

**Fishery Management Report No. 05-46**

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**Annual Management Report For The Commercial  
Weathervane Scallop Fisheries In Alaska's Westward  
Region, 2002/03**

by

**Jeffrey P. Barnhart**

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August 2005

Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries





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**ANNUAL MANAGEMENT REPORT FOR THE COMMERCIAL  
WEATHERVANE SCALLOP FISHERIES IN ALASKA'S WESTWARD  
REGION, 2002/03**

by

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August 2005

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## ABSTRACT

The Alaska Department of Fish and Game (ADF&G) Westward Region includes all waters of the Territorial Sea and Exclusive Economic Zone (EEZ) in the Gulf of Alaska south of Cape Douglas (58°51.10' N lat.) and west of 149° W long. and the Bering Sea to the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990. This report presents details on the commercial weathervane scallop *Patinopecten caurinus* fishery including harvest, participation, and value for fisheries occurring in the Kodiak, Alaska Peninsula, Bering Sea, Dutch Harbor, and Adak Registration Areas. Historic and present day fishery management measures, a synopsis of the most recent fishing season and stock status are discussed for each registration area in the Westward Region.

The Alaska Scallop Fishery Management Plan of 1993 provided for 100% onboard observer coverage on all commercial scallop vessels. Observers on board fishing vessels greatly enhance management, primarily by facilitating information gathering and by improving regulatory compliance. Management relies heavily on observer-collected data to help manage the weathervane scallop fishery.

Key words: Weathervane Scallop, Westward Region, Fishery Observer, Kodiak, Alaska Peninsula, Bering Sea, Dutch Harbor, Adak, Aleutian Islands, Fishery Management Plan, Crab Bycatch

## INTRODUCTION

Alaskan weathervane scallop *Patinopecten caurinus* populations were first evaluated for commercial potential in the early 1950s by both government and private sector research (Kaiser 1986). However, it was not until the late 1960s as catches declined in the United States and Canadian scallop fisheries on Georges Bank, that interest in a fishery off Alaska began to take shape (Orensanz 1968). Initial commercial fishing effort took place in 1967 when fishermen on two vessels harvested weathervane scallops from fishing grounds off the eastside of Kodiak Island. By the following year, 19 vessels consisting of New England type scallop vessels, converted Alaskan crab boats, salmon seiners, halibut longliners, and shrimp trawlers entered the fishery (Kaiser 1986). The commercial fishery progressed through several developmental phases. From 1967 through 1973 virgin scallop beds throughout the state were identified and exploited. This was followed by a period of declining scallop harvests from 1974 to the end of the decade. A smaller, more stable harvest followed through the 1980s (Shirley and Kruse 1995). In the early 1990s, the fishery again expanded with an influx of scallop boats from the east coast of the United States (Table 1). In response, regulatory actions were implemented to slow the pace of the fishery. In 1997, participation in the weathervane scallop fishery was limited by vessel moratoria in both federal and state waters. By 2001, a federal license limitation program (LLP) replaced the federal moratorium permanently limiting participation in the exclusive economic zone (EEZ). During the same year, some vessel owners formed a fishing cooperative. The result of these combined actions associated with a conservative management approach, has been a decline in the statewide scallop harvest since the late 1990s to levels similar of those in the mid to late 1980s, prior to the influx of vessels from the east coast into the fishery (Table 1).

The fishery changed in the 1990s from one characterized by short trips with numerous deliveries each season to one of long trips with few deliveries as the majority of the fleet converted from icing to freezing of the product on board the vessel (Barnhart 2000). The fleet averaged 114 deliveries per year between 1990 and 1994 when product was iced on board and delivered fresh (Table 1). By 1996, all the scallop catcher boats participating exclusively in the statewide fishery were converted to catcher-processors with freezing capability. Freezing product onboard allowed longer trips without product spoilage. As a result, the average number of deliveries between 1996/97 and 2002/03 for the catcher-processor fleet operating exclusively in the statewide

fishery, was 20. The average number of deliveries during the same time period, for all scallop vessels and all registration areas combined, was 27.

Variable quantities of weathervane scallops are found in patchy distribution along the continental shelf from Southeast Alaska to the Bering Sea and Aleutian Islands. Scallop “beds” are typically elongated and oriented in a north-south direction consistent with prevailing currents parallel to Alaska’s coastline. Major scallop fishing locations in Alaska coastal waters are shown in Figure 1. Scallops are typically found at depths of 20–125 fathoms (120 feet to 750 feet), with the majority of the fishing effort occurring between 40 and 60 fathoms (240 feet to 360 feet; Barnhart and Rosenkranz 2000). Statewide, a maximum of 163 square nautical miles as calculated by area swept, have been fished annually since the 1996/97 regulatory season. Bottom substrate types inhabited by weathervanes are variable throughout the state and include mud, clay, silt, sand, and pebble.

