound (Boat) |
| D 0852 | Kakul Narrows - Chichagof, Baranof Islands (Boat) |
| D 0854 | Olga Strait - Sitka Sound (Boat) |
| D 0858 | Saint Lazaria Island - Sitka Sound (Boat) |
| D 0860 | Big Bay - Baranof Island (Boat) |
| D 0868 | Middle Island - Sitka Sound (Boat) |
| D 0878 | Dog Point - Sitka Sound (Boat) |
| D 0884 | Leo Anchorage - Chichagof Island (Boat) |
| D 0886 | Magoun Islands - Sitka Sound (Boat) |
| D 0894 | Deadman's Reach (Boat) |
| D 0898 | Beehive Island - Sitka Sound (Boat) |
| D 0914 | Pirate Cove - Sitka Sound (Boat) |
| D 0916 | Neva Strait - Sitka Sound (Boat) |
| D 0920 | Slocum Arm (Boat) |
| D 0922 | Ford Arm (Boat) |
| D 0928 | Deep Inlet - Sitka Sound (Boat) |
| D 0934 | Kalinin Bay - Kruzof Island (Boat) |
| D 0938 | Parker Group Island - Sitka Sound (Boat) |
| D 0946 | Goddard Bay - Sitka Sound (Boat) |
| D 0966 | Sergius Narrows - Chichagof, Baranof Islands (Boat) |
| D 0998 | Crow Island - Sitka Sound (Boat) |
| D 1004 | Hot Springs Bay - Sitka Sound (Boat) |
| D 1010 | Sea Lion Cove - Kruzof Island (Boat) |
| D 1012 | Cape Georgiana - Kruzof Island (Boat) |
| D 1014 | Samsing Cove - Sitka Sound (Boat) |
| D 1016 | Shelikof Bay - Kruzof Island (Boat) |
| D 1024 | Golf Island - Baranof Island (Boat) |

-continued-

Appendix B2.-Page 2 of 2.

| Location Code | Site Label |
|---------------|--|
| D 1030 | Sinitsin Island - Kruzof Island (Boat) |
| D 1032 | Bear Cove - Sitka Sound (Boat) |
| D 1034 | Windy Passage - Baranof Island |
| D 1038 | Krestof Sound - Sitka Sound (Boat) |
| D 1040 | Little Island (Boat) |
| D 1044 | Kruzof Island - Outer Coast (Boat) |
| D 1048 | Baranof Island - East Shore (Boat) |
| D 1052 | Sitka Road System - Sitka Sound (Boat) |
| D 1054 | Terminal Harvest Area - Silver Bay - Sitka Sound (Boat) |
| D 1055 | Terminal Harvest Area - Silver Bay - Sitka Sound (Shore) |

Appendix B3.–Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Ketchikan Marine Boat creel survey, 1996-2006.

| Location Code | Site Label |
|---------------|---|
| A 0001 | Behm Canals - East and West (Boat) |
| A 0002 | Clarence Strait (Boat) |
| A 0003 | Revillagigedo Channel (Boat) |
| A 0004 | Tongass Narrows (Boat) |
| A 0005 | Yes Bay (Boat) |
| A 0006 | Bell Island (Boat) |
| A 0007 | Unspecified Boat |
| A 0720 | Blank Inlet - Gravina Island (Boat) |
| A 0724 | Ham Island (Boat) |
| A 0726 | Clover Pass (Boat) (Salmon Falls Resort, Settlers Cove) |
| A 0728 | Mountain Point (Boat) |
| A 0730 | Carroll Inlet (Boat) |
| A 0732 | Nose Point (Boat) |
| A 0734 | George Inlet (Boat) |
| A 0736 | Herring Cove (Boat) |
| A 0738 | Fox Island (Boat) |
| A 0740 | Vallenar Point (Boat) |
| A 0742 | Annette Island (Boat) |
| A 0744 | Nichols Passage (Boat) |
| A 0746 | Neets Bay (Boat) |
| A 0748 | Traitors Cove (Boat) |
| A 0756 | Ella Bay (Boat) |
| A 0758 | Pearse Canal (Boat) |
| A 0760 | Gravina Island (Boat) |
| A 0762 | Thorne Arm (Boat) |
| A 0764 | Knudson Cove (Boat) |
| A 0766 | Tatoosh Rocks (Boat) |
| A 0768 | Dall Head - Gravina Island (Boat) |
| A 0770 | Caamano Point (Boat) |
| A 0772 | Foggy Bay (Boat) |
| A 0774 | Shoal Cove (Boat) |
| A 0776 | Smugglers Cove - Annette Island (Boat) |
| A 0778 | Rock Point (Boat) |
| A 0780 | Helm Bay (Boat) |
| A 0784 | Thomas Basin (Boat) |
| A 0786 | California Head (Boat) |
| A 0788 | Grant Island (Boat) |
| A 0790 | Nakat Bay (Boat) |
| A 0796 | Copper Bay - Gravina Island (Boat) (Nehenta Bay) |
| A 0800 | Pup Island (Boat) |
| A 0802 | DeLong Island (Boat) |
| A 0804 | Ketchikan Area (Boat) |
| A 0806 | Mink Bay (Boat) |
| A 0808 | Moser Bay (Boat) |
| A 0810 | Point Higgins (Boat) |
| A 0814 | Hog Rocks (Boat) |
| A 0816 | Felice Strait (Boat) |
| A 0878 | Mary Island (Boat) |
| A 0880 | Betton Island (Boat) |
| A 0882 | Coon Cove (Boat) |
| A 0884 | Alava Bay (Boat) |
| A 0886 | Boca de Quadra (Boat) |
| A 0888 | Duke Island (Boat) |
| A 0890 | Walden Rocks (Boat) |

-continued -

| Location Code | Site Label |
|---------------|---|
| A 0892 | Ward Cove (Boat) |
| A 0894 | Cone Island (Boat) |
| A 0896 | White River Mouth (Boat) |
| A 0900 | Joe Island (Boat) |
| A 0902 | Canoe Cove (Boat) |
| A 0904 | Twin Islands (Boat) |
| A 0906 | Slate Islands (Boat) |
| A 0908 | Weasel Cove (Boat) |
| A 0910 | Fillmore Inlet (Boat) |
| A 0912 | Alava Point (Boat) |
| A 0914 | Lucky Cove (Boat) |
| A 0916 | Metlakatla Area – Annette Island (Boat) |
| A 0918 | Port Stewart (Boat) |
| A 0920 | Pond Reef (Boat) |
| A 0922 | Naha Bay (Boat) |
| A 0924 | Inside Passage (Boat) |
| A 0926 | Bald Headed Cove – Pennock Island (Boat) |
| A 0928 | Cat Island (Boat) |
| A 0930 | Anchor Pass (Boat) |
| A 0932 | Bostwick Inlet – Gravina Island (Boat) |
| A 0934 | Pennock Island (Boat) |
| A 0936 | Bronagh Island (Boat) |
| A 0938 | Percy Island (Boat) |
| A 0942 | Nelson Cove (Boat) |
| A 0944 | Spacious Bay (Boat) |
| A 0946 | Coho Cove (Boat) |
| A 0956 | Round Island (Boat) |
| A 0958 | Dog Bay (Boat) |
| A 0960 | Kah Shakes Cove (Boat) |
| A 0962 | Vegas Island (Boat) |
| A 0964 | Garnet Point (Boat) |
| A 0966 | Tsa Cove (Boat) |
| A 0968 | Blank Island (Boat) |
| A 0970 | Guard Island (Boat) |
| A 0972 | Vallendar Bay – Gravina Island (Boat) |
| A 0974 | Bullhead Cove (Boat) |
| A 0976 | Bakewell Arm (Boat) |
| A 0978 | Moser Island (Boat) |
| A 0980 | Lincoln Channel (Boat) |
| A 0982 | Gnat Cove (Boat) |
| A 0984 | Shelter Cove (Boat) |
| A 0986 | Bold Island (Boat) |
| A 0988 | Bond Bay (Boat) |
| A 0990 | Burroughs Bay (Boat) |
| A 0992 | Princess Bay (Boat) |
| A 0994 | Bailey Bay (Boat) |
| A 0996 | Walker Cove (Boat) |
| A 0998 | Shrimp Bay (Boat) |
| A 1000 | Very Inlet (Boat) |
| A 1002 | Refuge Cove (Boat) |
| A 1006 | Survey Point (Boat) |
| A 1008 | Terminal Harvest Area – Ketchikan (Boat) |
| A 1009 | Terminal Harvest Area – Ketchikan (Shore) |
| B 0720 | Thorne Bay (Boat) |
| B 0722 | Tolstoi Bay (Boat) |

- continued -

| Location Code | Site Label |
|---------------|--|
| B 0726 | Cape Chacon (Boat) |
| B 0730 | Twelvemile Arm (Boat) |
| B 0732 | Skin Island (Boat) |
| B 0734 | Grindall Island (Boat) |
| B 0738 | Twenty Fathom Bank (Boat) |
| B 0740 | Salt Chuck Lagoon (Boat) |
| B 0742 | Kasaan Bay (Boat) |
| B 0744 | Moir Sound (Boat) |
| B 0746 | Niblack Anchorage (Boat) |
| B 0764 | Cholmondeley Sound (Boat) |
| B 0768 | Karta Bay (Boat) |
| B 0770 | Slide Creek Mouth (Boat) |
| B 0780 | Sandy Point (Boat) |
| B 0782 | Sunny Cove (Boat) |
| B 0788 | Island Point (outside Kasaan Bay) (Boat) |
| B 0792 | High Island (Boat) |
| B 0814 | Hollis Area (Boat) |
| B 0818 | Lyman Anchorage (Boat) |
| B 0822 | Skowl Arm (Boat) |
| B 0824 | Saltry Cove (Boat) |
| B 0840 | Clarence Strait (Boat) |
| B 0864 | McLean Arm (Boat) |
| B 0866 | Stone Rock Bay (Boat) |
| B 0868 | Polk Inlet (Boat) |
| B 0882 | Kegan Cove (Boat) |
| B 0886 | Kina Cove (Boat) |
| B 0892 | Kendrick Bay (Boat) |
| B 0900 | Dolomi Bay (Boat) |
| B 0904 | Clover Bay (Boat) |
| B 0908 | Lancaster Cove (Boat) |
| B 0920 | Coal Bay (Boat) |
| B 0922 | Dora Bay (Boat) |
| B 0928 | Cape Muzon (Boat) |
| B 0934 | Scott Point (Boat) |
| B 0944 | Hidden Bay (Boat) |
| B 0972 | Trollers Cove (Boat) |
| B 0984 | Windfall Harbor (Boat) |
| C 0812 | Meyers Chuck (Boat) |
| C 0822 | Union Bay (Boat) |
| C 0856 | Lemesurier Point (Boat) |

Appendix B4.–Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Gastineau Hatchery shoreline creel survey, 1996-2003.

| Location Code | Site Label |
|---------------|---|
| E 0939 | Macaulay Hatchery (Shore) (DIPAC), was Gastineau Hatchery |

Appendix B5.–Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Situk River creel survey, 1998-2006.

| Location Code | Site Label |
|---------------|---------------------------------|
| H 0003 | Situk River (reach unspecified) |
| H 0148 | Situk River (above weir) |
| H 0149 | Situk River (below weir) |

Appendix B6.–Listing of Statewide Harvest Survey (SWHS) location codes included in estimates of harvest to compare with the onsite Lower Kenai River creel survey, 1996-2006.

| Location Code | Site Label |
|---------------|---|
| P40001 | Kenai River - Cook Inlet to Soldotna Bridge |
| P50001 | Kenai River - Cook Inlet to Soldotna Bridge |

