

Fishery Data Series No. 09-49

**Summary of Observer Data Collected during the
2006/07 Alaska Weathervane Scallop Fishery**

by

Gregg Rosenkranz

and

Ryan Burt

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

FISHERY DATA SERIES NO. 09-49

**SUMMARY OF OBSERVER DATA COLLECTED DURING THE 2006/07
ALASKA WEATHERVANE SCALLOP FISHERY**

by

Gregg Rosenkranz

Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak
and

Ryan Burt

Alaska Department of Fish and Game, Division of Commercial Fisheries, Kodiak

Alaska Department of Fish and Game
Division of Sport Fish, Research and Technical Services
333 Raspberry Road, Anchorage, Alaska, 99518-1565

September 2009

ADF&G Fishery Data Series was established in 1987 for the publication of Division of Sport Fish technically oriented results for a single project or group of closely related projects, and in 2004 became a joint divisional series with the Division of Commercial Fisheries. Fishery Data Series reports are intended for fishery and other technical professionals and are available through the Alaska State Library and on the Internet: <http://www.sf.adfg.state.ak.us/statewide/divreports/html/intersearch.cfm> This publication has undergone editorial and peer review.

*Gregg Rosenkranz,
Alaska Department of Fish and Game, Division of Commercial Fisheries,
211 Mission Road, Kodiak, AK 99615, USA*

and

*Ryan Burt,
Alaska Department of Fish and Game, Division of Commercial Fisheries,
211 Mission Road, Kodiak, AK 99615, USA*

This document should be cited as:

Rosenkranz, G. and R. Burt. 2009. Summary of observer data collected during the 2006/07 Alaska weathervane scallop fishery. Alaska Department of Fish and Game, Fishery Data Series No. 09-49, 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

| | |
|--|-----|
| LIST OF TABLES..... | ii |
| LIST OF FIGURES..... | ii |
| LIST OF APPENDICES..... | iii |
| ABSTRACT..... | 1 |
| INTRODUCTION..... | 1 |
| METHODS..... | 1 |
| COMMONLY USED TERMS..... | 2 |
| CATCH SAMPLING..... | 2 |
| Bycatch Sampling..... | 3 |
| Haul Composition Sampling..... | 3 |
| VESSEL OPERATOR LOGBOOKS..... | 3 |
| ESTIMATION OF BYCATCH AND DISCARDED SCALLOP CATCH..... | 4 |
| SCALLOP SHELL HEIGHT FREQUENCY DISTRIBUTIONS..... | 5 |
| RESULTS AND DISCUSSION..... | 5 |
| OBSERVER SAMPLING EFFORT..... | 5 |
| FISHERY CATCH AND EFFORT..... | 5 |
| DISCARDED SCALLOP CATCH..... | 6 |
| SCALLOP SHELL HEIGHT DISTRIBUTIONS..... | 6 |
| BYCATCH..... | 6 |
| Bycatch Estimates..... | 6 |
| Size Distributions of Incidentally Caught Tanner and Snow Crabs..... | 7 |
| Tanner Crab and Halibut Mortality..... | 7 |
| HAUL COMPOSITION..... | 7 |
| HISTORICAL SUMMARY INFORMATION..... | 8 |
| ACKNOWLEDGEMENTS..... | 8 |
| REFERENCES CITED..... | 9 |
| TABLES AND FIGURES..... | 11 |
| APPENDIX A: HISTORICAL ALASKA SCALLOP OBSERVER PROGRAM SUMMARY STATISTICS..... | 39 |
| APPENDIX B: HISTORICAL ALASKA SCALLOP FISHERY SUMMARY STATISTICS..... | 49 |
| APPENDIX C: HISTORICAL ALASKA SCALLOP FISHERY BYCATCH STATISTICS..... | 59 |

LIST OF TABLES

| Table | Page |
|--|-------------|
| 1. Observer program statistics from the 2006/07 weathervane scallop fishing season..... | 12 |
| 2. Fishery statistics from the 2006/07 weathervane scallop fishing season..... | 12 |
| 3. Depth-range fished, distance towed, and area dredged during the 2006/07 weathervane scallop fishing season..... | 13 |
| 4. Number and weight of discarded scallops sampled by observers during the 2006/07 weathervane scallop fishing season..... | 13 |
| 5. Estimated number and weight of intact scallops discarded during the 2006/07 weathervane scallop fishing season..... | 14 |
| 6. Estimated number and weight of broken scallops discarded during the 2006/07 weathervane scallop fishing season..... | 14 |
| 7. Average scallop shell heights and sample sizes from the 2006/07 weathervane scallop fishery..... | 15 |
| 8. Crab and halibut bycatch estimates for the 2006/07 weathervane scallop fishing season..... | 15 |
| 9. Release condition of Tanner crabs and halibut sampled by observers during the 2006/07 scallop fishery..... | 16 |
| 10. Dredge contents from haul composition sampling during the 2006/07 Yakutat District 16 weathervane scallop fishery..... | 17 |
| 11. Dredge contents from haul composition sampling during the 2006/07 Yakutat Area D weathervane scallop fishery..... | 18 |
| 12. Dredge contents from haul composition sampling during the 2006/07 Prince William Sound weathervane scallop fishery..... | 19 |
| 13. Dredge contents from haul composition sampling during the 2006/07 Kodiak Northeast District weathervane scallop fishery..... | 20 |
| 14. Dredge contents from haul composition sampling during the 2006/07 Kodiak Shelikof District weathervane scallop fishery..... | 21 |
| 15. Dredge contents from haul composition sampling during the 2006/07 Alaska Peninsula Area weathervane scallop fishery..... | 22 |
| 16. Dredge contents from haul composition sampling during the 2006/07 Bering Sea Area weathervane scallop fishery..... | 23 |

LIST OF FIGURES

| Figure | Page |
|--|-------------|
| 1. Left (upper) valve of scallop shell showing orientation of shell height measurement..... | 24 |
| 2. Map showing Alaska scallop fishery registration areas. General areas of effort during the 2006/07 season are overlaid by dark polygons..... | 25 |
| 3. Scallop catch (top), dredge-hrs (center), and CPUE (bottom) during the 2006/07 statewide weathervane scallop fishery..... | 26 |
| 4. Estimated scallop shell height distributions from the 1998/99 – 2006/07 Yakutat District 16 fishing seasons. No histogram was constructed for the 2003/04 season due to small sample sizes..... | 27 |
| 5. Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Yakutat Area D fishing seasons..... | 28 |
| 6. Estimated scallop shell height distributions from the 2000/01 – 2006/07 Prince William Sound fishing seasons..... | 29 |
| 7. Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Kodiak Northeast District fishing seasons..... | 30 |
| 8. Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Kodiak Shelikof District fishing seasons..... | 31 |
| 9. Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Bering Sea fishing seasons..... | 32 |
| 10. Estimated Tanner crab bycatch (top) and bycatch rate (bottom) from the 2006/07 scallop fishing season..... | 33 |

LIST OF FIGURES (Continued)

| | | |
|-----|---|----|
| 11. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Yakutat District 16 scallop fishery. Sample sizes were 13 males and 18 females..... | 34 |
| 12. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Yakutat Area D scallop fishery. Sample sizes were 345 males and 350 females..... | 34 |
| 13. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Prince William Sound scallop fishery. Sample sizes were 41 males and 33 females..... | 35 |
| 14. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Kodiak Northeast District scallop fishery. Sample sizes were 593 males and 472 females..... | 35 |
| 15. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Kodiak Shelikof District scallop fishery. Sample sizes were 1,314 males and 1,376 females..... | 36 |
| 16. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Alaska Peninsula scallop fishery. Sample sizes were 97 males and 94 females..... | 36 |
| 17. | Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Bering Sea scallop fishery. Sample sizes were 1,430 males and 1,015 females..... | 37 |
| 18. | Combined snow crab and hybrid snow crab × Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Bering Sea scallop fishery. Sample sizes were 391 males and 7 females..... | 37 |

LIST OF APPENDICES

| Appendix | Page | |
|-----------------|--|----|
| A1. | Historical observer program summary statistics from the Yakutat Area D scallop fishery..... | 40 |
| A2. | Historical observer program summary statistics from the Yakutat District 16 scallop fishery..... | 41 |
| A3. | Historical observer program summary statistics from the Prince William Sound scallop fishery. The area was not opened for fishing during 1994 and 1996..... | 42 |
| A4. | Historical observer program summary statistics from the Kodiak Northeast District scallop fishery. The area was not opened for fishing during 1995/96..... | 43 |
| A5. | Historical observer program summary statistics from the Kodiak Shelikof District scallop fishery. The area was not opened for fishing during 1995/96..... | 44 |
| A6. | Historical observer program summary statistics from the Kodiak Semidi Island District scallop fishery. The area was not opened for fishing in 1995. Regulatory changes in 2000 closed state waters in the Semidi District and no effort has occurred since..... | 45 |
| A7. | Historical observer program summary statistics from the Alaska Peninsula scallop fishery. The area was not opened for fishing during the 1995/96, 2001/02, and 2002/03 seasons. No effort occurred during the 2003/04 – 2005/06 seasons..... | 46 |
| A8. | Historical observer program summary statistics from the Bering Sea scallop fishery. Fishing was not opened during the 1995/96 season..... | 47 |
| A9. | Historical observer program summary statistics from the Dutch Harbor Area scallop fishery. No effort occurred during the 1996/97 season, and fishing was not opened during the 2000/01 – 2001/02 and 2003/04 – 2006/07 seasons..... | 48 |
| B1. | Historical summary statistics from the Yakutat Area D scallop fishery..... | 50 |
| B2. | Historical summary statistics from the Yakutat District 16 scallop fishery..... | 51 |
| B3. | Historical summary statistics from the Prince William Sound (Area E) scallop fishery. The area was not opened for fishing during 1994 and 1996..... | 52 |
| B4. | Historical summary statistics from the Kodiak Northeast District scallop fishery. Fishing was not opened during the 1995/96 season..... | 53 |
| B5. | Historical summary statistics from the Kodiak Shelikof District scallop fishery. Fishing was not opened during the 1995/96 season..... | 54 |
| B6. | Historical summary statistics from the Kodiak Semidi Island District scallop fishery. Fishing was not opened during the 1995/96 season. Regulatory changes that closed state waters to scallop fishing were enacted in 2000, and no effort has occurred since..... | 55 |

LIST OF APPENDICES (Continued)

| | | |
|-----|--|----|
| B7. | Historical summary statistics from the Alaska Peninsula (Area M) scallop fishery. The area was not opened for fishing during the 1995/96, 2001/02, and 2002/03 seasons. No effort occurred during the 2003/04 – 2005/06 seasons..... | 56 |
| B8. | Historical summary statistics from the Bering Sea (Area Q) scallop fishery. Fishing was not opened during the 1995/96 season..... | 57 |
| B9. | Historical summary statistics from the Dutch Harbor (Area O) scallop fishery. Fishing was not opened during the 2000/01 – 2001/02 and 2003/04 – 2006/07 seasons. No effort occurred during the 1996/97 season..... | 58 |
| C1. | Historical bycatch statistics from the Yakutat Area D scallop fishery. Crab bycatch limits have not been established for the Yakutat scallop fishery. | 60 |
| C2. | Historical bycatch statistics from the Yakutat District 16 scallop fishery. Crab bycatch limits have not been established for the Yakutat scallop fishery. | 61 |
| C3. | Historical bycatch statistics from the Prince William Sound (Area E) scallop fishery. | 62 |
| C4. | Historical bycatch statistics from the Kodiak Northeast District scallop fishery. | 63 |
| C5. | Historical bycatch statistics from the Kodiak Shelikof District scallop fishery. | 64 |
| C6. | Historical bycatch statistics from the Kodiak Semidi Island District scallop fishery. Fishing was not opened during the 1995/96 season. Regulatory changes that closed state waters to scallop fishing were enacted in 2000, and no effort has occurred since..... | 65 |
| C7. | Historical bycatch statistics from the Alaska Peninsula (Area M) scallop fishery..... | 66 |
| C8. | Historical bycatch statistics from the Bering Sea (Area Q) scallop fishery. Fishing was not opened during the 1995/96 season..... | 67 |
| C9. | Historical bycatch statistics from the Dutch Harbor (Area O) scallop fishery. | 68 |

ABSTRACT

Onboard fishery observers have been required on all commercial vessels fishing for weathervane scallops *Patinopecten caurinus* in Alaska waters excluding Cook Inlet since 1994. This report summarizes data collected by scallop fishery observers during the 2006/07 Alaska weathervane scallop fishing season. Observer sampling effort and fishery data are summarized, and estimates of crab and halibut bycatch are presented. Time series of scallop observer data that begin in 1993 are included as appendices.

Key words: weathervane scallops, Alaska, *Patinopecten caurinus*, fishery observer, marine fishery, bycatch

INTRODUCTION

Commercial fishing for weathervane scallops *Patinopecten caurinus* in Alaska began in 1967, when two Kodiak-based vessels were converted for scallop dredging (Kruse et al. 2005). The weathervane scallop fishery was passively managed by the Alaska Department of Fish and Game (ADF&G) by using measures such as seasons and area closures from the late 1960s through 1993, when an influx of scallop vessels from the east coast of the United States led to concerns about overfishing. This led ADF&G to officially designate the fishery a ‘high impact emerging fishery.’ ADF&G subsequently developed the Alaska Scallop Fishery Management Plan, which became regulation 5 AAC 38.076 adopted by the Alaska Board of Fisheries in 1994.

The new management plan included provisions designed to limit efficiency and slow the scallop harvest; additionally, it provided a framework for establishing crab bycatch limits, and gave ADF&G authority to establish an onboard scallop fishery observer program. Observers have been required onboard all vessels fishing for scallops in Alaska waters outside Cook Inlet since that time. Alaska scallop fishery regulations, detailed descriptions of registration areas, and additional management information are available from ADF&G (e.g., Barnhart et al. 2008), and in the Fisheries Management Plan for the Scallop fishery off Alaska (FMP)¹, a federal document approved by the North Pacific Fishery Management Council that grants authority to the state of Alaska to manage the scallop fishery in federal waters between 3 and 200 nautical miles offshore.

Scallop fishery observers are employed by independent agents who contract with scallop vessel operators for their services. ADF&G coordinates observer activities including training, deployment, briefing, debriefing, and certification, and maintains a database of observer-collected data at the Kodiak office.

This report summarizes data collected by scallop fishery observers during the 2006/07 Alaska statewide scallop fishing season. Biological data on the scallop catch and on other species incidentally caught by scallop dredges (bycatch) are presented along with summaries of logbook data recorded by scallop vessel operators. Time series data in tabular form that provide historical perspective on the scallop fishery and observer program are presented in appendices.

METHODS

Scallop fishery observers were trained prior to the 2006/07 season at the University of Alaska’s North Pacific Fisheries Observer Training Center. Methods described here are for data presented in this report; comprehensive scallop observer sampling methods are contained in the

¹ <http://www.fakr.noaa.gov/npfmc/fmp/scallop/ScallopFMP2006.pdf>

Weatherlane Scallop Observer Manual (Barnhart 2004), which was the primary reference used during the training course.

Observers were deployed on all vessels fishing scallops outside Cook Inlet during the 2006/07 season. Participants in the Cook Inlet scallop fishery are not required to carry observers but are limited to a single 6 ft dredge; the fishery is closely monitored by ADF&G Central Region staff.

COMMONLY USED TERMS

The following terms, abbreviations and definitions related to scallops and the scallop fishery are used in this report:

| | |
|--------------------------------|---|
| <i>bycatch</i> | non-target species and other items incidentally caught in dredges during scallop fishing operations |
| <i>CPUE</i> | catch per unit effort, fishery performance statistic expressed in pounds meat per dredge hour (lbs mt/dredge-hr) |
| <i>CW</i> | carapace width, size measurement for <i>Chionoecetes</i> spp. crabs |
| <i>discarded scallop catch</i> | small and/or broken scallops captured by the dredge that are not removed from deck by vessel crew for shucking |
| <i>dredge-hr</i> | one scallop dredge towed one hour |
| eastern GOA | eastern Gulf of Alaska region including Yakutat District 16, Yakutat Area D, and Prince William Sound scallop fishing areas |
| <i>GHL</i> | guideline harvest level; anticipated scallop catch in a given area established prior to season |
| <i>observer</i> | onboard scallop fishery observer |
| <i>retained scallop catch</i> | whole scallops caught in dredge and removed from deck by vessel crew for shucking |
| <i>SH</i> | scallop shell height in mm measured as in Figure 1 |
| <i>shucking</i> | process of removing adductor muscle (scallop meat) from shell and viscera |
| <i>vessel-day</i> | 24-hr period beginning at midnight for a specific vessel |

CATCH SAMPLING

Data summarized in this report were obtained through two types of catch sampling: *bycatch sampling* provided counts of incidentally caught crabs and halibut as well as weights and numbers of the retained and discarded scallop catch, and *haul composition sampling* documented all dredge contents by weight. Alaska scallop vessels typically fish almost 24 hours per day and most deploy two dredges simultaneously; observers were instructed to sample a single dredge from different tows at different times throughout the day and to choose the port or starboard dredge (if available) for sampling prior to viewing dredge contents.

Bycatch Sampling

Scallop observers' bycatch sampling goal for the 2006/07 season was a single dredge from five separate tows on each full day of fishing. After dredge contents were emptied on deck and the scallop vessel crew removed the retained catch of scallops for shucking, observers examined the remaining contents of the selected dredge.

Pacific halibut *Hippoglossus stenolepis* were counted, measured, examined, and returned to the sea. All incidentally caught crabs were identified by species, the number of individuals of each species was counted, and samples of up to 20 Dungeness crabs *Cancer magister*, red king crabs *Paralithodes camtschaticus*, Tanner crabs *Chionoecetes bairdi*, and snow crabs *C. opilio* were examined in detail. Carapace sizes of these individuals were measured with vernier calipers, and sex, shell condition (intact or broken/crushed), and injuries were noted. Crabs that were crushed, dismembered, exhibited no movement, or that appeared to be severely injured and not likely to survive, were coded as dead. Carapace length (CL) of king crabs was measured, and carapace width (CW) was measured on all other crab species.

The scallop catch was also examined during bycatch sampling. Twenty scallops were selected from the retained catch, shell height (SH) of each scallop was measured, and the sample was weighed. The discarded scallop catch consisting of small and/or broken scallops and larger scallops that were overlooked by the crew was collected into baskets. One basket was sorted based on shell condition, with intact scallops separated from broken/crushed scallops. These intact scallops and broken/crushed scallop samples were weighed separately with a hanging spring scale and individuals were counted; broken/crushed scallops with half or more of the soft body tissue attached were counted as one scallop. Shell height was measured on a systematic sample of 20 intact discarded scallops.

Haul Composition Sampling

Scallop observers targeted one dredge from one tow for haul composition sampling on each full day of fishing. After the retained scallop catch was removed from deck by the crew, the scallop observer would sort the remaining contents to the lowest taxonomic level possible. Natural debris such as kelp, wood, and rocks was separated from man-made items such as plastics and derelict fishing gear. Complete weights were obtained for most species or items caught by the dredge using a hanging spring scale and baskets. Pacific halibut were measured to the nearest centimeter (cm) from the tip of the snout to the end of the central rays of the caudal fin, and weights were determined using a length/weight conversion table. Subsampling was used to estimate weight when large quantities of a single species or item were present. This was accomplished by weighing three baskets on a spring scale then multiplying the average weight by the observer's visual estimate of the total number of baskets of the species or item.