There are nine scallop fishing registration areas in Alaska (Figure 2). Unless otherwise indicated, this report describes Westward Region fisheries within Registration Area J, including scallop registration areas K, M, O, Q, and R. Registration area J includes all waters of the Territorial Sea and Exclusive Economic Zone (EEZ) in the Gulf of Alaska south of Cape Douglas (58°51.10' N lat.), west of 149° W long. and the Bering Sea and Aleutian Islands to the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990.

## **MANAGEMENT HISTORY**

### **HISTORIC MANAGEMENT MEASURES**

Prior to an influx of boats from the east coast of the U. S. into the Alaska weathervane scallop fishery in the early 1990s, the fishery was open year-round in many parts of the state, without harvest restrictions. However, vessels were registered to fish under a commissioner’s permit, which could stipulate location and duration of harvest, limit gear and other harvest procedures, and require periodic or annual reporting. By 1993, scallop fishery management changed in response to increased effort. The fishery was declared to be a high impact and emerging fishery on May 21, 1993 by the Commissioner of the Alaska Department of Fish and Game (ADF&G) and was closed until a conservative management plan could be developed by the department. The resulting Alaska Scallop Fishery Management Plan approved by the ADF&G Commissioner and later adopted by the Alaska Board of Fisheries (BOF) included (1) a requirement for 100% onboard observer coverage, (2) regulations that limit efficiency and slow the pace of fishing, (3) gear regulations that reduce the capture rate of small scallops, and (4) crab bycatch limits. Regulations prohibited the use of mechanical shucking machines, restricted the number and size of dredges, required a minimum ring size, and limited the number of crew members. At the BOF meeting in March 1994, the Westward Region regulatory season was established as July 1 through February 15. At the March 1997 BOF meeting, the regulatory season in all registration areas of the state, except the Cook Inlet Registration Area, was also established as July 1 through February 15. Although season dates were established to protect molting and mating crab, they have the added benefit of not disturbing scallops prior to and during their spawning period.

Other Federal regulatory actions also changed the character of the fishery. In January 1995, the captain of a scallop vessel home-ported in Norfolk, Virginia returned his 1995 scallop interim use permit card to the Commercial Fisheries Entry Commission (CFEC) in Juneau and proceeded to harvest scallops in the EEZ with disregard to harvest limits, observer coverage, and



all other management measures. In response to the uncontrolled fishing for scallops in the EEZ by this single vessel outside the jurisdiction of the state of Alaska, the fishery was closed from February 23, 1995 to August 1, 1996. Fishing in the EEZ was initially closed by emergency rule (60 FR 11054); however, subsequent to expiration of the emergency rule, the North Pacific Fisheries Management Council (NPFMC) adopted an FMP that closed the fishery while a federal scallop management program was developed.

Amendment 2 to the Fishery Management Plan for the Scallop Fishery Off Alaska (FMP) was approved on April 11, 1997 (62 FR 17749). Amendment 2 established a federal moratorium on the entry of new vessels into the fishery. In 1997, the Alaska legislature approved legislation (AS 16.43.906) establishing a scallop vessel moratorium in state waters. In 1998, Amendment 3 to the federal FMP delegated authority to the state of Alaska to manage all aspects of the scallop fishery, except limited access, in federal waters (Barnhart 2000).

## **CURRENT MANAGEMENT**

The weathervane scallop fishery, in both state and federal waters, is managed by the ADF&G. Vessels eligible to fish in the EEZ are limited by the NPFMC FMP, while vessels in state waters (0-3 nautical miles) are limited by an Alaska legislative moratorium (AS 16.43.906).

The regulatory fishing season is from July 1 through February 15 or until closed by emergency order. Scallop guideline harvest ranges (GHRs) and crab bycatch limits for the 2002/03 season were announced by news release on June 6, 2002. The upper limit of the GHRs in the Westward Region totaled 450,000 lb.