APPENDIX C
ESTIMATES OF HARVEST BY YEAR FOR ONSITE
AND STATEWIDE HARVEST SURVEYS

Appendix C1.–Juneau marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 8,417 | 7,404 | 9,430 | 0.061 | 10,710 | 8,368 | 13,373 | 0.127 |
| 1997 | 7,900 | 6,706 | 9,094 | 0.077 | 10,796 | 8,606 | 13,253 | 0.116 |
| 1998 | 3,847 | 3,277 | 4,417 | 0.076 | 6,880 | 5,555 | 8,306 | 0.106 |
| 1999 | 5,639 | 4,833 | 6,445 | 0.073 | 8,415 | 6,644 | 10,121 | 0.103 |
| 2000 | 4,549 | 3,771 | 5,327 | 0.087 | 7,431 | 6,056 | 8,861 | 0.098 |
| 2001 | 4,441 | 3,761 | 5,121 | 0.078 | 9,132 | 7,540 | 10,780 | 0.092 |
| 2002 | 6,329 | 5,290 | 7,368 | 0.084 | 10,113 | 8,208 | 12,395 | 0.115 |
| 2003 | 5,292 | 4,236 | 6,348 | 0.102 | 10,502 | 8,626 | 12,601 | 0.102 |
| 2004 | 6,109 | 4,837 | 7,381 | 0.106 | 9,524 | 8,017 | 11,122 | 0.086 |
| 2005 | 6,140 | 4,880 | 7,400 | 0.105 | 11,229 | 9,469 | 13,102 | 0.085 |
| 2006 | 4,339 | 3,588 | 5,090 | 0.088 | 8,440 | 7,073 | 10,128 | 0.102 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C2.–Juneau marine boat Pacific halibut harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 11,158 | 9,094 | 13,222 | 0.094 | 14,486 | 12,031 | 17,017 | 0.089 |
| 1997 | 12,547 | 9,946 | 15,188 | 0.106 | 16,740 | 13,666 | 19,963 | 0.098 |
| 1998 | 8,200 | 6,628 | 9,772 | 0.098 | 14,715 | 11,257 | 19,110 | 0.152 |
| 1999 | 8,105 | 6,521 | 9,689 | 0.100 | 11,760 | 9,053 | 13,553 | 0.078 |
| 2000 | 6,169 | 5,126 | 7,212 | 0.086 | 18,152 | 14,666 | 22,269 | 0.116 |
| 2001 | 4,802 | 3,826 | 5,778 | 0.104 | 16,300 | 13,937 | 18,652 | 0.074 |
| 2002 | 6,172 | 4,947 | 7,397 | 0.101 | 17,443 | 14,878 | 19,959 | 0.074 |
| 2003 | 9,754 | 7,823 | 11,685 | 0.101 | 21,734 | 19,036 | 24,546 | 0.066 |
| 2004 | 11,512 | 9,331 | 13,693 | 0.097 | 27,735 | 24,146 | 31,432 | 0.068 |
| 2005 | 12,932 | 9,927 | 15,937 | 0.119 | 31,805 | 27,722 | 36,397 | 0.074 |
| 2006 | 9,230 | 7,578 | 10,882 | 0.091 | 21,361 | 18,563 | 24,352 | 0.071 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C3.–Juneau marine boat chum salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 3,059 | 2,206 | 3,912 | 0.142 | 2,946 | 2,188 | 3,836 | 0.154 |
| 1997 | 1,055 | 688 | 1,422 | 0.177 | 1,889 | 1,324 | 2,537 | 0.175 |
| 1998 | 480 | 362 | 598 | 0.125 | 1,624 | 1,050 | 2,336 | 0.224 |
| 1999 | 565 | 402 | 728 | 0.147 | 1,109 | 712 | 1,488 | 0.174 |
| 2000 | 2,185 | 1,346 | 3,024 | 0.196 | 3,627 | 2,550 | 4,816 | 0.167 |
| 2001 | 3,370 | 2,267 | 4,473 | 0.167 | 4,709 | 3,497 | 6,129 | 0.154 |
| 2002 | 713 | 499 | 927 | 0.153 | 2,147 | 1,401 | 3,013 | 0.206 |
| 2003 | 2,616 | 2,022 | 3,210 | 0.116 | 4,283 | 2,990 | 5,785 | 0.179 |
| 2004 | 1,950 | 1,387 | 2,513 | 0.147 | 3,807 | 2,705 | 5,199 | 0.187 |
| 2005 | 509 | 225 | 793 | 0.285 | 2,321 | 1,382 | 3,426 | 0.243 |
| 2006 | 924 | 632 | 1,216 | 0.161 | 2,318 | 1,418 | 3,425 | 0.244 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C4.–Juneau marine boat pink salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 3,029 | 2,172 | 3,886 | 0.144 | 3,241 | 2,267 | 4,411 | 0.184 |
| 1997 | 4,174 | 3,247 | 5,101 | 0.113 | 5,811 | 4,060 | 7,850 | 0.179 |
| 1998 | 3,114 | 2,205 | 4,023 | 0.149 | 6,060 | 3,739 | 9,018 | 0.249 |
| 1999 | 7,193 | 5,717 | 8,669 | 0.105 | 12,624 | 9,177 | 15,986 | 0.136 |
| 2000 | 1,895 | 1,295 | 2,495 | 0.162 | 4,947 | 3,612 | 6,518 | 0.162 |
| 2001 | 3,868 | 2,204 | 5,532 | 0.219 | 11,416 | 8,879 | 14,224 | 0.125 |
| 2002 | 2,763 | 1,920 | 3,606 | 0.156 | 10,007 | 6,798 | 14,068 | 0.207 |
| 2003 | 1,934 | 1,460 | 2,408 | 0.125 | 7,241 | 5,611 | 9,168 | 0.136 |
| 2004 | 2,330 | 1,750 | 2,910 | 0.127 | 10,607 | 8,054 | 13,345 | 0.132 |
| 2005 | 3,239 | 1,896 | 4,582 | 0.211 | 13,842 | 10,442 | 17,743 | 0.144 |
| 2006 | 3,224 | 2,228 | 4,220 | 0.158 | 6,370 | 4,701 | 8,217 | 0.148 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C5.–Juneau marine boat rockfish species harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 774 | 500 | 1,048 | 0.181 | 2,016 | 1,134 | 2,962 | 0.239 |
| 1997 | 1,295 | 619 | 1,971 | 0.266 | 2,851 | 1,853 | 4,111 | 0.225 |
| 1998 | 659 | 451 | 867 | 0.161 | 3,989 | 2,477 | 5,874 | 0.241 |
| 1999 | 1,056 | 721 | 1,391 | 0.162 | 3,053 | 2,045 | 4,136 | 0.181 |
| 2000 | 1,591 | 1,150 | 2,032 | 0.141 | 5,735 | 3,888 | 7,843 | 0.188 |
| 2001 | 748 | 489 | 1,007 | 0.177 | 5,003 | 3,738 | 6,542 | 0.157 |
| 2002 | 534 | 211 | 857 | 0.309 | 3,407 | 2,419 | 4,580 | 0.176 |
| 2003 | 1,185 | 595 | 1,775 | 0.254 | 4,355 | 3,277 | 5,589 | 0.145 |
| 2004 | 1,117 | 588 | 1,646 | 0.242 | 4,957 | 3,527 | 6,664 | 0.176 |
| 2005 | 1,910 | 1,003 | 2,817 | 0.242 | 4,899 | 3,305 | 7,040 | 0.223 |
| 2006 | 1,042 | 670 | 1,414 | 0.182 | 5,251 | 3,622 | 7,192 | 0.189 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C6.–Juneau marine boat coho salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 18,816 | 15,584 | 22,048 | 0.088 | 22,320 | 18,777 | 25,662 | 0.076 |
| 1997 | 12,477 | 10,388 | 14,566 | 0.085 | 16,432 | 13,924 | 19,091 | 0.083 |
| 1998 | 15,730 | 11,996 | 19,464 | 0.121 | 21,669 | 17,655 | 25,640 | 0.093 |
| 1999 | 26,604 | 21,402 | 31,806 | 0.100 | 32,596 | 27,424 | 37,437 | 0.076 |
| 2000 | 11,960 | 7,915 | 16,005 | 0.173 | 23,469 | 19,151 | 28,028 | 0.099 |
| 2001 | 16,036 | 13,510 | 18,562 | 0.080 | 42,486 | 36,453 | 49,073 | 0.079 |
| 2002 | 26,273 | 19,925 | 32,621 | 0.123 | 44,617 | 38,870 | 50,696 | 0.070 |
| 2003 | 18,682 | 15,217 | 22,147 | 0.095 | 34,319 | 29,807 | 39,143 | 0.072 |
| 2004 | 20,633 | 17,581 | 23,685 | 0.075 | 42,230 | 37,090 | 48,250 | 0.073 |
| 2005 | 24,855 | 20,982 | 28,728 | 0.080 | 50,289 | 43,503 | 57,062 | 0.069 |
| 2006 | 26,098 | 20,541 | 31,655 | 0.109 | 39,580 | 32,693 | 47,496 | 0.102 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C7.–Juneau marine boat lingcod harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 11 | 0 | 31 | 0.510 | 171 | 55 | 325 | 0.461 |
| 1997 | 6 | 0 | 16 | 0.510 | 623 | 159 | 1,280 | 0.538 |
| 1998 | 45 | 0 | 98 | 0.510 | 228 | 88 | 396 | 0.377 |
| 1999 | 86 | 13 | 159 | 0.433 | 484 | 146 | 969 | 0.512 |
| 2000 | 66 | 0 | 150 | 0.510 | 858 | 241 | 1,763 | 0.538 |
| 2001 | 87 | 11 | 163 | 0.446 | 487 | 289 | 704 | 0.227 |
| 2002 | 9 | 0 | 27 | 0.510 | 360 | 201 | 560 | 0.283 |
| 2003 | 41 | 0 | 88 | 0.510 | 604 | 235 | 1,170 | 0.478 |
| 2004 | 49 | 0 | 120 | 0.510 | 279 | 142 | 451 | 0.315 |
| 2005 | 37 | 0 | 82 | 0.510 | 552 | 253 | 904 | 0.325 |
| 2006 | 49 | 4 | 94 | 0.469 | 354 | 160 | 619 | 0.382 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C8.–Juneau marine boat sockeye salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 64 | 33 | 95 | 0.247 | 284 | 132 | 476 | 0.345 |
| 1997 | 20 | 0 | 53 | 0.510 | 294 | 156 | 459 | 0.287 |
| 1998 | 42 | 3 | 81 | 0.474 | 1,049 | 305 | 2,176 | 0.548 |
| 1999 | 86 | 19 | 153 | 0.397 | 594 | 195 | 1,159 | 0.486 |
| 2000 | 32 | 0 | 67 | 0.510 | 695 | 232 | 1,287 | 0.434 |
| 2001 | 54 | 17 | 91 | 0.350 | 809 | 411 | 1,316 | 0.320 |
| 2002 | 57 | 0 | 135 | 0.510 | 458 | 176 | 857 | 0.444 |
| 2003 | 78 | 0 | 162 | 0.510 | 630 | 329 | 1,054 | 0.343 |
| 2004 | 60 | 13 | 107 | 0.400 | 736 | 301 | 1,385 | 0.450 |
| 2005 | 148 | 50 | 246 | 0.338 | 1,457 | 605 | 2,544 | 0.381 |
| 2006 | 76 | 21 | 131 | 0.369 | 1,156 | 488 | 2,050 | 0.395 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C9.–Sitka marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 10,069 | 8,589 | 11,549 | 0.075 | 16,144 | 14,249 | 18,316 | 0.069 |
| 1997 | 25,838 | 22,641 | 29,035 | 0.063 | 24,713 | 21,760 | 27,904 | 0.066 |
| 1998 | 20,848 | 18,090 | 23,606 | 0.067 | 21,817 | 19,524 | 24,054 | 0.052 |
| 1999 | 20,741 | 17,915 | 23,567 | 0.070 | 24,495 | 22,381 | 28,278 | 0.079 |
| 2000 | 17,230 | 15,096 | 19,364 | 0.063 | 17,954 | 16,305 | 19,590 | 0.046 |
| 2001 | 20,779 | 18,292 | 23,266 | 0.061 | 23,526 | 21,097 | 26,047 | 0.055 |
| 2002 | 24,834 | 21,627 | 28,041 | 0.066 | 16,993 | 15,078 | 18,988 | 0.060 |
| 2003 | 24,124 | 21,441 | 26,807 | 0.057 | 20,704 | 18,108 | 23,504 | 0.069 |
| 2004 | 31,478 | 27,627 | 35,329 | 0.062 | 25,288 | 22,556 | 28,442 | 0.064 |
| 2005 | 25,247 | 22,187 | 28,307 | 0.062 | 25,299 | 22,394 | 28,345 | 0.061 |
| 2006 | 27,125 | 24,334 | 29,916 | 0.052 | 33,413 | 29,337 | 37,423 | 0.061 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C10.–Sitka marine boat Pacific halibut harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 12,015 | 9,532 | 14,498 | 0.105 | 14,725 | 12,813 | 16,882 | 0.075 |
| 1997 | 21,852 | 18,006 | 25,698 | 0.090 | 19,709 | 17,498 | 21,900 | 0.057 |
| 1998 | 19,640 | 16,283 | 22,997 | 0.087 | 23,859 | 21,123 | 26,737 | 0.062 |
| 1999 | 27,967 | 22,730 | 33,204 | 0.096 | 22,101 | 19,760 | 25,549 | 0.080 |
| 2000 | 31,110 | 26,141 | 36,079 | 0.081 | 27,205 | 24,317 | 30,113 | 0.055 |
| 2001 | 29,006 | 23,984 | 34,028 | 0.088 | 32,025 | 28,677 | 35,496 | 0.055 |
| 2002 | 34,260 | 28,296 | 40,224 | 0.089 | 23,596 | 20,984 | 26,205 | 0.056 |
| 2003 | 37,472 | 31,657 | 43,287 | 0.079 | 30,141 | 26,928 | 33,582 | 0.058 |
| 2004 | 36,427 | 30,618 | 42,236 | 0.081 | 36,782 | 32,927 | 40,876 | 0.057 |
| 2005 | 34,864 | 29,192 | 40,536 | 0.083 | 39,288 | 34,949 | 43,778 | 0.058 |
| 2006 | 27,188 | 23,805 | 30,571 | 0.063 | 36,688 | 32,542 | 40,724 | 0.056 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C11.—Sitka marine boat chum salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 6,164 | 3,126 | 9,202 | 0.251 | 4,731 | 3,750 | 5,885 | 0.124 |
| 1997 | 3,031 | 1,545 | 4,517 | 0.250 | 3,094 | 1,956 | 4,454 | 0.224 |
| 1998 | 1,087 | 799 | 1,375 | 0.135 | 2,959 | 1,887 | 4,161 | 0.207 |
| 1999 | 538 | 232 | 844 | 0.290 | 1,544 | 962 | 2,370 | 0.273 |
| 2000 | 1,621 | 892 | 2,350 | 0.229 | 2,438 | 1,760 | 3,179 | 0.155 |
| 2001 | 1,393 | 1,030 | 1,756 | 0.133 | 2,261 | 1,614 | 2,987 | 0.164 |
| 2002 | 661 | 434 | 888 | 0.175 | 1,647 | 920 | 2,472 | 0.255 |
| 2003 | 2,062 | 1,484 | 2,640 | 0.143 | 2,158 | 1,356 | 3,066 | 0.215 |
| 2004 | 3,195 | 2,190 | 4,200 | 0.160 | 4,184 | 3,028 | 5,524 | 0.163 |
| 2005 | 429 | 264 | 594 | 0.196 | 1,425 | 862 | 2,109 | 0.245 |
| 2006 | 282 | 190 | 374 | 0.166 | 1,216 | 749 | 1,763 | 0.230 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C12.—Sitka marine boat pink salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 7,961 | 5,478 | 10,444 | 0.159 | 5,593 | 4,318 | 6,968 | 0.125 |
| 1997 | 4,540 | 3,276 | 5,804 | 0.142 | 3,864 | 2,867 | 5,035 | 0.155 |
| 1998 | 5,407 | 3,808 | 7,006 | 0.151 | 4,835 | 3,525 | 6,220 | 0.146 |
| 1999 | 4,326 | 3,436 | 5,216 | 0.105 | 5,824 | 4,959 | 8,848 | 0.265 |
| 2000 | 1,675 | 1,246 | 2,104 | 0.131 | 3,207 | 2,239 | 4,271 | 0.169 |
| 2001 | 2,851 | 1,830 | 3,872 | 0.183 | 4,193 | 3,082 | 5,466 | 0.155 |
| 2002 | 5,719 | 3,939 | 7,499 | 0.159 | 5,347 | 3,694 | 7,314 | 0.188 |
| 2003 | 5,625 | 4,275 | 6,975 | 0.122 | 4,638 | 3,457 | 5,972 | 0.147 |
| 2004 | 4,917 | 3,388 | 6,446 | 0.159 | 7,505 | 5,630 | 9,640 | 0.145 |
| 2005 | 6,619 | 4,453 | 8,785 | 0.167 | 8,673 | 6,751 | 11,014 | 0.138 |
| 2006 | 3,403 | 2,362 | 4,444 | 0.156 | 3,297 | 2,255 | 4,418 | 0.173 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C13.–Sitka marine boat rockfish species harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 6,754 | 5,598 | 7,910 | 0.087 | 8,266 | 6,797 | 9,955 | 0.104 |
| 1997 | 10,288 | 8,301 | 12,275 | 0.099 | 9,418 | 7,598 | 11,060 | 0.089 |
| 1998 | 11,151 | 9,299 | 13,003 | 0.085 | 12,710 | 10,571 | 14,815 | 0.084 |
| 1999 | 13,412 | 11,415 | 15,409 | 0.076 | 17,575 | 14,627 | 23,927 | 0.184 |
| 2000 | 17,752 | 15,188 | 20,316 | 0.074 | 16,356 | 13,967 | 19,035 | 0.084 |
| 2001 | 12,792 | 10,391 | 15,193 | 0.096 | 15,159 | 12,982 | 17,132 | 0.066 |
| 2002 | 14,174 | 11,883 | 16,465 | 0.082 | 14,899 | 12,324 | 17,782 | 0.099 |
| 2003 | 17,673 | 14,806 | 20,540 | 0.083 | 14,806 | 11,782 | 18,280 | 0.120 |
| 2004 | 20,254 | 16,630 | 23,878 | 0.091 | 28,014 | 23,585 | 32,223 | 0.077 |
| 2005 | 24,440 | 19,732 | 29,148 | 0.098 | 29,508 | 25,415 | 34,069 | 0.079 |
| 2006 | 28,275 | 24,396 | 32,154 | 0.070 | 32,023 | 26,707 | 37,147 | 0.082 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C14.–Sitka marine boat coho salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 28,981 | 24,724 | 33,238 | 0.075 | 28,504 | 23,885 | 34,203 | 0.102 |
| 1997 | 30,789 | 23,245 | 38,333 | 0.125 | 27,956 | 23,756 | 32,322 | 0.080 |
| 1998 | 42,524 | 34,739 | 50,309 | 0.093 | 41,788 | 36,023 | 48,259 | 0.079 |
| 1999 | 73,757 | 59,173 | 88,341 | 0.101 | 59,423 | 54,493 | 70,764 | 0.097 |
| 2000 | 38,247 | 30,285 | 46,209 | 0.106 | 37,350 | 33,039 | 41,705 | 0.059 |
| 2001 | 78,218 | 62,761 | 93,675 | 0.101 | 80,872 | 71,995 | 91,213 | 0.065 |
| 2002 | 46,150 | 35,846 | 56,454 | 0.114 | 33,379 | 28,520 | 38,042 | 0.071 |
| 2003 | 73,760 | 60,477 | 87,043 | 0.092 | 63,257 | 55,498 | 71,228 | 0.064 |
| 2004 | 53,311 | 41,522 | 65,100 | 0.113 | 64,226 | 56,625 | 71,863 | 0.061 |
| 2005 | 78,813 | 63,229 | 94,397 | 0.101 | 88,451 | 78,810 | 99,113 | 0.061 |
| 2006 | 43,989 | 36,457 | 51,521 | 0.087 | 44,402 | 39,074 | 50,174 | 0.066 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C15.–Sitka marine boat lingcod harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 4,377 | 3,556 | 5,198 | 0.096 | 5,487 | 4,523 | 6,558 | 0.100 |
| 1997 | 6,929 | 5,232 | 8,626 | 0.125 | 5,756 | 4,810 | 6,681 | 0.082 |
| 1998 | 3,777 | 3,003 | 4,551 | 0.105 | 5,843 | 4,952 | 6,766 | 0.081 |
| 1999 | 4,961 | 4,038 | 5,884 | 0.095 | 6,577 | 5,675 | 7,973 | 0.108 |
| 2000 | 2,269 | 1,765 | 2,773 | 0.113 | 4,655 | 4,017 | 5,326 | 0.074 |
| 2001 | 2,297 | 1,846 | 2,748 | 0.100 | 5,191 | 4,370 | 6,027 | 0.082 |
| 2002 | 1,946 | 1,417 | 2,475 | 0.139 | 2,666 | 2,139 | 3,266 | 0.115 |
| 2003 | 2,750 | 2,050 | 3,450 | 0.130 | 3,640 | 2,916 | 4,327 | 0.096 |
| 2004 | 3,209 | 2,276 | 4,142 | 0.148 | 4,406 | 3,579 | 5,377 | 0.112 |
| 2005 | 4,668 | 3,784 | 5,552 | 0.097 | 6,265 | 5,177 | 7,447 | 0.096 |
| 2006 | 3,435 | 2,643 | 4,227 | 0.118 | 6,241 | 5,236 | 7,364 | 0.092 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C16.–Sitka marine boat sockeye salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 572 | 256 | 888 | 0.282 | 1,969 | 924 | 3,385 | 0.367 |
| 1997 | 634 | 299 | 969 | 0.270 | 2,306 | 762 | 4,481 | 0.481 |
| 1998 | 541 | 198 | 884 | 0.323 | 2,451 | 1,159 | 3,991 | 0.321 |
| 1999 | 5,013 | 2,916 | 7,110 | 0.213 | 5,344 | 3,852 | 8,259 | 0.278 |
| 2000 | 93 | 1 | 185 | 0.505 | 1,021 | 333 | 1,898 | 0.438 |
| 2001 | 22 | 2 | 42 | 0.464 | 1,085 | 374 | 1,961 | 0.412 |
| 2002 | 356 | 31 | 681 | 0.466 | 843 | 332 | 1,445 | 0.364 |
| 2003 | 500 | 231 | 769 | 0.274 | 1,219 | 608 | 1,971 | 0.315 |
| 2004 | 534 | 265 | 803 | 0.257 | 1,723 | 616 | 3,148 | 0.422 |
| 2005 | 344 | 132 | 556 | 0.314 | 1,446 | 688 | 2,354 | 0.320 |
| 2006 | 431 | 80 | 782 | 0.416 | 1,408 | 632 | 2,380 | 0.352 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C17.–Ketchikan marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 2,575 | 2,081 | 3,069 | 0.098 | 4,679 | 3,656 | 5,801 | 0.122 |
| 1997 | 3,179 | 2,595 | 3,763 | 0.094 | 5,472 | 4,501 | 6,566 | 0.102 |
| 1998 | 2,052 | 1,695 | 2,409 | 0.089 | 3,302 | 2,614 | 4,140 | 0.129 |
| 1999 | 4,494 | 3,496 | 5,492 | 0.113 | 8,172 | 6,245 | 9,764 | 0.099 |
| 2000 | 3,428 | 2,620 | 4,236 | 0.120 | 8,048 | 5,915 | 10,954 | 0.184 |
| 2001 | 5,607 | 4,339 | 6,875 | 0.115 | 9,173 | 7,625 | 10,951 | 0.099 |
| 2002 | 7,161 | 6,046 | 8,276 | 0.079 | 10,612 | 8,422 | 13,288 | 0.129 |
| 2003 | 6,535 | 4,718 | 8,352 | 0.142 | 9,982 | 7,920 | 12,521 | 0.130 |
| 2004 | 6,853 | 5,842 | 7,864 | 0.075 | 11,145 | 9,180 | 13,386 | 0.103 |
| 2005 | 10,447 | 8,991 | 11,903 | 0.071 | 14,092 | 11,664 | 16,872 | 0.101 |
| 2006 | 6,663 | 5,320 | 8,006 | 0.103 | 9,268 | 7,767 | 11,122 | 0.102 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C18.–Ketchikan marine boat Pacific halibut harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 11,177 | 9,082 | 13,272 | 0.096 | 16,446 | 14,183 | 18,878 | 0.075 |
| 1997 | 7,983 | 6,403 | 9,563 | 0.101 | 14,457 | 12,447 | 16,755 | 0.081 |
| 1998 | 6,778 | 5,249 | 8,307 | 0.115 | 11,944 | 10,060 | 14,193 | 0.096 |
| 1999 | 5,126 | 4,097 | 6,155 | 0.102 | 11,449 | 9,519 | 13,164 | 0.076 |
| 2000 | 6,039 | 4,740 | 7,338 | 0.110 | 14,685 | 12,635 | 16,953 | 0.079 |
| 2001 | 4,664 | 3,727 | 5,601 | 0.103 | 10,459 | 8,835 | 12,251 | 0.087 |
| 2002 | 7,009 | 5,537 | 8,481 | 0.107 | 11,713 | 9,624 | 14,009 | 0.100 |
| 2003 | 7,138 | 5,784 | 8,492 | 0.097 | 9,090 | 7,596 | 10,856 | 0.099 |
| 2004 | 6,253 | 4,897 | 7,609 | 0.111 | 21,148 | 17,973 | 24,741 | 0.087 |
| 2005 | 13,041 | 10,973 | 15,109 | 0.081 | 17,260 | 14,485 | 20,339 | 0.091 |
| 2006 | 9,883 | 8,503 | 11,263 | 0.071 | 15,545 | 13,182 | 18,343 | 0.092 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C19.–Ketchikan marine boat chum salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 2,624 | 1,813 | 3,435 | 0.158 | 4,240 | 3,100 | 5,640 | 0.168 |
| 1997 | 2,686 | 1,728 | 3,644 | 0.182 | 7,060 | 5,354 | 9,387 | 0.168 |
| 1998 | 7,130 | 4,349 | 9,911 | 0.199 | 11,863 | 9,474 | 14,479 | 0.113 |
| 1999 | 350 | 230 | 470 | 0.175 | 3,297 | 2,266 | 4,480 | 0.183 |
| 2000 | 3,296 | 2,024 | 4,568 | 0.197 | 9,130 | 7,232 | 11,192 | 0.115 |
| 2001 | 3,206 | 1,846 | 4,566 | 0.216 | 5,930 | 4,916 | 7,133 | 0.104 |
| 2002 | 1,966 | 1,096 | 2,836 | 0.226 | 3,456 | 2,628 | 4,437 | 0.145 |
| 2003 | 2,904 | 2,159 | 3,649 | 0.131 | 6,493 | 5,042 | 7,966 | 0.116 |
| 2004 | 3,711 | 1,927 | 5,495 | 0.245 | 7,071 | 5,511 | 8,957 | 0.136 |
| 2005 | 1,297 | 758 | 1,836 | 0.212 | 4,871 | 3,478 | 6,443 | 0.165 |
| 2006 | 712 | 287 | 1,137 | 0.305 | 1,833 | 1,196 | 2,690 | 0.239 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C20.–Ketchikan marine boat pink salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 43,156 | 32,260 | 54,052 | 0.129 | 37,948 | 31,884 | 43,711 | 0.077 |
| 1997 | 13,557 | 9,759 | 17,355 | 0.143 | 16,254 | 13,023 | 20,050 | 0.119 |
| 1998 | 32,740 | 16,672 | 48,808 | 0.250 | 16,580 | 13,416 | 20,169 | 0.110 |
| 1999 | 21,460 | 15,635 | 27,285 | 0.138 | 34,969 | 28,740 | 41,577 | 0.096 |
| 2000 | 17,990 | 8,925 | 27,055 | 0.257 | 24,762 | 21,532 | 28,214 | 0.071 |
| 2001 | 16,341 | 11,692 | 20,990 | 0.145 | 21,465 | 18,070 | 25,202 | 0.089 |
| 2002 | 43,063 | 28,385 | 57,741 | 0.174 | 28,410 | 23,564 | 33,449 | 0.090 |
| 2003 | 34,454 | 21,971 | 46,937 | 0.185 | 24,416 | 20,442 | 28,507 | 0.085 |
| 2004 | 32,612 | 12,775 | 52,449 | 0.310 | 41,070 | 34,576 | 47,611 | 0.081 |
| 2005 | 25,276 | 14,331 | 36,221 | 0.221 | 30,180 | 23,823 | 38,169 | 0.135 |
| 2006 | 10,566 | 5,997 | 15,135 | 0.221 | 9,481 | 7,518 | 11,756 | 0.122 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C21.—Ketchikan marine boat rockfish species harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 5,492 | 4,363 | 6,621 | 0.105 | 8,063 | 6,532 | 9,692 | 0.103 |
| 1997 | 6,514 | 5,111 | 7,917 | 0.110 | 8,704 | 7,087 | 10,575 | 0.110 |
| 1998 | 3,864 | 3,174 | 4,554 | 0.091 | 6,096 | 4,851 | 7,677 | 0.132 |
| 1999 | 3,282 | 2,602 | 3,962 | 0.106 | 12,097 | 8,524 | 13,460 | 0.058 |
| 2000 | 4,784 | 3,706 | 5,862 | 0.115 | 12,447 | 9,438 | 16,319 | 0.159 |
| 2001 | 3,089 | 2,574 | 3,604 | 0.085 | 8,767 | 7,026 | 10,700 | 0.112 |
| 2002 | 3,627 | 2,845 | 4,409 | 0.110 | 7,941 | 5,943 | 10,096 | 0.138 |
| 2003 | 7,126 | 5,685 | 8,567 | 0.103 | 7,888 | 6,253 | 9,897 | 0.130 |
| 2004 | 5,311 | 4,172 | 6,450 | 0.109 | 14,268 | 11,704 | 17,314 | 0.109 |
| 2005 | 11,589 | 9,253 | 13,925 | 0.103 | 13,475 | 10,912 | 16,674 | 0.121 |
| 2006 | 8,168 | 6,126 | 10,210 | 0.128 | 14,670 | 11,531 | 18,191 | 0.122 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C22.—Ketchikan marine boat coho salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 42,220 | 33,337 | 51,103 | 0.107 | 48,742 | 42,120 | 56,683 | 0.083 |
| 1997 | 14,204 | 10,478 | 17,930 | 0.134 | 33,071 | 28,258 | 39,219 | 0.095 |
| 1998 | 24,059 | 18,614 | 29,504 | 0.115 | 30,580 | 23,408 | 39,360 | 0.146 |
| 1999 | 20,719 | 16,142 | 25,296 | 0.113 | 55,757 | 47,150 | 61,637 | 0.054 |
| 2000 | 14,778 | 10,241 | 19,315 | 0.157 | 33,623 | 28,876 | 39,028 | 0.082 |
| 2001 | 26,693 | 21,732 | 31,654 | 0.095 | 50,094 | 43,197 | 58,024 | 0.081 |
| 2002 | 33,889 | 27,964 | 39,814 | 0.089 | 56,353 | 47,670 | 65,848 | 0.086 |
| 2003 | 38,498 | 30,544 | 46,452 | 0.105 | 51,621 | 44,107 | 59,924 | 0.082 |
| 2004 | 24,698 | 17,027 | 32,369 | 0.158 | 64,858 | 55,097 | 76,393 | 0.091 |
| 2005 | 47,940 | 39,222 | 56,658 | 0.093 | 76,527 | 63,670 | 90,436 | 0.093 |
| 2006 | 15,219 | 10,976 | 19,462 | 0.142 | 32,662 | 27,240 | 38,868 | 0.097 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C23.–Ketchikan marine boat lingcod harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 783 | 491 | 1,075 | 0.190 | 2,031 | 1,537 | 2,615 | 0.147 |
| 1997 | 445 | 265 | 625 | 0.206 | 2,111 | 1,545 | 2,758 | 0.156 |
| 1998 | 452 | 274 | 630 | 0.201 | 1,468 | 1,048 | 2,006 | 0.187 |
| 1999 | 296 | 188 | 404 | 0.186 | 1,712 | 1,119 | 2,056 | 0.103 |
| 2000 | 513 | 299 | 727 | 0.213 | 2,891 | 2,134 | 3,812 | 0.162 |
| 2001 | 489 | 338 | 640 | 0.158 | 2,527 | 1,695 | 3,540 | 0.205 |
| 2002 | 617 | 378 | 856 | 0.198 | 1,569 | 1,172 | 1,988 | 0.136 |
| 2003 | 415 | 221 | 609 | 0.239 | 1,096 | 799 | 1,418 | 0.150 |
| 2004 | 255 | 161 | 349 | 0.188 | 2,587 | 2,067 | 3,246 | 0.130 |
| 2005 | 491 | 324 | 658 | 0.173 | 2,267 | 1,655 | 2,964 | 0.157 |
| 2006 | 440 | 258 | 622 | 0.211 | 1,631 | 1,179 | 2,137 | 0.158 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C24.–Ketchikan marine boat sockeye salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 252 | 72 | 432 | 0.364 | 1,219 | 614 | 2,053 | 0.349 |
| 1997 | 21 | 0 | 50 | 0.705 | 1,342 | 588 | 2,542 | 0.456 |
| 1998 | 20 | 0 | 42 | 0.561 | 1,789 | 955 | 2,711 | 0.263 |
| 1999 | 22 | 4 | 40 | 0.417 | 1,966 | 1,007 | 3,026 | 0.275 |
| 2000 | 56 | 9 | 103 | 0.428 | 2,829 | 1,630 | 4,041 | 0.219 |
| 2001 | 17 | 1 | 33 | 0.480 | 1,248 | 750 | 1,831 | 0.238 |
| 2002 | 22 | 0 | 47 | 0.580 | 1,055 | 528 | 1,672 | 0.298 |
| 2003 | 76 | 13 | 139 | 0.423 | 2,920 | 1,323 | 4,835 | 0.335 |
| 2004 | 110 | 10 | 210 | 0.464 | 981 | 523 | 1,515 | 0.278 |
| 2005 | 110 | 0 | 230 | 0.555 | 1,189 | 602 | 1,962 | 0.332 |
| 2006 | 22 | 0 | 46 | 0.557 | 774 | 261 | 1,614 | 0.554 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C25.—Gastineau Hatchery shoreline survey Chinook salmon harvests, 1996-2003.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 783 | 579 | 987 | 0.133 | 1,028 | 452 | 1,778 | 0.372 |
| 1997 | 1,041 | 729 | 1,353 | 0.153 | 1,232 | 456 | 2,326 | 0.453 |
| 1998 | 557 | 428 | 686 | 0.118 | 315 | 138 | 539 | 0.363 |
| 1999 | 243 | 161 | 325 | 0.172 | 457 | 128 | 973 | 0.576 |
| 2000 | 302 | 224 | 380 | 0.132 | 1,365 | 480 | 2,778 | 0.528 |
| 2001 | 672 | 523 | 821 | 0.113 | 730 | 351 | 1,209 | 0.335 |
| 2002 | 1,214 | 920 | 1,508 | 0.124 | 739 | 234 | 1,314 | 0.397 |
| 2003 | 2,467 | 2,008 | 2,926 | 0.095 | 653 | 151 | 1,408 | 0.590 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C26.—Gastineau Hatchery shoreline survey chum salmon harvests, 1996-2003.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 2,274 | 1,784 | 2,764 | 0.110 | 606 | 319 | 946 | 0.286 |
| 1997 | 2,878 | 2,296 | 3,460 | 0.103 | 2,732 | 1,359 | 4,655 | 0.359 |
| 1998 | 2,376 | 1,827 | 2,925 | 0.118 | 1,370 | 302 | 2,858 | 0.554 |
| 1999 | 1,028 | 689 | 1,367 | 0.168 | 855 | 275 | 1,519 | 0.396 |
| 2000 | 1,520 | 1,148 | 1,892 | 0.125 | 734 | 379 | 1,145 | 0.286 |
| 2001 | 1,178 | 841 | 1,515 | 0.146 | 931 | 318 | 1,892 | 0.527 |
| 2002 | 1,707 | 1,113 | 2,301 | 0.178 | 486 | 103 | 1,087 | 0.631 |
| 2003 | 1,942 | 1,521 | 2,363 | 0.111 | 397 | 78 | 882 | 0.623 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C27.—Gastineau Hatchery shoreline survey pink salmon harvests, 1996-2003.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 1,039 | 774 | 1,304 | 0.130 | 281 | 71 | 538 | 0.467 |
| 1997 | 1,605 | 1,144 | 2,066 | 0.147 | 1,859 | 602 | 3,879 | 0.554 |
| 1998 | 5,653 | 4,842 | 6,464 | 0.073 | 1,420 | 679 | 2,409 | 0.355 |
| 1999 | 2,986 | 2,392 | 3,580 | 0.101 | 4,867 | 1,624 | 9,748 | 0.512 |
| 2000 | 2,386 | 1,925 | 2,847 | 0.099 | 1,005 | 533 | 1,581 | 0.292 |
| 2001 | 1,453 | 1,098 | 1,808 | 0.125 | 522 | 205 | 912 | 0.381 |
| 2002 | 1,078 | 592 | 1,564 | 0.230 | 221 | 48 | 445 | 0.517 |
| 2003 | 2,305 | 1,870 | 2,740 | 0.096 | 667 | 323 | 1,099 | 0.330 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C28.—Gastineau Hatchery shoreline survey coho salmon harvests, 1996-2003.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 3,625 | 3,010 | 4,240 | 0.087 | 1,228 | 626 | 1,957 | 0.303 |
| 1997 | 5,108 | 4,087 | 6,129 | 0.102 | 3,070 | 1,249 | 6,044 | 0.494 |
| 1998 | 12,909 | 11,029 | 14,789 | 0.074 | 3,207 | 1,381 | 5,948 | 0.436 |
| 1999 | 7,419 | 6,666 | 8,172 | 0.052 | 6,193 | 4,014 | 8,956 | 0.228 |
| 2000 | 10,521 | 9,614 | 11,428 | 0.044 | 7,685 | 4,901 | 11,246 | 0.236 |
| 2001 | 4,401 | 3,768 | 5,034 | 0.073 | 4,526 | 2,478 | 6,973 | 0.276 |
| 2002 | 12,092 | 10,949 | 13,235 | 0.048 | 2,341 | 1,252 | 3,795 | 0.317 |
| 2003 | 12,474 | 10,779 | 14,169 | 0.069 | 6,849 | 2,914 | 12,850 | 0.447 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C29.—Situk River Chinook salmon harvests, 1998-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1998 | 1,354 | 817 | 1,884 | 0.200 | 1,816 | 1,025 | 2,731 | 0.257 |
| 1999 | 1,345 | 902 | 1,788 | 0.168 | 1,545 | 900 | 2,300 | 0.249 |
| 2000 | 1,176 | 858 | 1,494 | 0.138 | 1,521 | 969 | 2,134 | 0.206 |
| 2001 | 405 | 203 | 607 | 0.254 | 394 | 190 | 647 | 0.328 |
| 2002 | 129 | 62 | 196 | 0.265 | 168 | 12 | 443 | 0.835 |
| 2003 | 1,050 | 817 | 1,283 | 0.113 | 994 | 634 | 1,436 | 0.227 |
| 2004 | 396 | 320 | 472 | 0.098 | 467 | 222 | 712 | 0.268 |
| 2005 | 210 | 143 | 277 | 0.162 | 270 | 88 | 452 | 0.344 |
| 2006 | 66 | 29 | 103 | 0.286 | 64 | 13 | 139 | 0.597 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C30.—Lower Kenai River Chinook salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 10,150 | 8,276 | 12,024 | 0.094 | 11,155 | 9,501 | 12,862 | 0.078 |
| 1997 | 15,278 | 11,820 | 18,736 | 0.115 | 11,244 | 9,625 | 12,936 | 0.077 |
| 1998 | 6,629 | 5,316 | 7,942 | 0.101 | 5,394 | 4,281 | 6,628 | 0.117 |
| 1999 | 17,561 | 13,903 | 21,219 | 0.106 | 12,982 | 11,166 | 14,992 | 0.079 |
| 2000 | 13,214 | 10,825 | 15,603 | 0.092 | 12,787 | 11,193 | 14,521 | 0.069 |
| 2001 | 15,164 | 12,034 | 18,294 | 0.105 | 11,474 | 9,692 | 13,314 | 0.082 |
| 2002 | 11,858 | 9,756 | 13,960 | 0.090 | 8,371 | 6,788 | 10,071 | 0.104 |
| 2003 | 15,785 | 11,605 | 19,965 | 0.135 | 13,235 | 11,250 | 15,269 | 0.078 |
| 2004 | 16,779 | 13,228 | 20,330 | 0.108 | 13,746 | 11,445 | 16,315 | 0.095 |
| 2005 | 18,189 | 14,169 | 22,209 | 0.113 | 16,620 | 14,069 | 19,303 | 0.082 |
| 2006 | 16,587 | 13,045 | 20,129 | 0.109 | 14,919 | 12,528 | 17,422 | 0.086 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C31.—Lower Kenai River non-guided Chinook salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 7,038 | 5,932 | 8,144 | 0.080 | 6,667 | 5,746 | 7,609 | 0.072 |
| 1997 | 9,516 | 7,390 | 11,642 | 0.114 | 6,713 | 5,826 | 7,648 | 0.071 |
| 1998 | 4,066 | 3,303 | 4,829 | 0.096 | 3,124 | 2,532 | 3,777 | 0.107 |
| 1999 | 12,146 | 10,086 | 14,206 | 0.087 | 6,472 | 5,610 | 7,486 | 0.080 |
| 2000 | 7,445 | 6,095 | 8,795 | 0.093 | 6,360 | 5,553 | 7,238 | 0.070 |
| 2001 | 9,520 | 7,493 | 11,547 | 0.109 | 5,277 | 4,453 | 6,189 | 0.088 |
| 2002 | 6,822 | 5,818 | 7,826 | 0.075 | 3,823 | 3,070 | 4,650 | 0.110 |
| 2003 | 8,957 | 6,277 | 11,637 | 0.153 | 6,385 | 5,425 | 7,361 | 0.078 |
| 2004 | 11,003 | 8,930 | 13,076 | 0.096 | 6,429 | 5,419 | 7,506 | 0.085 |
| 2005 | 10,645 | 8,254 | 13,036 | 0.115 | 7,518 | 6,366 | 8,670 | 0.078 |
| 2006 | 6,728 | 5,331 | 8,125 | 0.106 | 7,848 | 6,617 | 9,086 | 0.080 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C32.—Lower Kenai River guided Chinook salmon harvests, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 3,112 | 2,344 | 3,880 | 0.126 | 4,488 | 3,755 | 5,253 | 0.087 |
| 1997 | 5,762 | 4,430 | 7,094 | 0.118 | 4,531 | 3,799 | 5,288 | 0.085 |
| 1998 | 2,563 | 2,013 | 3,113 | 0.109 | 2,270 | 1,749 | 2,851 | 0.131 |
| 1999 | 5,415 | 3,817 | 7,013 | 0.151 | 6,510 | 5,556 | 7,506 | 0.078 |
| 2000 | 5,769 | 4,730 | 6,808 | 0.092 | 6,427 | 5,640 | 7,283 | 0.068 |
| 2001 | 5,644 | 4,541 | 6,747 | 0.100 | 6,197 | 5,239 | 7,125 | 0.076 |
| 2002 | 5,036 | 3,938 | 6,134 | 0.111 | 4,548 | 3,718 | 5,421 | 0.098 |
| 2003 | 6,828 | 5,328 | 8,328 | 0.112 | 6,850 | 5,825 | 7,908 | 0.079 |
| 2004 | 5,776 | 4,298 | 7,254 | 0.131 | 7,317 | 6,026 | 8,809 | 0.104 |
| 2005 | 7,544 | 5,915 | 9,173 | 0.110 | 9,102 | 7,703 | 10,633 | 0.086 |
| 2006 | 9,859 | 7,715 | 12,003 | 0.111 | 7,071 | 5,911 | 8,336 | 0.091 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C33.–Lower Kenai River Chinook salmon harvests prior to July 1, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 4,166 | 3,409 | 4,923 | 0.093 | 3,782 | 3,088 | 4,535 | 0.102 |
| 1997 | 4,942 | 3,451 | 6,433 | 0.154 | 3,805 | 3,143 | 4,501 | 0.093 |
| 1998 | 648 | 415 | 881 | 0.183 | 1,193 | 857 | 1,578 | 0.165 |
| 1999 | 5,534 | 4,544 | 6,524 | 0.091 | 4,732 | 3,919 | 5,617 | 0.095 |
| 2000 | 1,149 | 751 | 1,547 | 0.177 | 1,723 | 1,318 | 2,163 | 0.130 |
| 2001 | 1,428 | 985 | 1,871 | 0.158 | 1,757 | 1,301 | 2,237 | 0.139 |
| 2002 | 376 | 158 | 594 | 0.296 | 943 | 577 | 1,347 | 0.219 |
| 2003 | 1,948 | 897 | 2,999 | 0.275 | 1,982 | 1,462 | 2,560 | 0.149 |
| 2004 | 2,285 | 1,427 | 3,143 | 0.192 | 2,853 | 2,205 | 3,590 | 0.132 |
| 2005 | 2,877 | 2,054 | 3,700 | 0.146 | 3,790 | 2,986 | 4,644 | 0.115 |
| 2006 | 3,397 | 2,346 | 4,448 | 0.158 | 3,528 | 2,753 | 4,393 | 0.125 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C34.–Lower Kenai River Chinook salmon harvests after June 30, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 5,984 | 4,867 | 7,101 | 0.095 | 7,373 | 6,413 | 8,327 | 0.066 |
| 1997 | 10,336 | 8,369 | 12,303 | 0.097 | 7,439 | 6,482 | 8,435 | 0.068 |
| 1998 | 5,981 | 4,901 | 7,061 | 0.092 | 4,201 | 3,424 | 5,050 | 0.103 |
| 1999 | 12,027 | 9,359 | 14,695 | 0.113 | 8,250 | 7,247 | 9,375 | 0.070 |
| 2000 | 12,065 | 10,074 | 14,056 | 0.084 | 11,064 | 9,875 | 12,358 | 0.060 |
| 2001 | 13,736 | 11,049 | 16,423 | 0.100 | 9,717 | 8,391 | 11,077 | 0.071 |
| 2002 | 11,482 | 9,598 | 13,366 | 0.084 | 7,428 | 6,211 | 8,724 | 0.089 |
| 2003 | 13,837 | 10,708 | 16,966 | 0.115 | 11,253 | 9,788 | 12,709 | 0.066 |
| 2004 | 14,494 | 11,801 | 17,187 | 0.095 | 10,893 | 9,240 | 12,725 | 0.086 |
| 2005 | 15,312 | 12,115 | 18,509 | 0.107 | 12,830 | 11,083 | 14,659 | 0.073 |
| 2006 | 13,190 | 10,699 | 15,681 | 0.096 | 11,391 | 9,775 | 13,029 | 0.073 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C35.–Lower Kenai River non-guided Chinook salmon harvests prior to July 1, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 3,185 | 2,671 | 3,699 | 0.082 | 2,256 | 1,872 | 2,668 | 0.093 |
| 1997 | 3,660 | 2,490 | 4,830 | 0.163 | 2,288 | 1,911 | 2,683 | 0.088 |
| 1998 | 491 | 332 | 650 | 0.165 | 616 | 457 | 804 | 0.156 |
| 1999 | 4,541 | 3,818 | 5,264 | 0.081 | 2,327 | 1,929 | 2,784 | 0.100 |
| 2000 | 860 | 576 | 1,144 | 0.168 | 795 | 597 | 1,008 | 0.137 |
| 2001 | 1,280 | 915 | 1,645 | 0.145 | 765 | 551 | 1,008 | 0.162 |
| 2002 | 285 | 132 | 438 | 0.274 | 213 | 82 | 370 | 0.376 |
| 2003 | 1,320 | 622 | 2,018 | 0.270 | 850 | 608 | 1,114 | 0.158 |
| 2004 | 1,512 | 893 | 2,131 | 0.209 | 897 | 638 | 1,186 | 0.164 |
| 2005 | 2,226 | 1,618 | 2,834 | 0.139 | 2,167 | 1,754 | 2,609 | 0.104 |
| 2006 | 833 | 533 | 1,133 | 0.184 | 1,163 | 862 | 1,474 | 0.136 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C36.–Lower Kenai River guided Chinook salmon harvests prior to July 1, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 981 | 738 | 1,224 | 0.126 | 1,526 | 1,216 | 1,867 | 0.114 |
| 1997 | 1,282 | 961 | 1,603 | 0.128 | 1,517 | 1,232 | 1,818 | 0.101 |
| 1998 | 157 | 83 | 231 | 0.240 | 577 | 400 | 774 | 0.174 |
| 1999 | 993 | 726 | 1,260 | 0.137 | 2,405 | 1,990 | 2,833 | 0.091 |
| 2000 | 289 | 175 | 403 | 0.201 | 928 | 721 | 1,155 | 0.125 |
| 2001 | 148 | 70 | 226 | 0.269 | 992 | 750 | 1,229 | 0.122 |
| 2002 | 91 | 26 | 156 | 0.364 | 730 | 495 | 977 | 0.173 |
| 2003 | 628 | 275 | 981 | 0.287 | 1,132 | 854 | 1,446 | 0.142 |
| 2004 | 773 | 534 | 1,012 | 0.158 | 1,956 | 1,567 | 2,404 | 0.117 |
| 2005 | 651 | 435 | 867 | 0.169 | 1,623 | 1,232 | 2,035 | 0.130 |
| 2006 | 2,564 | 1,813 | 3,315 | 0.149 | 2,365 | 1,891 | 2,919 | 0.120 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C37.—Lower Kenai River non-guided Chinook salmon harvests after June 30, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 3,853 | 3,261 | 4,445 | 0.078 | 4,411 | 3,874 | 4,941 | 0.061 |
| 1997 | 5,856 | 4,900 | 6,812 | 0.083 | 4,425 | 3,915 | 4,965 | 0.062 |
| 1998 | 3,575 | 2,971 | 4,179 | 0.086 | 2,508 | 2,075 | 2,973 | 0.095 |
| 1999 | 7,605 | 6,268 | 8,942 | 0.090 | 4,145 | 3,681 | 4,702 | 0.069 |
| 2000 | 6,585 | 5,519 | 7,651 | 0.083 | 5,565 | 4,956 | 6,230 | 0.061 |
| 2001 | 8,240 | 6,578 | 9,902 | 0.103 | 4,512 | 3,902 | 5,181 | 0.076 |
| 2002 | 6,537 | 5,686 | 7,388 | 0.066 | 3,610 | 2,988 | 4,280 | 0.095 |
| 2003 | 7,637 | 5,655 | 9,619 | 0.132 | 5,535 | 4,817 | 6,247 | 0.066 |
| 2004 | 9,491 | 8,037 | 10,945 | 0.078 | 5,532 | 4,781 | 6,320 | 0.073 |
| 2005 | 8,419 | 6,635 | 10,203 | 0.108 | 5,351 | 4,612 | 6,061 | 0.068 |
| 2006 | 5,895 | 4,797 | 6,993 | 0.095 | 6,685 | 5,755 | 7,612 | 0.071 |