To estimate the weight of retained scallops in the haul composition sample, the average weight of three baskets of retained scallops was obtained using the spring scale then multiplied by the total number of baskets of retained scallops. All discarded scallops were weighed with the spring scale, then discarded and retained scallop weights were summed to obtain total weight of scallops in the sampled dredge.

VESSEL OPERATOR LOGBOOKS

Scallop vessel operators were required to complete logbooks supplied by ADF&G that provided detailed information on each tow. Observers were instructed to check regularly to assure that

these forms were completed accurately, legibly, and in a timely manner. Data recorded for each tow included date, time, number and width of dredges fished, starting latitude and longitude, tow duration, average depth, average speed, ADF&G statistical area, and estimated round weight of retained scallops.

ESTIMATION OF BYCATCH AND DISCARDED SCALLOP CATCH

Bycatch of Tanner and snow crabs, Dungeness crabs, and Pacific halibut was estimated using data collected during bycatch sampling. For each fishing area or district, total number of individuals of each species incidentally caught, \hat{B} , was estimated by summing *daily* bycatch estimates for each vessel calculated as

$$\hat{B} = \frac{c}{t} \cdot T \cdot D, \quad (1)$$

where

c = number crabs or halibut counted in sampled dredges,

t = sampled dredge-hrs,

T = total dredge-hrs, and

D = average number of dredges fished during the day.

For days when no dredges were sampled, bycatch was estimated by multiplying the average catch rate (number/hr) for the same vessel in the same area by total dredge hrs and average number of dredges fished during the day for which no samples were taken. Ninety-five percent confidence intervals for the bycatch estimates were calculated using percentile-method bootstrapping (Barnhart et al. 1996).

Methods for estimating the number and weight of discarded scallops in each fishing area were similar to those used for bycatch estimation. Number or weight (\hat{X}) of intact (or broken) scallops in the sampled dredges on each vessel each fishing day were estimated by

$$\hat{X} = \frac{x}{W} (W + R), \quad (2)$$

where

x = number (or weight) of intact (or broken) scallops in subsampled baskets,

W = weight of subsampled baskets, and

R = weight of remaining scallops in sampled dredges.

Estimates of daily totals for each vessel were obtained by substituting \hat{X} for c in equation (1), and area estimates were obtained by summing over all vessels and days. Days with no sampling were handled as above, using average catch rates (number or weight per dredge hr) by the same vessel in the same area. Again, confidence intervals were calculated using percentile-method bootstrapping.

SCALLOP SHELL HEIGHT FREQUENCY DISTRIBUTIONS

Histograms depicting estimated SH distributions of the combined retained and discarded scallop catch were created for fishing areas with at least 200 measurements of both retained and discarded scallops. This was accomplished by resampling observer-collected SH measurements based on the estimated proportion of retained and discarded scallops in the catch. Plots of multiple years of SH histograms are presented to document changes in these SH distributions over time.

RESULTS AND DISCUSSION

OBSERVER SAMPLING EFFORT

Three vessels participated in the 2006/07 statewide scallop fishery between July 2 and December 13, 2006 (Table 1). Five observers were deployed during the season, and they sampled at least one tow on 260 of the 270 vessel-days on which fishing occurred (Table 1). Of 4,493 tows documented in vessel operator logbooks, 1,223 or 27% were sampled by observers.

Observer sampling effort was proportional to vessel fishing effort. Over 300 bycatch samples and over 60 haul composition samples were completed in both Yakutat Area D and Kodiak Shelikof District, where effort was highest during the 2006/07 season. Only 21 bycatch samples and one haul composition sample were completed during the 2006/07 Alaska Peninsula fishery.

FISHERY CATCH AND EFFORT

Regulatory scallop fishing areas and general locations of 2006/07 scallop fishing effort are shown in Figure 2. Scallop fishing effort during the 2006/07 season occurred in traditional fishing areas documented in observer program logbooks dating back to 1993. Of note, commercial scallop fishing effort occurred in the Alaska Peninsula Area for the first time since the 2000/01 season.

A total of 487,473 lbs of scallop meats were harvested during the season (Table 2, Figure 3). In declining order, catches were approximately 163,000 lbs from Kodiak Shelikof District, 151,000 lbs from Yakutat Area D, 75,000 lbs from Kodiak Northeast District, 48,000 lbs from the Bering Sea Area, 37,000 lbs from the Prince William Sound Area, 13,000 lbs from Yakutat District 16, and 155 lbs from the Alaska Peninsula Area.

Catches were close to GHGs in most fishing areas (Table 2). Exceptions included the Kodiak Northeast District, where 15,000 lbs of the GHG was assigned to an exploratory area north of traditional fishing areas that saw minimal effort, and the Alaska Peninsula Area, where poor fishing produced a catch that was much lower than the 25,000 lb GHG.

Scallop fishing effort during the 2006/07 season was highest in Yakutat Area D (Table 2, Figure 3). CPUE was higher in Kodiak Shelikof District than in Yakutat Area D and produced a higher catch from fewer dredge-hrs. CPUE was highest in Prince William Sound at 111 lbs meat/dredge-hr and ranged down to 2 lbs meat/dredge-hr in the Alaska Peninsula Area. Statewide CPUE for the season was 61 lbs meat/dredge-hr.

Depths fished during 2006/07 were similar to depths fished during previous seasons. Fishing occurred offshore in 42–152 m of water (Table 3), with over 90% of effort in depths 60–120 m statewide.

Distances towed and area dredged (Table 3) were proportional to dredge-hrs (Table 2), with the highest values recorded in Yakutat Area D. Average tow length during the 2006/07 season was 56 minutes, and average tow speed was 4.8 nmi/hr (8.9 km/hr); with the legal maximum of 2 dredges totaling 30 ft width (9.14 m), the average tow swept an area of about 72,700 m² or 0.02 nmi².

DISCARDED SCALLOP CATCH

Observers sampled almost 50,000 lbs of discarded scallops during 2006/07 bycatch sampling (Table 4). Average weight of intact discarded scallops was lower than average weight for broken discards, as intact scallops were discarded because they were judged too small for shucking by vessel crewmembers. For all areas except Yakutat District 16 and Prince William Sound, intact discarded scallops outnumbered broken discards (Table 4).

Estimated numbers, round weight, and associated confidence intervals for discarded intact scallops (Table 5) and broken scallops (Table 6) were calculated from bycatch sampling and logbook effort data. Total weight of discarded scallops (Table 2) was highest in Yakutat Area D. Expressed as a percentage of estimated round weight catch, the discard rate was highest in the Alaska Peninsula Area at 20%, followed by Yakutat Area D (18%), Kodiak Northeast District (16%), Kodiak Shelikof District (15%), Yakutat District 16 (12%), Bering Sea (9%), and Prince William Sound (8%). Statewide, an estimated 881,000 lbs (95% confidence interval 772,000–998,000), or 15% of the total round weight catch, was discarded during the 2006/07 season.

SCALLOP SHELL HEIGHT DISTRIBUTIONS

Observers recorded over 43,000 SH measurements during the 2006/07 season (Table 7). Average retained scallop SH was highest in the Bering Sea, midrange for both Kodiak districts, and lowest in Yakutat District 16. Average discarded SH ranged from a high of 119 mm in the Bering Sea to 84 mm in Yakutat District 16.

Histograms of estimated scallop SH distributions from recent seasons (Figures 4–9) illustrate geographic differences in population size structures as well as changes over time. In general, large scallops dominated Bering Sea catches, wide ranges of scallop sizes were present in catches from the Kodiak Area, and Yakutat catches featured smaller scallops and narrower size ranges. These results were consistent with results from exploratory shell aging work by ADF&G that show slower growth and lower asymptotic sizes for eastern GOA scallops than for those from Kodiak and the Bering Sea. No SH histogram was constructed for the Alaska Peninsula due to small sample size (Table 7).

BYCATCH

Bycatch Estimates

Approximately 103,000 Tanner crabs (95% confidence interval 80,000–130,300), 2,300 Dungeness crabs (95% confidence interval 1,300–3,400), and 1,400 halibut (95% confidence interval 800–2,000), were incidentally caught by scallop vessels during the 2006/07 statewide scallop fishing season (Table 8).

Estimated Tanner crab bycatch was highest in the Bering Sea at about 45,000 animals (Table 8; Figure 10). Ten red king crabs and approximately 8,500 snow crabs and snow crab × Tanner crab hybrids were also incidentally caught in the 2006/07 Bering Sea scallop fishery. Tanner crab

bycatch rate (Figure 10) was highest in the Alaska Peninsula Area at almost 75 crabs/dredge-hr, followed by rates of about 40 crabs/dredge-hr in the Bering Sea, 10–15 crabs/dredge-hr in both Kodiak districts, and <3 crabs/dredge-hr in the eastern GOA (Figure 10). Combining scallop harvest with crab bycatch estimates produced ratios of 103 lbs scallop meat per Tanner crab for Prince William Sound, 77 lbs scallop meat per Tanner crab for Yakutat District 16, 19 lbs scallop meat per Tanner crab for Yakutat Area D, 6 lbs scallop meat per Tanner crab for Kodiak Shelikof District, 5 lbs scallop meat per Tanner crab for Kodiak Northeast District, 1 lb scallop meat per combined Tanner crab and snow crab × Tanner crab hybrids in the Bering Sea, and less than 1 lb scallop meat per Tanner crab in the Alaska Peninsula Area.

Most Dungeness crab bycatch during the 2006/07 scallop season occurred in the Kodiak Shelikof District, with zero Dungeness crabs encountered by observers in the Kodiak Northeast District, Alaska Peninsula, and Bering Sea fisheries (Table 8). Halibut bycatch was relatively high in the eastern GOA, where an estimated 729 halibut incidentally caught in Yakutat Area D and District 16 accounted for over half the statewide total (Table 8).

Size Distributions of Incidentally Caught Tanner and Snow Crabs

Size distributions of Tanner crabs incidentally caught during the 2006/07 scallop season in each area are shown in Figures 11–18. In general, fewer and smaller crabs were caught in the eastern GOA than in the Kodiak, Alaska Peninsula, and Bering Sea Areas.

Eastern GOA CW distributions (Figures 11–13) show that Tanner crab bycatch in these areas consisted almost exclusively of animals <50 mm CW. Size distributions of Tanner crab bycatch from Kodiak Northeast District (Figure 14) were bimodal with peaks for males at about 30 mm and 125 mm CW and for females at 25 mm and 85 mm CW. Size distributions of Kodiak Shelikof District Tanner crab bycatch (Figure 15) were dominated by a mode at about 35 mm CW. The size distribution of male and female Tanner crabs incidentally caught in the Alaska Peninsula scallop fishery (Figure 16) featured a mode at 55 mm CW. In the Bering Sea, CW distributions of Tanner crabs (Figure 17) showed a wide range of sizes with a notable mode at about 75 mm for females. For combined Bering Sea snow crabs and snow × Tanner hybrids, CW distributions (Figure 18) showed that numerous males 60–125 mm CW were incidentally caught in the 2006/07 scallop fishery while only 7 females total were sampled by observers.

Tanner Crab and Halibut Mortality

Observers examined about 7,600 incidentally caught Tanner crabs, snow crabs, and hybrid snow × Tanner crabs statewide during 2006/07 bycatch sampling and classified 63% as dead (Table 9). Rosenkranz (2002) reviewed observer data collected between 1993 and 2000 and noted high variability in Tanner crab bycatch mortality rates both between years and between vessels. Of the 164 halibut encountered by observers during 2006/07 bycatch sampling, 52 (32%) were reported as dead.

HAUL COMPOSITION

Scallops were the most abundant species by weight in dredges sampled for haul composition, comprising 80% of the total weight in 202 dredges sampled statewide during the 2006/07 season (Tables 10–16). Sea stars, skates, Tanner crabs, and flatfish, as well as natural debris including kelp, wood, and rocks were also frequently encountered by observers during haul composition sampling.

In the eastern GOA, scallops, empty scallop shells, and sunflower sea stars *Pycnopodia helianthoides* were the 3 top items in haul composition samples from each fishing area (Tables 10–12). Other commonly caught invertebrates were sand stars *Luidia foliata*, brittle stars *Ophiura sarsi*, and sea anemones (order *Actiniaria*). Skates such as the big skate *Raja binoculata* and flatfishes including English sole *Parophrys vetulus* were also frequently encountered. Of note, Tanner crabs were relatively rare, comprising less than 0.1% of the sampled catch by weight.

Scallops, scallop shells, sunflower sea stars, and natural debris were prominent in haul composition samples from Kodiak (Tables 13–14). Flatfish and skates were also frequently encountered in Kodiak haul composition samples. Tanner crabs were the 12th most commonly caught item by weight in the Kodiak Northeast District (Table 13), comprising 0.3% of the total sampled weight. In Kodiak Shelikof District (Table 14), Tanner crabs were ranked 16th and comprised 0.1% of the total sampled weight.

The Alaska Peninsula Area scallop fishery saw effort for the first time in several years during 2006/07. Fishing was extremely poor given that the area had been closed to promote scallop stock rebuilding, and only one haul composition sample was completed before the vessel departed the area. Basket stars *Gorgonocephalus caryi* captured in that dredge outweighed scallops, and Tanner crabs accounted for over 3% of the total weight (Table 15).

Haul composition samples from the 2006/07 Bering Sea scallop fishery contained almost 90% scallops and scallop shells by weight (Table 16). Empty gastropod shells ranked fourth, comprising over 1% of sample weight, while *Chionoecetes* crabs were common in sampled dredges and comprised about 4% of the total weight.

HISTORICAL SUMMARY INFORMATION

Historical scallop observer program time series data are presented in appendices to this annual report. Appendix A contains tables summarizing observer program statistics such as fishing dates, vessel days, and number of tows sampled by observers. Appendix B tables summarize fishery performance with statistics such as catch and CPUE. Appendix C contains tables summarizing bycatch of crabs and halibut. In each of these appendices, tables dating back to inception of the scallop observer program in 1993 are presented for each fishing area.

ACKNOWLEDGEMENTS

Scallop observers Scott Brandl, Aimee Kaye, Melanie Rickett, Bill Rucker, and Ted Starnes collected data presented in this report. Their sampling work while living aboard scallop vessels at sea for extended periods of time is greatly appreciated. We thank Jeff Barnhart, retired ADF&G scallop biologist, who coordinated the scallop observer program during the time period covered by this report, and Heidi Morrison, who entered data and made corrections where warranted. Special thanks are also due to the scallop vessel operators who participated in the fishery, completed numerous logbook pages, and released confidential data for inclusion in this report: Tom Hogan, John Lemar, Glenn Mikkelsen, George Milne, Tom Minio, and Thomas Minio, Jr.

REFERENCES CITED

- Barnhart, J. P. 2004. Weathervane scallop observer manual. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K04-39, Kodiak.
- Barnhart, J. P., I. Vining, and L. Byrne. 1996. A summary of data collected by scallop observers from the 1994/1995 commercial scallop fishery in Alaska's Westward Region. Alaska Department of Fish and Game, Division of Commercial Fisheries, Regional Information Report 4K96-33, Kodiak.
- Barnhart, J., N. Sagalkin, G. Rosenkranz, R. Berceli, J. Stratman, and C. Trowbridge. 2008. Annual management report for the commercial weathervane scallop fisheries in Alaska, 2005/06. Alaska Department of Fish and Game, Division of Commercial Fisheries, Fishery Management Report No. 08-01, Anchorage.
- Kruse, G. H., J. P. Barnhart, and G. E. Rosenkranz. 2005. Management of the data limited weathervane scallop fishery in Alaska. Pages 51-86 in G. H. Kruse, V. F. Galucci, D. E. Hay, R. I. Perry, R. M. Peterman, T. C. Shirley, D. Spencer, B. Wilson, and D. Woodby, editors. Fisheries assessment and management in data limited situations. Alaska Sea Grant College-Program, University of Alaska Fairbanks.
- Rosenkranz, G. E. 2002. Mortality of Chionoecetes crabs incidentally caught in Alaska's weathervane scallop fishery. Pages 717-732 in A.J. Paul et al., editors. Crabs in Cold Water Regions: Biology, Management, and Economics. University of Alaska Sea Grant, AK-SG-02-01, Fairbanks.

TABLES AND FIGURES

Table 1.–Observer program statistics from the 2006/07 weathervane scallop fishing season.

| Area/District | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples |
|---------------------------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|------------------|
| Yakutat District 16 | 8/19/06 | 9/13/06 | 2 | 12 | 11 | 47 | 6 |
| Yakutat Area D | 7/11/06 | 10/24/06 | 2 | 92 | 84 | 383 | 64 |
| Prince William Sound | 7/2/06 | 7/11/06 | 2 | 15 | 15 | 66 | 9 |
| Kodiak Northeast District | 9/7/06 | 12/2/06 | 2 | 42 | 40 | 178 | 31 |
| Kodiak Shelikof District | 7/5/06 | 9/7/06 | 3 | 73 | 72 | 325 | 68 |
| Alaska Peninsula | 10/26/06 | 12/8/06 | 2 | 7 | 5 | 21 | 1 |
| Bering Sea | 10/31/06 | 12/13/06 | 1 | 36 | 33 | 149 | 23 |
| Statewide Total | 7/2/06 | 12/13/06 | 3 | 277 | 260 | 1,169 | 202 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

Table 2.–Fishery statistics from the 2006/07 weathervane scallop fishing season.

| Area/District | GHL ^a (lbs meat) | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^b | Discarded scallops ^c | |
|---------------------------|--------------------------------|----------------------|---------------------|-----------------|-------------------|---------------------------------|--------------|
| | | | | | | Number | Weight (lbs) |
| Yakutat District 16 | 21,000 | 184,106 | 13,445 | 309 | 44 | 139,657 | 24,800 |
| Yakutat Area D | 150,000 | 1,771,229 | 150,950 | 2,817 | 54 | 1,483,604 | 383,622 |
| Prince William Sound | 37,000 | 440,781 | 36,990 | 334 | 111 | 106,623 | 38,104 |
| Kodiak Northeast District | 90,000 | 703,338 | 75,150 | 1,168 | 64 | 392,477 | 136,625 |
| Kodiak Shelikof District | 160,000 | 1,405,382 | 162,537 | 2,183 | 74 | 761,724 | 241,414 |
| Alaska Peninsula | 25,000 | 3,103 | 155 | 64 | 2 | 2,604 | 794 |
| Bering Sea | 50,000 | 529,590 | 48,246 | 1,138 | 42 | 131,115 | 55,562 |
| Statewide Total | 533,000 | 5,037,529 | 487,473 | 8,013 | 61 | 3,017,804 | 880,921 |

^a Upper catch target set prior to season.

^b Catch per unit effort in lbs meat/dredge-hr.

^c Estimated from bycatch samples.