King and Tanner crab bycatch caps are established for the weathervane scallop fishery. Each registration area or district has separate crab bycatch caps. Crab caps are established based on the most recent crab trawl survey data (with exception of the Bering Sea), and published in a news release approximately one month prior to the opening of the scallop season. A scallop fishery crab bycatch cap of one percent of the surveyed crab population estimate is applied to scallop registration areas or districts where a directed commercial crab fishery occurred in the most recent season. In areas where the directed commercial crab fishery was closed during the most recent season, a cap of one-half of one percent of the surveyed crab population estimate is applied to the scallop fishery. In the Bering Sea, a three tier approach is used to determine *Chionoecetes* sp. bycatch caps for the scallop fishery. The three tiers include (1) crab spawning biomass above minimum stock size threshold (MSST), (2) crab spawning biomass below MSST and (3) crab spawning biomass below MSST and the commercial crab fishing season is closed (Barnhart 2003).

Catch per unit effort (CPUE) is one management tool used by ADF&G when setting annual GHRs. Fishery-dependent data such as CPUE is affected by many variables and therefore must be used with caution. CPUE is expressed in two ways, round weight and meat weight, standardized to a dredge-hour, which is one dredge towed for 60 minutes. Round weight represents the retained weight in lb of the live or whole animals. The round weight of retained scallops is estimated by the vessel operator for each tow, by counting the number of retained scallop bushels and multiplying by an estimated weight per bushel. However, the retained scallop meats are weighed when processed. Therefore, CPUE based on scallop meat weight provides a more standard measure of fishery performance across the fleet. However, estimated

round weight is used in conjunction with weighed scallop meats to determine estimated recovery rates, thus helping assure the accuracy of reported data.

## **OBSERVER PROGRAM**

The ADF&G Scallop Fishery Management Plan, 5 AAC 38.076, includes 100% onboard observer coverage. The primary purposes of the onboard scallop observer program are to collect a variety of biological and fishery-based data, monitor bycatch, and provide for regulatory enforcement. Data are collected on crab and halibut bycatch, discarded scallop catch, retained scallop catch, catch composition, catch per unit effort (CPUE), scallop meat-weight recovery, and location, area and depth fished (Barnhart and Rosenkranz 2003). Observers report scallop harvest, number of tows, area fished, and crab bycatch to ADF&G tri-weekly during the season by radio or email. Observer-collected data are used to manage the fishery in-season and to set GHRs for the following season. Data are provided to local advisory committees, BOF, NPFMC, NMFS and the public to help answer a myriad of questions pertaining to the weathervane scallop fishery. Regulatory decisions, in the absence of observer-collected data, may have had different outcomes. These data have been invaluable for preparing Essential Fish Habitat (EFH) and Habitat Areas of Particular Concern (HAPC) documents. Observer data were particularly useful in showing that a proposed HAPC would have a minimal impact. For analyzing fine-scale spatial impacts, observer data are critical.

Onboard observer coverage is funded by industry through direct payments to independent contracting agents (Barnhart 2003). Independent contracting agents provide the personnel that are trained at the University of Alaska North Pacific Fisheries Observer Training Center in Anchorage, Alaska. Observer training is funded by a federal grant. Federal assistance is provided to the State of Alaska by a NOAA grant award to cover additional costs incurred to meet federal oversight. ADF&G funds scallop stock assessments and day to day management of the resource including staff salaries and indirect costs incurred by field offices throughout the state.

## **INDUSTRY**

The majority of the scallop vessel owners formed a cooperative prior to the 2000/01 regulatory season. This program is not endorsed or managed by the ADF&G or any federal agency. Within the cooperative, vessel owners allocated themselves shares based on previous fishing history. Some owners opted to remove their boats from the fishery and arranged for their coop shares to be caught by others members of the cooperative. The formation of the cooperative extended fishing effort over a longer time period compared to the pre-cooperative fishery that was typically characterized by short seasons.

Vessel owners and operators, within the cooperative, have taken an active role in developing measures aimed at reducing crab bycatch. Vessel operators provide their confidential inseason fishing information to an independent consulting company contracted by the cooperative. In theory, the consultant reviews the crab bycatch data, fishing location information, and scallop harvest. This procedure potentially allows for real time identification of any high crab abundance areas discovered during the fishery. If an area of high crab abundance is identified, the coop fleet is provided with location information and directed to avoid fishing in that area.

Vessel operators also voluntarily release their confidential fishing information to the department so that it can be used in this and other reports to help the BOF make informed decisions on management issues in areas where few fishermen participate.

## **KODIAK REGISTRATION AREA**

The Kodiak Registration Area (Area K) includes the waters of the Pacific Ocean south of the latitude of Cape Douglas (58° 51.10' N lat.), east of the longitude of Cape Kumlik (157° 27' W long.) and west of 149° W long. (Figure 3). The Kodiak Registration Area is comprised of the Northeast, Shelikof, and Semidi Districts. Extensive areas are closed to scallop fishing to protect crab habitat.