^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

Appendix C38.—Lower Kenai River guided Chinook salmon harvests after June 30, 1996-2006.

| Year | Onsite Survey ^a | | | | SWHS ^b | | | |
|------|----------------------------|-----------------------|-----------------------|-------|-------------------|----------|----------|-------|
| | Harvest | Lower CI ^c | Upper CI ^d | CV | Harvest | Lower CI | Upper CI | CV |
| 1996 | 2,131 | 1,606 | 2,656 | 0.126 | 2,962 | 2,539 | 3,386 | 0.073 |
| 1997 | 4,480 | 3,469 | 5,491 | 0.115 | 3,014 | 2,567 | 3,470 | 0.077 |
| 1998 | 2,406 | 1,930 | 2,882 | 0.101 | 1,693 | 1,349 | 2,077 | 0.116 |
| 1999 | 4,422 | 3,091 | 5,753 | 0.154 | 4,105 | 3,566 | 4,673 | 0.071 |
| 2000 | 5,480 | 4,555 | 6,405 | 0.086 | 5,499 | 4,919 | 6,128 | 0.058 |
| 2001 | 5,496 | 4,471 | 6,521 | 0.095 | 5,205 | 4,489 | 5,896 | 0.068 |
| 2002 | 4,945 | 3,912 | 5,978 | 0.107 | 3,818 | 3,223 | 4,444 | 0.084 |
| 2003 | 6,200 | 5,053 | 7,347 | 0.094 | 5,718 | 4,971 | 6,462 | 0.066 |
| 2004 | 5,003 | 3,764 | 6,242 | 0.126 | 5,361 | 4,459 | 6,405 | 0.099 |
| 2005 | 6,893 | 5,480 | 8,306 | 0.105 | 7,479 | 6,471 | 8,598 | 0.076 |
| 2006 | 7,295 | 5,901 | 8,689 | 0.097 | 4,706 | 4,020 | 5,417 | 0.077 |

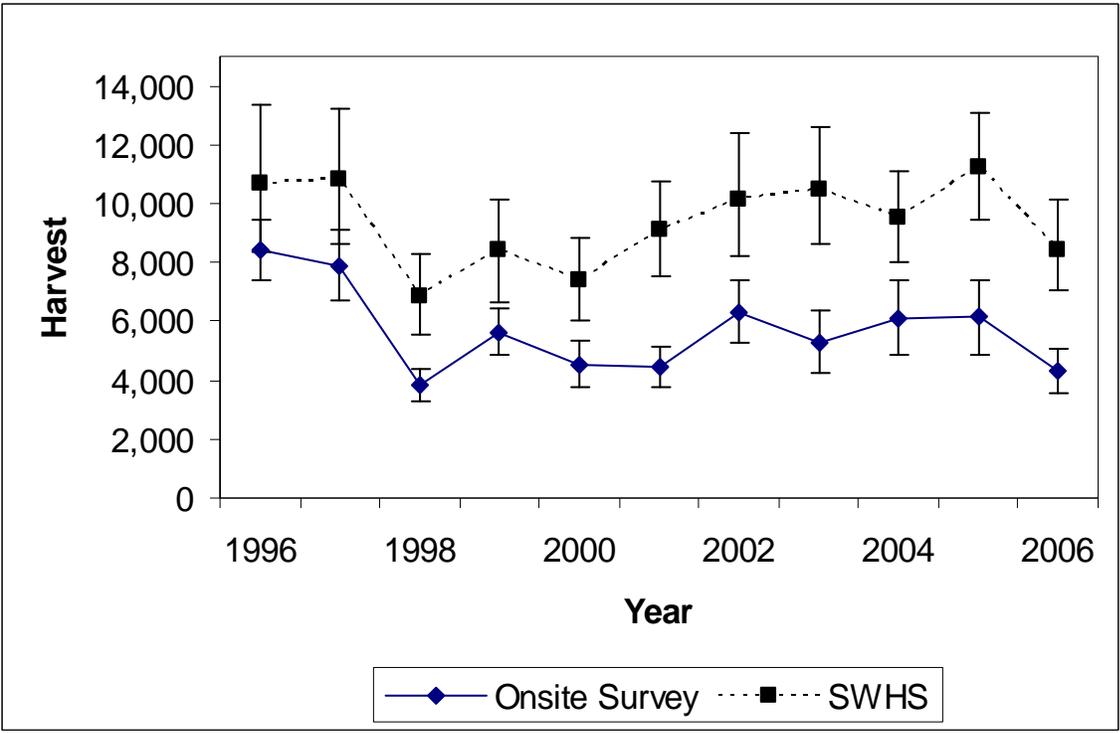
^a Onsite creel survey (see Appendix A for data source of onsite survey).

^b Statewide Harvest Survey (see list of SWHS site codes used in Appendix B).

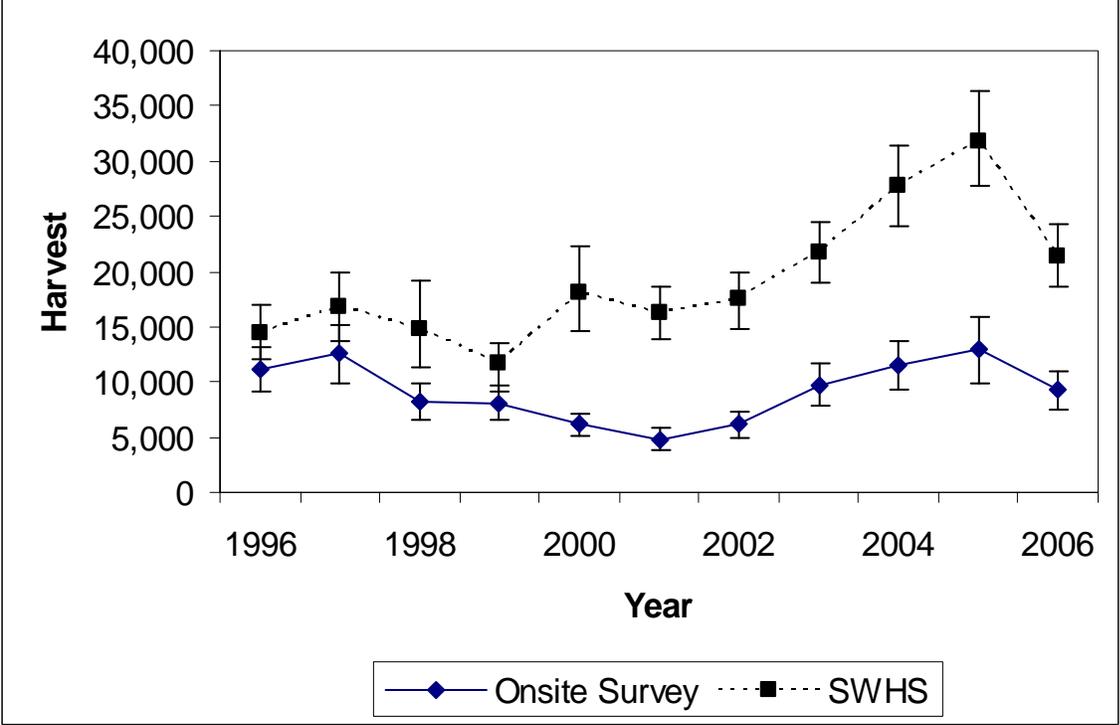
^c Lower 95% confidence interval.

^d Upper 95% confidence interval.

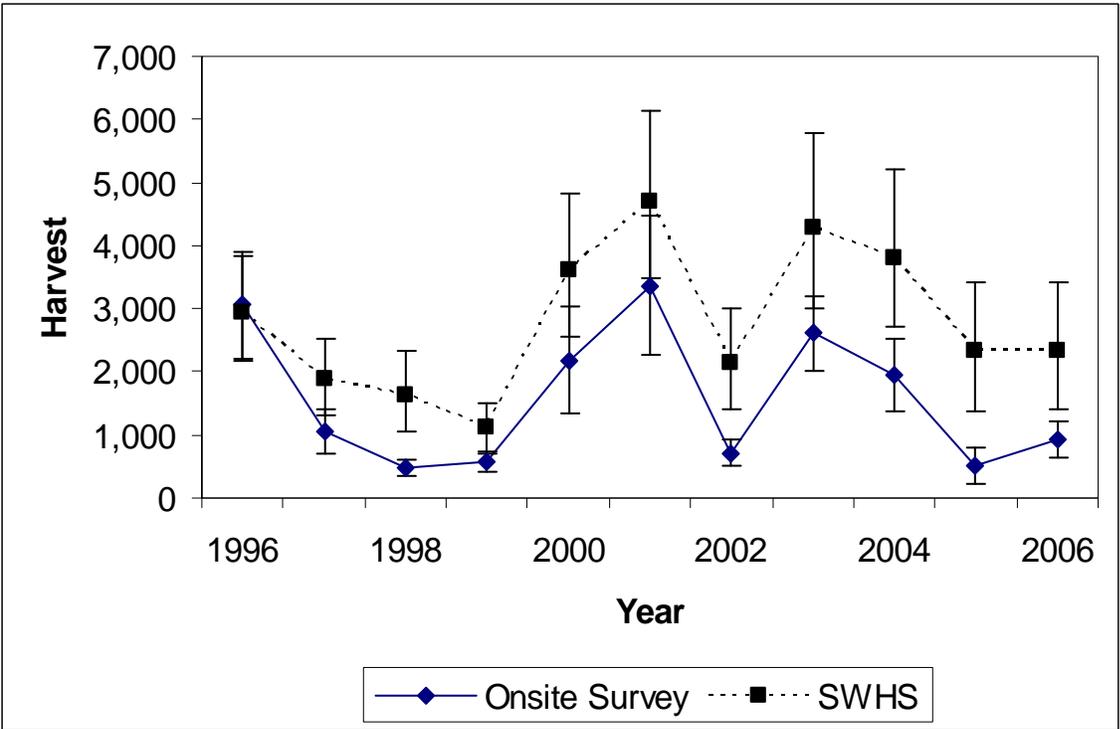
APPENDIX D
PLOTS COMPARING HARVEST ESTIMATES FROM
THE SWHS AND ONSITE SURVEYS



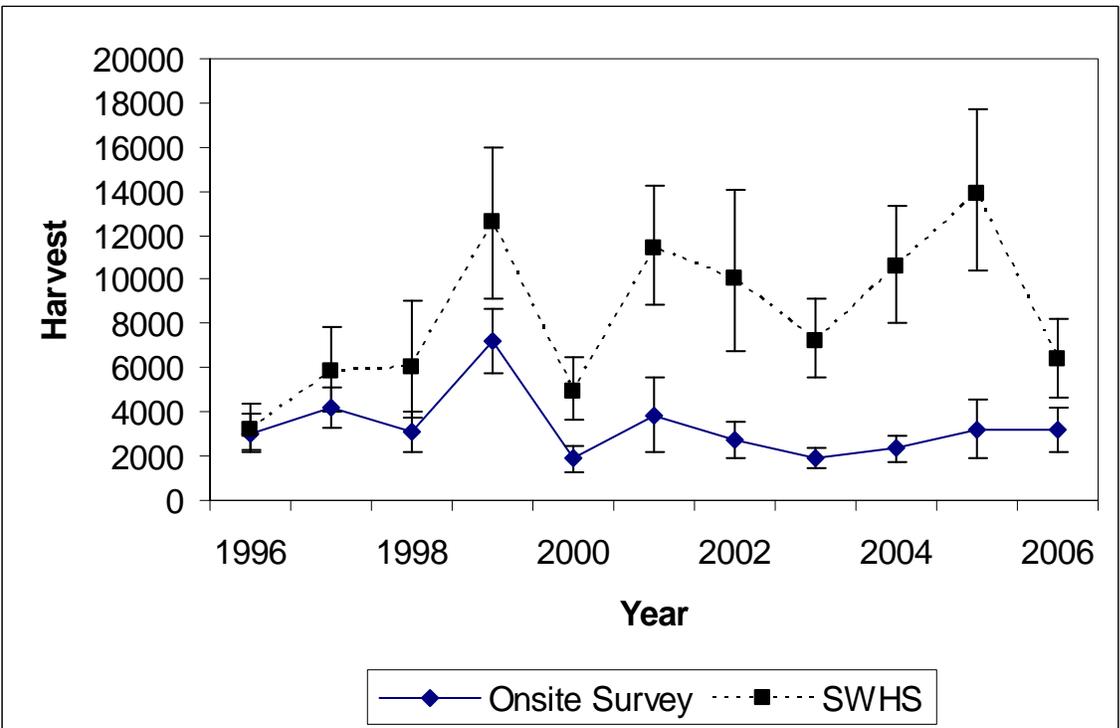
Appendix D1.—Juneau marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



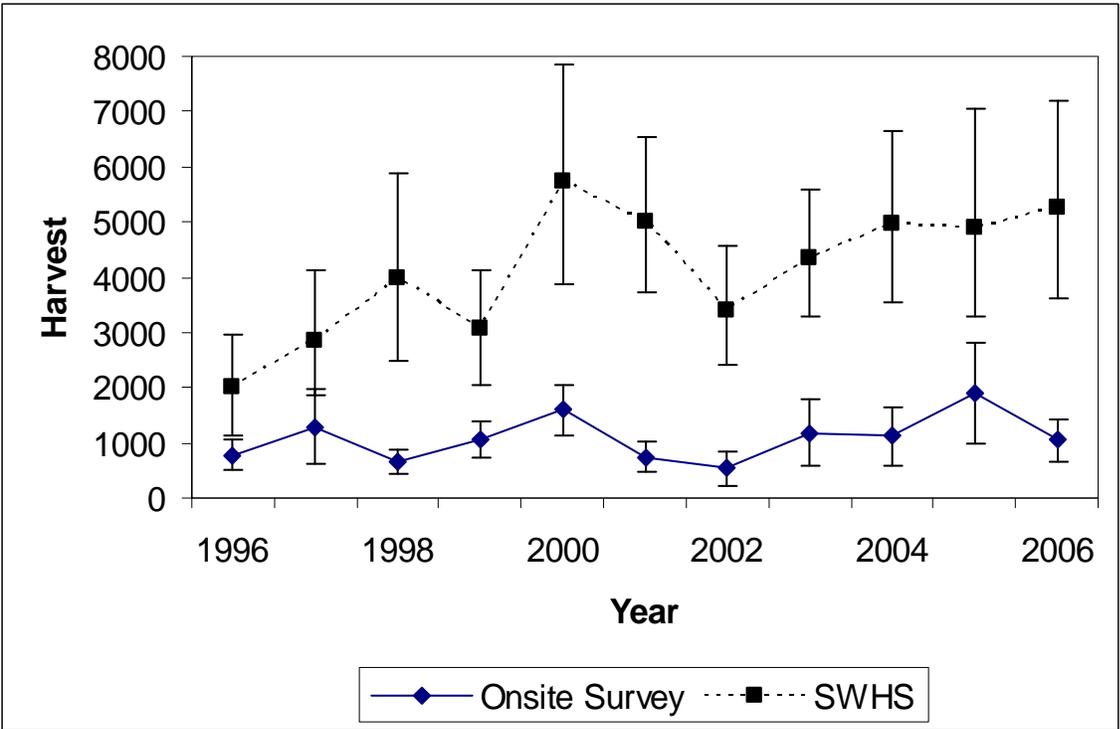
Appendix D2.—Juneau marine boat Pacific halibut harvests, 1996-2006. Error bars are 95% confidence intervals.



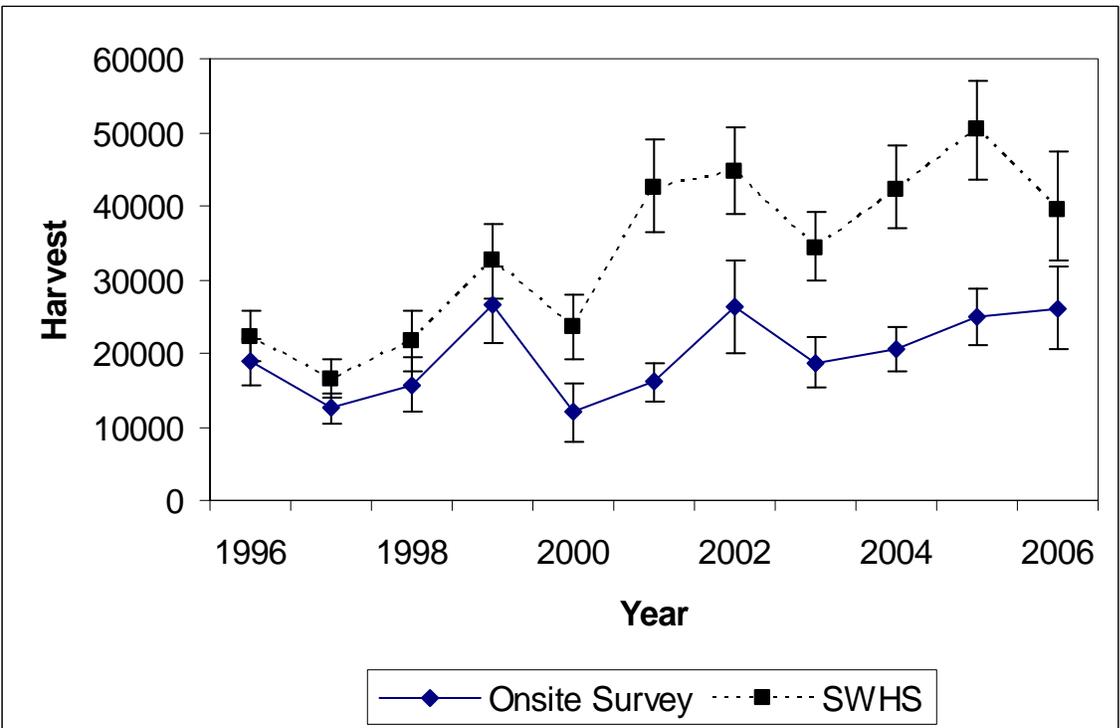
Appendix D3.—Juneau marine boat chum salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



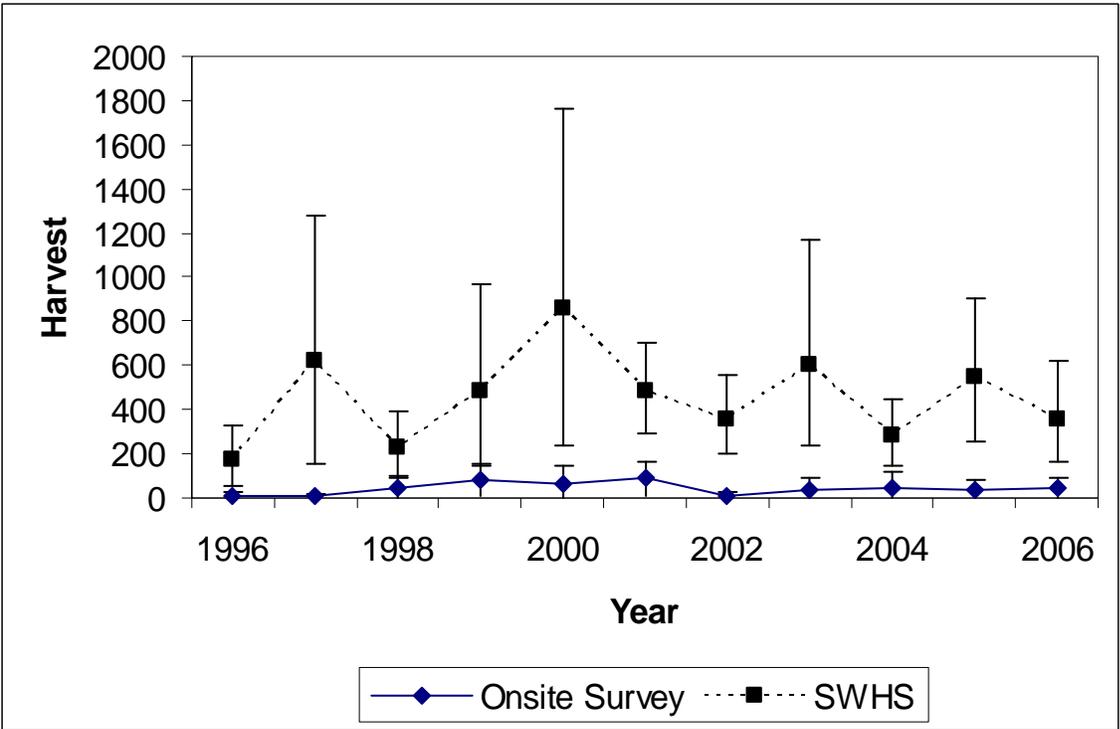
Appendix D4.—Juneau marine boat pink salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



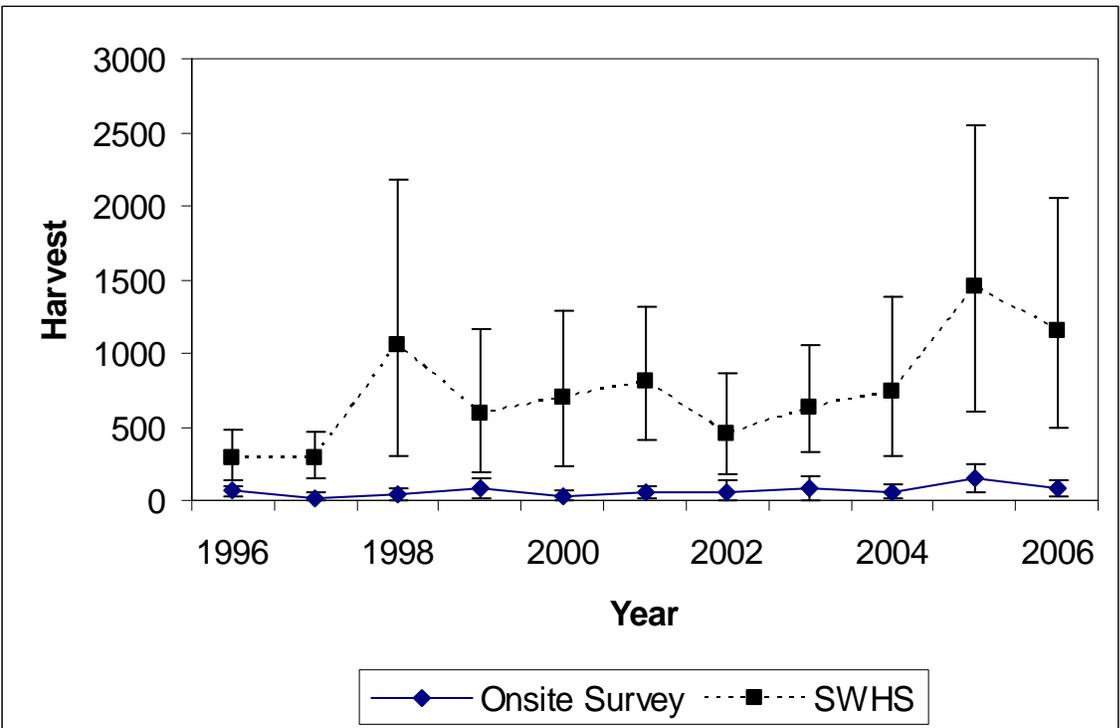
Appendix D5.—Juneau marine boat rockfish species harvests, 1996-2006. Error bars are 95% confidence intervals.