Table 3.—Depth-range fished, distance towed, and area dredged during the 2006/07 weathervane scallop fishing season.

| Area/district | Depths fished (m) | | | Distance towed (nmi) | Area dredged (nmi ²) ^a |
|---------------------------|-------------------|---------|---------|----------------------|---|
| | Minimum | Maximum | Average | | |
| Yakutat District 16 | 62 | 77 | 71 | 742 | 3.7 |
| Yakutat Area D | 57 | 110 | 75 | 7,075 | 33.6 |
| Prince William Sound | 62 | 86 | 75 | 805 | 3.9 |
| Kodiak Northeast District | 64 | 137 | 93 | 2,902 | 13.8 |
| Kodiak Shelikof District | 42 | 152 | 103 | 5,603 | 25.5 |
| Alaska Peninsula | 59 | 126 | 102 | 226 | 0.8 |
| Bering Sea | 91 | 108 | 97 | 2,746 | 13.5 |
| Statewide Total | 42 | 152 | 49 | 20,101 | 94.7 |

^a Calculated from logbook data by summing tow duration × average speed × dredgewidth for each tow.

Table 4.—Number and weight of discarded scallops sampled by observers during the 2006/07 weathervane scallop fishing season.

| Area/district | Number scallops | | Weight scallops (lbs) | | Average weight (lbs) | | |
|---------------------------|-----------------|--------|-----------------------|--------|----------------------|--------|---------|
| | Intact | Broken | Intact | Broken | Intact | Broken | Overall |
| Yakutat District 16 | 4,653 | 4,888 | 572 | 1,174 | 0.12 | 0.24 | 0.18 |
| Yakutat Area D | 47,263 | 20,197 | 11,153 | 6,416 | 0.24 | 0.32 | 0.26 |
| Prince William Sound | 2,385 | 5,481 | 664 | 2,148 | 0.28 | 0.39 | 0.36 |
| Kodiak Northeast District | 9,599 | 8,958 | 2,892 | 3,789 | 0.30 | 0.42 | 0.36 |
| Kodiak Shelikof District | 35,147 | 9,748 | 10,123 | 3,836 | 0.29 | 0.39 | 0.31 |
| Alaska Peninsula | 260 | 25 | 79 | 8 | 0.30 | 0.32 | 0.31 |
| Bering Sea | 8,770 | 5,057 | 3,201 | 2,584 | 0.36 | 0.51 | 0.42 |
| Statewide Total | 108,077 | 54,354 | 28,684 | 19,955 | 0.27 | 0.37 | 0.30 |

Table 5.—Estimated number and weight of intact scallops discarded during the 2006/07 weathervane scallop fishing season.

| Area/District | Number intact scallops | | | Weight intact scallops (lbs) | | |
|---------------------------|------------------------|-------------------------|-------------------------|------------------------------|-------------------------|-------------------------|
| | Estimate | Lower c.i. ^a | Upper c.i. ^a | Estimate | Lower c.i. ^a | Upper c.i. ^a |
| Yakutat District 16 | 69,965 | 53,671 | 88,773 | 8,425 | 6,335 | 10,905 |
| Yakutat Area D | 1,113,425 | 1,016,217 | 1,267,780 | 266,868 | 244,462 | 300,484 |
| Prince William Sound | 33,095 | 24,263 | 41,498 | 8,924 | 6,532 | 10,803 |
| Kodiak Northeast District | 232,308 | 174,456 | 290,260 | 70,548 | 53,276 | 88,612 |
| Kodiak Shelikof District | 607,493 | 532,504 | 690,411 | 181,084 | 160,599 | 202,904 |
| Alaska Peninsula | 2,441 | 169 | 4,274 | 738 | 65 | 1,345 |
| Bering Sea | 82,294 | 76,043 | 87,824 | 30,369 | 27,846 | 32,337 |
| Statewide Total | 2,141,021 | 1,877,323 | 2,470,820 | 566,956 | 499,115 | 647,390 |

^a 95% confidence intervals from bootstrapping.

Table 6.—Estimated number and weight of broken scallops discarded during the 2006/07 weathervane scallop fishing season.

| Area/District | Number broken scallops | | | Weight broken scallops (lbs) | | |
|---------------------------|------------------------|-------------------------|-------------------------|------------------------------|-------------------------|-------------------------|
| | Estimate | Lower c.i. ^a | Upper c.i. ^a | Estimate | Lower c.i. ^a | Upper c.i. ^a |
| Yakutat District 16 | 69,692 | 57,109 | 86,447 | 16,375 | 13,815 | 19,892 |
| Yakutat Area D | 370,179 | 336,565 | 400,126 | 116,754 | 106,035 | 125,795 |
| Prince William Sound | 73,528 | 59,516 | 91,672 | 29,180 | 23,733 | 36,477 |
| Kodiak Northeast District | 160,169 | 129,922 | 176,829 | 66,077 | 54,103 | 73,625 |
| Kodiak Shelikof District | 154,231 | 136,075 | 171,568 | 60,330 | 52,773 | 66,647 |
| Alaska Peninsula | 163 | 45 | 241 | 56 | 14 | 80 |
| Bering Sea | 48,821 | 43,711 | 53,008 | 25,193 | 22,294 | 27,991 |
| Statewide Total | 876,783 | 762,943 | 979,891 | 313,965 | 272,767 | 350,507 |

^a 95% confidence intervals from bootstrapping.

Table 7.—Average scallop shell heights and sample sizes from the 2006/07 weathervane scallop fishery.

| Area/District | Retained catch | | Discarded catch | |
|---------------------------|-----------------|-------------|-----------------|-------------|
| | Average SH (mm) | Sample size | Average SH (mm) | Sample size |
| Yakutat District 16 | 122 | 918 | 84 | 816 |
| Yakutat Area D | 126 | 7,585 | 103 | 7,495 |
| Prince William Sound | 135 | 1,319 | 107 | 1,113 |
| Kodiak Northeast District | 143 | 3,055 | 115 | 2,682 |
| Kodiak Shelikof District | 142 | 6,387 | 107 | 6,217 |
| Alaska Peninsula | 121 | 124 | 108 | 104 |
| Bering Sea | 152 | 2,981 | 119 | 2,906 |
| Statewide Total | 137 | 22,369 | 108 | 21,333 |

Table 8.—Crab and halibut bycatch estimates for the 2006/07 weathervane scallop fishing season.

| Area/district | Tanner crabs | | | Dungeness crabs | | | Halibut | | |
|---------------------------|--------------|-----------------------------|-----------------------------|-----------------|----------------|----------------|------------|----------------|----------------|
| | Est number | Lower 95% c.i. ^a | Upper 95% c.i. ^a | Est number | Lower 95% c.i. | Upper 95% c.i. | Est number | Lower 95% c.i. | Upper 95% c.i. |
| Yakutat District 16 | 174 | 110 | 338 | 21 | 4 | 49 | 363 | 243 | 513 |
| Yakutat Area D | 7,961 | 5,285 | 11,382 | 159 | 88 | 253 | 366 | 234 | 503 |
| Prince William Sound | 359 | 212 | 541 | 4 | 1 | 13 | 24 | 5 | 63 |
| Kodiak Northeast District | 16,899 | 10,617 | 20,382 | 0 | | | 261 | 115 | 392 |
| Kodiak Shelikof District | 27,668 | 22,596 | 32,405 | 2,078 | 1,245 | 3,062 | 260 | 155 | 409 |
| Alaska Peninsula | 4,693 | 845 | 15,794 | 0 | | | 4 | 1 | 14 |
| Bering Sea ^b | 45,204 | 40,282 | 49,429 | 0 | | | 82 | 42 | 145 |
| Statewide | 102,958 | 79,947 | 130,271 | 2,262 | 1,338 | 3,377 | 1,360 | 795 | 2,039 |

^a 95% confidence intervals from bootstrapping.

^b Ten red king crabs and an estimated 8,543 snow crabs and snow crab × Tanner crab hybrids (95% confidence interval 7,144 – 10,538) were also incidentally caught in the Bering Sea.

Table 9.—Release condition of Tanner crabs and halibut sampled by observers during the 2006/07 scallop fishery.

| Area/district | Tanner crabs | | | Halibut | | |
|---------------------------|--------------|--------------|-----------------|-------------|--------------|-----------------|
| | Number dead | Number alive | Percentage dead | Number dead | Number alive | Percentage dead |
| Yakutat District 16 | 15 | 16 | 48 | 19 | 29 | 40 |
| Yakutat Area D | 497 | 198 | 72 | 9 | 34 | 21 |
| Prince William Sound | 36 | 38 | 49 | 0 | 5 | 0 |
| Kodiak Northeast District | 706 | 359 | 66 | 13 | 16 | 45 |
| Kodiak Shelikof District | 1,476 | 1,213 | 55 | 8 | 21 | 28 |
| Alaska Peninsula | 163 | 28 | 85 | 1 | 0 | 100 |
| Bering Sea ^a | 1,926 | 919 | 68 | 2 | 7 | 22 |
| Statewide Total | 4,819 | 2,721 | 63 | 52 | 112 | 32 |

^a Includes Tanner crabs, snow crabs, and hybrid snow × Tanner crabs.

Table 10.–Dredge contents from haul composition sampling during the 2006/07 Yakutat District 16 weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|--------------------------|----------------------------------|-------------------|
| 1 | weathervane scallop | <i>Patinopecten caurinus</i> | 82.9 |
| 2 | sunflower sea star | <i>Pycnopodia helianthoides</i> | 4.3 |
| 3 | empty weathervane shells | <i>P. caurinus</i> | 3.1 |
| 4 | sand star | <i>Luidia foliata</i> | 2.1 |
| 5 | kelp, wood, rocks, etc. | NA | 1.3 |
| 6 | skate unidentified | Family <i>Rajidae</i> | 1.1 |
| 7 | big skate | <i>Raja binoculata</i> | 1.1 |
| 8 | English sole | <i>Parophrys vetulus</i> | 0.8 |
| 9 | Pacific halibut | <i>Hippoglossus stenolepis</i> | 0.6 |
| 10 | flathead sole | <i>Hippoglossoides elassodon</i> | 0.5 |
| 11 | spiny dogfish | <i>Squalus acanthias</i> | 0.3 |
| 12 | longnose skate | <i>Raja rhina</i> | 0.3 |
| 13 | wolf eel | <i>Anarrhichthys ocellatus</i> | 0.2 |
| 14 | Pacific cod | <i>Gadus macrocephalus</i> | 0.1 |
| 15 | vermillion sea star | <i>Mediaster aequalis</i> | <0.1 |
| 16 | sea anemone unidentified | Order <i>Actiniaria</i> | <0.1 |
| 17 | black rockfish | <i>Sebastes melanops</i> | <0.1 |
| 18 | sea whip unidentified | <i>Halipteris sp.</i> | <0.1 |
| 19 | arrowtooth flounder | <i>Atheresthes stomias</i> | <0.1 |
| 20 | brittle star | <i>Ophiura sarsi</i> | <0.1 |

Table 11.—Dredge contents from haul composition sampling during the 2006/07 Yakutat Area D weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|--------------------------|----------------------------------|-------------------|
| 1 | weathervane scallop | <i>Patinopecten caurinus</i> | 83.4 |
| 2 | empty weathervane shells | <i>P. caurinus</i> | 5.9 |
| 3 | sunflower sea star | <i>Pycnopodia helianthoides</i> | 2.4 |
| 4 | kelp, wood, rocks, etc. | NA | 2.2 |
| 5 | big skate | <i>Raja binoculata</i> | 1.6 |
| 6 | sand star | <i>Luidia foliata</i> | 0.8 |
| 7 | brittle star | <i>Ophiura sarsi</i> | 0.7 |
| 8 | longnose skate | <i>Raja rhina</i> | 0.3 |
| 9 | English sole | <i>Parophrys vetulus</i> | 0.3 |
| 10 | spiny dogfish | <i>Squalus acanthias</i> | 0.2 |
| 11 | lingcod | <i>Ophiodon elongatus</i> | 0.2 |
| 12 | sea anemone unidentified | Order <i>Actiniaria</i> | 0.2 |
| 13 | Dover sole | <i>Microstomus pacificus</i> | 0.2 |
| 14 | skate unidentified | Family <i>Rajidae</i> | 0.1 |
| 15 | bristle worm | <i>Aphrodita negligens</i> | 0.1 |
| 16 | Pacific cod | <i>Gadus macrocephalus</i> | 0.1 |
| 17 | Bering skate | <i>Bathyraja interrupta</i> | 0.1 |
| 18 | sea whip unidentified | <i>Halipteris sp.</i> | <0.1 |
| 19 | flathead sole | <i>Hippoglossoides elassodon</i> | <0.1 |
| 20 | sponge unidentified | Phylum <i>Porifera</i> | <0.1 |

Table 12.—Dredge contents from haul composition sampling during the 2006/07 Prince William Sound weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|--------------------------|----------------------------------|-------------------|
| 1 | weathervane scallop | <i>Patinopecten caurinus</i> | 87.1 |
| 2 | empty weathervane shells | <i>P. caurinus</i> | 5.1 |
| 3 | sunflower sea star | <i>Pycnopodia helianthoides</i> | 4.5 |
| 4 | brittle star | <i>Ophiura sarsi</i> | 1.4 |
| 5 | kelp, wood, rocks, etc. | NA | 0.3 |
| 6 | longnose skate | <i>Raja rhina</i> | 0.3 |
| 7 | sand star | <i>Luidia foliata</i> | 0.3 |
| 8 | wolf eel | <i>Anarrhichthys ocellatus</i> | 0.1 |
| 9 | lingcod | <i>Ophiodon elongatus</i> | 0.1 |
| 10 | English sole | <i>Parophrys vetulus</i> | 0.1 |
| 11 | big skate | <i>Raja binoculata</i> | 0.1 |
| 12 | skate unidentified | Family <i>Rajidae</i> | <0.1 |
| 13 | sponge unidentified | Phylum <i>Porifera</i> | <0.1 |
| 14 | arrowtooth flounder | <i>Atheresthes stomias</i> | <0.1 |
| 15 | Tanner crab | <i>Chionoecetes bairdi</i> | <0.1 |
| 16 | sea anemone unidentified | Order <i>Actiniaria</i> | <0.1 |
| 17 | Dover sole | <i>Microstomus pacificus</i> | <0.1 |
| 18 | flathead sole | <i>Hippoglossoides elassodon</i> | <0.1 |
| 19 | longnose skate | <i>Raja rhina</i> | <0.1 |
| 20 | rex sole | <i>Glyptocephalus zachirus</i> | <0.1 |

Table 13.–Dredge contents from haul composition sampling during the 2006/07 Kodiak Northeast District weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|--------------------------|----------------------------------|-------------------|
| 1 | weathervane scallop | <i>Patinopecten caurinus</i> | 66.0 |
| 2 | sunflower sea star | <i>Pycnopodia helianthoides</i> | 14.4 |
| 3 | kelp, wood, rocks, etc. | NA | 6.0 |
| 4 | empty weathervane shells | <i>P. caurinus</i> | 3.1 |
| 5 | sea anemone unidentified | Order <i>Actiniaria</i> | 2.0 |
| 6 | brittle star | <i>Ophiura sarsi</i> | 1.8 |
| 7 | rock sole | <i>Pleuronectes bilineatus</i> | 1.3 |
| 8 | Bering skate | <i>Bathyraja interrupta</i> | 0.9 |
| 9 | sand star | <i>Luidia foliata</i> | 0.6 |
| 10 | southern rocksole | <i>Pleuronectes bilineatus</i> | 0.6 |
| 11 | arrowtooth flounder | <i>Atheresthes stomias</i> | 0.3 |
| 12 | Tanner crab | <i>Chionoecetes bairdi</i> | 0.3 |
| 13 | Dover sole | <i>Microstomus pacificus</i> | 0.3 |
| 14 | spiny red sea star | <i>Hippasteria spinosa</i> | 0.2 |
| 15 | basket star | <i>Gorgonocephalus caryi</i> | 0.2 |
| 16 | longnose skate | <i>Raja rhina</i> | 0.2 |
| 17 | big skate | <i>Raja binoculata</i> | 0.2 |
| 18 | flathead sole | <i>Hippoglossoides elassodon</i> | 0.2 |
| 19 | rex sole | <i>Glyptocephalus zachirus</i> | 0.1 |
| 20 | giant wrymouth | <i>Cryptacanthodes giganteus</i> | 0.1 |

Table 14.—Dredge contents from haul composition sampling during the 2006/07 Kodiak Shelikof District weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|--------------------------|--|-------------------|
| 1 | weathervane scallop | <i>Patinopecten caurinus</i> | 78.6 |
| 2 | empty weathervane shells | <i>P. caurinus</i> | 4.9 |
| 3 | sunflower sea star | <i>Pycnopodia helianthoides</i> | 3.1 |
| 4 | kelp, wood, rocks, etc. | NA | 3.0 |
| 5 | Bering skate | <i>Bathyraja interrupta</i> | 1.8 |
| 6 | debris-fishing gear | NA | 1.2 |
| 7 | Alaska plaice | <i>Pleuronectes quadrituberculatus</i> | 1.1 |
| 8 | longnose skate | <i>Raja rhina</i> | 1.0 |
| 9 | arrowtooth flounder | <i>Atheresthes stomias</i> | 0.8 |
| 10 | Oregon triton | <i>Fusitriton oregonensis</i> | 0.7 |
| 11 | big skate | <i>Raja binoculata</i> | 0.6 |
| 12 | flathead sole | <i>Hippoglossoides elassodon</i> | 0.5 |
| 13 | sea anemone unidentified | Order <i>Actiniaria</i> | 0.4 |
| 14 | Pacific cod | <i>Gadus macrocephalus</i> | 0.2 |
| 15 | basket star | <i>Gorgonocephalus caryi</i> | 0.1 |
| 16 | Tanner crab | <i>Chionoecetes bairdi</i> | 0.1 |
| 17 | lyre crab | <i>Hyas lyratus</i> | 0.1 |
| 18 | Dover sole | <i>Microstomus pacificus</i> | 0.1 |
| 19 | Dungeness crab | <i>Cancer magister</i> | <0.1 |
| 20 | Aleutian hermit crab | <i>Pagurus aleuticus</i> | <0.1 |

Table 15.—Dredge contents from haul composition sampling during the 2006/07 Alaska Peninsula Area weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|-------------------------|----------------------------------|-------------------|
| 1 | basket star | <i>Gorgonocephalus caryi</i> | 38.0 |
| 2 | weathervane scallop | <i>Patinopecten caurinus</i> | 33.7 |
| 3 | Bering skate | <i>Bathyraja interrupta</i> | 5.9 |
| 4 | kelp, wood, rocks, etc. | NA | 4.3 |
| 5 | Tanner crab | <i>Chionoecetes bairdi</i> | 3.2 |
| 6 | Alaska skate | <i>Bathyraja parmifera</i> | 2.7 |
| 7 | flathead sole | <i>Hippoglossoides elassodon</i> | 2.7 |
| 8 | rex sole | <i>Glyptocephalus zachirus</i> | 2.1 |
| 9 | sea whip unidentified | <i>Halipteris</i> sp. | 1.1 |
| 10 | sea pen unidentified | Order <i>Pennatulacea</i> | 0.5 |
| 11 | box crab unidentified | <i>Lopholithodes</i> sp. | 0.5 |
| 12 | bristle worm | <i>Aphrodita negligens</i> | 0.5 |
| 13 | arrowtooth flounder | <i>Atheresthes stomias</i> | 0.5 |
| 14 | plastics | NA | 0.5 |
| 15 | whelk eggs | <i>Buccinum</i> sp. eggs | 0.5 |
| 16 | black-spined sea star | <i>Lethasterias nanimensis</i> | 0.5 |
| 17 | solaster endeca | <i>Solaster endeca</i> | 0.5 |
| 18 | solaster paxillatus | <i>Solaster paxillatus</i> | 0.5 |
| 19 | common mud star | <i>Ctenodiscus crispatus</i> | 0.5 |
| 20 | left-handed whelk | <i>Pyrulofusus harpa</i> | 0.5 |