### **HISTORIC BACKGROUND**

When commercial fishing for weathervane scallops began in Alaska, vessel operators targeted fishing grounds along the eastside of Kodiak Island. In 1968, 734,084 lb of scallop meats were landed from eight vessels (Table 2). The Kodiak scallop fishery peaked in 1970 when 1.4 million lb of scallop meats were landed from seven vessels. Catches declined by the mid-1970s with no participation in 1977 or 1978. Since 1979, landings have fluctuated from 24,826 lb to 689,497 lb of scallop meats. There was no harvest in 1995 because the scallop season was closed while a federal scallop management plan was under development.

In response to the uncontrolled fishing for scallops in the EEZ by this single vessel outside the jurisdiction of the state of Alaska, the fishery was closed from February 23, 1995 to August 1, 1996. Fishing in the EEZ was initially closed by emergency rule (60 FR 11054); however, subsequent to expiration of the emergency rule, the North Pacific Fisheries Management Council (NPFMC) adopted an FMP that closed the fishery while a federal scallop management plan was developed.

Within two years from inception of the scallop fishery, concerns about dredging impacts on crab resources, specifically red king crab *Paralithodes camtschatica*, began to develop. In 1969, ADF&G closed extensive areas off the south end of Kodiak Island as well as Marmot Bay at the north end of Kodiak Island, to scallop fishing. These areas were closed due to concerns about crab bycatch and conflict with other gear types. Subsequently, the BOF adopted the department's recommendation, and closed both areas by regulation. When the Alaska scallop fishery began in 1967, there were no closed seasons. During the early 1970s, a regulatory season was established allowing the harvest of scallops from June 1 through March 31 to protect molting and softshell red king crabs (Barnhart 2003). In 1990, to protect depressed red king and Tanner crab *Chionoecetes bairdi* populations, the BOF closed scallop fishing in Kodiak's westside bays which had been previously closed to non-pelagic trawling. With development of the Alaska Scallop Fishery Management Plan in 1993, crab bycatch limits were developed for the Kodiak Area.

### **2002/03 FISHERY**

The 2002/03 scallop fishing season was open July 1, 2002 through February 15, 2003. Three catcher-processors fished in the Kodiak Registration Area. To facilitate distribution of fishing effort and crab bycatch limits, king crab districts as described in 5 AAC 34.405 were utilized.

## **Northeast District**

The Northeast District (Figure 3) of the Kodiak Registration Area as applied to the scallop fishery includes all waters northeast of a line extending 180° from the easternmost tip of Cape Barnabas, east of a line from the northernmost tip of Inner Point on Kodiak Island to the southernmost tip of Afognak Point, east of 152° 30' W long. in Shuyak Strait, and east of the longitude of the northernmost tip of Shuyak Island at 152° 20' W. long.

The GHR for the Northeast District was set at zero to 80,000 lb of shucked scallop meats. Three catcher-processors participated in the fishery with initial effort in mid-August. Inseason observer reports indicated that approximately 19,000 Tanner crabs and no red king crabs were caught from a bycatch limit of 1.1 million Tanner crabs and 15 red king crabs. Observer reports also indicated that the upper end of the GHR was achieved, prompting an emergency order closing the Northeast District to scallop fishing on February 10, 2003. Final fish tickets summaries totaled 80,000 lb of shucked meats (Table 3).

The average scallop shell height (SH) increased from 127 mm in the 1998/99 season to 140 mm in the 2001/02 season and has remained at that level for the 2002/03 season. Scallop CPUE, expressed as round weight of retained scallops per dredge-hour (round lb/drg-hr), increased from a low of 220 in 1994/95 to a high of 720 in the 2001/2002 season, followed by a decrease to 646 during the 2002/03 season (Table 3).

Figure 4 depicts the estimated SH distributions of the retained and discarded scallop catch in the Northeast District, based on resampling the discarded and retained SH measurements in equal proportion. There appears to be continued recruitment to the Northeast District scallop population based on the estimated frequency of scallops <110 mm SH in the size distribution. A summary of the scallop catch in lb of round scallops, shucked scallop meats, dredge hours, and CPUE expressed in lb of shucked scallop meats per dredge-hour (meat lb/drg-hr) from the 1993/94 through 2002/03 seasons is depicted in Figure 5. The fishery in this district is characterized by decreasing effort (dredge hours) and a general increase in fishery performance (CPUE) between 1993/94 and 2000/01. Between the 2000/01 and 2002/03 seasons, dredge hours increased slightly from 1,101 to 1,350 while the CPUE decreased from 73 meat lb/drg-hr to 59 meat lb/drg-hr (Table 4).