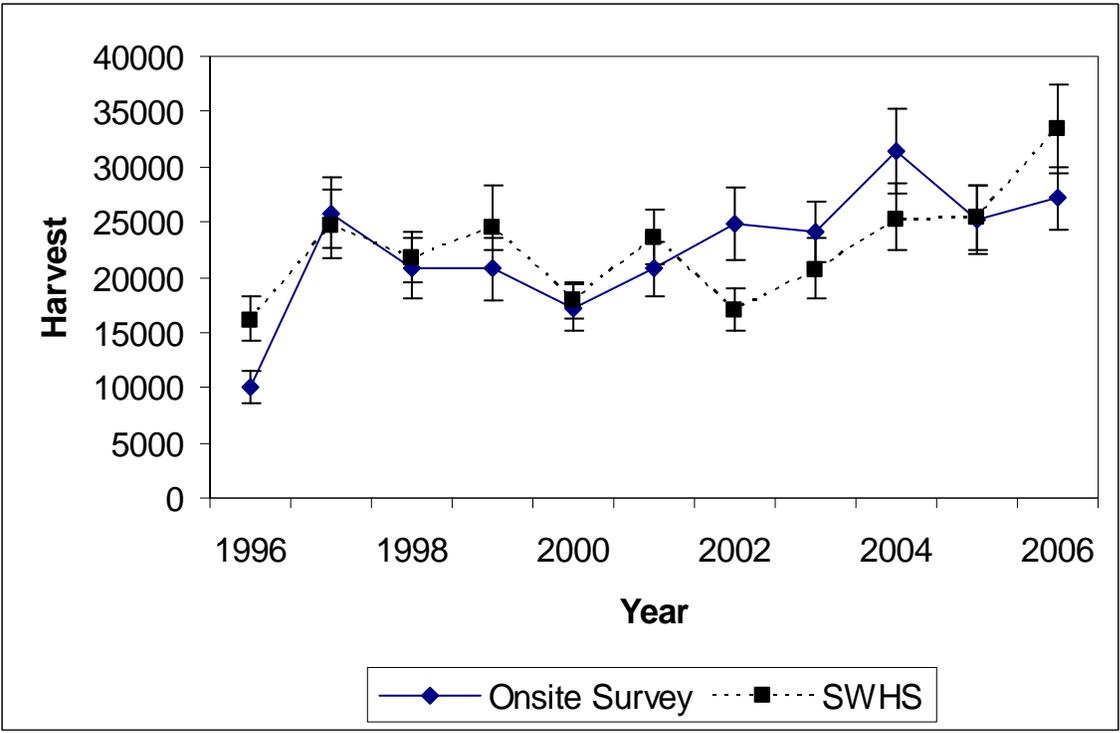
Appendix D6.—Juneau marine boat coho salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



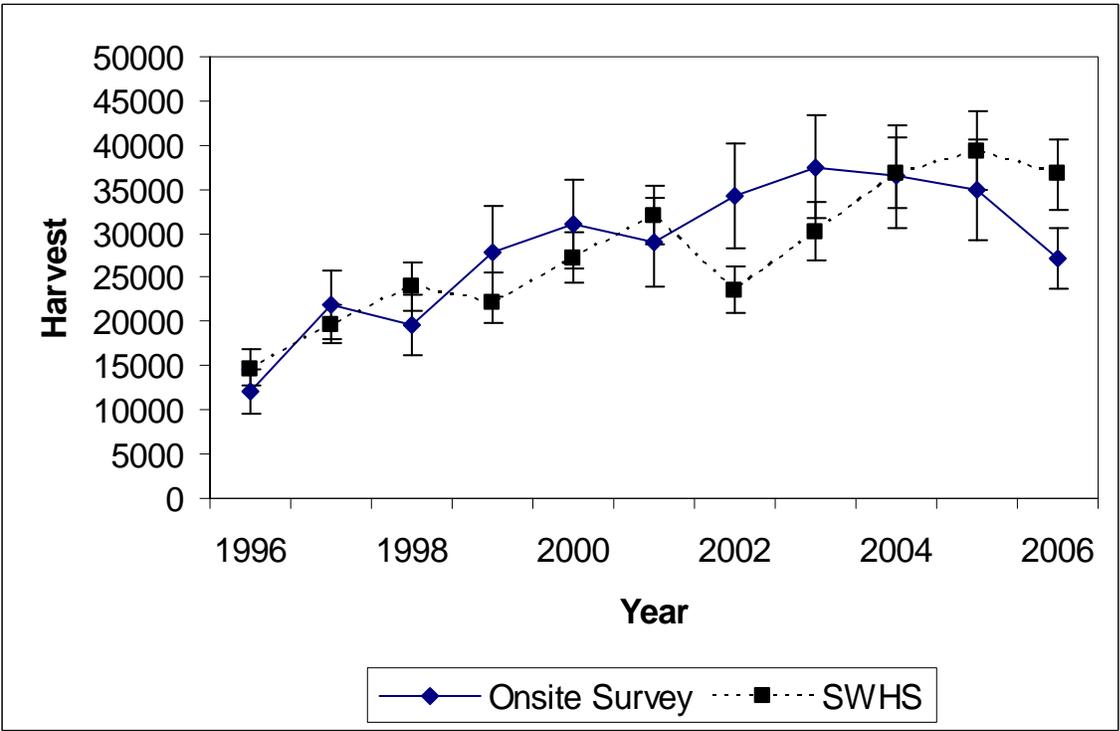
Appendix D7.—Juneau marine boat lingcod harvests, 1996-2006. Error bars are 95% confidence intervals.



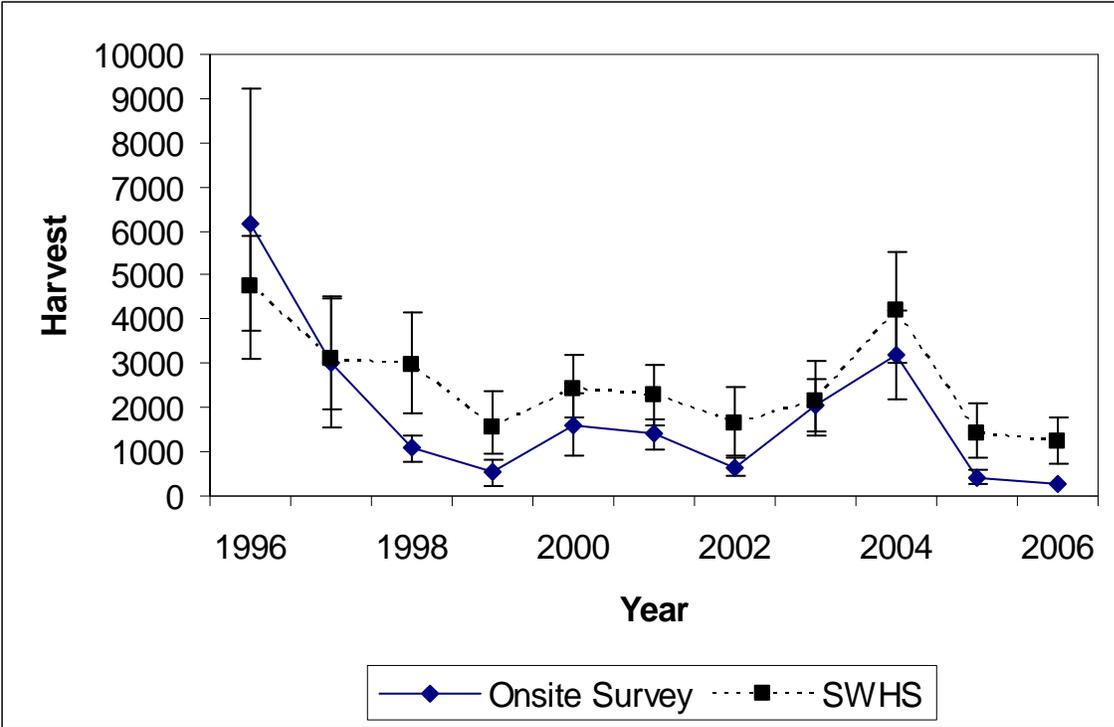
Appendix D8.—Juneau marine boat sockeye salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



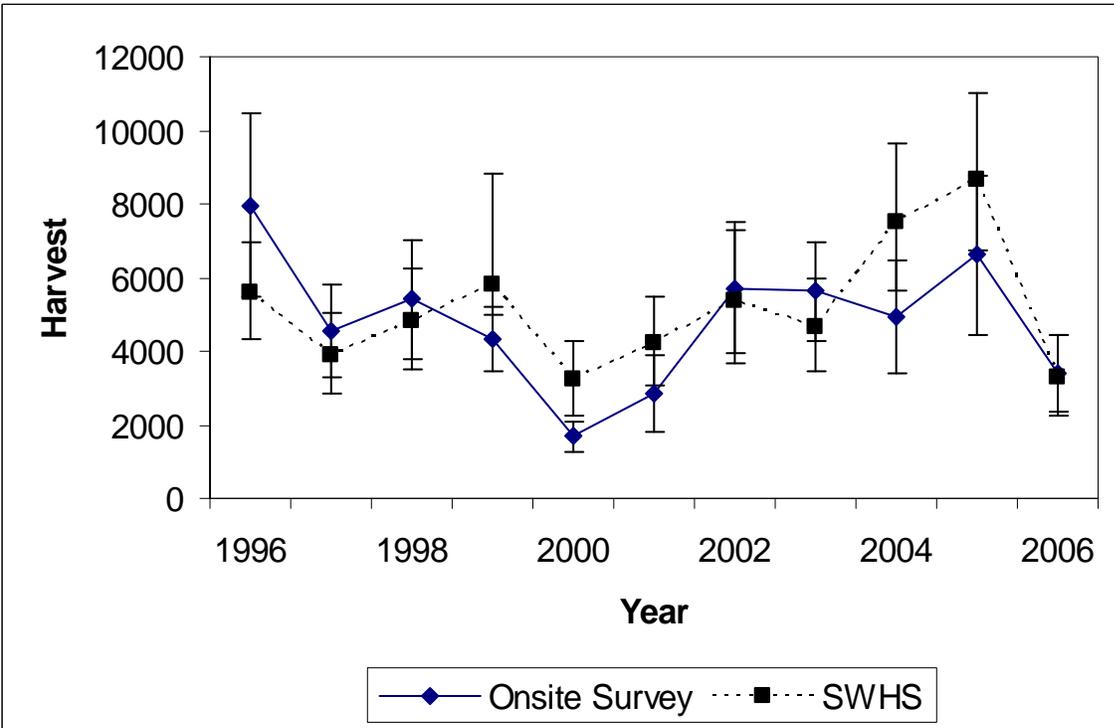
Appendix D9.—Sitka marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



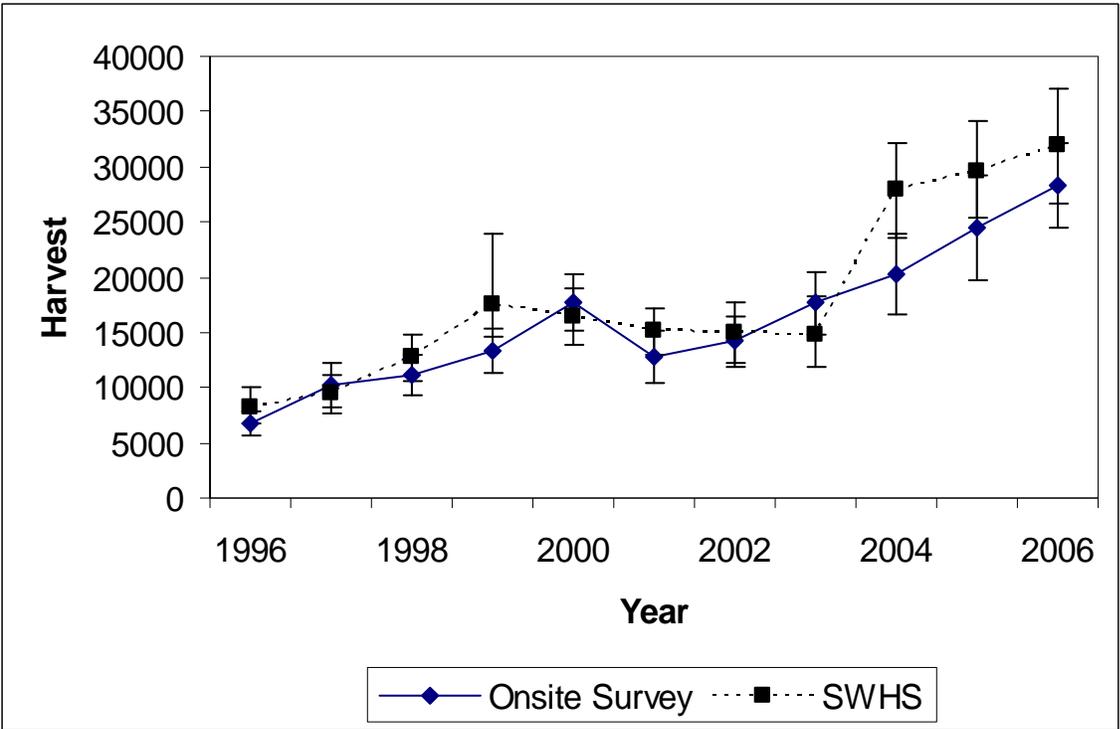
Appendix D10.—Sitka marine boat Pacific halibut harvests, 1996-2006. Error bars are 95% confidence intervals.



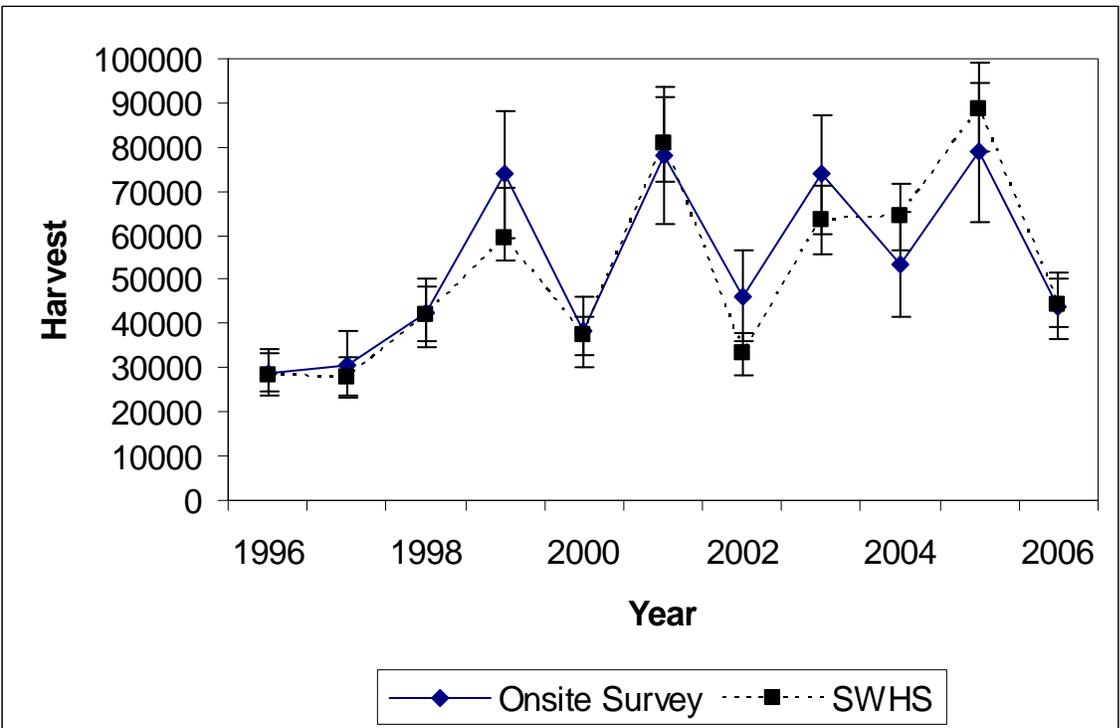
Appendix D11.—Sitka marine boat chum salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



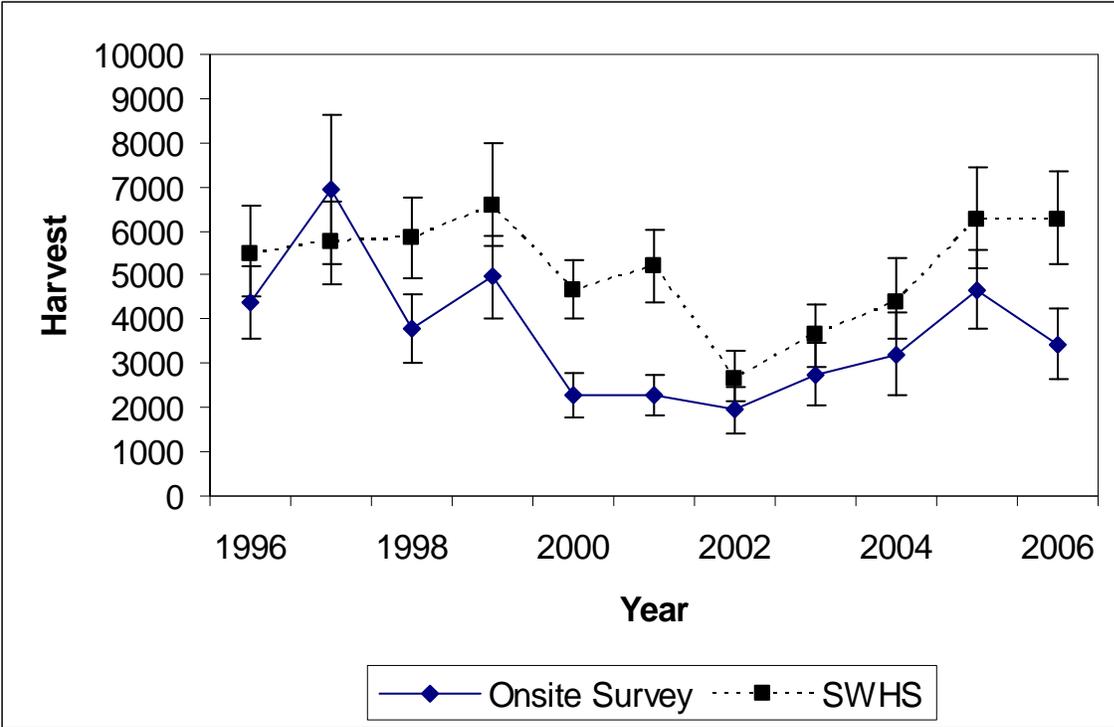
Appendix D12.—Sitka marine boat pink salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



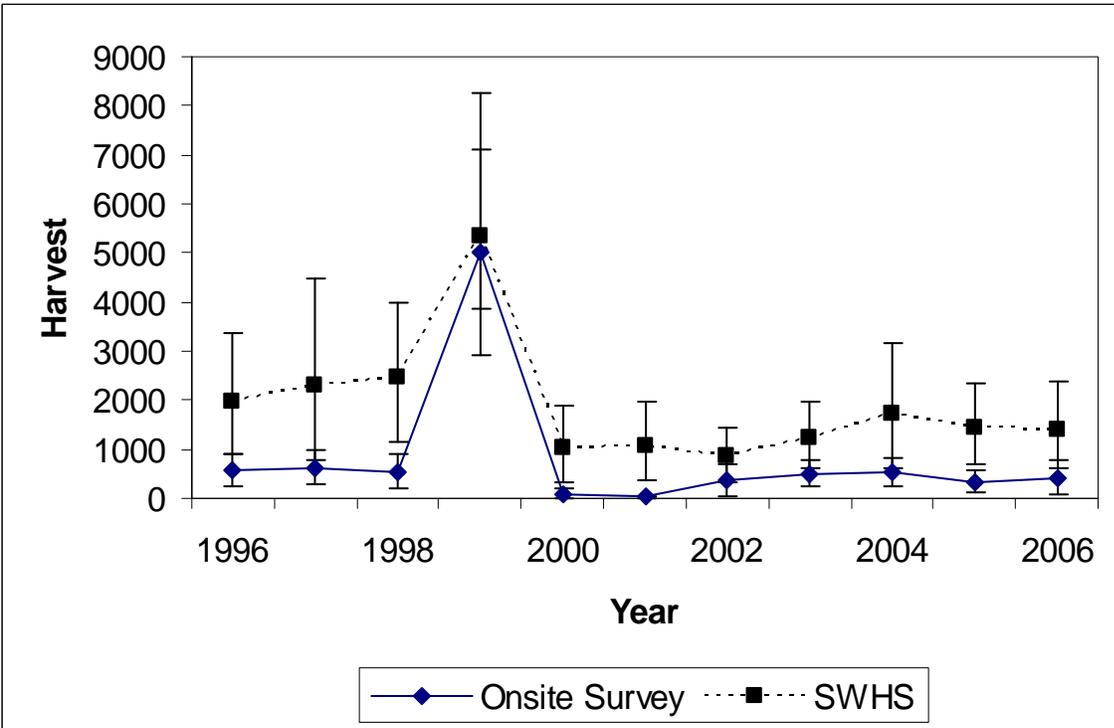
Appendix D13.—Sitka marine boat rockfish species harvests, 1996-2006. Error bars are 95% confidence intervals.



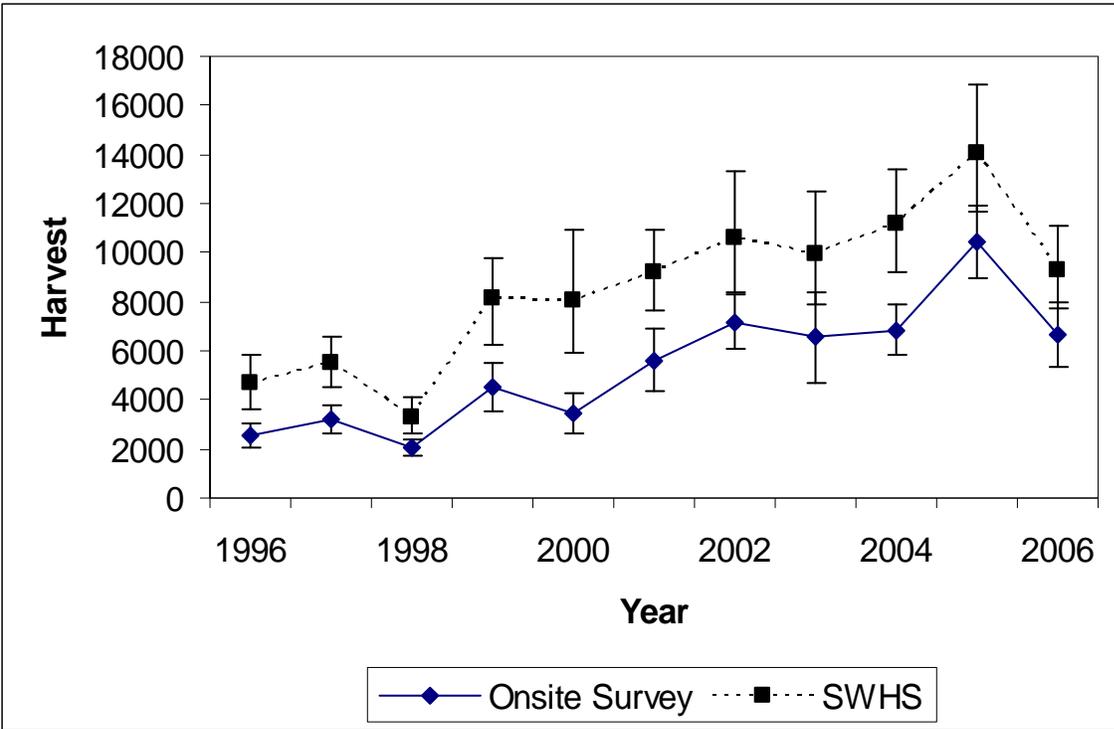
Appendix D14.—Sitka marine boat coho salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



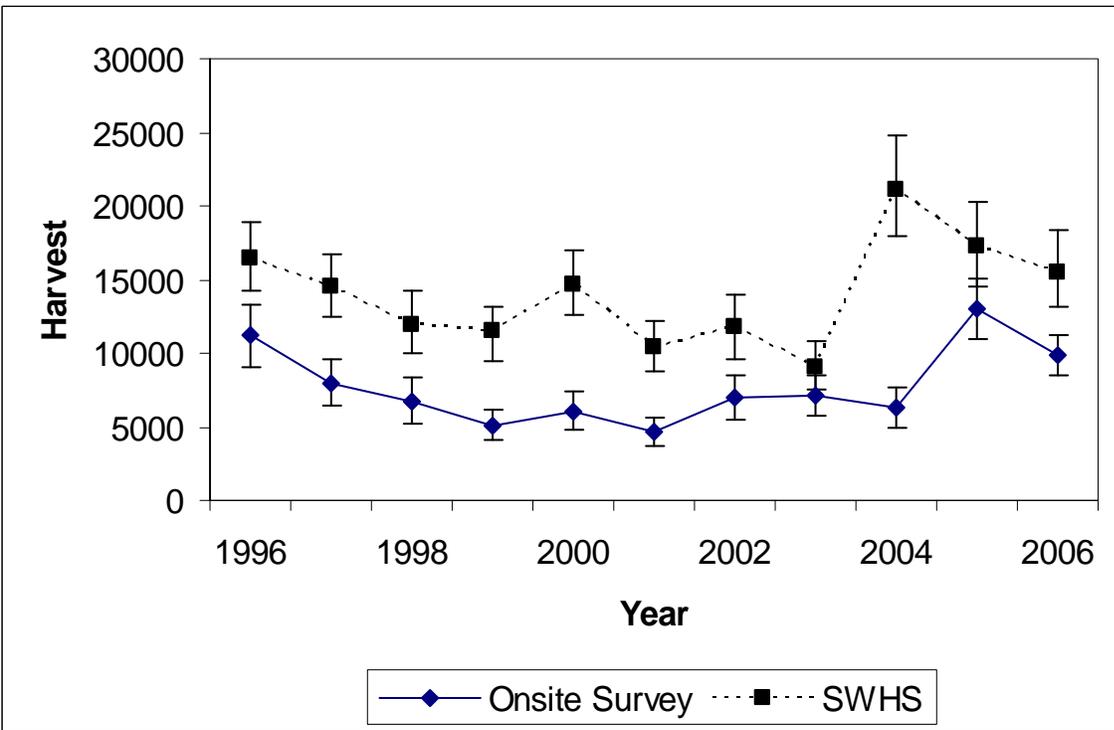
Appendix D15.—Sitka marine boat lingcod harvests, 1996-2006. Error bars are 95% confidence intervals.