Table 16.—Dredge contents from haul composition sampling during the 2006/07 Bering Sea Area weathervane scallop fishery.

| Rank | Common name | Scientific name | Percentage weight |
|------|--------------------------|----------------------------------|-------------------|
| 1 | weathervane scallop | <i>Patinopecten caurinus</i> | 86.7 |
| 2 | Tanner crab | <i>Chionoecetes bairdi</i> | 2.9 |
| 3 | empty weathervane shells | <i>P. caurinus</i> | 1.8 |
| 4 | empty gastropod shells | NA | 1.2 |
| 5 | Alaska skate | <i>Bathyraja parmifera</i> | 1.1 |
| 6 | Tanner crab unidentified | <i>Chionoecetes</i> sp. | 0.9 |
| 7 | barrel sponge | <i>Halichondria panicea</i> | 0.6 |
| 8 | Oregon triton | <i>Fusitriton oregonensis</i> | 0.5 |
| 9 | sea whip unidentified | <i>Halipteris</i> sp. | 0.5 |
| 10 | arrowtooth flounder | <i>Atheresthes stomias</i> | 0.4 |
| 11 | sea anemone unidentified | Order <i>Actiniaria</i> | 0.4 |
| 12 | kelp, wood, rocks, etc. | NA | 0.3 |
| 13 | Pacific cod | <i>Gadus macrocephalus</i> | 0.3 |
| 14 | flathead sole | <i>Hippoglossoides elassodon</i> | 0.3 |
| 15 | Pacific halibut | <i>Hippoglossus stenolepis</i> | 0.2 |
| 16 | rex sole | <i>Glyptocephalus zachirus</i> | 0.2 |
| 17 | basket star | <i>Gorgonocephalus caryi</i> | 0.2 |
| 18 | lyre whelk | <i>Neptunea lyrata</i> | 0.2 |
| 19 | Bering skate | <i>Bathyraja interrupta</i> | 0.1 |
| 20 | Aleutian hermit crab | <i>Pagurus aleuticus</i> | 0.1 |

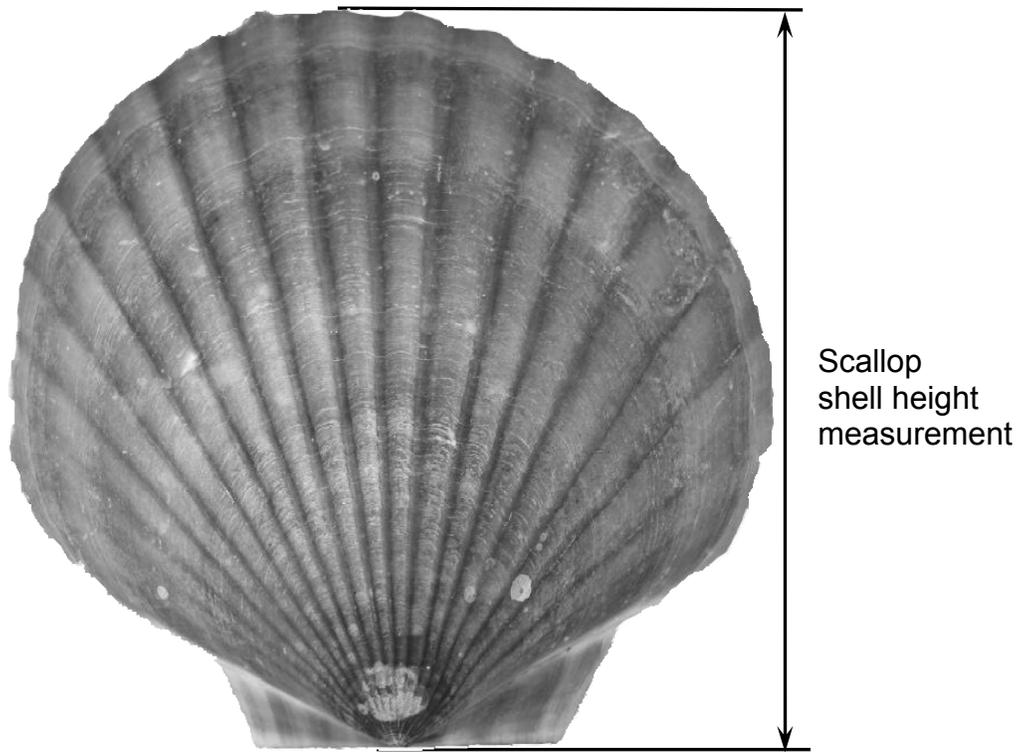


Figure 1.–Left (upper) valve of scallop shell showing orientation of shell height measurement.

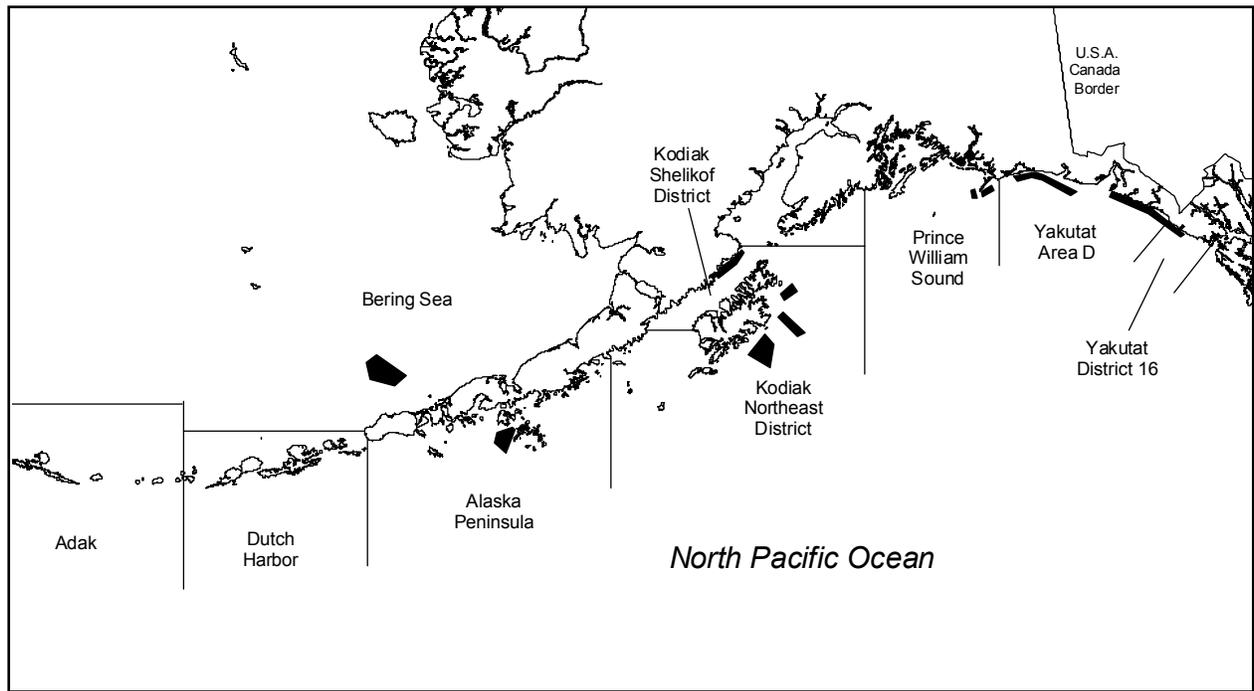


Figure 2.—Map showing Alaska scallop fishery registration areas. General areas of effort during the 2006/07 season are overlaid by dark polygons.

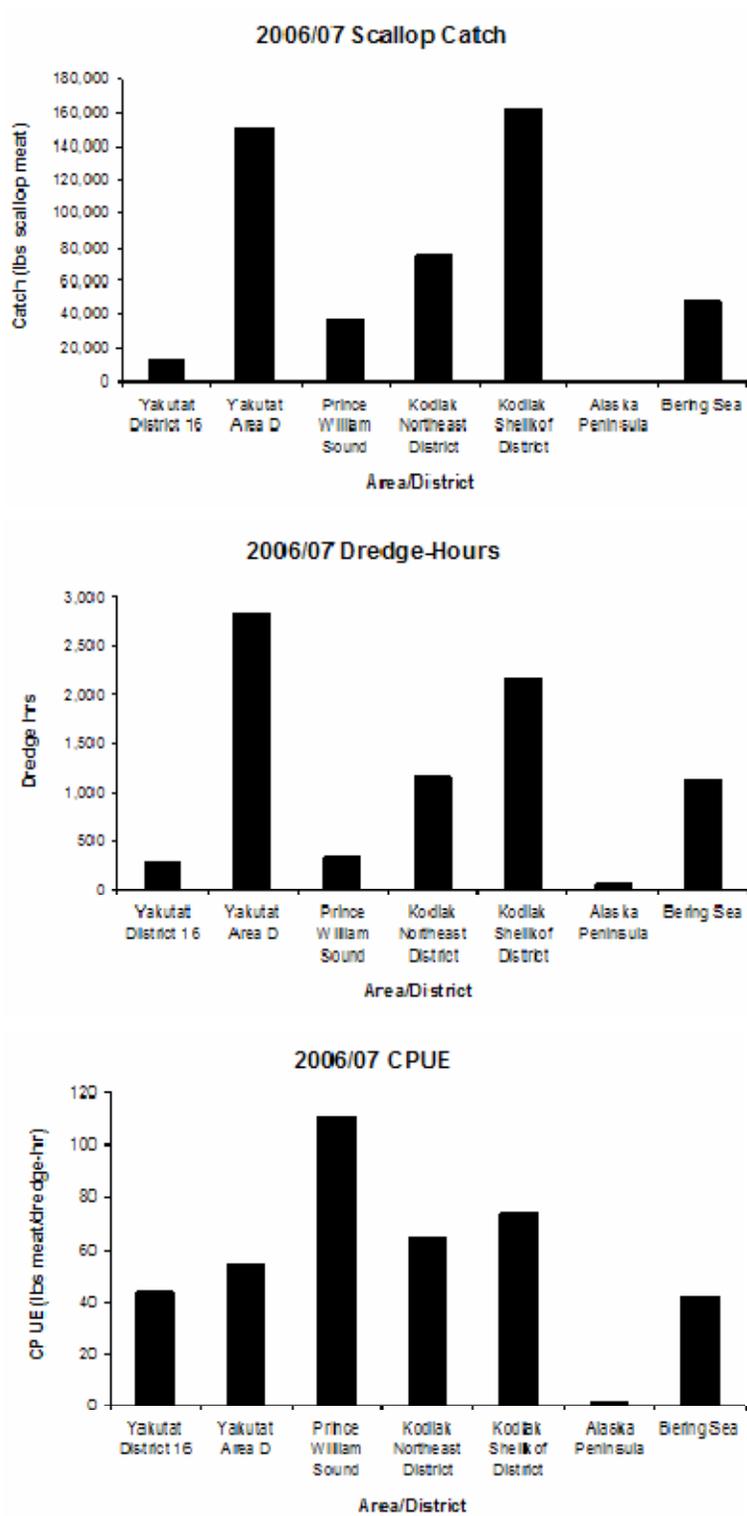


Figure 3.—Scallop catch (top), dredge-hrs (center), and CPUE (bottom) during the 2006/07 statewide weathervane scallop fishery.

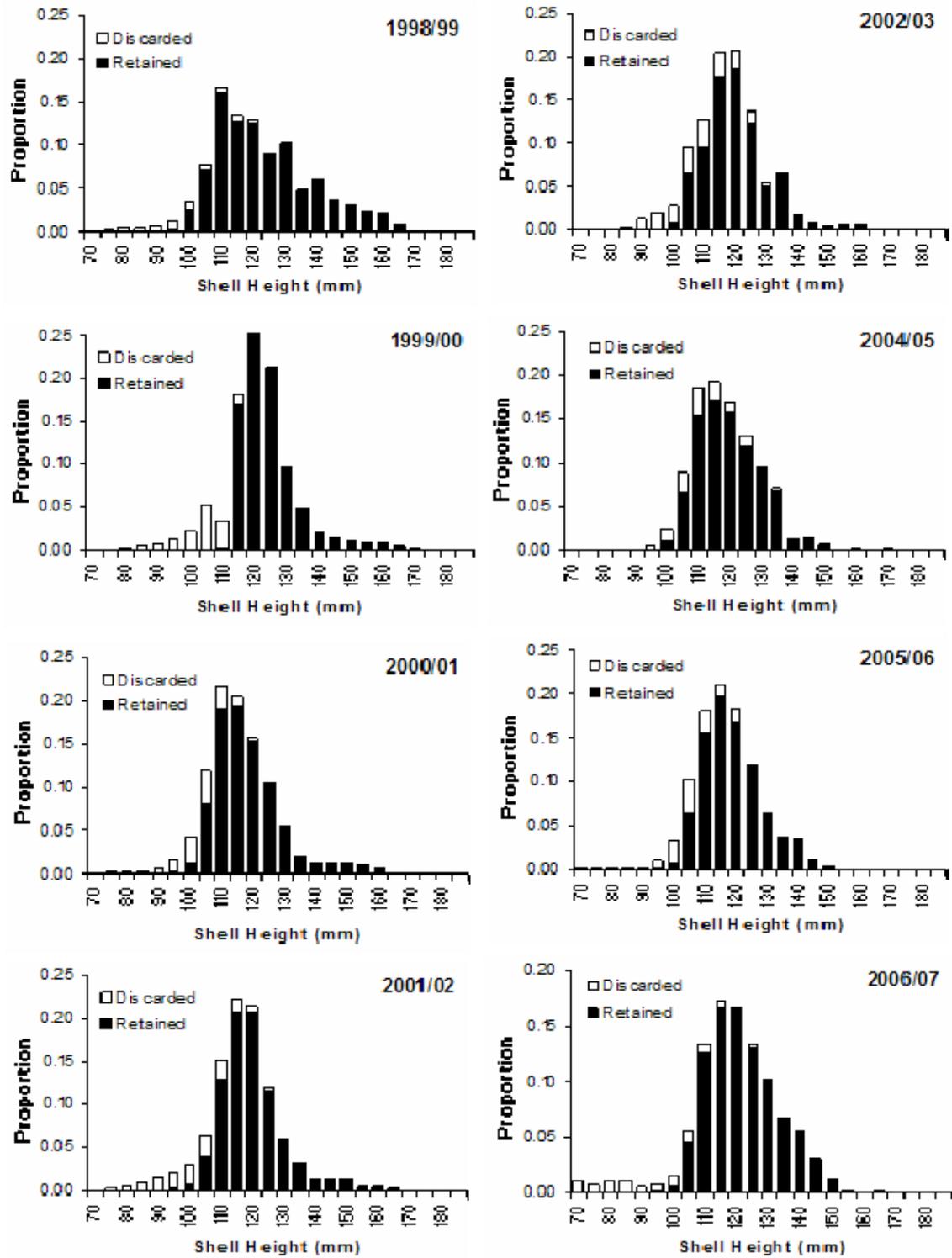


Figure 4.—Estimated scallop shell height distributions from the 1998/99 – 2006/07 Yakutat District 16 fishing seasons. No histogram was constructed for the 2003/04 season due to small sample sizes.

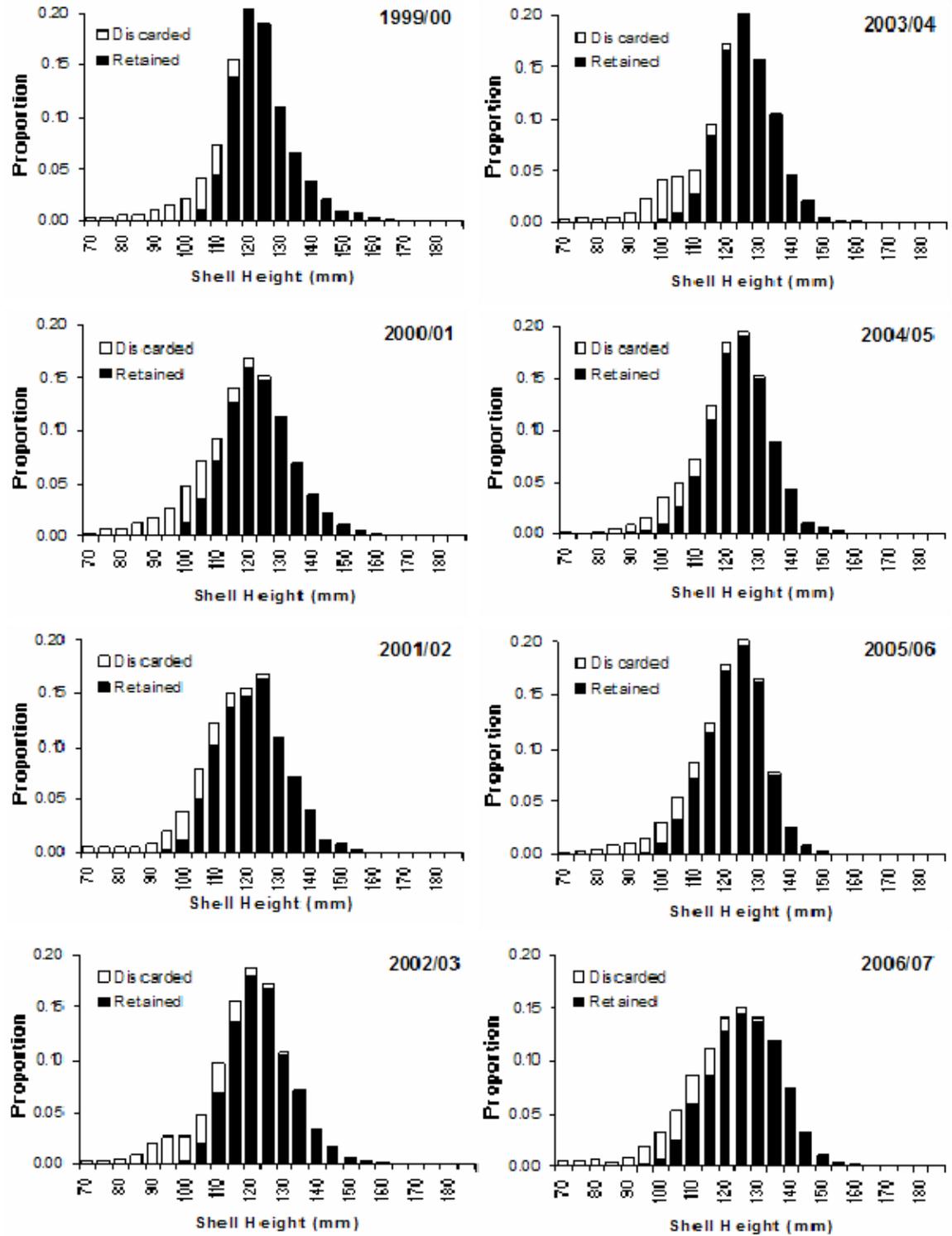


Figure 5.—Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Yakutat Area D fishing seasons.