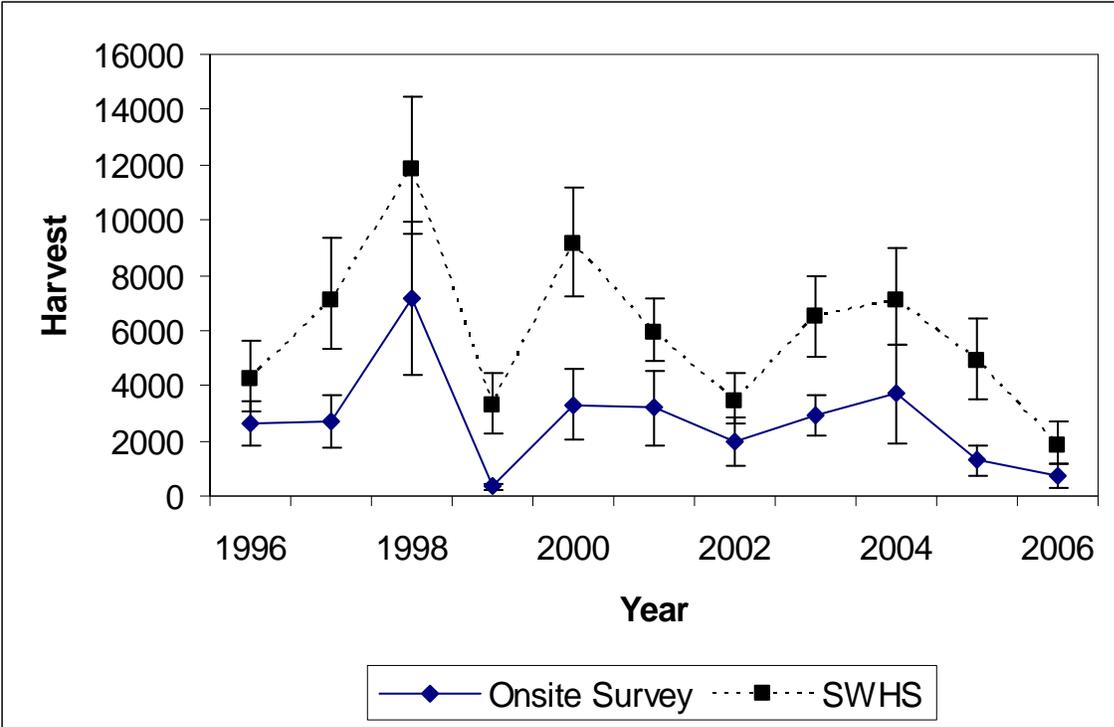
Appendix D16.—Sitka marine boat sockeye salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



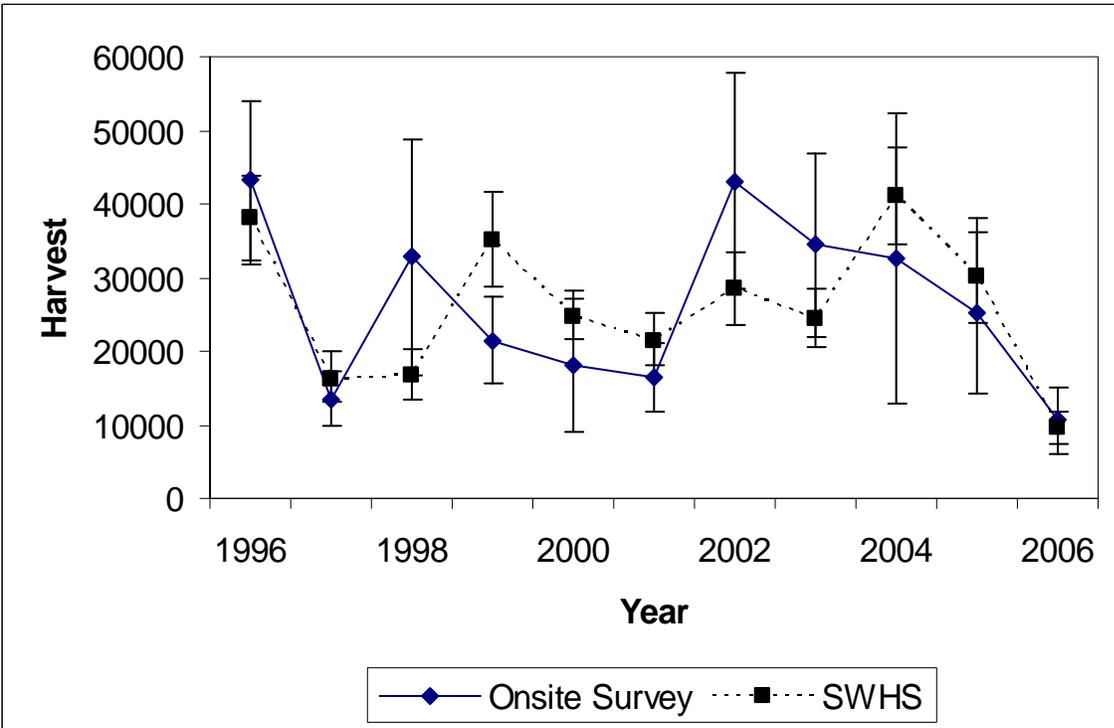
Appendix D17.—Ketchikan marine boat large (28 inches or greater) Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



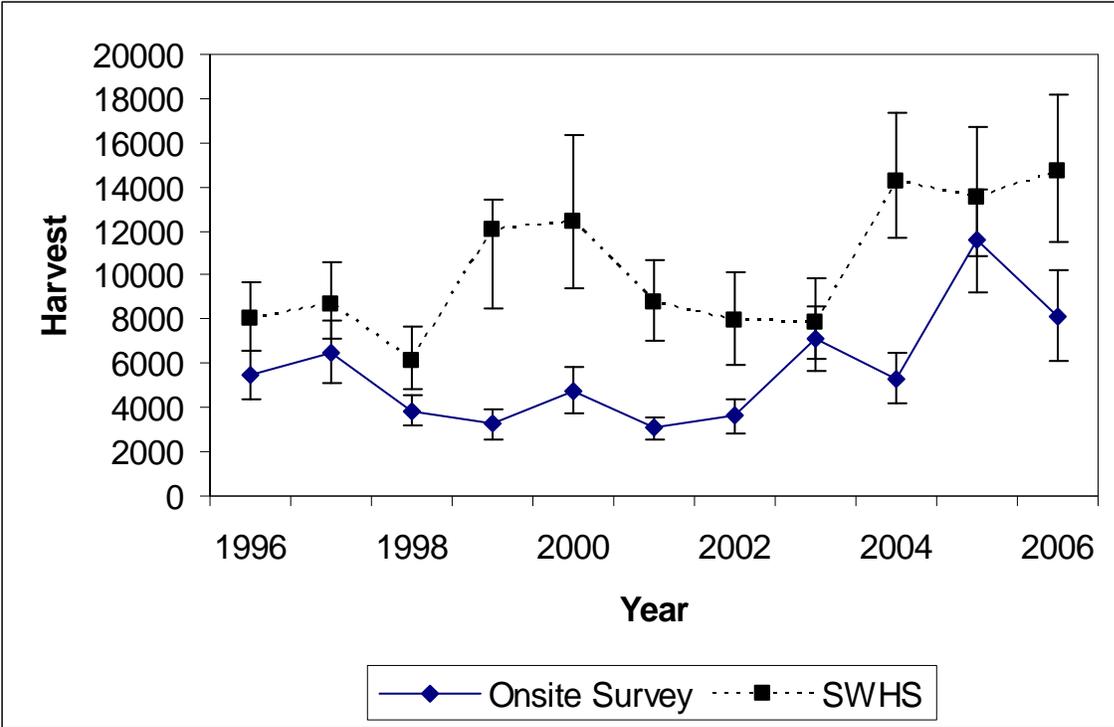
Appendix D18.—Ketchikan marine boat Pacific halibut harvests, 1996-2006. Error bars are 95% confidence intervals.



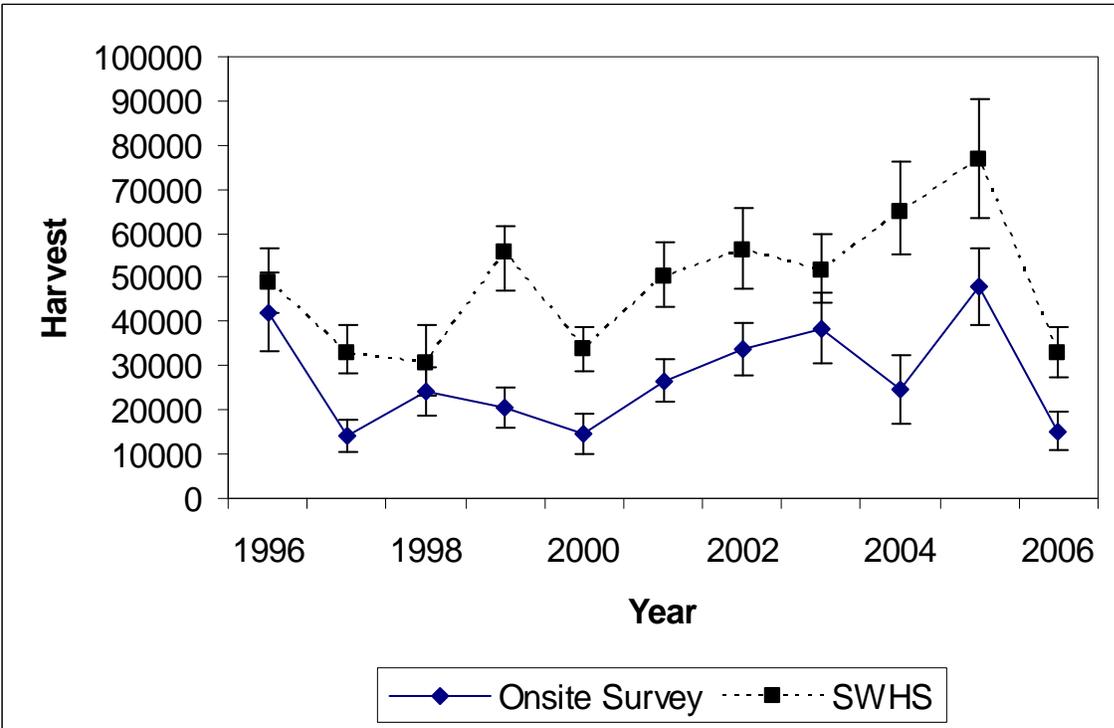
Appendix D19.—Ketchikan marine boat chum salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



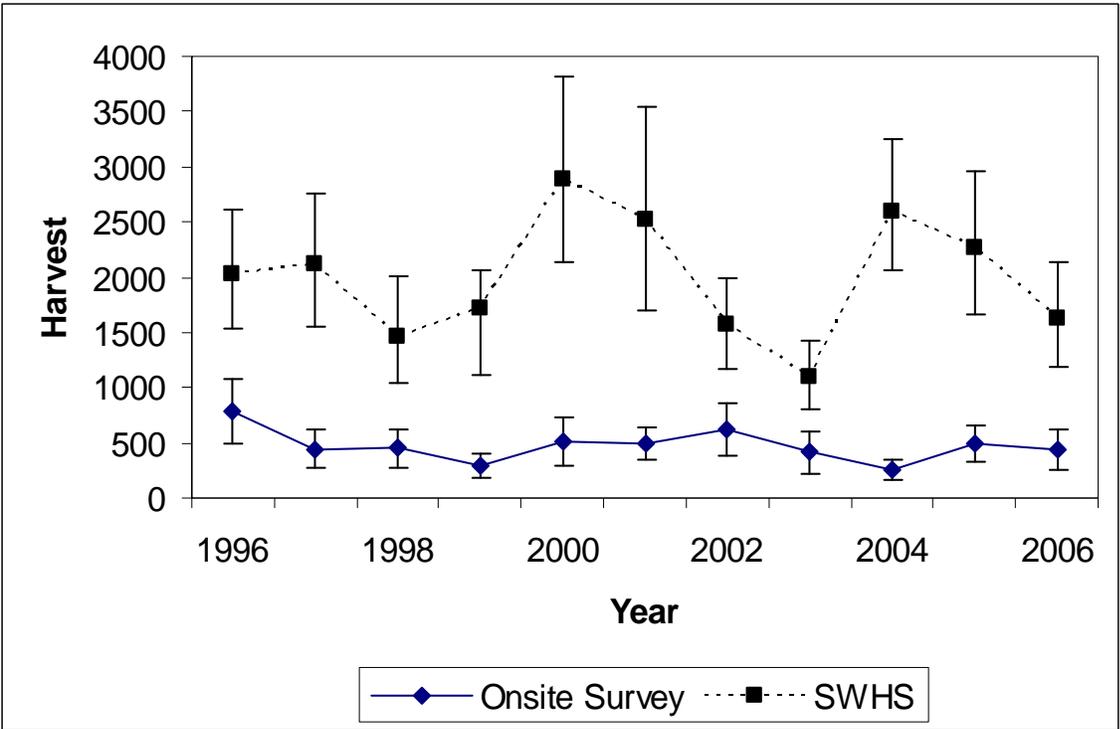
Appendix D20.—Ketchikan marine boat pink salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



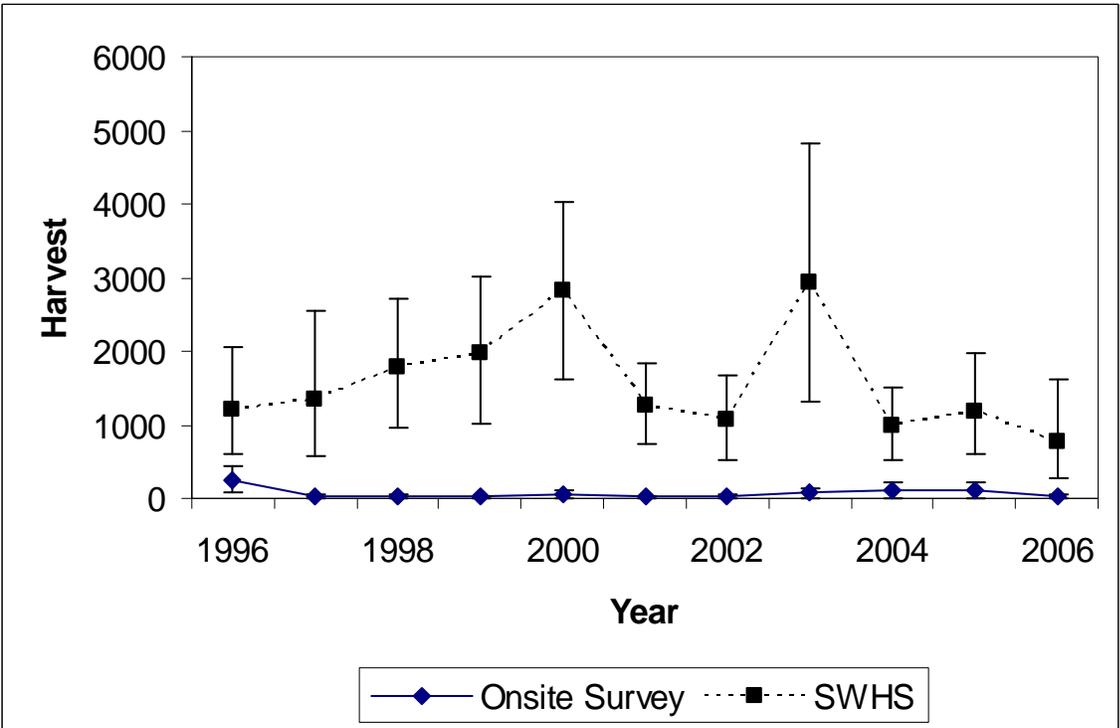
Appendix D21.—Ketchikan marine boat rockfish species harvests, 1996-2006. Error bars are 95% confidence intervals.



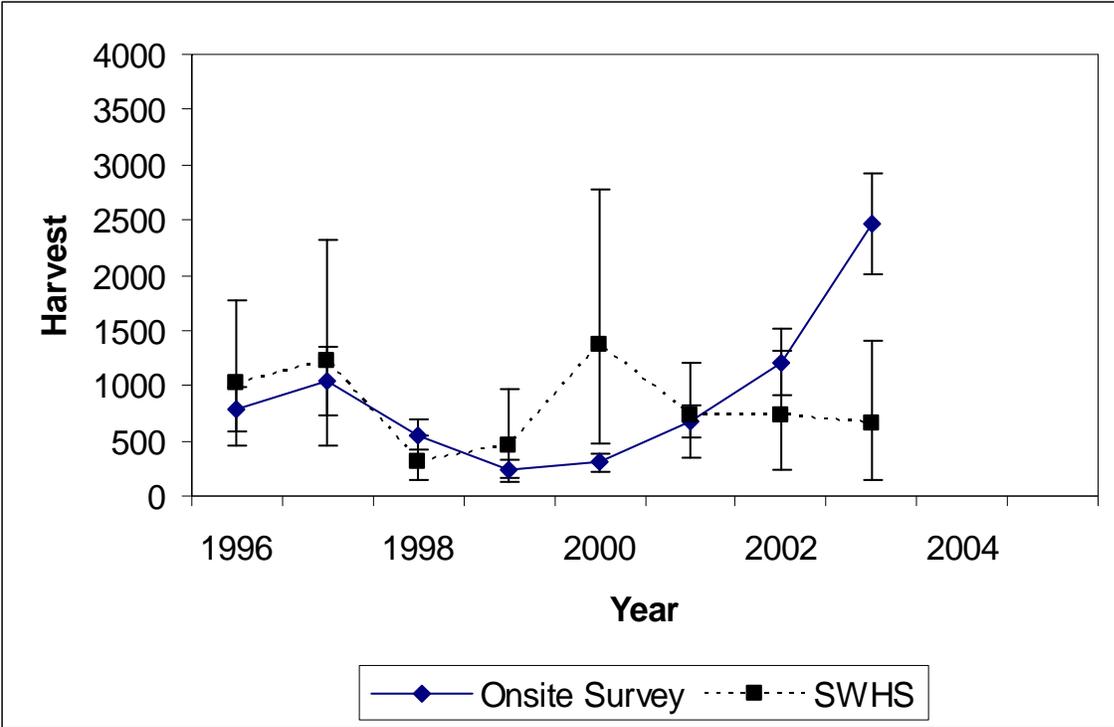
Appendix D22.—Ketchikan marine boat coho salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



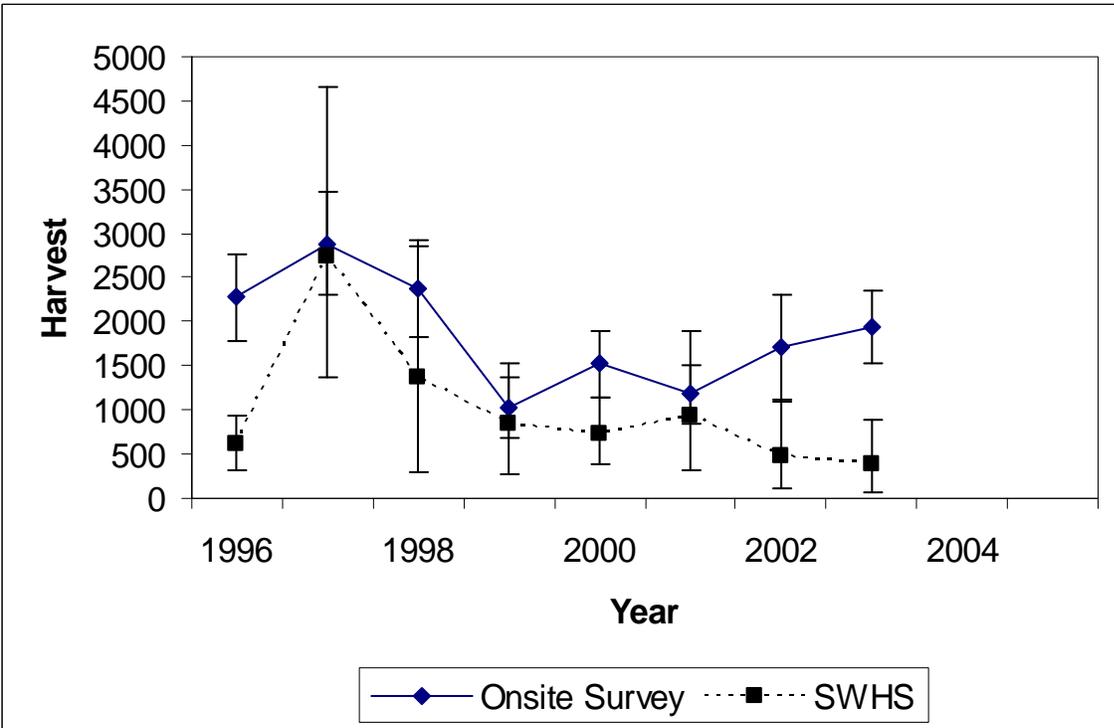
Appendix D23.—Ketchikan marine boat lingcod harvests, 1996-2006. Error bars are 95% confidence intervals.



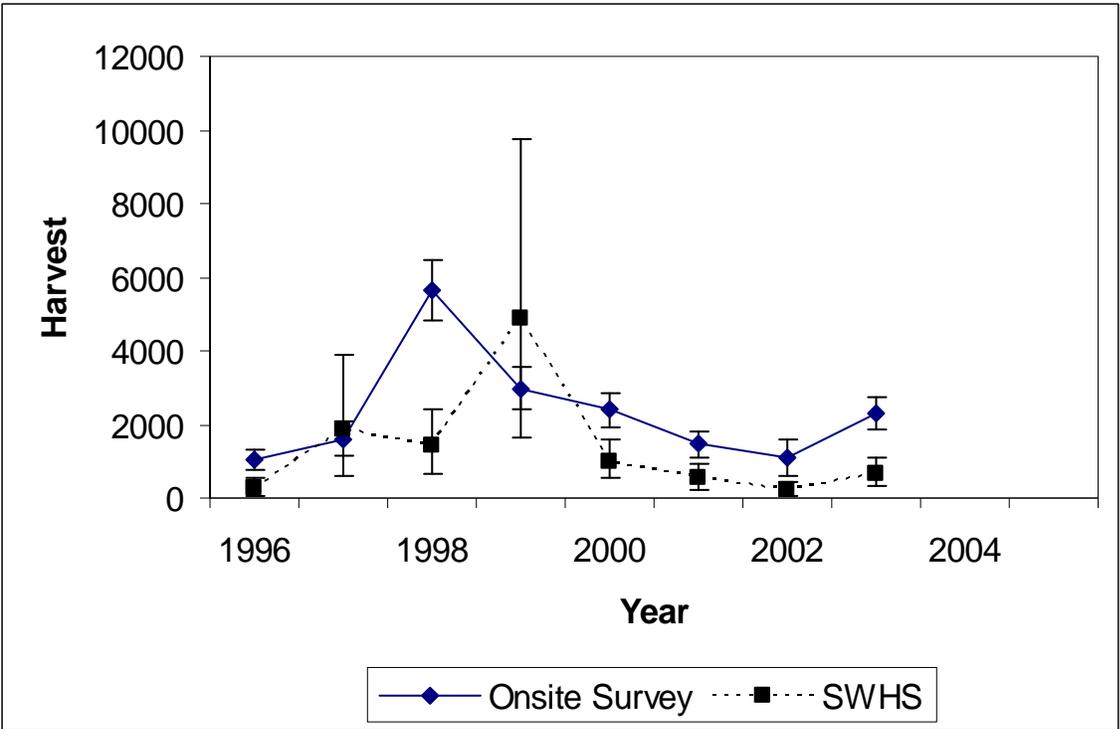
Appendix D24.—Ketchikan marine boat sockeye salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



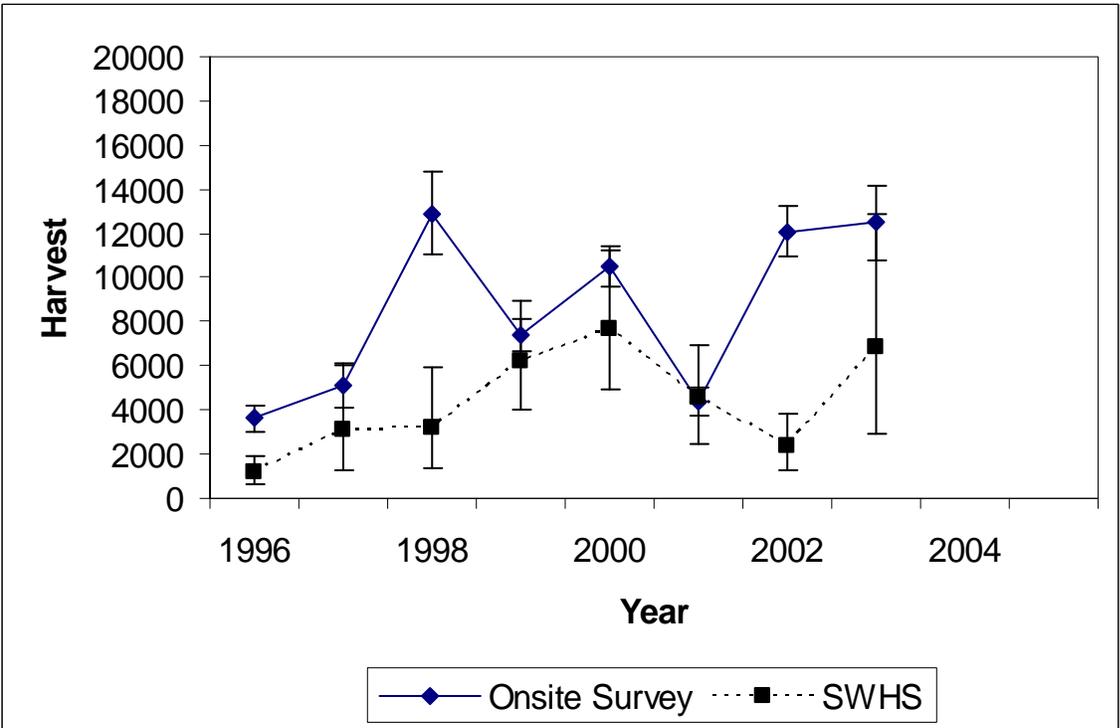
Appendix D25.—Gastineau Hatchery shoreline survey Chinook salmon harvests, 1996-2003. Error bars are 95% confidence intervals.



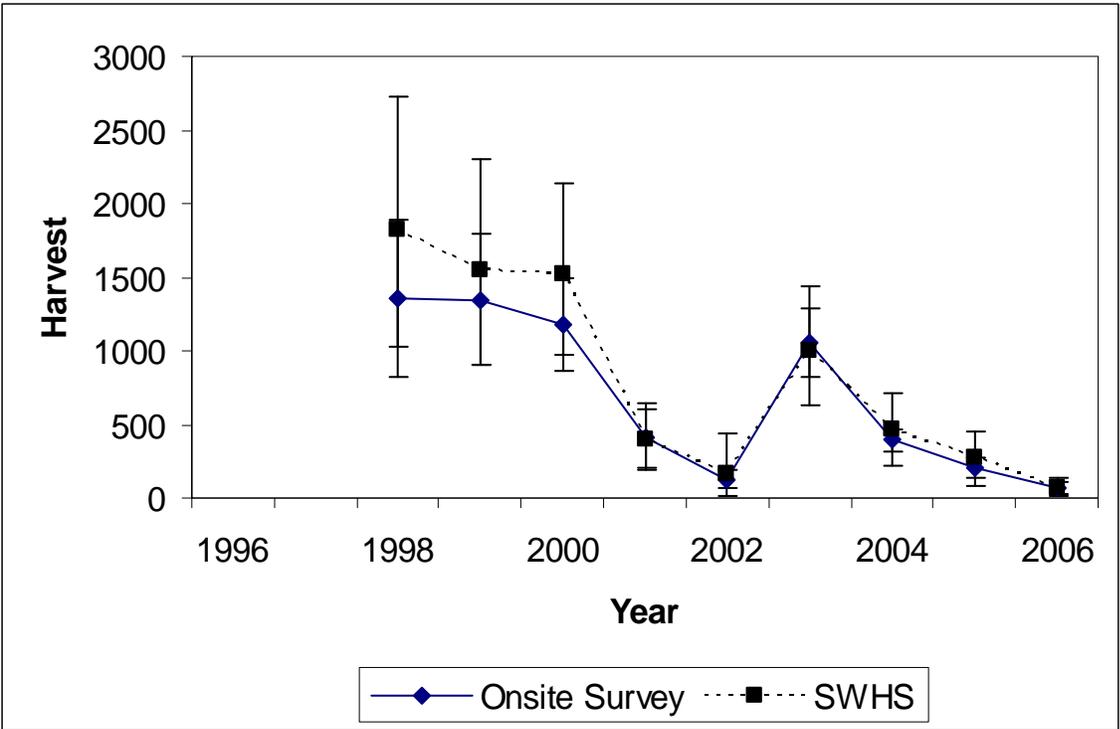
Appendix D26.—Gastineau Hatchery shoreline survey chum salmon harvests, 1996-2003. Error bars are 95% confidence intervals.



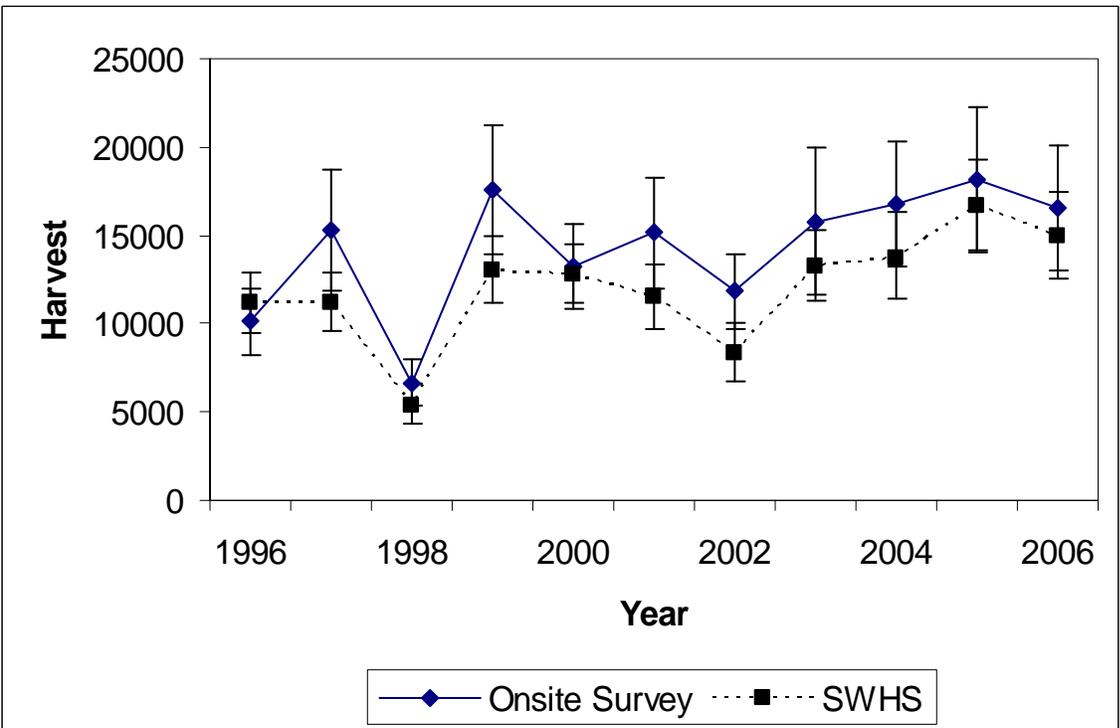
Appendix D27.—Gastineau Hatchery shoreline survey pink salmon harvests, 1996-2003. Error bars are 95% confidence intervals.



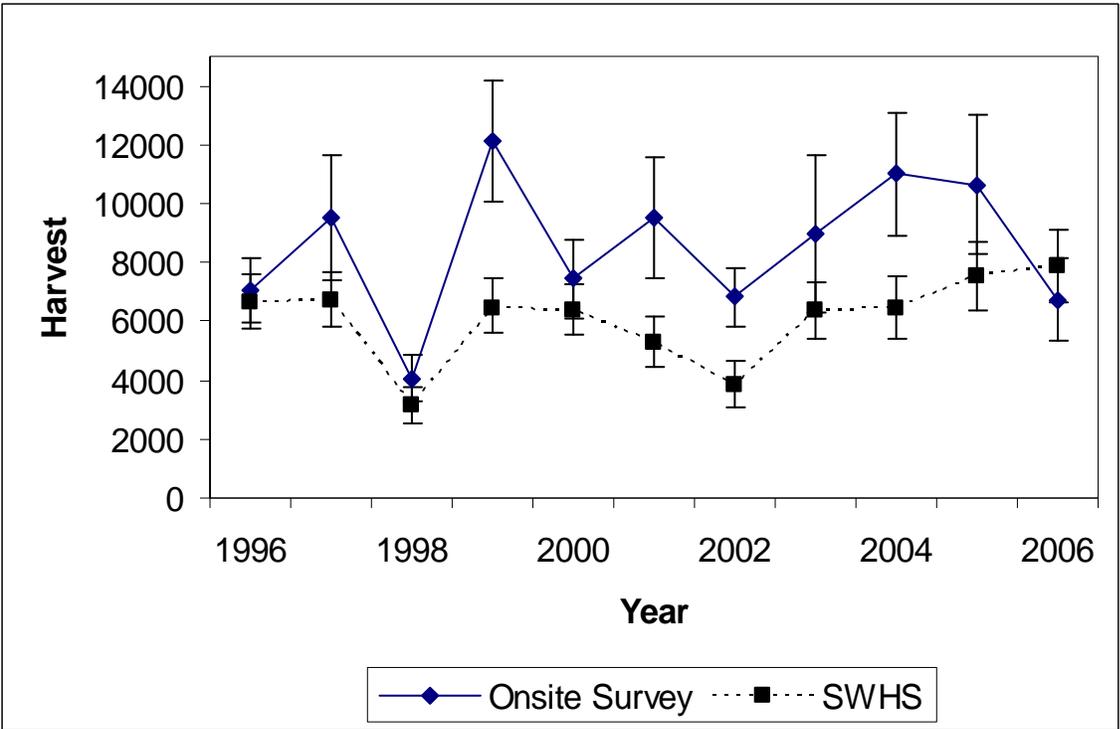
Appendix D28.—Gastineau Hatchery shoreline survey coho salmon harvests, 1996-2003. Error bars are 95% confidence intervals.



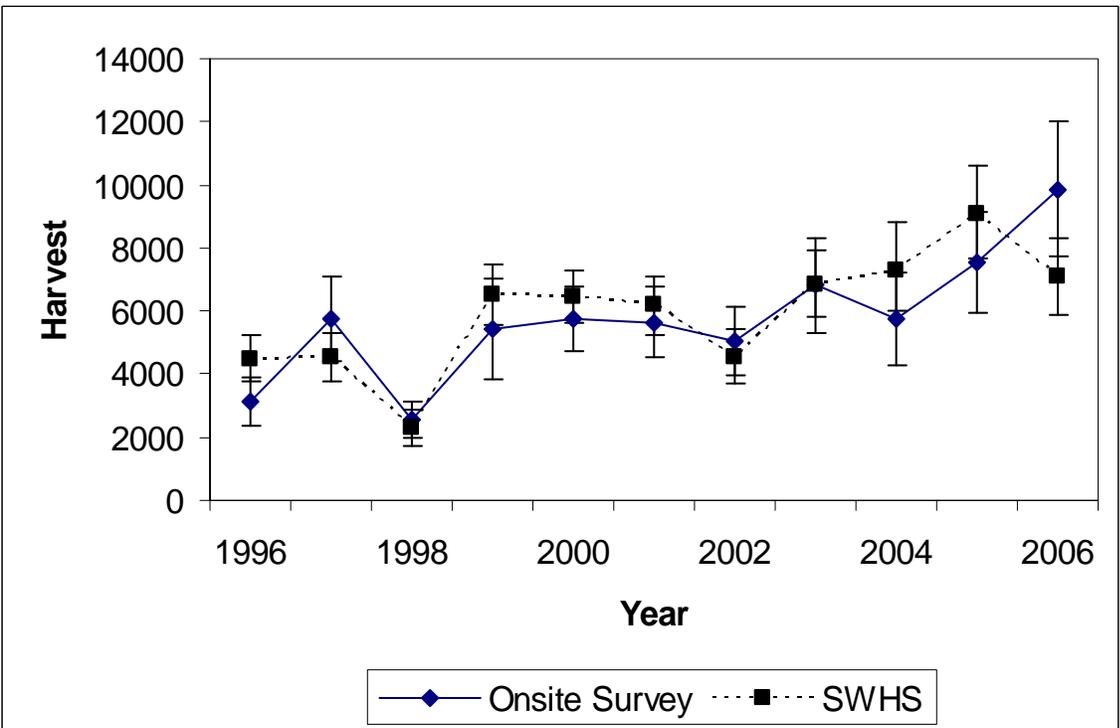
Appendix D29.—Situk River Chinook salmon harvests, 1998-2006. Error bars are 95% confidence intervals.



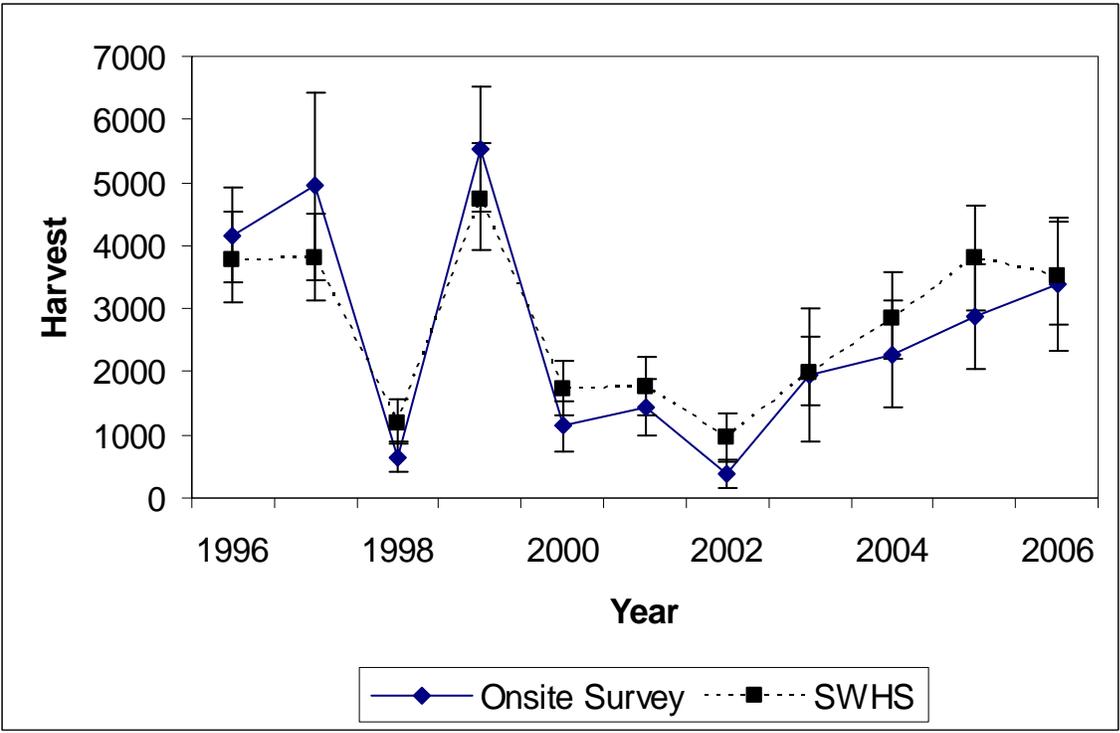
Appendix D30.—Lower Kenai River Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



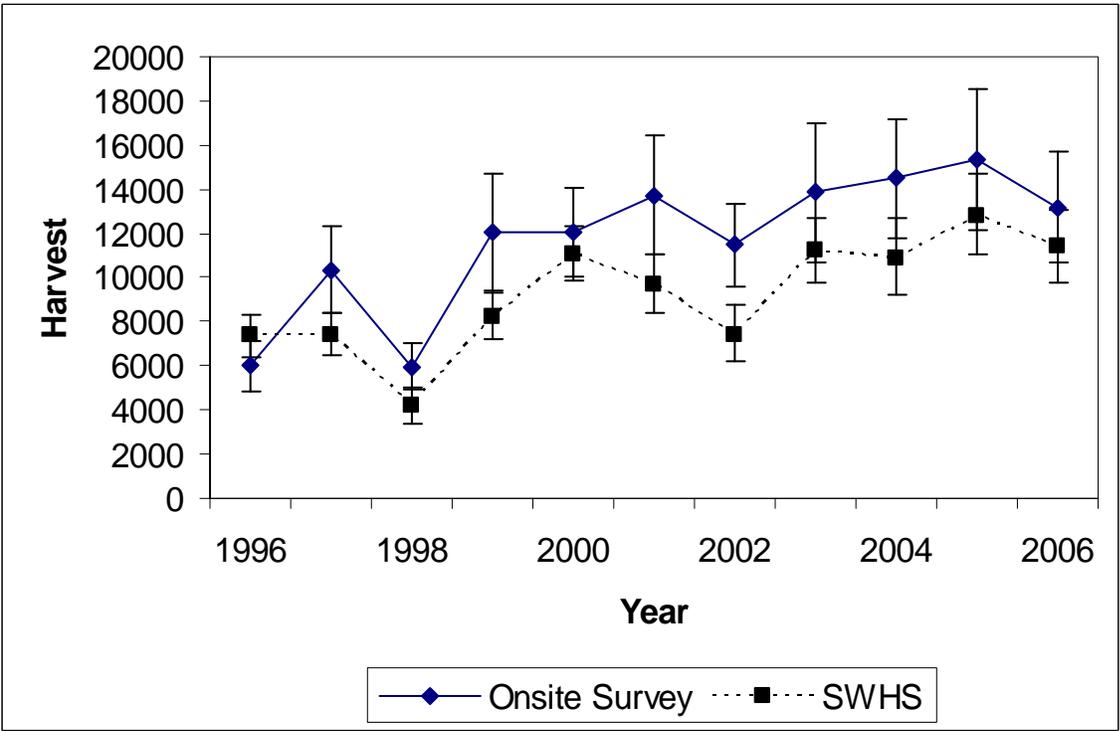
Appendix D31.—Lower Kenai River non-guided Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



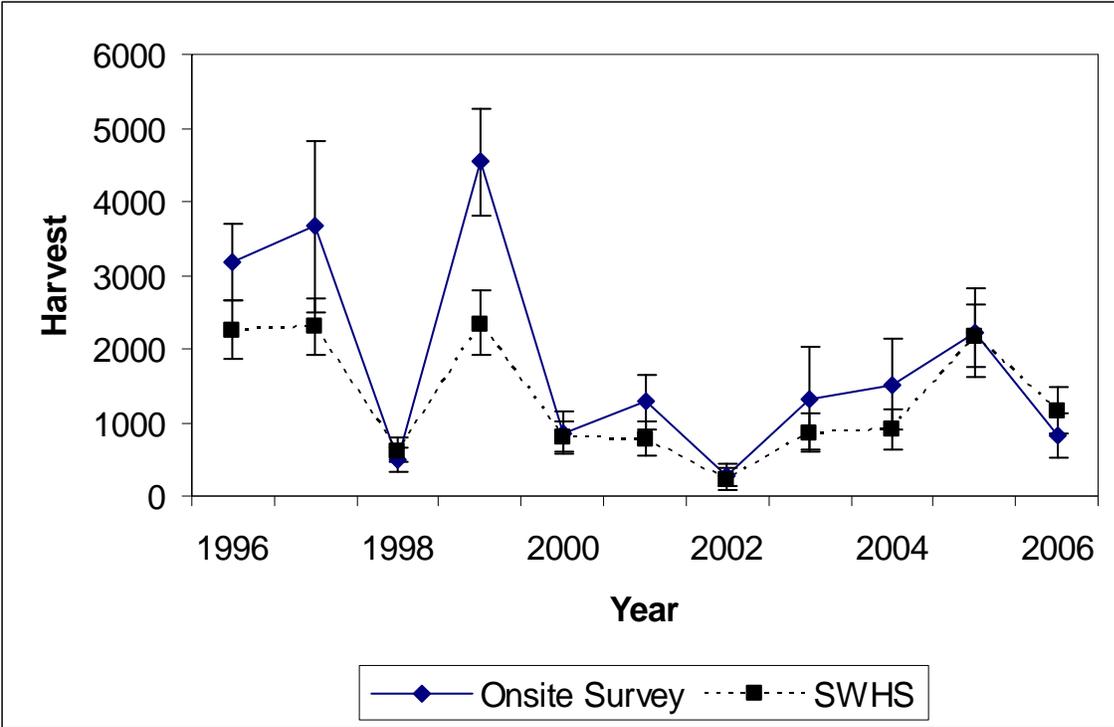
Appendix D32.—Lower Kenai River guided Chinook salmon harvests, 1996-2006. Error bars are 95% confidence intervals.



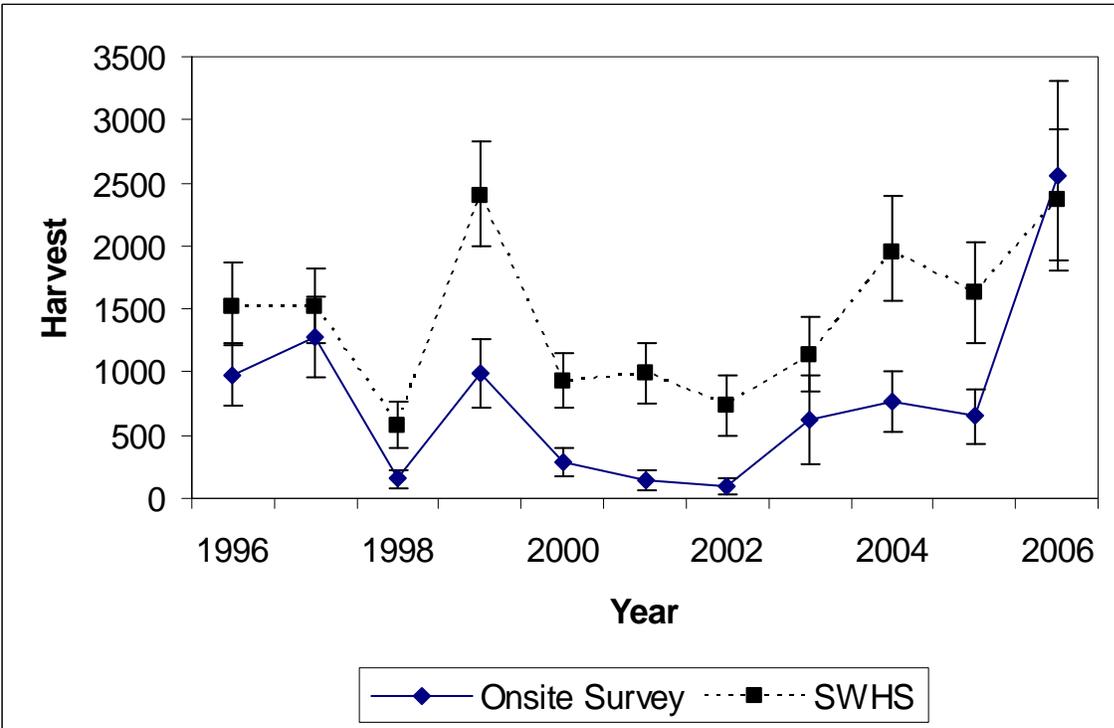
Appendix D33.–Lower Kenai River Chinook salmon harvests prior to July 1, 1996-2006. Error bars are 95% confidence intervals.



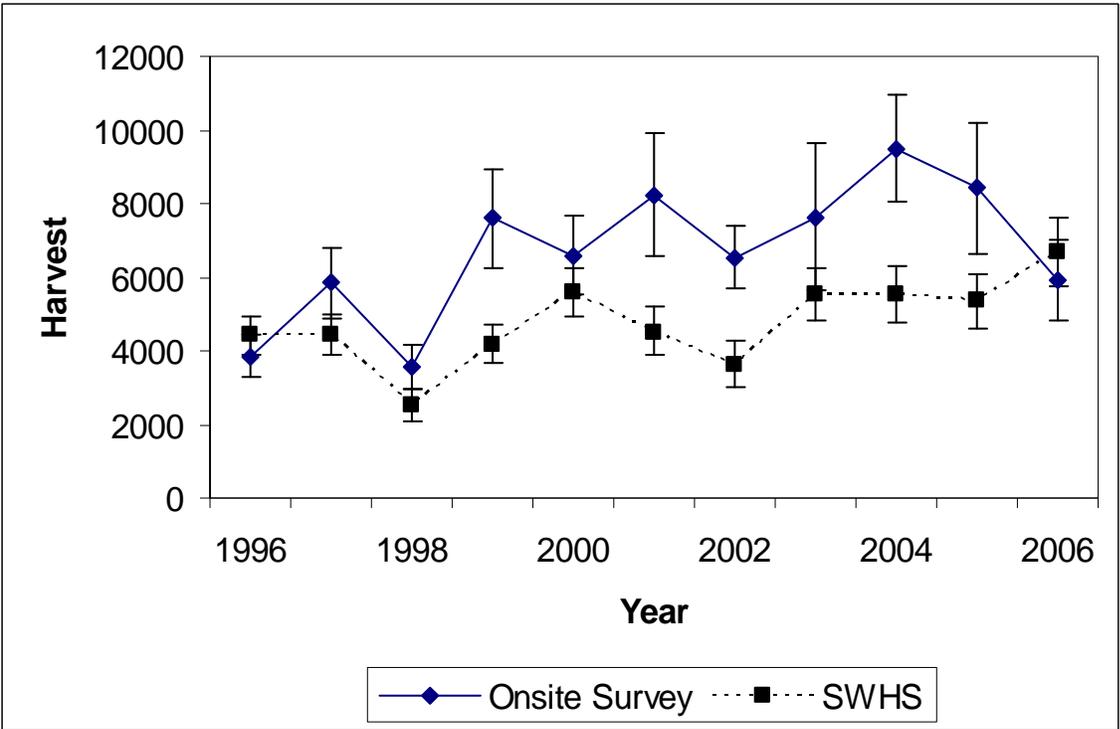
Appendix D34.–Lower Kenai River Chinook salmon harvests after June 30, 1996-2006. Error bars are 95% confidence intervals.



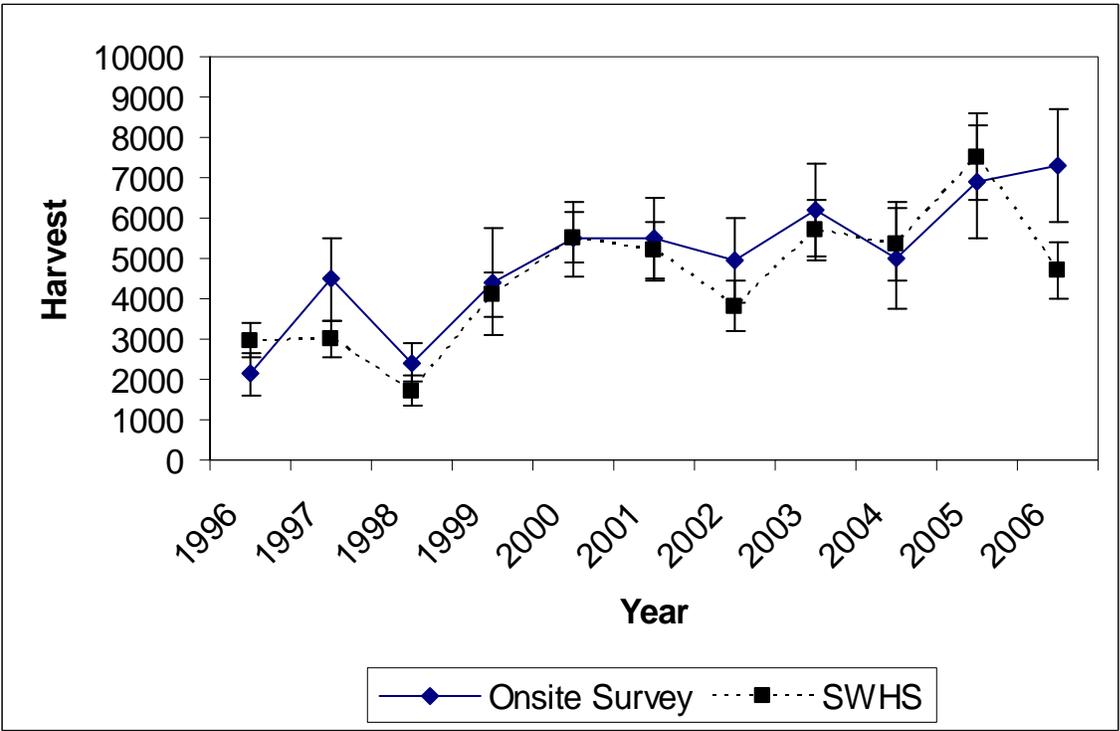
Appendix D35.—Lower Kenai River non-guided Chinook salmon harvests prior to July 1, 1996-2006. Error bars are 95% confidence intervals.



Appendix D36.—Lower Kenai River guided Chinook salmon harvests prior to July 1, 1996-2006. Error bars are 95% confidence intervals.

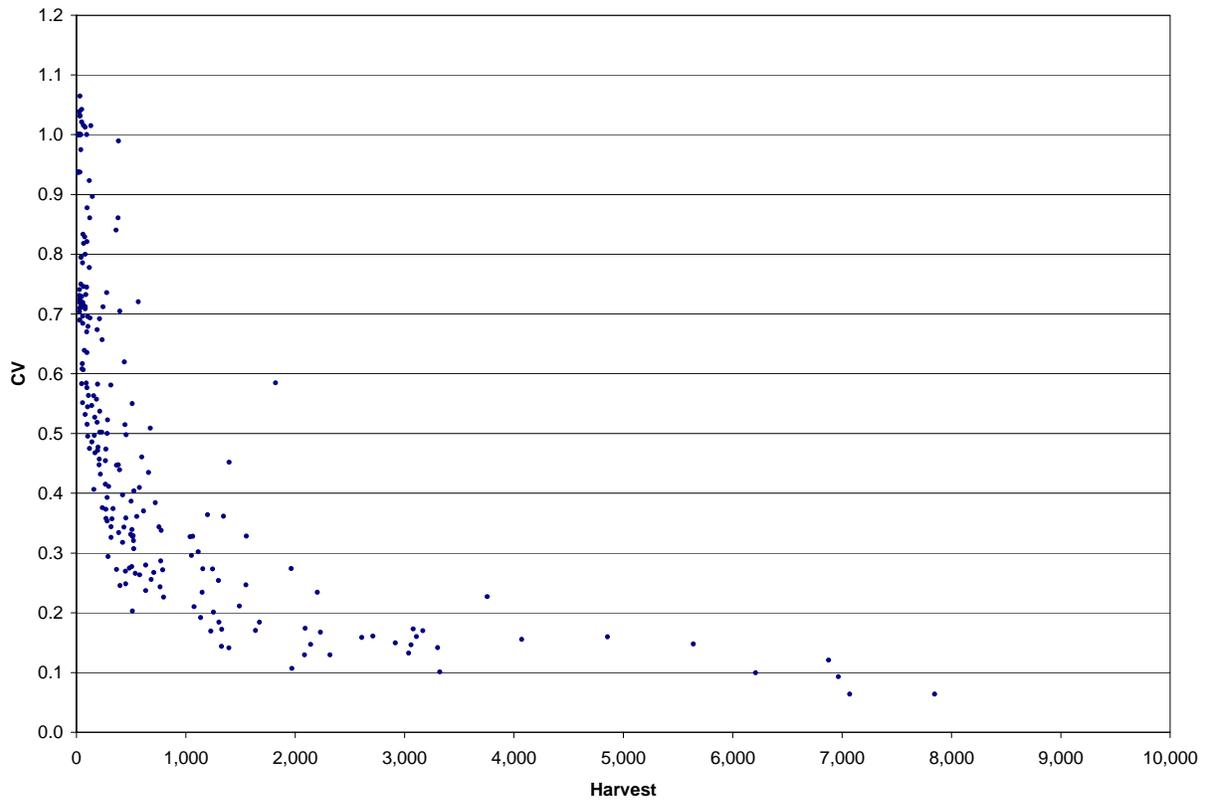
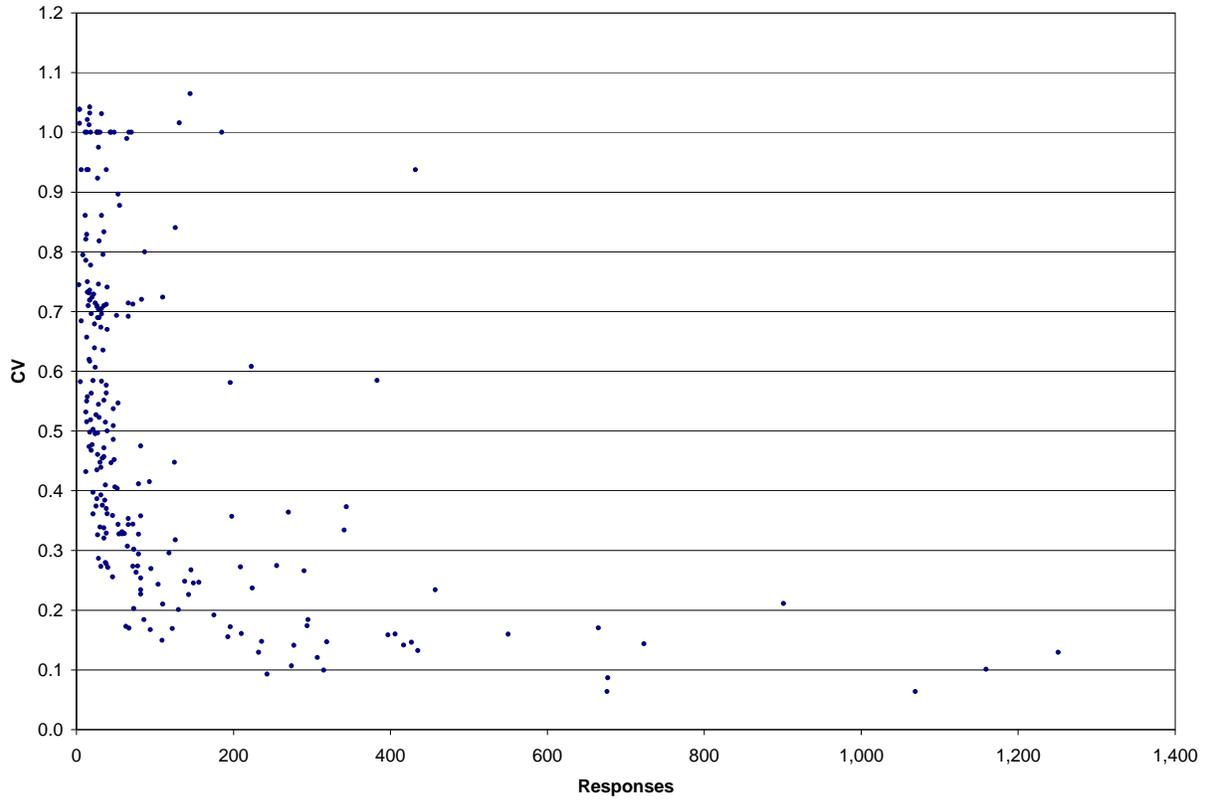


Appendix D37.—Lower Kenai River non-guided Chinook salmon harvests after June 30, 1996-2006. Error bars are 95% confidence intervals.