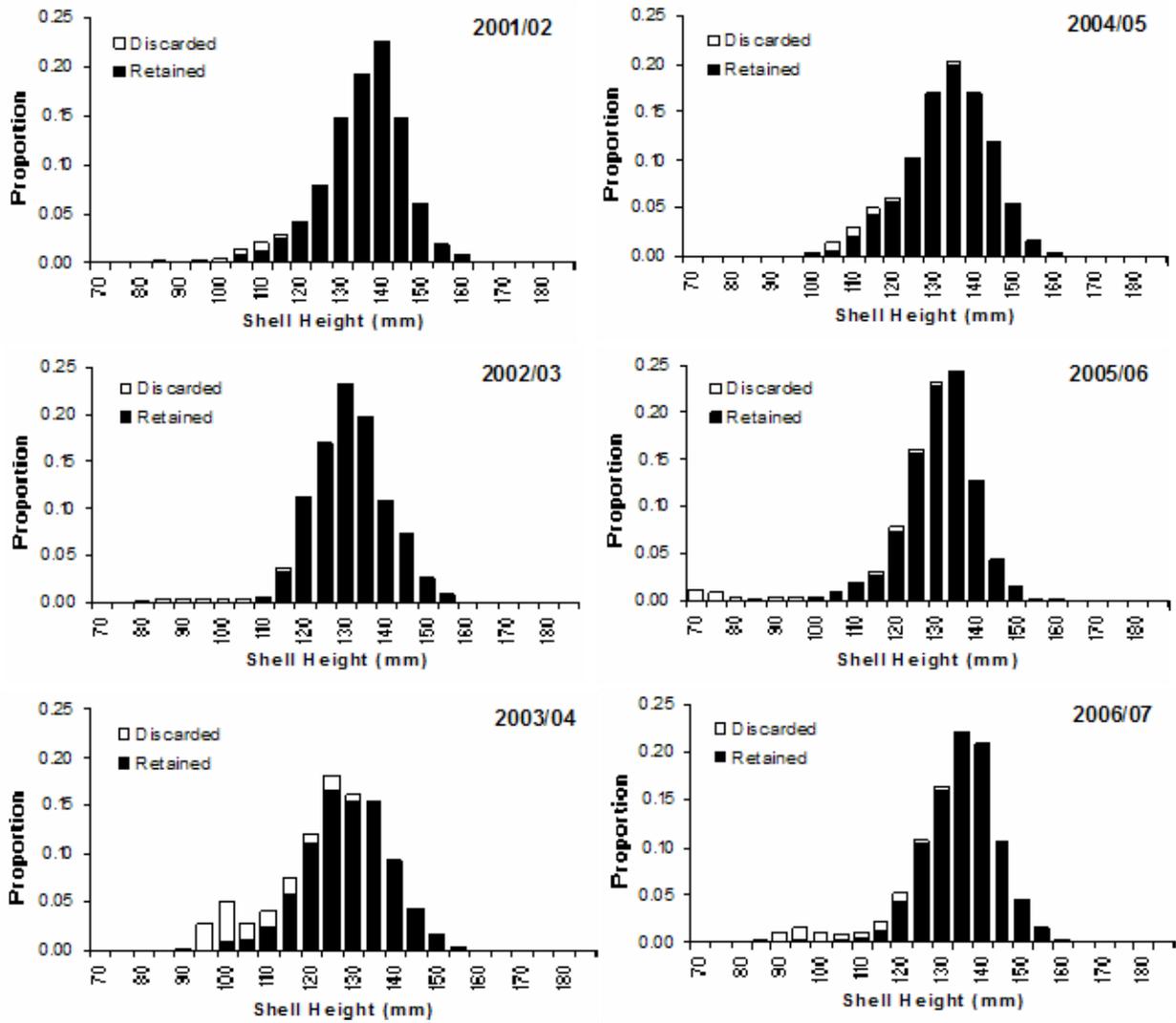


Figure 6.—Estimated scallop shell height distributions from the 2000/01 – 2006/07 Prince William Sound fishing seasons.

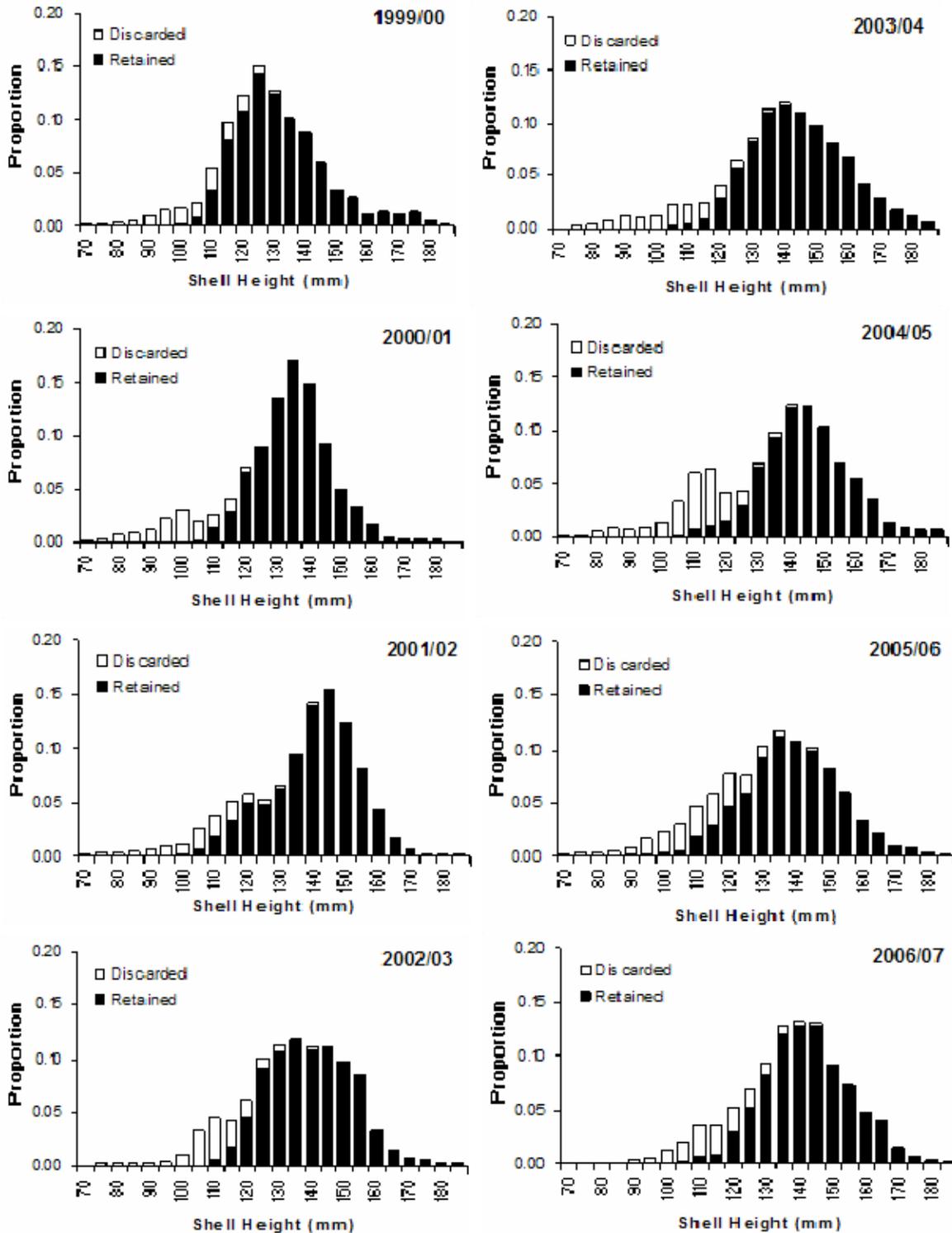


Figure 7.—Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Kodiak Northeast District fishing seasons.

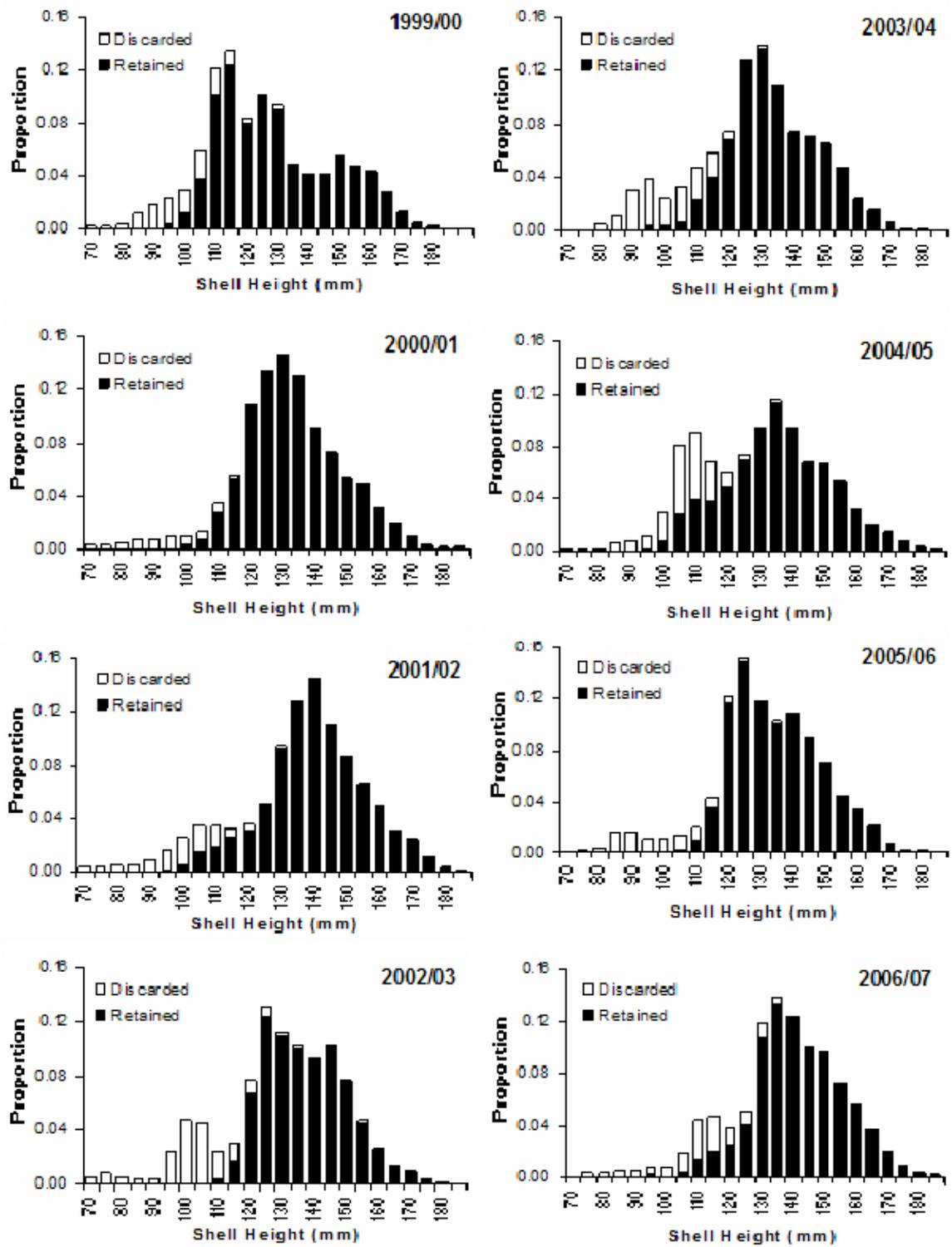


Figure 8.—Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Kodiak Shelikof District fishing seasons.

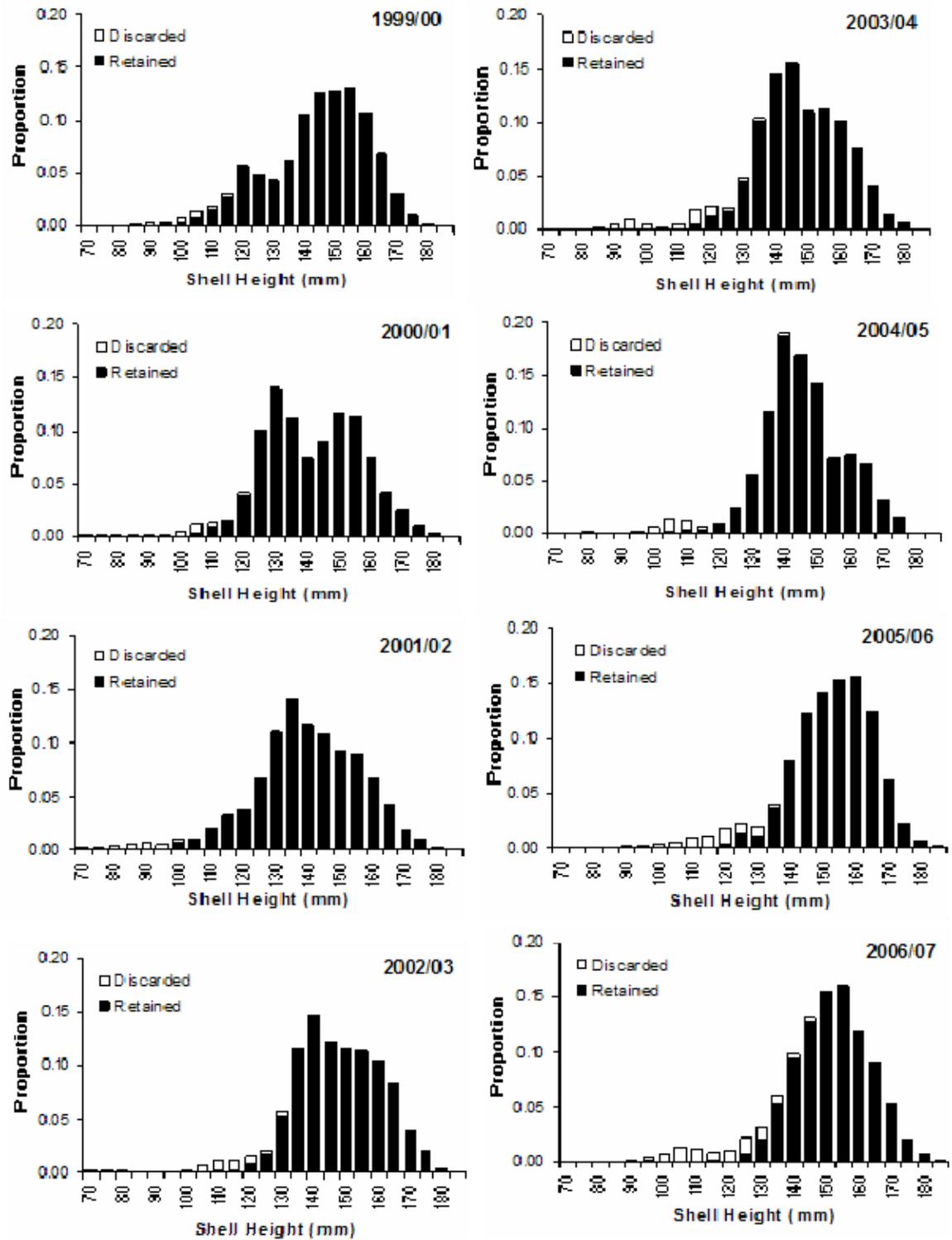


Figure 9.—Estimated scallop shell height distributions from the 1999/2000 – 2006/07 Bering Sea fishing seasons.

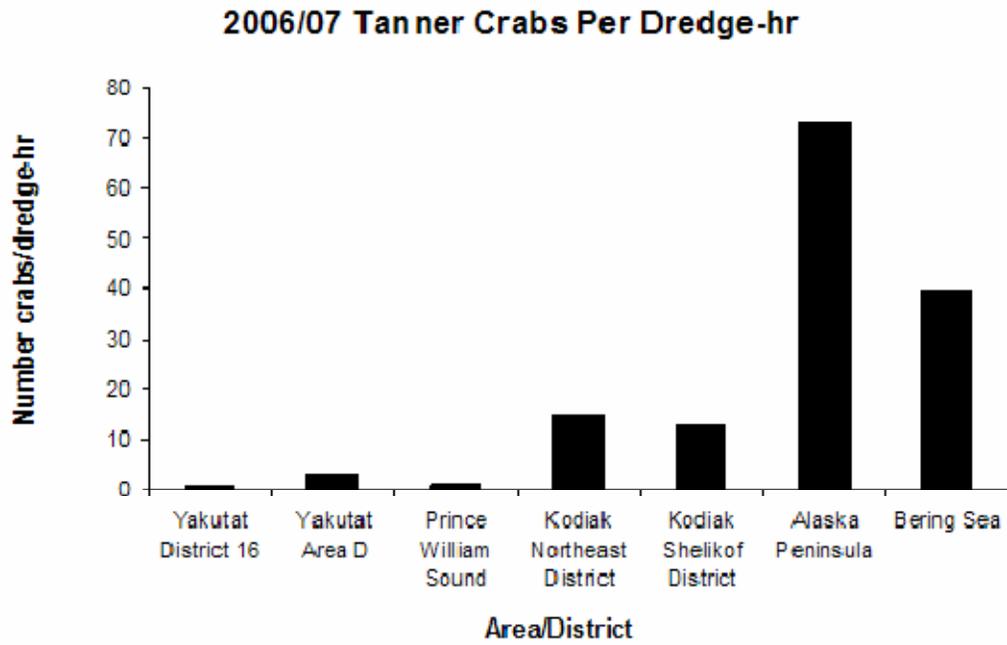
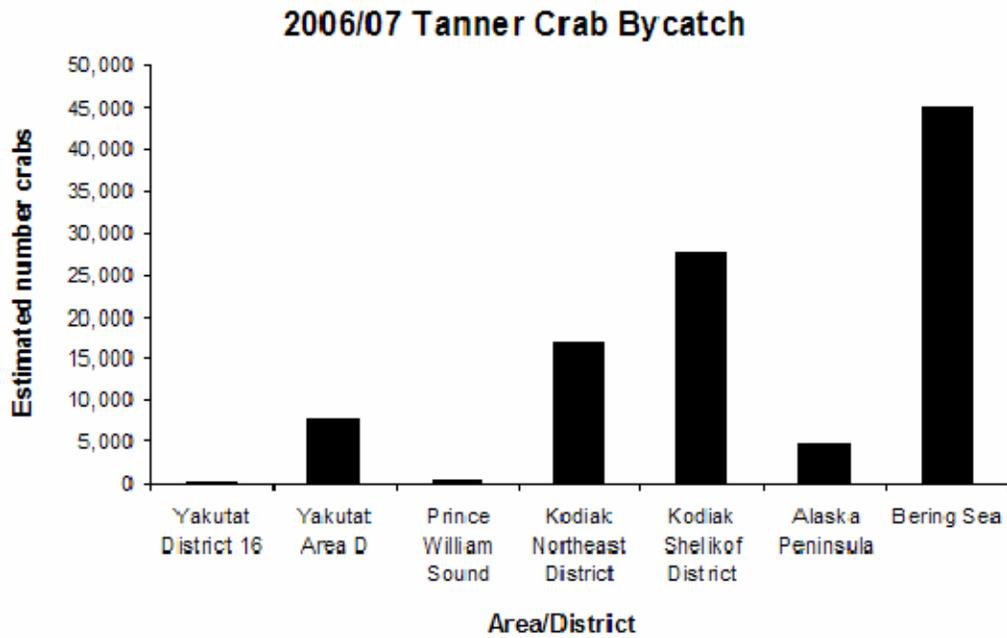


Figure 10.—Estimated Tanner crab bycatch (top) and bycatch rate (bottom) from the 2006/07 scallop fishing season.