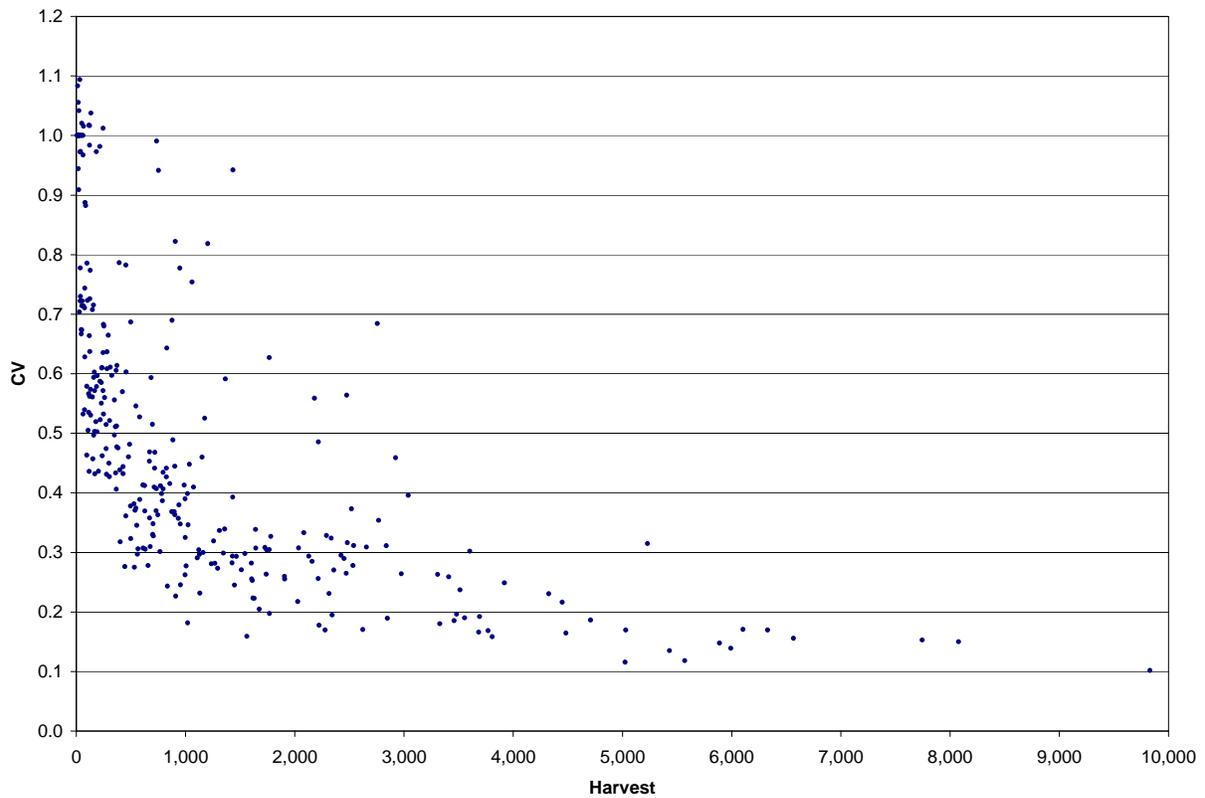
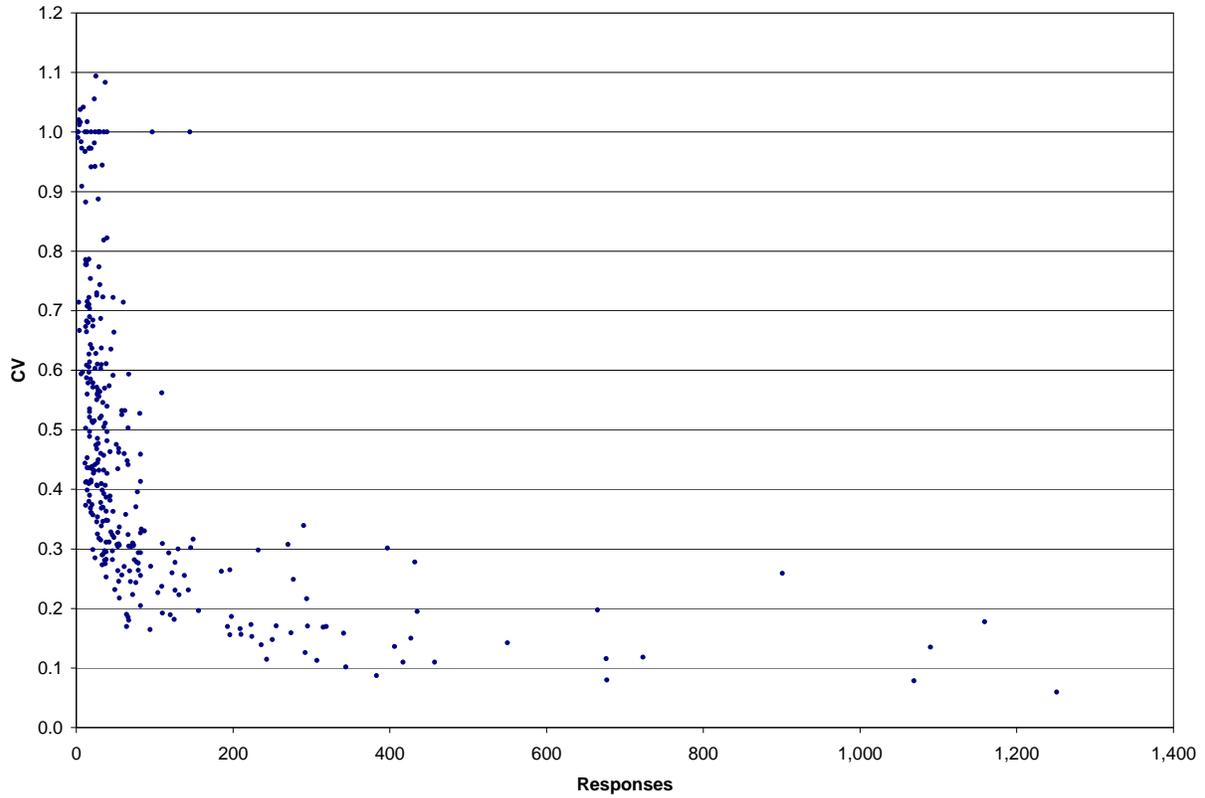


Appendix D38.—Lower Kenai River guided Chinook salmon harvests after June 30, 1996-2006. Error bars are 95% confidence intervals.

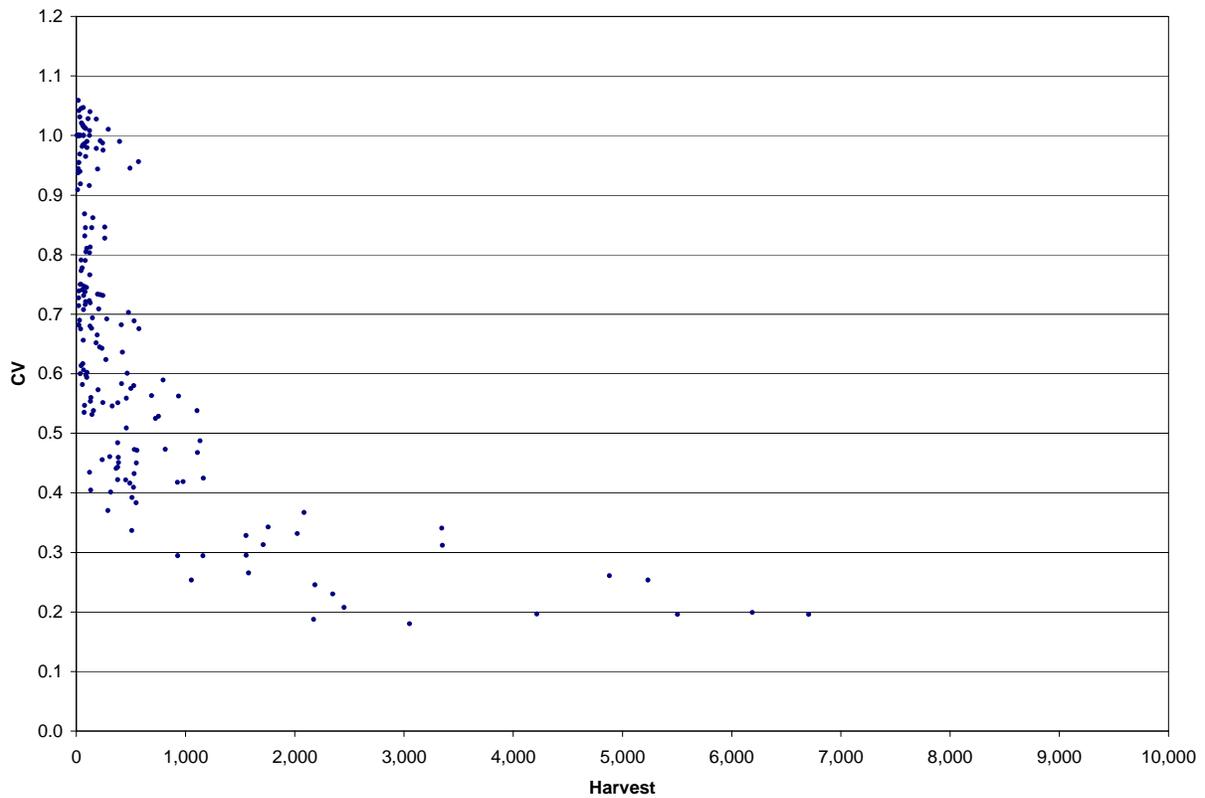
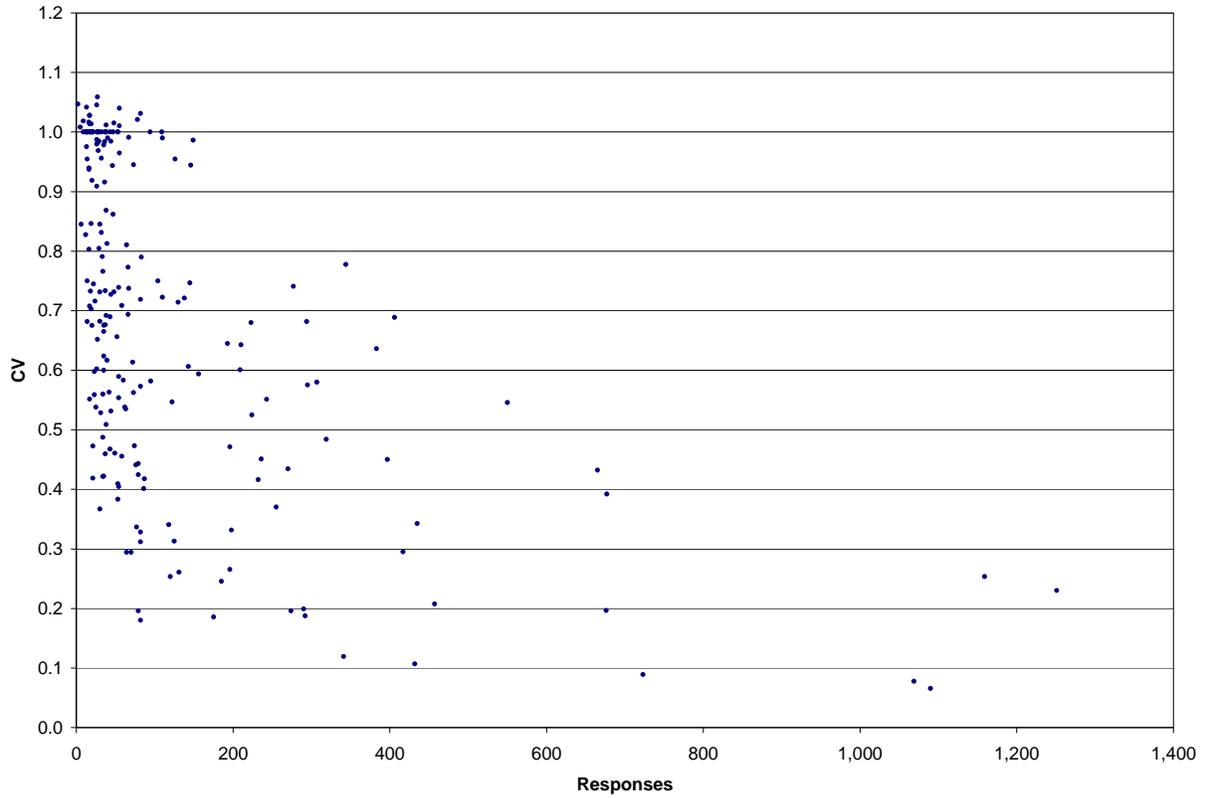
APPENDIX E
PLOTS OF PRECISION ON NUMBER OF RESPONSES
AND MAGNITUDE OF HARVEST



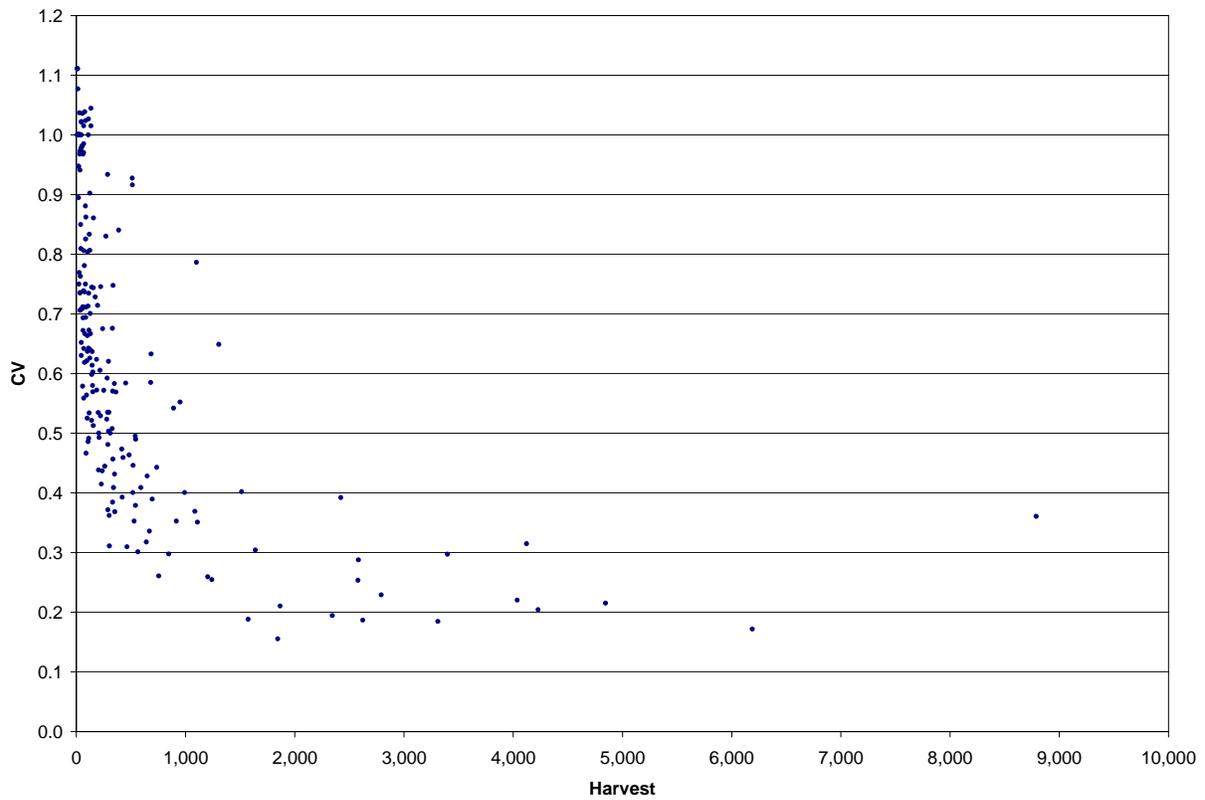
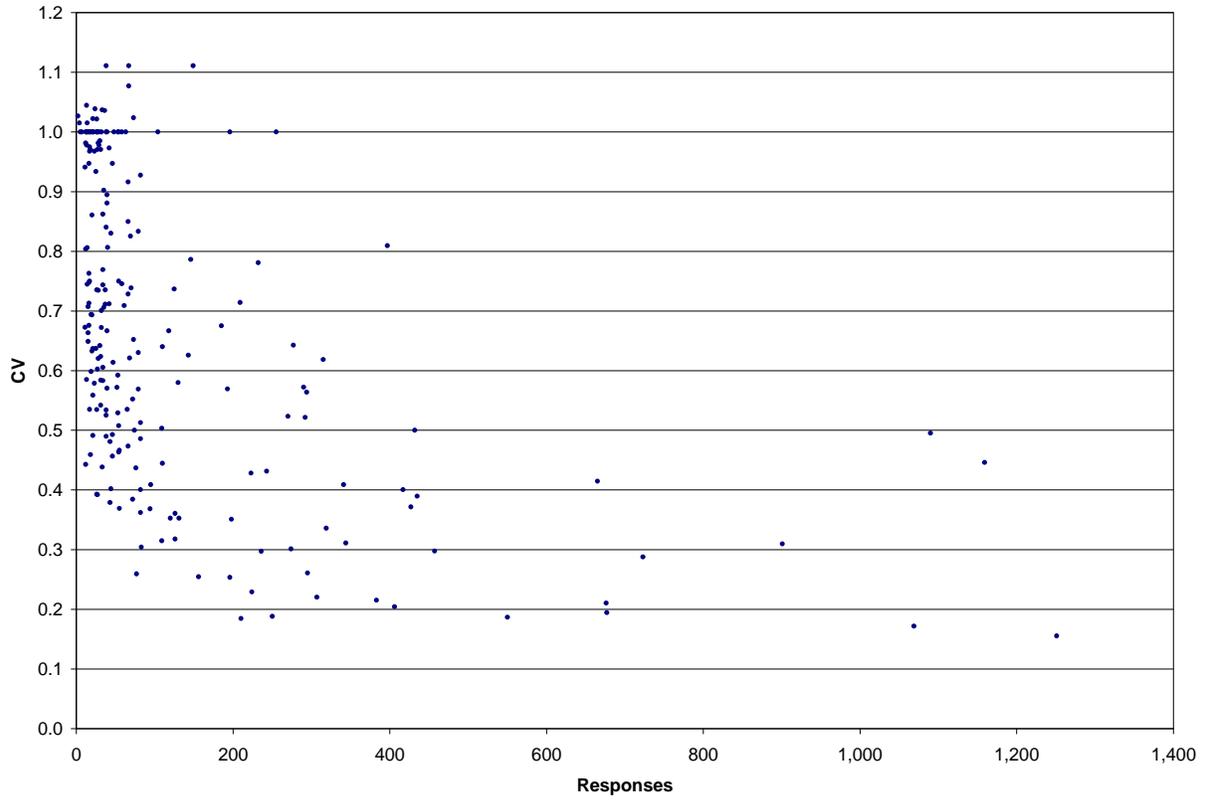
Appendix E1.—Coefficient of variation (CV) of harvest of Chinook salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



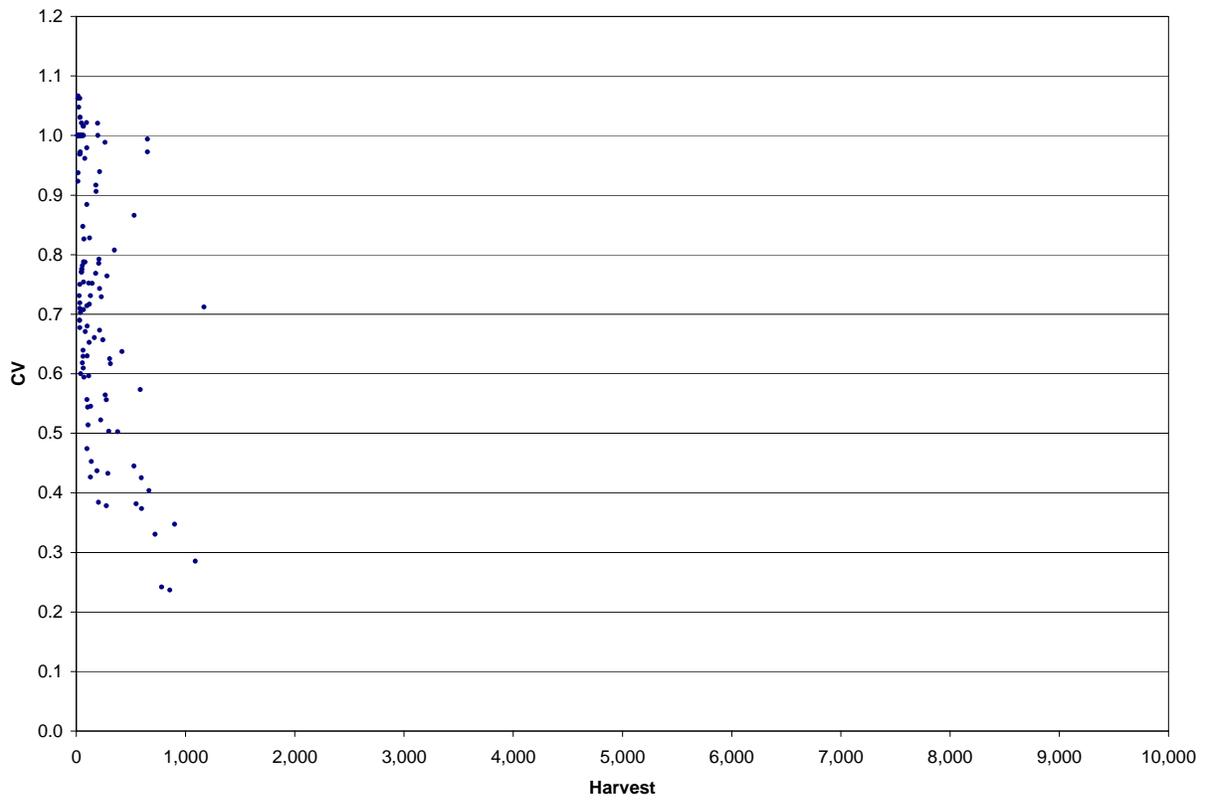
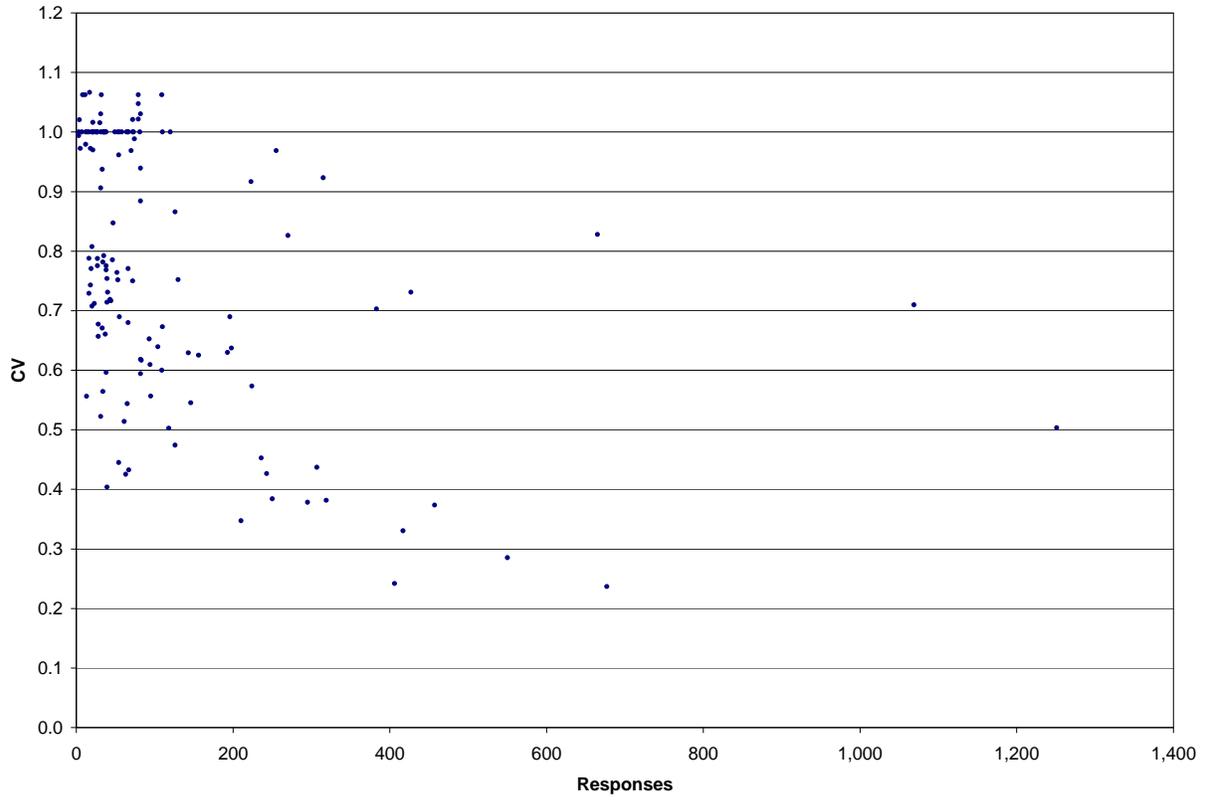
Appendix E2.—Coefficient of variation (CV) of harvest of coho salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