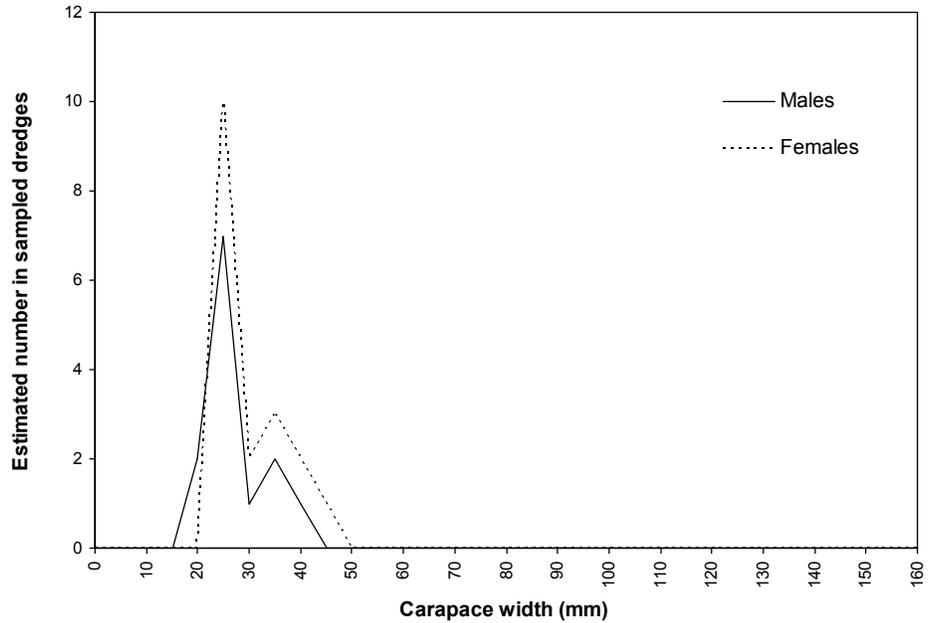


Figure 11.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Yakutat District 16 scallop fishery. Sample sizes were 13 males and 18 females.

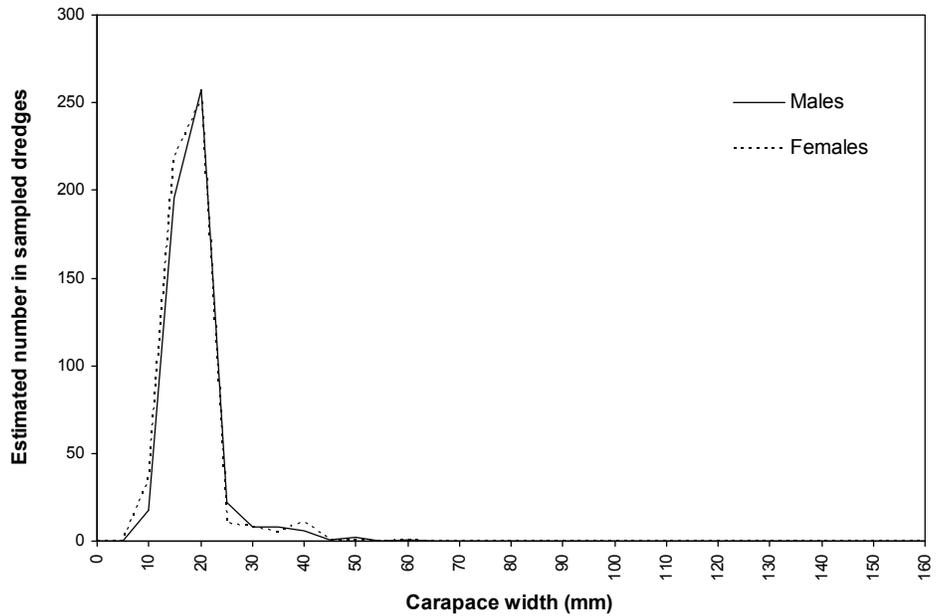


Figure 12.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Yakutat Area D scallop fishery. Sample sizes were 345 males and 350 females.

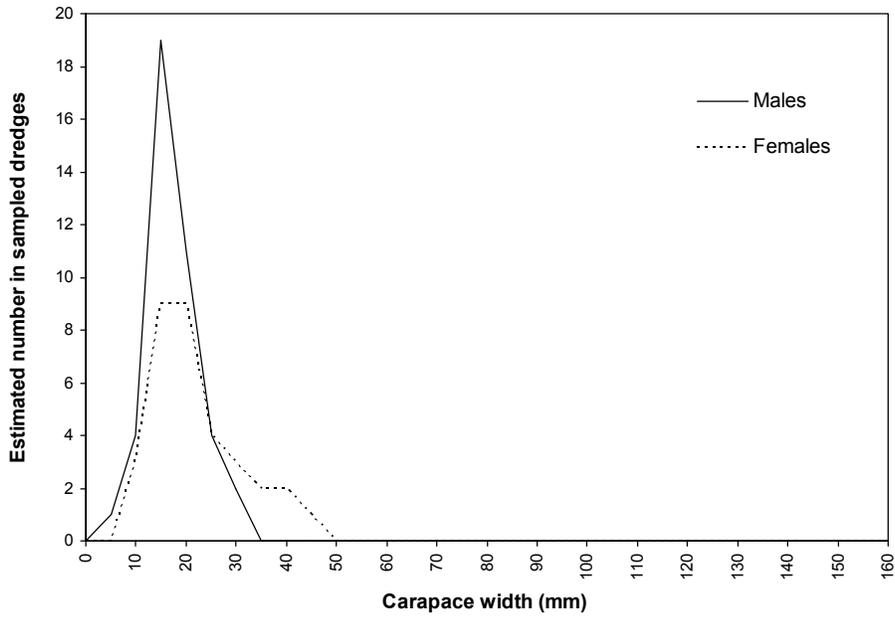


Figure 13.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Prince William Sound scallop fishery. Sample sizes were 41 males and 33 females.

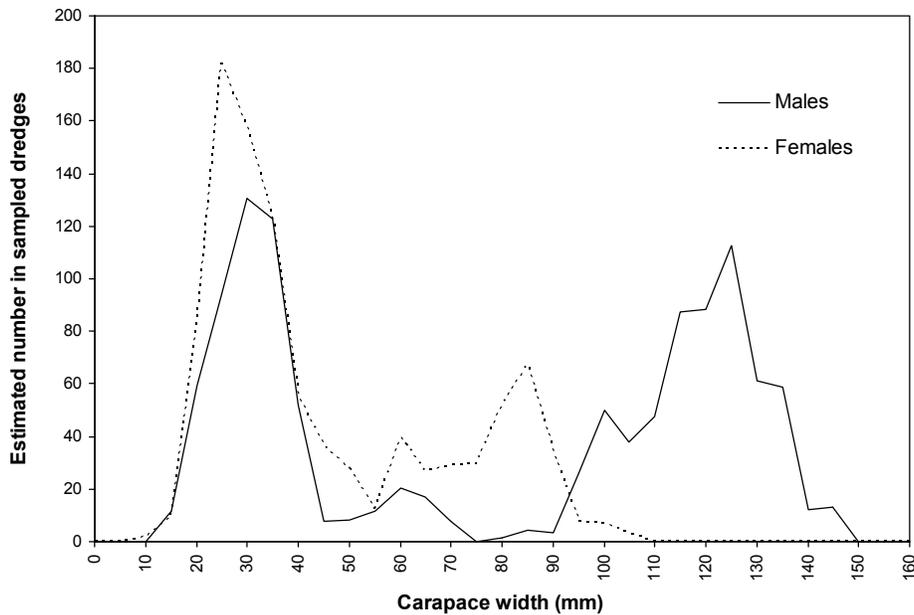


Figure 14.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Kodiak Northeast District scallop fishery. Sample sizes were 593 males and 472 females.

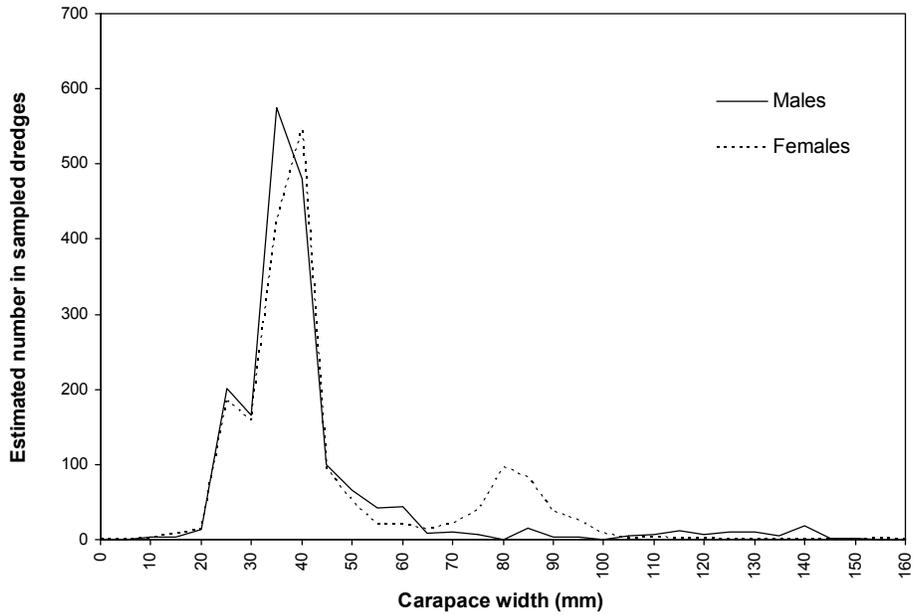


Figure 15.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Kodiak Shelikof District scallop fishery. Sample sizes were 1,314 males and 1,376 females.

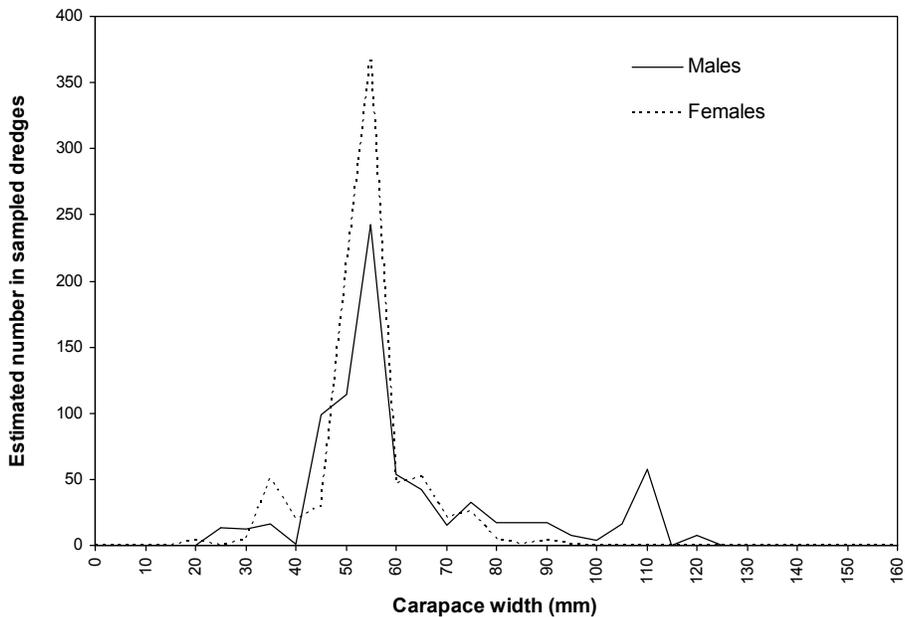


Figure 16.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Alaska Peninsula scallop fishery. Sample sizes were 97 males and 94 females.

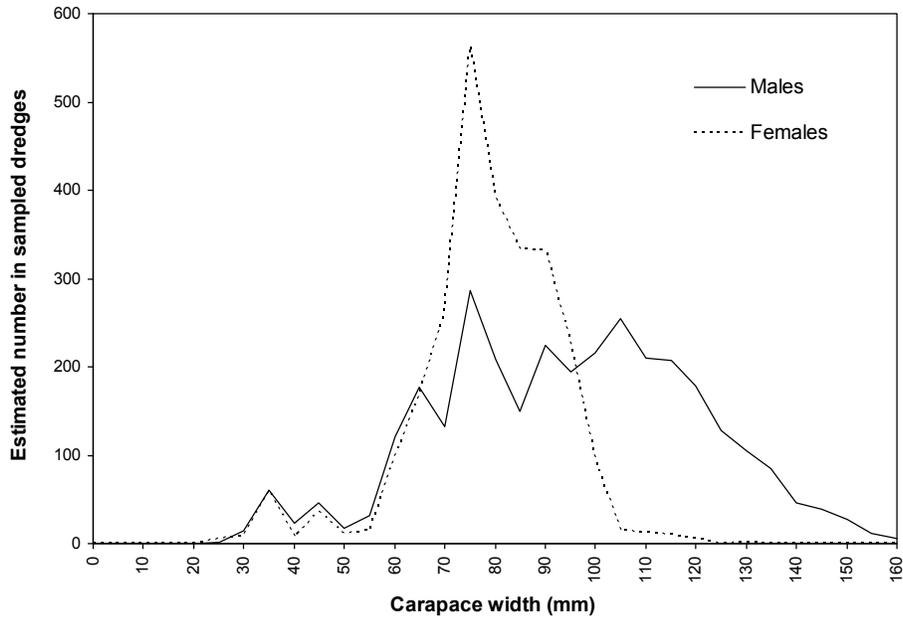


Figure 17.—Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Bering Sea scallop fishery. Sample sizes were 1,430 males and 1,015 females.

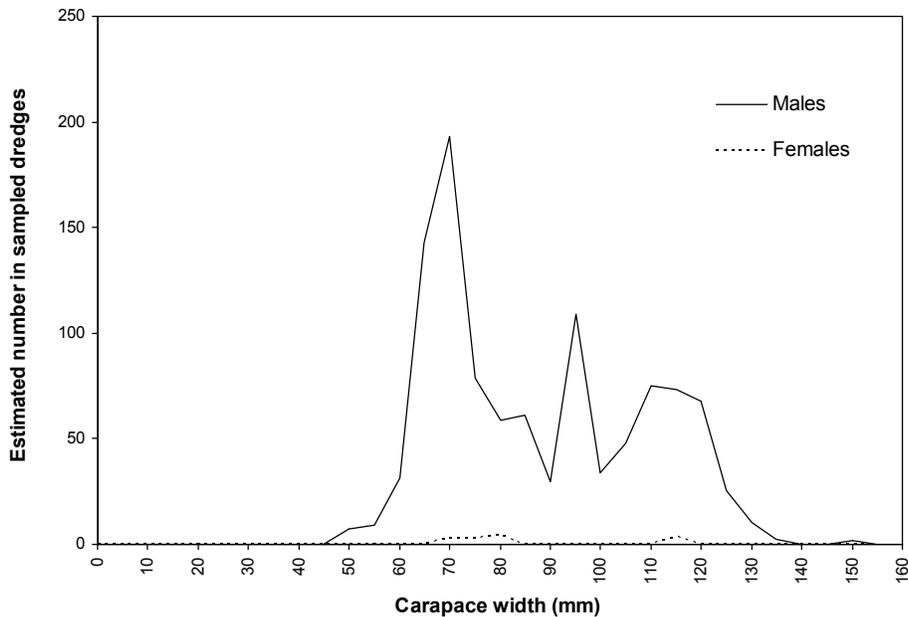


Figure 18.—Combined snow crab and hybrid snow crab \times Tanner crab carapace width distribution from bycatch sampling during the 2006/07 Bering Sea scallop fishery. Sample sizes were 391 males and 7 females.

**APPENDIX A: HISTORICAL ALASKA SCALLOP
OBSERVER PROGRAM SUMMARY STATISTICS**

Appendix A1.–Historical observer program summary statistics from the Yakutat Area D scallop fishery.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993 | 7/1/1993 | 7/11/1993 | 8 | 77 | 75 | 466 | NA |
| 1994 | 1/10/1994 | 1/20/1994 | 11 | 88 | 83 | 496 | NA |
| 1994 | 7/1/1994 | 7/12/1994 | 4 | 60 | 60 | 280 | 95 |
| 1995 | 1/10/1995 | 2/14/1995 | 10 | 166 | 134 | 429 | 71 |
| 1996 | 1/10/1996 | 1/25/1996 | 3 | 47 | 43 | 141 | 37 |
| 1996 | 8/1/1996 | 9/4/1996 | 3 | 82 | 80 | 424 | 69 |
| 1997 | 1/10/1997 | 2/19/1997 | 4 | 144 | 129 | 502 | 85 |
| 1998/99 | 7/1/1998 | 10/5/1998 | 8 | 160 | 148 | 767 | 121 |
| 1999/2000 | 7/1/1999 | 9/21/1999 | 3 | 132 | 123 | 616 | 104 |
| 2000/01 | 7/1/2000 | 2/14/2001 | 3 | 170 | 134 | 510 | 113 |
| 2001/02 | 7/7/2001 | 2/15/2002 | 2 | 86 | 81 | 318 | 66 |
| 2002/03 | 7/2/2002 | 8/29/2002 | 2 | 83 | 77 | 339 | 72 |
| 2003/04 | 8/10/2003 | 2/8/2004 | 2 | 105 | 85 | 354 | 67 |
| 2004/05 | 9/1/2004 | 2/15/2005 | 2 | 88 | 74 | 294 | 60 |
| 2005/06 | 8/5/2005 | 1/25/2006 | 2 | 162 | 137 | 574 | 104 |
| 2006/07 | 7/11/2006 | 10/24/2006 | 2 | 92 | 84 | 383 | 64 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A2.–Historical observer program summary statistics from the Yakutat District 16 scallop fishery.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993 | 7/17/1993 | 7/25/1993 | 1 | 9 | 9 | 28 | NA |
| 1994 | 1/20/1994 | 1/20/1994 | 7 | 7 | 7 | 48 | NA |
| 1994 | 7/13/1994 | 7/16/1994 | 1 | 4 | 3 | 16 | 6 |
| 1995 | 1/10/1995 | 2/13/1995 | 6 | 42 | 35 | 114 | 21 |
| 1996 | 1/15/1996 | 1/20/1996 | 1 | 6 | 5 | 8 | 2 |
| 1996 | 8/4/1996 | 11/28/1996 | 2 | 23 | 21 | 91 | 18 |
| 1997 | 1/21/1997 | 2/21/1997 | 3 | 27 | 14 | 71 | 11 |
| 1998/99 | 7/1/1998 | 10/6/1998 | 6 | 33 | 24 | 117 | 18 |
| 1999/2000 | 7/28/1999 | 9/26/1999 | 2 | 23 | 16 | 67 | 12 |
| 2000/01 | 9/17/2000 | 2/14/2001 | 4 | 29 | 23 | 83 | 16 |
| 2001/02 | 7/10/2001 | 10/8/2001 | 2 | 21 | 17 | 57 | 8 |
| 2002/03 | 7/1/2002 | 7/9/2002 | 2 | 6 | 4 | 10 | 1 |
| 2003/04 | 8/30/2003 | 2/8/2004 | 2 | 3 | 1 | 2 | 1 |
| 2004/05 | 9/3/2004 | 2/15/2005 | 2 | 18 | 18 | 33 | 12 |
| 2005/06 | 10/11/2005 | 1/30/2006 | 2 | 16 | 15 | 43 | 8 |
| 2006/07 | 8/19/2006 | 9/13/2006 | 2 | 12 | 11 | 47 | 6 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A3.—Historical observer program summary statistics from the Prince William Sound scallop fishery. The area was not opened for fishing during 1994 and 1996.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993 | 7/15/1993 | 7/19/1993 | 7 | 29 | 27 | 182 | NA |
| 1995 | 1/10/1995 | 1/26/1995 | 2 | 21 | 21 | 75 | 15 |
| 1997 | 1/12/1997 | 1/19/1997 | 1 | 8 | 7 | 37 | 7 |
| 1998/99 | 7/1/1998 | 7/4/1998 | 2 | 8 | 8 | 26 | 3 |
| 1999/2000 | 7/1/1999 | 7/4/1999 | 2 | 8 | 6 | 18 | 3 |
| 2000/01 | 7/6/2000 | 8/2/2000 | 3 | 30 | 28 | 71 | 20 |
| 2001/02 | 1/22/2002 | 2/11/2002 | 1 | 21 | 16 | 29 | 13 |
| 2002/03 | 7/28/2002 | 2/15/2003 | 2 | 17 | 16 | 55 | 11 |
| 2003/04 | 12/11/2003 | 1/24/2004 | 1 | 15 | 13 | 23 | 8 |
| 2004/05 | 8/21/2004 | 11/2/2004 | 2 | 28 | 26 | 84 | 22 |
| 2005/06 | 7/1/2005 | 8/22/2005 | 3 | 56 | 51 | 180 | 36 |
| 2006/07 | 7/2/2006 | 7/11/2006 | 2 | 15 | 15 | 66 | 9 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A4.—Historical observer program summary statistics from the Kodiak Northeast District scallop fishery. The area was not opened for fishing during 1995/96.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993/94 | 7/11/1993 | 11/24/1993 | 10 | 272 | 237 | 1,393 | NA |
| 1994/95 | 8/20/1994 | 11/11/1994 | 11 | 80 | 67 | 291 | 45 |
| 1996/97 | 10/31/1996 | 12/12/1996 | 3 | 29 | 19 | 73 | 12 |
| 1997/98 | 8/10/1997 | 12/8/1997 | 3 | 94 | 86 | 414 | 60 |
| 1998/99 | 7/6/1998 | 10/2/1998 | 4 | 89 | 80 | 418 | 55 |
| 1999/2000 | 7/1/1999 | 9/9/1999 | 3 | 40 | 38 | 197 | 30 |
| 2000/01 | 8/19/2000 | 9/26/2000 | 4 | 40 | 37 | 163 | 28 |
| 2001/02 | 8/8/2001 | 1/18/2002 | 3 | 45 | 39 | 166 | 33 |
| 2002/03 | 8/20/2002 | 2/10/2003 | 2 | 46 | 42 | 189 | 40 |
| 2003/04 | 7/18/2003 | 11/15/2003 | 2 | 42 | 40 | 166 | 31 |
| 2004/05 | 7/5/2004 | 8/9/2004 | 2 | 42 | 42 | 189 | 33 |
| 2005/06 | 7/7/2005 | 1/17/2006 | 3 | 63 | 53 | 199 | 63 |
| 2006/07 | 9/7/2006 | 12/2/2006 | 2 | 42 | 40 | 178 | 31 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A5.—Historical observer program summary statistics from the Kodiak Shelikof District scallop fishery. The area was not opened for fishing during 1995/96.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993/94 | 7/1/1993 | 8/5/1993 | 5 | 82 | 80 | 499 | NA |
| 1994/95 | 7/1/1994 | 10/25/1994 | 11 | 265 | 257 | 1,405 | 203 |
| 1996/97 | 8/28/1996 | 10/18/1996 | 4 | 104 | 99 | 544 | 85 |
| 1997/98 | 7/1/1997 | 8/10/1997 | 4 | 153 | 150 | 841 | 134 |
| 1998/99 | 7/9/1998 | 8/21/1998 | 8 | 121 | 112 | 607 | 88 |
| 1999/2000 | 7/3/1999 | 9/6/1999 | 6 | 117 | 111 | 627 | 98 |
| 2000/01 | 7/3/2000 | 10/2/2000 | 5 | 90 | 81 | 384 | 79 |
| 2001/02 | 7/3/2001 | 12/8/2001 | 4 | 103 | 97 | 458 | 96 |
| 2002/03 | 7/3/2002 | 2/9/2003 | 3 | 115 | 110 | 484 | 96 |
| 2003/04 | 8/11/2003 | 1/13/2004 | 2 | 95 | 88 | 394 | 78 |
| 2004/05 | 7/27/2004 | 12/9/2004 | 2 | 100 | 96 | 445 | 86 |
| 2005/06 | 7/1/2005 | 12/11/2005 | 2 | 70 | 65 | 263 | 54 |
| 2006/07 | 7/5/2006 | 9/7/2006 | 3 | 73 | 72 | 325 | 68 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A6.—Historical observer program summary statistics from the Kodiak Semidi Island District scallop fishery. The area was not opened for fishing in 1995. Regulatory changes in 2000 closed state waters in the Semidi District and no effort has occurred since.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993 | 11/5/1993 | 12/11/1993 | 3 | 27 | 26 | 180 | NA |
| 1994 | 1/26/1994 | 2/11/1994 | 6 | 48 | 44 | 260 | NA |
| 1994 | 7/18/1994 | 10/31/1994 | 2 | 10 | 10 | 51 | 7 |
| 1996/97 | 10/19/1996 | 12/1/1996 | 3 | 37 | 32 | 166 | 20 |
| 1997/98 | 11/26/1997 | 12/9/1997 | 1 | 14 | 14 | 64 | 14 |
| 1998/99 | 8/22/1998 | 9/25/1998 | 2 | 5 | 5 | 23 | 3 |
| 1999/2000 | 7/21/1999 | 9/17/1999 | 1 | 4 | 1 | 6 | 1 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A7.—Historical observer program summary statistics from the Alaska Peninsula scallop fishery. The area was not opened for fishing during the 1995/96, 2001/02, and 2002/03 seasons. No effort occurred during the 2003/04 – 2005/06 seasons.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993/94 | 7/25/1993 | 10/21/1993 | 8 | 75 | 69 | 374 | NA |
| 1994/95 | 7/7/1994 | 9/21/1994 | 7 | 80 | 75 | 342 | 47 |
| 1996/97 | 10/21/1996 | 10/30/1996 | 2 | 13 | 12 | 47 | 9 |
| 1997/98 | 8/13/1997 | 2/10/1998 | 4 | 68 | 64 | 325 | 42 |
| 1998/99 | 8/28/1998 | 9/19/1998 | 4 | 48 | 46 | 228 | 31 |
| 1999/2000 | 8/23/1999 | 10/6/1999 | 5 | 73 | 65 | 343 | 46 |
| 2000/01 | 7/11/2000 | 8/28/2000 | 3 | 14 | 9 | 39 | 8 |
| 2006/07 | 10/26/2006 | 12/8/2006 | 2 | 7 | 5 | 21 | 1 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A8.—Historical observer program summary statistics from the Bering Sea scallop fishery. Fishing was not opened during the 1995/96 season.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993/94 | 7/28/1993 | 9/5/1993 | 9 | 172 | 166 | 1,029 | NA |
| 1994/95 | 7/1/1994 | 9/7/1994 | 8 | 312 | 304 | 1,751 | 269 |
| 1996/97 | 8/1/1996 | 10/16/1996 | 1 | 63 | 54 | 204 | 35 |
| 1997/98 | 7/2/1997 | 8/11/1997 | 2 | 66 | 64 | 252 | 54 |
| 1998/99 | 7/16/1998 | 9/4/1998 | 4 | 73 | 64 | 293 | 39 |
| 1999/2000 | 7/1/1999 | 8/30/1999 | 2 | 94 | 76 | 440 | 60 |
| 2000/01 | 7/1/2000 | 8/23/2000 | 3 | 91 | 87 | 424 | 76 |
| 2001/02 | 7/1/2001 | 10/30/2001 | 3 | 84 | 82 | 372 | 72 |
| 2002/03 | 9/8/2002 | 1/2/2003 | 2 | 61 | 56 | 244 | 50 |
| 2003/04 | 7/2/2003 | 2/15/2004 | 2 | 28 | 26 | 127 | 18 |
| 2004/05 | 7/3/2004 | 7/9/2004 | 1 | 7 | 7 | 35 | 7 |
| 2005/06 | 12/18/2005 | 1/9/2006 | 1 | 21 | 18 | 77 | 17 |
| 2006/07 | 10/31/2006 | 12/13/2006 | 1 | 36 | 33 | 149 | 23 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

Appendix A9.—Historical observer program summary statistics from the Dutch Harbor Area scallop fishery. No effort occurred during the 1996/97 season, and fishing was not opened during the 2000/01 – 2001/02 and 2003/04 – 2006/07 seasons.

| Season | Start of fishing | End of fishing | Number vessels | Fishing days ^a | Observed days ^b | Bycatch samples | Haulcomp samples ^c |
|-----------|------------------|----------------|----------------|---------------------------|----------------------------|-----------------|-------------------------------|
| 1993/94 | 7/2/1993 | 9/16/1993 | 3 | 38 | 26 | 91 | NA |
| 1994/95 | 7/23/1994 | 8/20/1994 | 3 | 6 | 6 | 23 | 1 |
| 1995/96 | 7/11/1995 | 9/9/1995 | 1 | 38 | 35 | 145 | 27 |
| 1997/98 | 8/18/1997 | 8/25/1997 | 1 | 8 | 8 | 22 | 6 |
| 1998/99 | 9/6/1998 | 11/12/1998 | 4 | 37 | 34 | 173 | 16 |
| 1999/2000 | 9/17/1999 | 9/30/1999 | 1 | 13 | 10 | 54 | 6 |
| 2002/03 | 10/10/2002 | 10/17/2002 | 1 | 8 | 7 | 30 | 6 |

^a Number vessel days with at least one haul.

^b Number vessel days with at least one sampled haul.

^c Number haul composition samples. Haul composition sampling began in July, 1994.

**APPENDIX B: HISTORICAL ALASKA SCALLOP FISHERY
SUMMARY STATISTICS**

Appendix B1.—Historical summary statistics from the Yakutat Area D scallop fishery.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|-----------------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|--------------|
| | | | | | | | Number | Weight (lbs) |
| 1993 | 125,000 | 2,082,824 | 141,423 | 1,999 | 71 | 118 | NA | NA |
| 1994 | 250,000 | 2,085,942 | 158,660 | 2,547 | 62 | 121 | NA | NA |
| 1994 | NA ^c | 1,713,094 | 94,400 | 1,715 | 55 | 122 | NA | NA |
| 1995 | 250,000 | 3,214,968 | 242,491 | 4,712 | 51 | 124 | NA | NA |
| 1996 | 250,000 | 832,756 | 53,310 | 1,142 | 47 | 121 | NA | NA |
| 1996 | NA ^c | 2,362,498 | 185,426 | 2,840 | 65 | 122 | 1,166,422 | 295,933 |
| 1997 | 250,000 | 3,282,860 | 242,940 | 3,956 | 61 | 119 | 1,575,369 | 299,843 |
| 1998/99 | 250,000 | 3,475,996 | 241,678 | 4,192 | 58 | 123 | 1,175,158 | 271,506 |
| 1999/2000 | 250,000 | 3,119,103 | 249,681 | 3,840 | 65 | 124 | 2,165,570 | 533,172 |
| 2000/01 | 200,000 | 2,734,559 | 195,699 | 4,241 | 46 | 123 | 2,129,885 | 588,981 |
| 2001/02 | 200,000 | 1,521,537 | 103,800 | 2,406 | 43 | 121 | 1,070,516 | 272,300 |
| 2002/03 | 200,000 | 1,541,867 | 122,718 | 2,439 | 50 | 123 | 1,366,856 | 359,010 |
| 2003/04 | 200,000 | 1,939,004 | 160,918 | 3,358 | 48 | 126 | 1,675,817 | 397,504 |
| 2004/05 | 200,000 | 1,262,499 | 86,950 | 2,134 | 41 | 124 | 831,898 | 217,269 |
| 2005/06 | 200,000 | 2,662,031 | 199,351 | 5,089 | 39 | 123 | 1,633,961 | 407,441 |
| 2006/07 | 150,000 | 1,771,229 | 150,950 | 2,817 | 54 | 126 | 1,483,604 | 383,622 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

^c Included in yearly GHL.

Appendix B2.–Historical summary statistics from the Yakutat District 16 scallop fishery.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|-----------------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993 | 35,000 | 55,576 | NA | 159 | NA | 132 | NA | NA |
| 1994 | 35,000 | 150,962 | 13,301 | 276 | 48 | 147 | NA | NA |
| 1994 | NA ^c | 88,905 | NA | 132 | NA | 152 | NA | NA |
| 1995 | 35,000 | 447,469 | 33,302 | 1,095 | 30 | 132 | NA | NA |
| 1996 | 35,000 | 85,086 | 8,090 | 167 | 48 | 126 | NA | NA |
| 1996 | NA ^c | 336,978 | 25,970 | 750 | 35 | 133 | 707,236 | 159,899 |
| 1997 | 35,000 | 265,882 | 22,890 | 561 | 41 | 128 | 143,392 | 32,764 |
| 1998/99 | 35,000 | 384,286 | 34,153 | 702 | 49 | 123 | 119,414 | 25,292 |
| 1999/2000 | 35,000 | 292,625 | 34,624 | 674 | 51 | 125 | 216,600 | 57,718 |
| 2000/01 | 35,000 | 310,370 | 30,904 | 476 | 65 | 118 | 203,946 | 51,221 |
| 2001/02 | 35,000 | 245,319 | 20,398 | 417 | 49 | 119 | 164,073 | 48,879 |
| 2002/03 | 35,000 | 60,928 | 3,685 | 100 | 37 | 120 | 55,090 | 14,084 |
| 2003/04 | 35,000 | 16,780 | 1,072 | 18 | 60 | 121 | 4,828 | 1,136 |
| 2004/05 | 35,000 | 326,228 | 24,430 | 419 | 58 | 120 | 77,678 | 20,541 |
| 2005/06 | 35,000 | 209,487 | 13,650 | 407 | 34 | 119 | 93,888 | 24,385 |
| 2006/07 | 21,000 | 184,106 | 13,445 | 309 | 44 | 122 | 139,657 | 24,800 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

^c Included in yearly GHL.

Appendix B3.—Historical summary statistics from the Prince William Sound (Area E) scallop fishery. The area was not opened for fishing during 1994 and 1996.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|--------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993 | 50,000 | 850,718 | 63,068 | 638 | 99 | 124 | NA | NA |
| 1995 | 50,000 | 736,455 | 108,000 | NA | NA | 125 | NA | NA |
| 1997 | 17,200 | 257,230 | 18,000 | 171 | 105 | 123 | NA | NA |
| 1998/99 | 20,000 | 334,152 | 19,650 | 179 | 110 | 132 | 15,457 | 12,789 |
| 1999/2000 | 20,000 | 211,140 | 20,410 | 149 | 137 | 132 | 46,502 | 18,500 |
| 2000/01 | 30,000 | 361,032 | 30,266 | 221 | 137 | 131 | 42,931 | 13,826 |
| 2001/02 | 30,000 | 511,761 | 30,090 | 263 | 114 | 136 | 68,454 | 23,824 |
| 2002/03 | 20,000 | 231,140 | 15,641 | 122 | 121 | 131 | 21,909 | 7,560 |
| 2003/04 | 20,000 | 261,720 | 19,980 | 216 | 93 | 136 | 123,031 | 49,963 |
| 2004/05 | 50,000 | 704,617 | 49,320 | 614 | 80 | 134 | 253,487 | 82,794 |
| 2005/06 | 50,000 | 818,741 | 49,205 | 491 | 100 | 131 | 171,902 | 64,092 |
| 2006/07 | 37,000 | 440,781 | 36,990 | 334 | 111 | 122 | 106,623 | 38,104 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

Appendix B4.–Historical summary statistics from the Kodiak Northeast District scallop fishery. Fishing was not opened during the 1995/96 season.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|-----------------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993/94 | NA ^c | 2,214,427 | 155,122 | 6,940 | 22 | 144 | NA | NA |
| 1994/95 | NA ^c | 389,202 | 35,207 | 1,773 | 20 | 151 | NA | NA |
| 1996/97 | NA ^c | 147,269 | 11,430 | 581 | 20 | 144 | 22,076 | 8,355 |
| 1997/98 | NA ^c | 1,143,926 | 95,858 | 2,604 | 37 | 140 | 193,776 | 41,615 |
| 1998/99 | NA ^c | 1,365,836 | 120,010 | 2,749 | 44 | 127 | 800,629 | 190,480 |
| 1999/2000 | 75,000 | 952,972 | 77,119 | 1,384 | 56 | 132 | 410,193 | 113,349 |
| 2000/01 | 80,000 | 681,192 | 79,965 | 1,101 | 73 | 136 | 351,100 | 113,422 |
| 2001/02 | 80,000 | 822,110 | 80,470 | 1,142 | 70 | 140 | 305,047 | 108,835 |
| 2002/03 | 80,000 | 871,918 | 80,000 | 1,350 | 59 | 140 | 486,634 | 165,976 |
| 2003/04 | 80,000 | 747,517 | 79,965 | 1,248 | 64 | 145 | 364,548 | 113,023 |
| 2004/05 | 80,000 | 848,527 | 80,105 | 1,227 | 65 | 144 | 909,579 | 261,512 |
| 2005/06 | 80,000 | 831,378 | 79,990 | 1,759 | 45 | 139 | 716,148 | 217,355 |
| 2006/07 | 90,000 | 703,338 | 75,150 | 1,168 | 64 | 143 | 392,477 | 136,625 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

^c Included in Kodiak Area GHL.