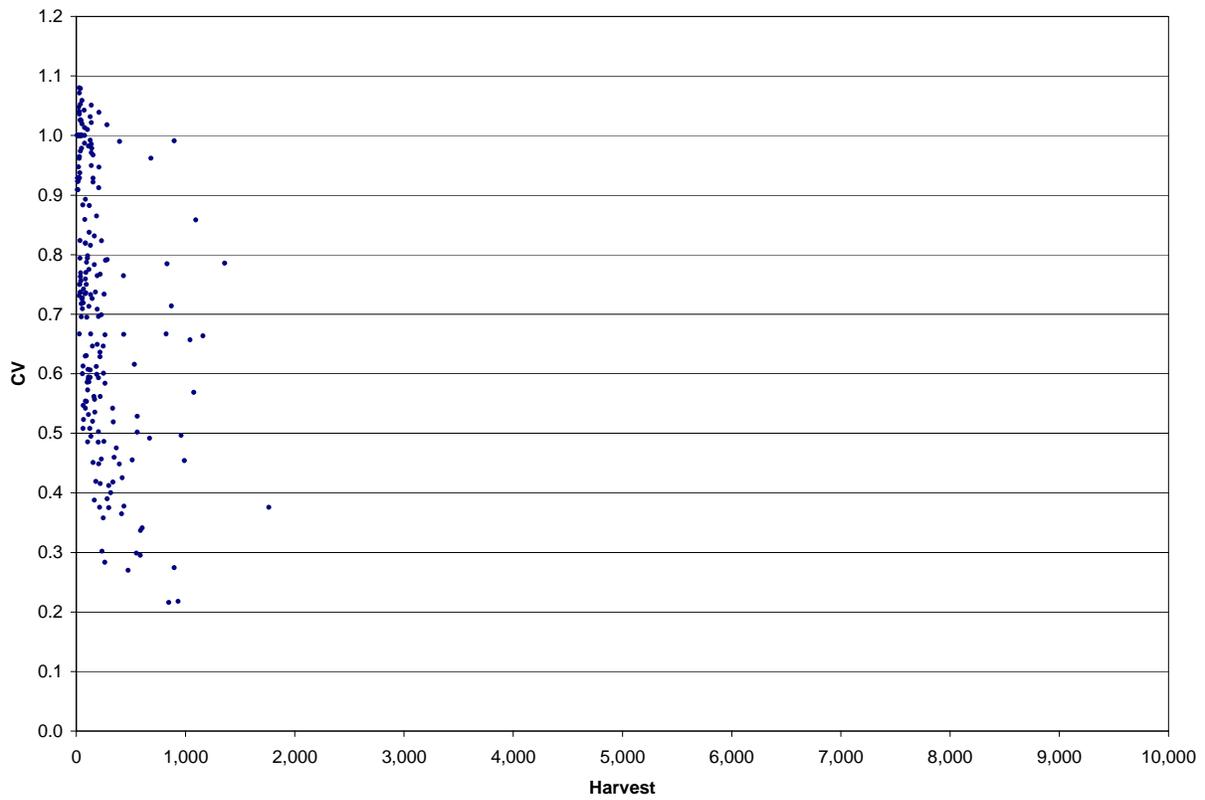
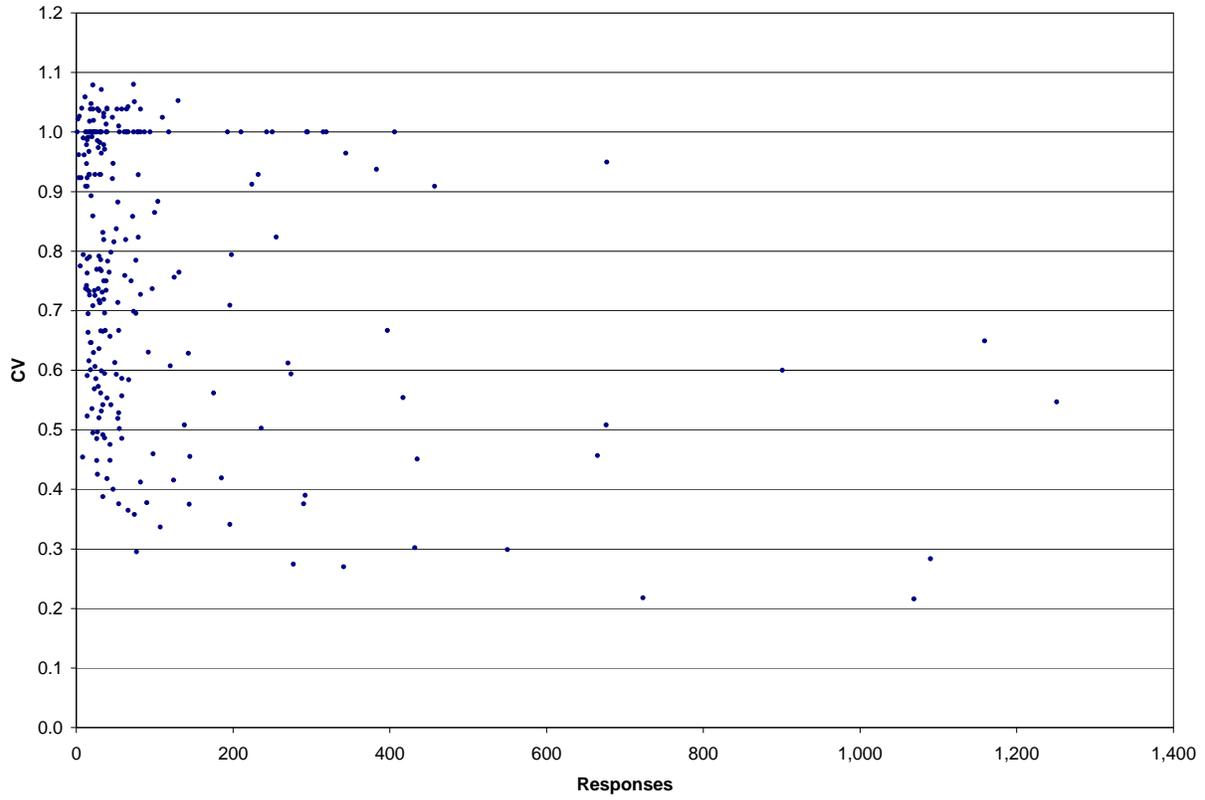
Appendix E3.—Coefficient of variation (CV) of harvest of sockeye salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



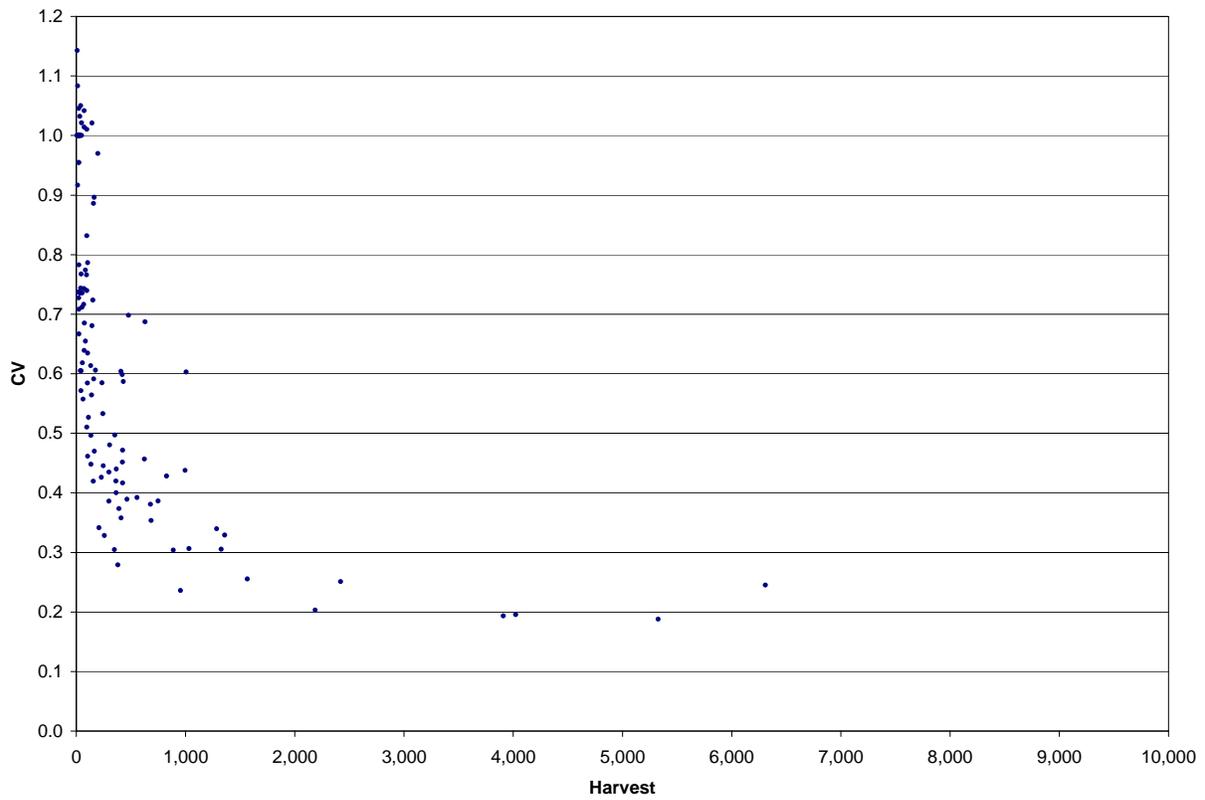
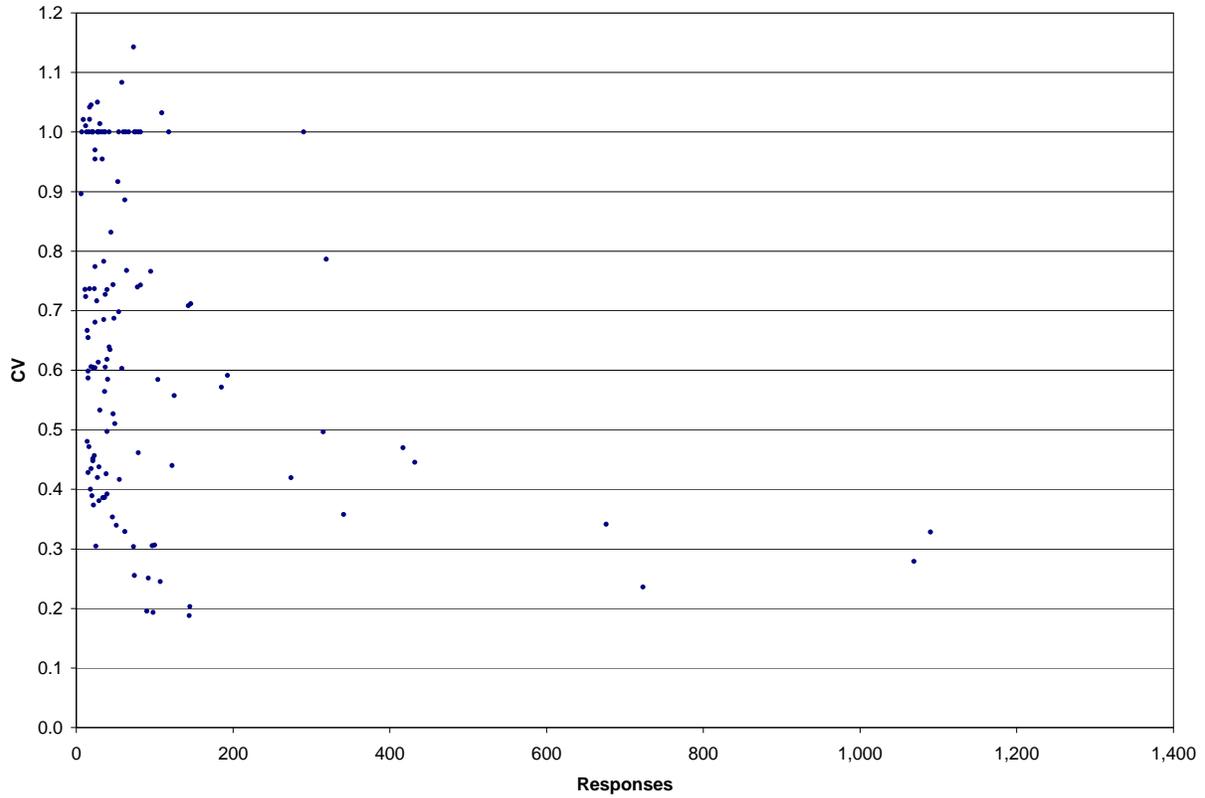
Appendix E4.—Coefficient of variation (CV) of harvest of pink salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



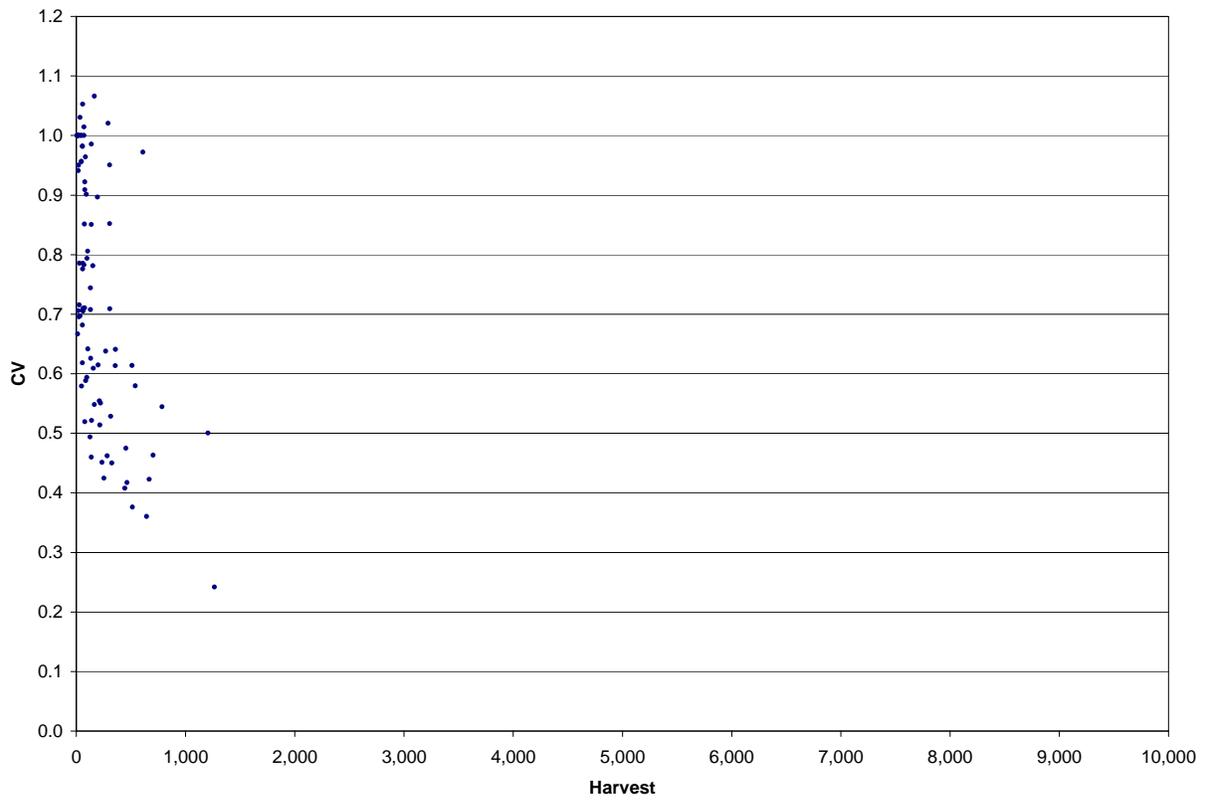
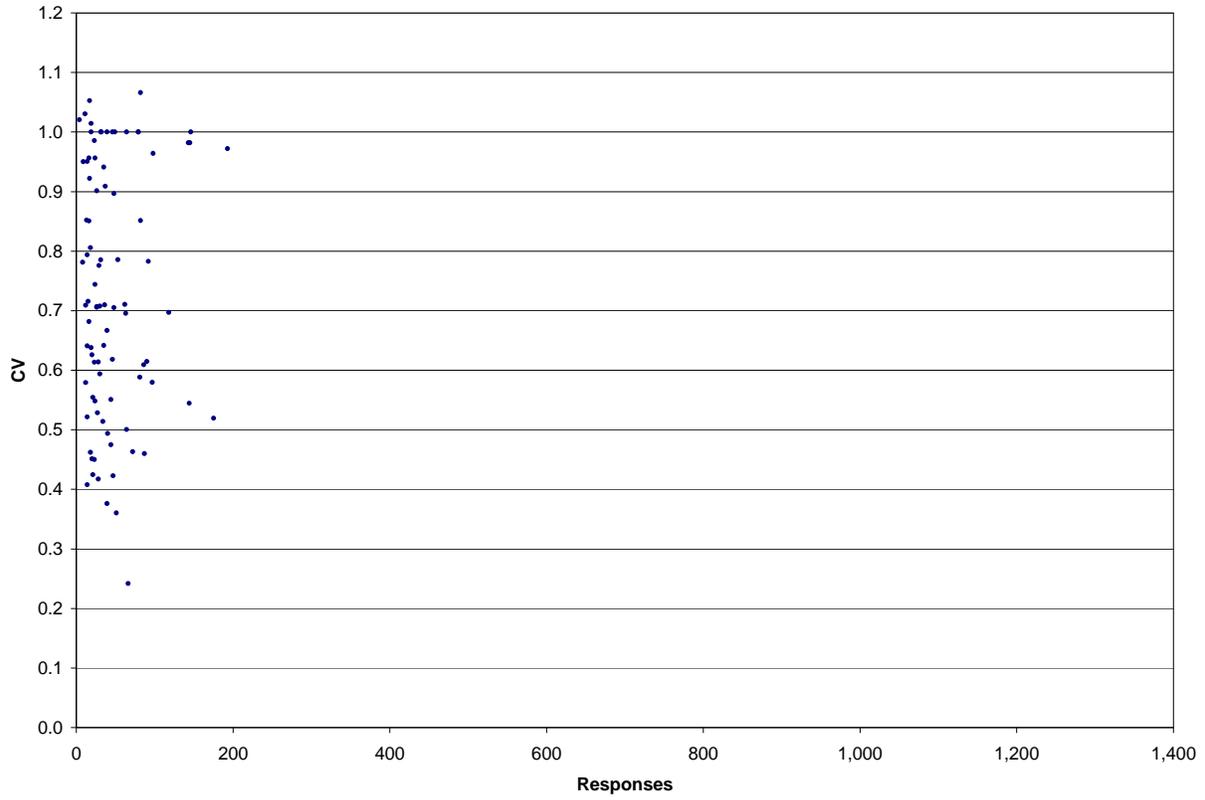
Appendix E5.—Coefficient of variation (CV) of harvest of chum salmon plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



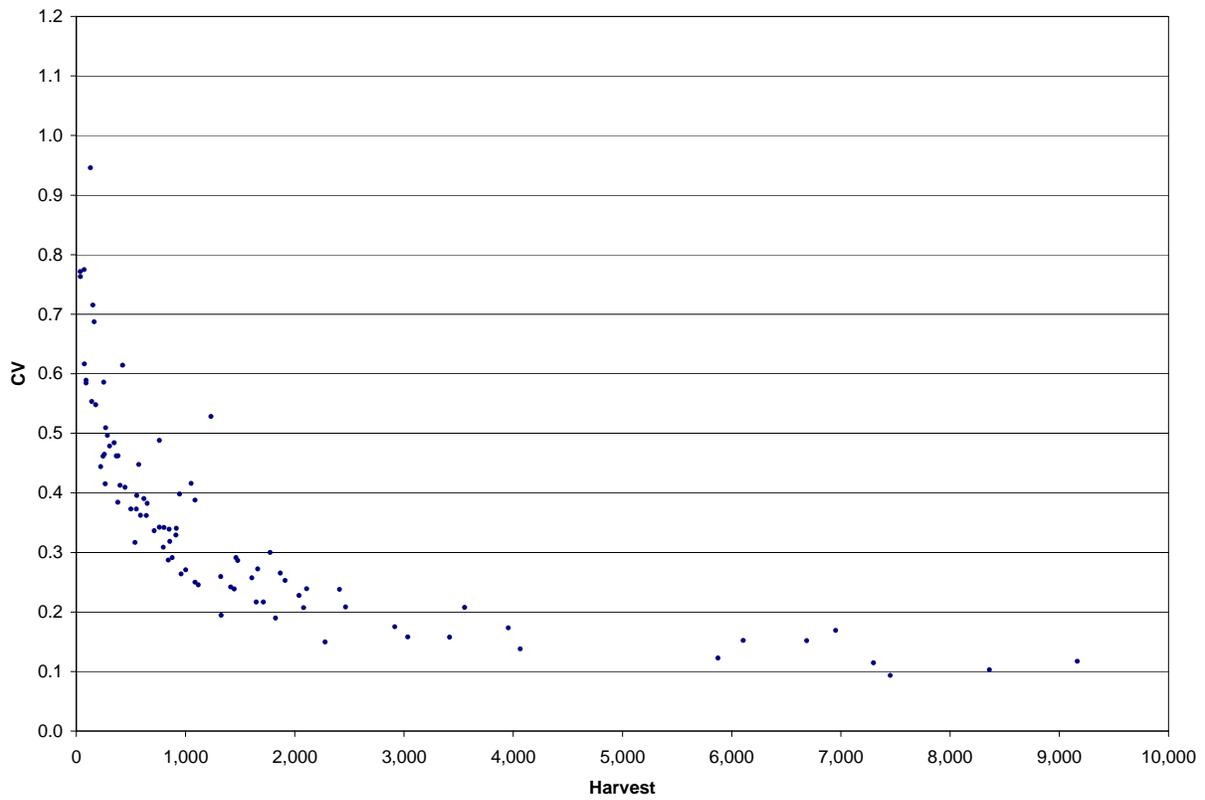
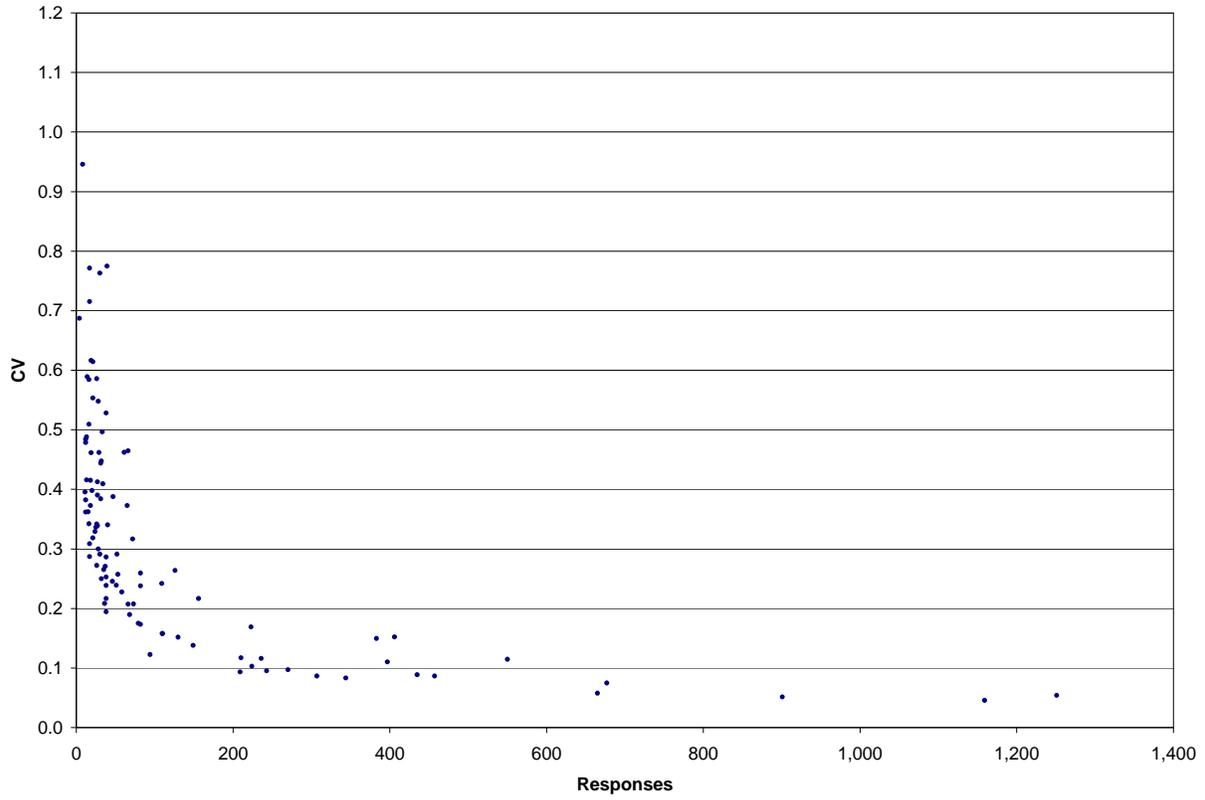
Appendix E6.—Coefficient of variation (CV) of harvest of Dolly Varden plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



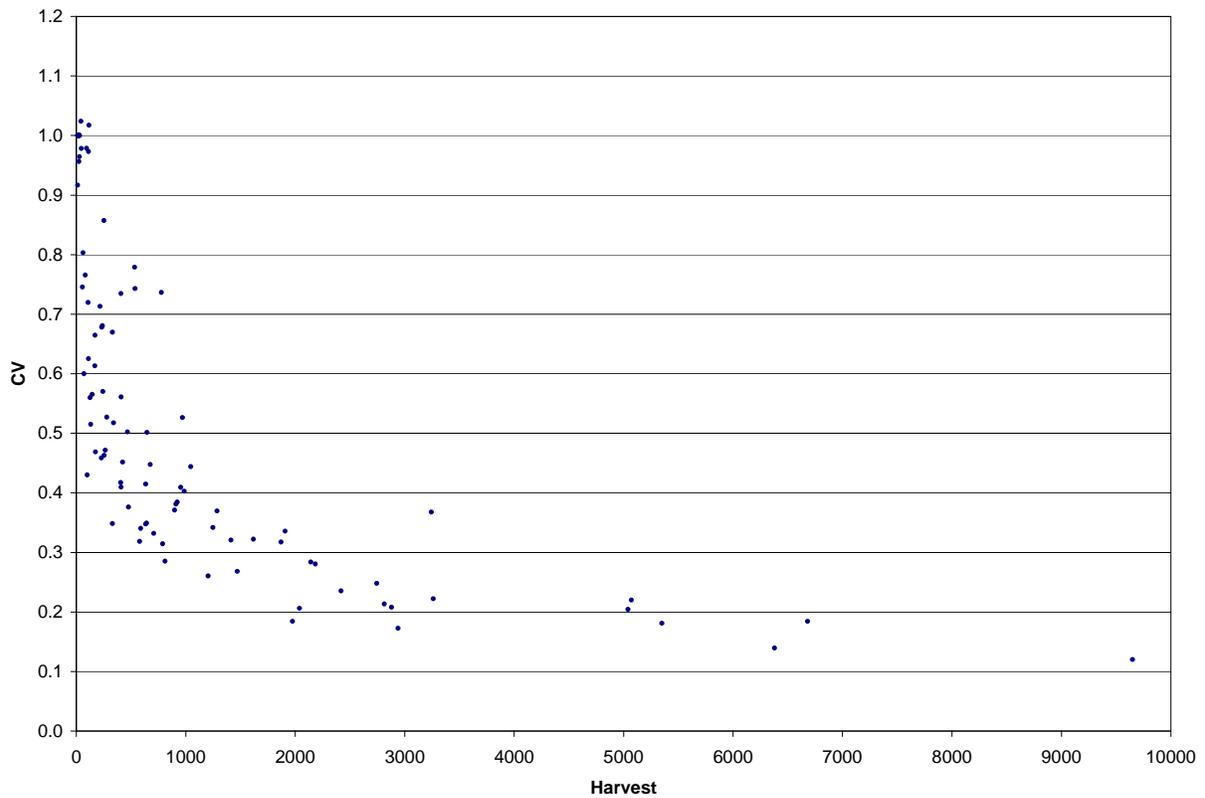
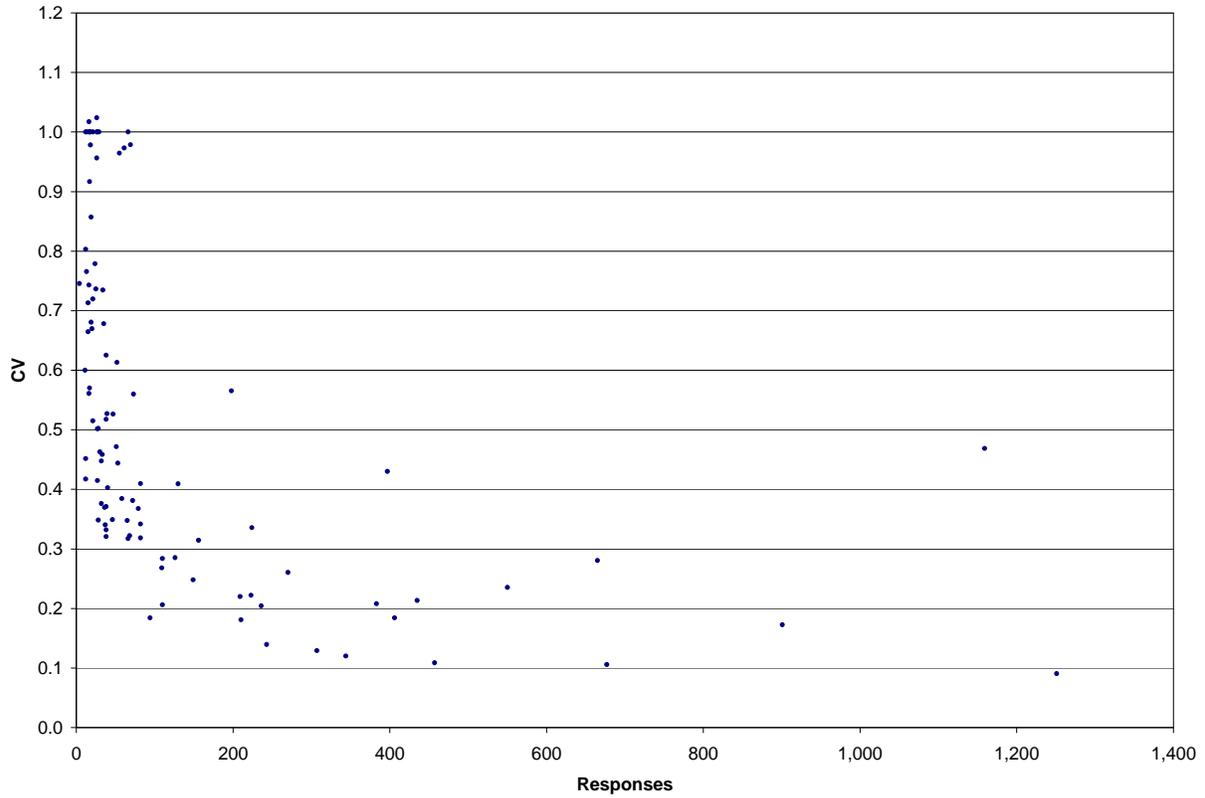
Appendix E7.—Coefficient of variation (CV) of harvest of rainbow trout plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



Appendix E8.—Coefficient of variation (CV) of harvest of Arctic grayling plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



Appendix E9.—Coefficient of variation (CV) of harvest of Pacific halibut plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.



Appendix E10.—Coefficient of variation (CV) of harvest of rockfish species plotted against number of responses (upper) or harvest (lower) estimated by location in the SWHS, 2006.