Appendix B5.—Historical summary statistics from the Kodiak Shelikof District scallop fishery. Fishing was not opened during the 1995/96 season.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|-----------------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993/94 | NA ^c | 1,169,664 | 105,017 | 2,491 | 42 | 128 | NA | NA |
| 1994/95 | NA ^c | 3,522,517 | 314,051 | 8,662 | 36 | 131 | NA | NA |
| 1996/97 | NA ^c | 1,878,268 | 219,305 | 3,491 | 63 | 136 | 753,292 | 197,174 |
| 1997/98 | NA ^c | 3,101,152 | 258,346 | 5,492 | 47 | 139 | 427,756 | 93,221 |
| 1998/99 | NA ^c | 2,129,025 | 179,870 | 4,081 | 44 | 137 | 1,054,711 | 216,354 |
| 1999/2000 | 180,000 | 1,903,345 | 187,963 | 4,304 | 44 | 130 | 1,144,593 | 289,867 |
| 2000/01 | 180,000 | 1,768,376 | 180,087 | 2,907 | 62 | 134 | 569,722 | 128,614 |
| 2001/02 | 180,000 | 1,830,265 | 177,112 | 3,398 | 52 | 140 | 722,636 | 239,459 |
| 2002/03 | 180,000 | 1,857,466 | 180,580 | 3,799 | 48 | 138 | 1,827,306 | 492,954 |
| 2003/04 | 180,000 | 1,724,498 | 180,011 | 3,258 | 55 | 135 | 1,654,486 | 400,946 |
| 2004/05 | 180,000 | 1,641,608 | 174,622 | 3,467 | 50 | 137 | 1,563,694 | 434,807 |
| 2005/06 | 160,000 | 1,454,806 | 159,941 | 2,280 | 70 | 136 | 622,014 | 164,900 |
| 2006/07 | 160,000 | 1,405,382 | 162,537 | 2,183 | 74 | 142 | 761,724 | 241,414 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

^c Included in Kodiak Area GHL.

Appendix B6.—Historical summary statistics from the Kodiak Semidi Island District scallop fishery. Fishing was not opened during the 1995/96 season. Regulatory changes that closed state waters to scallop fishing were enacted in 2000, and no effort has occurred since.

| Season | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | Number | Weight (lb) |
| 1993 | 261,910 | 55,487 | 1,819 | 31 | 145 | NA | NA |
| 1994 | 317,926 | NA | 990 | NA | 153 | NA | NA |
| 1994 | 69,315 | NA | 272 | NA | 153 | NA | NA |
| 1996/97 | 288,117 | 37,810 | 1,017 | 37 | 153 | 11,211 | 6,000 |
| 1997/98 | 61,320 | 6,315 | 349 | 18 | 147 | 5,831 | 2,716 |
| 1998/99 | 15,806 | 1,720 | 106 | 16 | 151 | 1,453 | 508 |
| 1999/2000 | 11,310 | 930 | 45 | 21 | 152 | 929 | 375 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

Appendix B7.—Historical summary statistics from the Alaska Peninsula (Area M) scallop fishery. The area was not opened for fishing during the 1995/96, 2001/02, and 2002/03 seasons. No effort occurred during the 2003/04 – 2005/06 seasons.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|---------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993/94 | NA | 1,061,925 | 112,152 | 1,847 | 61 | 119 | NA | NA |
| 1994/95 | NA | 619,473 | 65,282 | 1,664 | 39 | 127 | NA | NA |
| 1996/97 | 200,000 | 130,235 | 12,560 | 327 | 38 | 126 | 33,684 | 7,384 |
| 1997/98 | 200,000 | 654,960 | 51,616 | 1,752 | 29 | 135 | 56,654 | 38,219 |
| 1998/99 | 200,000 | 617,120 | 63,290 | 1,612 | 39 | 128 | 212,152 | 43,129 |
| 1999/2000 | 200,000 | 781,596 | 75,535 | 2,025 | 37 | 129 | 256,592 | 59,077 |
| 2000/01 | 33,000 | 95,510 | 7,660 | 320 | 24 | 119 | 18,633 | 4,538 |
| 2006/07 | 25,000 | 3,103 | 155 | 64 | 2 | 121 | 2,604 | 794 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

Appendix B8.—Historical summary statistics from the Bering Sea (Area Q) scallop fishery. Fishing was not opened during the 1995/96 season.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|---------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993/94 | NA | 3,447,681 | 284,414 | 5,763 | 49 | 146 | NA | NA |
| 1994/95 | NA | 5,942,912 | 505,439 | 11,113 | 45 | 147 | NA | NA |
| 1996/97 | 600,000 | 1,432,160 | 150,295 | 2,313 | 65 | 147 | 34,412 | 16,188 |
| 1997/98 | 600,000 | 1,082,825 | 97,002 | 2,246 | 43 | 151 | 114,614 | 38,262 |
| 1998/99 | 400,000 | 1,193,071 | 96,795 | 2,319 | 42 | 147 | 403,121 | 127,607 |
| 1999/2000 | 400,000 | 1,851,620 | 164,929 | 3,294 | 50 | 145 | 157,289 | 68,406 |
| 2000/01 | 200,000 | 2,376,601 | 205,520 | 3,355 | 61 | 142 | 298,483 | 97,994 |
| 2001/02 | 200,000 | 1,700,578 | 140,871 | 3,072 | 46 | 141 | 180,075 | 76,261 |
| 2002/03 | 105,000 | 952,958 | 92,240 | 2,038 | 45 | 149 | 135,276 | 55,165 |
| 2003/04 | 105,000 | 537,552 | 42,590 | 1,020 | 42 | 148 | 92,696 | 34,602 |
| 2004/05 | 105,000 | 129,220 | 10,050 | 275 | 37 | 146 | 15,076 | 5,622 |
| 2005/06 | 50,000 | 231,700 | 23,220 | 602 | 39 | 154 | 37,110 | 17,382 |
| 2006/07 | 50,000 | 529,590 | 48,246 | 1,138 | 42 | 152 | 131,115 | 55,562 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

Appendix B9.—Historical summary statistics from the Dutch Harbor (Area O) scallop fishery. Fishing was not opened during the 2000/01 – 2001/02 and 2003/04 – 2006/07 seasons. No effort occurred during the 1996/97 season.

| Season | GHL | Catch (lbs whole) | Catch (lbs meat) | Dredge hours | CPUE ^a | Avg SH ^b (mm) | Est scallop discards | |
|-----------|---------|----------------------|---------------------|-----------------|-------------------|-----------------------------|----------------------|-------------|
| | | | | | | | Number | Weight (lb) |
| 1993/94 | 170,000 | 432,970 | 38,731 | 838 | 46 | 128 | NA | NA |
| 1994/95 | 170,000 | 23,590 | 1,931 | 81 | 24 | 158 | NA | NA |
| 1995/96 | 170,000 | 289,398 | 26,950 | 1,047 | 26 | 134 | NA | NA |
| 1997/98 | 170,000 | 55,725 | 5,790 | 171 | 34 | 127 | 67,742 | 18,561 |
| 1998/99 | 110,000 | 427,422 | 46,432 | 1,025 | 45 | 128 | 92,270 | 29,348 |
| 1999/2000 | 110,000 | 68,070 | 6,465 | 273 | 24 | 135 | 11,459 | 4,284 |
| 2002/03 | 10,000 | 59,116 | 6,000 | 184 | 33 | 133 | 12,705 | 4,346 |

^a CPUE in lbs meat/dredge hr.

^b Average shell height of retained scallop catch.

**APPENDIX C: HISTORICAL ALASKA SCALLOP FISHERY
BYCATCH STATISTICS**

Appendix C1.–Historical bycatch statistics from the Yakutat Area D scallop fishery. Crab bycatch limits have not been established for the Yakutat scallop fishery.

| Season | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Dungeness | Halibut | |
| 1993 | 1,700 | 40 | 351 | 99 | 83 |
| 1994 | 1,767 | 0 | 10 | 129 | 90 |
| 1994 | 603 | 0 | 169 | 522 | 157 |
| 1995 | 3,751 | 0 | 2,379 | 1,361 | 65 |
| 1996 | 2,591 | 0 | 2,320 | 237 | 21 |
| 1996 | 6,872 | 0 | 38 | 150 | 27 |
| 1997 | 5,884 | 0 | 277 | 353 | 41 |
| 1998/99 | 8,891 | 0 | 177 | 293 | 27 |
| 1999/2000 | 4,993 | 0 | 584 | 80 | 50 |
| 2000/01 | 17,395 | 0 | 313 | 65 | 11 |
| 2001/02 | 6,770 | 0 | 1,150 | 155 | 15 |
| 2002/03 | 8,423 | 0 | 779 | 291 | 15 |
| 2003/04 | 1,650 | 0 | 905 | 316 | 98 |
| 2004/05 | 863 | 0 | 223 | 247 | 101 |
| 2005/06 | 5,189 | 0 | 394 | 518 | 38 |
| 2006/07 | 7,961 | 0 | 159 | 366 | 19 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C2.–Historical bycatch statistics from the Yakutat District 16 scallop fishery. Crab bycatch limits have not been established for the Yakutat scallop fishery.

| Season | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Dungeness | Halibut | |
| 1993 | NA | NA | NA | NA | NA |
| 1994 | 10 | 0 | 4 | 48 | 1,330 |
| 1994 | 0 | 0 | 11 | 236 | NA |
| 1995 | 469 | 0 | 93 | 719 | 71 |
| 1996 | 39 | 0 | 140 | 108 | 207 |
| 1996 | 669 | 0 | 1 | 68 | 39 |
| 1997 | 129 | 0 | 0 | 160 | 177 |
| 1998/99 | 273 | 0 | 0 | 24 | 125 |
| 1999/2000 | 48 | 0 | 0 | 111 | 721 |
| 2000/01 | 627 | 0 | 22 | 86 | 49 |
| 2001/02 | 833 | 0 | 32 | 86 | 24 |
| 2002/03 | 185 | 0 | 0 | 9 | 20 |
| 2003/04 | 0 | 0 | 21 | 10 | NA |
| 2004/05 | 0 | 0 | 170 | 110 | NA |
| 2005/06 | 175 | 0 | 0 | 0 | 78 |
| 2006/07 | 174 | 0 | 21 | 363 | 77 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C3.—Historical bycatch statistics from the Prince William Sound (Area E) scallop fishery.

| Season | Tanner crab bycatch limit | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|---------------------------|------------------------------------|------|-----------|---------|----------------------------------|
| | | Tanner | King | Dungeness | Halibut | |
| 1993 | 500 | 200 | 0 | 0 | 27 | 315 |
| 1995 | 500 | 271 | 0 | 0 | 153 | 399 |
| 1997 | 500 | 0 | 0 | 0 | 8 | NA |
| 1998/99 | 500 | 20 | 0 | 0 | 0 | 983 |
| 1999/2000 | 500 | 6 | 0 | 0 | 0 | 3,402 |
| 2000/01 | 11,400 | 467 | 0 | 3 | 9 | 65 |
| 2001/02 | 11,400 | 43 | 0 | 0 | 5 | 700 |
| 2002/03 | 11,400 | 369 | 0 | 0 | 10 | 42 |
| 2003/04 | 11,400 | 8 | 0 | 8 | 2 | 2,489 |
| 2004/05 | 11,400 | 524 | 0 | 0 | 90 | 94 |
| 2005/06 | 11,400 | 465 | 0 | 0 | 32 | 106 |
| 2006/07 | 11,400 | 359 | 0 | 4 | 24 | 103 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C4.–Historical bycatch statistics from the Kodiak Northeast District scallop fishery.

| Season | Crab bycatch limits | | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|---------------------|------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Tanner | King | Dungeness | Halibut | |
| 1993/94 | NA | NA | 33,511 | 9 | 5 | 1,513 | 5 |
| 1994/95 | 143,000 | 123 | 2,054 | 190 | 0 | 577 | 17 |
| 1996/97 | 130,000 | 66 | 27,722 | 0 | 0 | 704 | <1 |
| 1997/98 | 91,600 | 50 | 11,914 | 0 | 0 | 58 | 8 |
| 1998/99 | 46,500 | 21 | 13,887 | 1 | 0 | 309 | 9 |
| 1999/2000 | 66,500 | 150 | 13,886 | 0 | 0 | 158 | 6 |
| 2000/01 | 81,000 | 200 | 13,311 | 0 | 0 | 47 | 6 |
| 2001/02 | 425,000 | 15 | 20,362 | 0 | 100 | 94 | 4 |
| 2002/03 | 1,100,000 | 15 | 22,821 | 0 | 0 | 175 | 4 |
| 2003/04 | 606,991 | 17 | 18,230 | 0 | 0 | 197 | 4 |
| 2004/05 | 527,388 | 40 | 30,717 | 1 | 0 | 109 | 3 |
| 2005/06 | 449,403 | 45 | 29,264 | 0 | 0 | 211 | 3 |
| 2006/07 | 302,000 | 24 | 16,899 | 0 | 0 | 261 | 4 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C5.—Historical bycatch statistics from the Kodiak Shelikof District scallop fishery.

| Season | Crab bycatch limits | | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|---------------------|-------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Tanner | King | Dungeness | Halibut | |
| 1993/94 | NA | NA | 51,560 | 0 | 122 | 226 | 2 |
| 1994/95 | 98,000 | 219 | 64,444 | 29 | 1,097 | 851 | 5 |
| 1996/97 | 16,100 | 22 | 11,285 | 0 | 515 | 440 | 19 |
| 1997/98 | 51,000 | 35 | 36,744 | 0 | 4,359 | 448 | 7 |
| 1998/99 | 33,500 | 196 | 22,707 | 0 | 33 | 502 | 8 |
| 1999/2000 | 42,500 | 250 | 38,893 | 0 | 100 | 493 | 5 |
| 2000/01 | 49,000 | 125 | 15,133 | 2 | 54 | 366 | 12 |
| 2001/02 | 59,000 | 50 | 29,114 | 1 | 451 | 247 | 6 |
| 2002/03 | 67,500 | 50 | 51,165 | 0 | 2,704 | 301 | 4 |
| 2003/04 | 93,139 | 25 | 40,575 | 0 | 904 | 574 | 4 |
| 2004/05 | 35,069 | 25 | 33,338 | 1 | 1,647 | 579 | 5 |
| 2005/06 | 51,822 | 1,345 | 18,055 | 0 | 1,267 | 177 | 9 |
| 2006/07 | 66,132 | 76 | 27,688 | 0 | 2,078 | 260 | 6 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C6.—Historical bycatch statistics from the Kodiak Semidi Island District scallop fishery. Fishing was not opened during the 1995/96 season. Regulatory changes that closed state waters to scallop fishing were enacted in 2000, and no effort has occurred since.

| Season | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Dungeness | Halibut | |
| 1993/94 | 67,726 | 29 | 12,905 | 136 | <1 |
| 1994/95 | 984 | 22 | 64 | 21 | NA |
| 1996/97 | 8,902 | 9 | 0 | 79 | 4 |
| 1997/98 | 8,500 | 1 | 856 | 21 | <1 |
| 1998/99 | 780 | 0 | 37 | 17 | 2 |
| 1999/2000 | 66 | 0 | 0 | 0 | 14 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C7.—Historical bycatch statistics from the Alaska Peninsula (Area M) scallop fishery.

| Season | Crab bycatch limits | | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|---------------------|------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Tanner | King | Dungeness | Halibut | |
| 1993/94 | 52,530 | 85 | 180,319 | 25 | 0 | 329 | 2 |
| 1994/95 | 44,000 | 119 | 25,287 | 0 | 73 | 157 | 2 |
| 1996/97 | 22,000 | 435 | 19,045 | 0 | 4 | 25 | <1 |
| 1997/98 | 45,300 | 79 | 21,971 | 0 | 0 | 347 | 1 |
| 1998/99 | 48,500 | 900 | 47,780 | 0 | 140 | 226 | 1 |
| 1999/2000 | 75,500 | 300 | 28,160 | 1 | 2,349 | 178 | 1 |
| 2000/01 | 42,000 | 100 | 2,636 | 1 | 0 | 8 | <1 |
| 2006/07 | 26,500 | 156 | 4,693 | 0 | 0 | 4 | <1 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.

Appendix C8.—Historical bycatch statistics from the Bering Sea (Area Q) scallop fishery. Fishing was not opened during the 1995/96 season.

| Season | Crab bycatch limits | | | Estimated bycatch (number animals) | | | | Lbs meat per Tanner/snow ^a |
|-----------|---------------------|--------|---------|------------------------------------|------|---------|---------|---------------------------------------|
| | Tanner | King | Snow | Tanner | King | Snow | Halibut | |
| 1993/94 | 260,000 | 17,000 | NA | 290,913 | 207 | 15,000 | 165 | <1 |
| 1994/95 | 260,000 | 17,000 | NA | 220,710 | 22 | 34,867 | 3,513 | 2 |
| 1996/97 | 257,000 | 500 | 275,000 | 16,642 | 0 | 106,935 | 124 | 1 |
| 1997/98 | 238,000 | 500 | 172,000 | 28,446 | 0 | 195,345 | 98 | <1 |
| 1998/99 | 215,000 | 500 | 130,000 | 39,363 | 146 | 232,911 | 98 | <1 |
| 1999/2000 | 65,000 | 500 | 300,000 | 62,268 | 2 | 159,656 | 106 | <1 |
| 2000/01 | 65,000 | 500 | 150,000 | 52,505 | 2 | 103,350 | 50 | 1 |
| 2001/02 | 65,000 | 500 | 300,000 | 48,718 | 2 | 68,458 | 76 | 1 |
| 2002/03 | 65,000 | 500 | 300,000 | 48,053 | 2 | 70,795 | 85 | <1 |
| 2003/04 | 65,000 | 500 | 150,000 | 31,316 | 0 | 16,206 | 61 | <1 |
| 2004/05 | 65,000 | 500 | 150,000 | 15,303 | 0 | 3,843 | 0 | <1 |
| 2005/06 | 65,000 | 500 | 150,000 | 15,529 | 2 | 5,211 | 53 | 1 |
| 2006/07 | 260,000 | 24 | 300,000 | 45,204 | 10 | 8,543 | 82 | <1 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab or snow crab × Tanner crab hybrid.

Appendix C9.–Historical bycatch statistics from the Dutch Harbor (Area O) scallop fishery.

| Season | Crab bycatch limits | | Estimated bycatch (number animals) | | | | Lbs meat per Tanner ^a |
|-----------|---------------------|------|------------------------------------|------|-----------|---------|----------------------------------|
| | Tanner | King | Tanner | King | Dungeness | Halibut | |
| 1993/94 | 50,500 | 45 | 69,354 | 35 | 0 | 270 | <1 |
| 1994/95 | 87,000 | 47 | 757 | 7 | 0 | 0 | 3 |
| 1995/96 | 10,700 | 10 | 5,980 | 0 | 0 | 37 | 5 |
| 1997/98 | 10,700 | 10 | 12,582 | 1 | 0 | 22 | <1 |
| 1998/99 | 10,700 | 10 | 6,479 | 0 | 23 | 35 | 7 |
| 1999/2000 | 10,700 | 10 | 4,274 | 0 | 0 | 39 | 2 |
| 2002/03 | 10,700 | 50 | 2,744 | 0 | 29 | 0 | 2 |

^a Ratio of pounds scallop meat harvested for each incidentally caught Tanner crab.