## **Stock Status**

The weathervane scallop population in the Northeast District of the Kodiak Registration Area is not currently surveyed and no estimate of abundance has been made. There are currently no plans to survey this population. Since the 1999/2000 season the catch has remained level, as the department allowed the annual harvest to reach the upper limit of the GHR, set at 80,000 lb of shucked meats.

## **Shelikof District**

The Shelikof District of the Kodiak Registration Area includes all waters north of a line from the westernmost tip of Cape Ikolik to the southernmost tip of Cape Kilokak, west of a line from the northernmost tip of Inner Point on Kodiak Island to the southernmost tip of Afognak Point, west of 152° 30' W long. in Shuyak Strait, and west of the longitude of the northernmost tip of Shuyak Island at 152° 20' W. long. (Figure 3).

The GHR for the Shelikof District was set at zero to 180,000 lb of shucked meats. Three catcher-processors participated in the fishery with initial effort on July 1, the first day of the regulatory season. Inseason observer reports showed that approximately 50,932 Tanner crabs and no red king crabs were caught from a bycatch limit of 67,500 Tanner crabs and 50 red king crabs. Inseason observer reports also indicated that the upper end of the GHR was achieved prompting an emergency order closing the Shelikof District to scallop fishing on February 9, 2003. Final fish ticket summaries totaled 180,580 lb of shucked meats (Table 3).

The average scallop shell height (SH) decreased slightly from 140 mm in the 2001/02 season to 138 mm in the 2002/03 season. Since the 1996/97 season, the average SH has ranged from 130 mm to 140 mm (Table 3). There has been a slight downward trend in scallop CPUE, from an estimated 608 round lb/drg-hr, during the 2000/01 season (the highest level since the observer program began in 1993) to 489 round lb/drg-hr, during the 2002/03 season.

A range of scallop sizes supports the fishery and there appears to be continued recruitment to the population as evidenced by the frequency of scallops <110 mm SH in the size distribution (Figure 6). A summary of the scallop catch in lb of round scallops, shucked scallop meat weight, dredge hours, and CPUE (meat lb/drg-hr) in the Shelikof District from 1993 through 2001 is depicted in Figure 7. Between 1996/97 and 2001/02 CPUE has ranged from 44 meat lb/drg-hr to 63 meat lb/drg-hr (Table 5).

### **Stock Status**

The weathervane scallop population in the Shelikof District of the Kodiak Registration Area is not currently surveyed and no estimate of abundance has been made. A scallop video stock assessment is planned for 2004. Since the 1998/1999 season the catch has remained level, as the department allowed the annual harvest to reach the upper limit of the GHR, set at 180,000 lb of shucked meats.

### **Semidi District**

The Semidi District of the Kodiak Registration Area includes all Pacific Ocean waters west of the longitude of Cape Kilokak (156° 20.22' W long.) and east of the longitude of Cape Kumlik at 157° 27' W long. (Figure 3). A guideline harvest range has not been developed for this district.

State waters of the Semidi District were closed to scallop dredging by the BOF at the March 2000 meeting; however, federal waters remain open. No fishing activity occurred in the Semidi District during the 2002/03 fishing season, although it was open from July 1, 2002 to February 15, 2003.

Since the 1993/94 season, the Semidi District harvest has ranged from zero to 55,487 lb of scallop meats (Table 3). CPUE has ranged from 16 to 37 meat lb/drg-hr, which is lower than other areas within the Westward Region (Table 6).

### **Stock Status**

The weathervane scallop population in the Semidi District is not surveyed and no estimate of abundance has been made. There are currently no plans to survey this population. No fishing effort has occurred in the Semidi District since the BOF closed state waters to scallop fishing in 2000.

## **ALASKA PENINSULA REGISTRATION AREA**

The Alaska Peninsula Registration Area (Area M) includes waters of the Pacific Ocean west of the longitude of Cape Kumlik (157° 27' W long.) and east of the longitude of Scotch Cap Light at 164° 44' W long. (Figure 8).

Areas closed to fishing include all state waters and offshore waters of Unimak Bight and Mitrofanina Island. The Unimak closure was adopted in the early 1970s to protect king crab habitat. The Mitrofanina Island closure was adopted in the mid-1980s to protect Tanner crab.

### **HISTORIC BACKGROUND**

Historic fishing effort for scallops in the Alaska Peninsula Registration Area was sporadic. Most catch and effort information prior to 1993 is confidential because few fishermen participated in any given year. However, the average annual harvest during the nine years of participation prior to 1993 was 41,888 lb of scallop meats. The highest harvest occurred in 1982 when 205,691 lb of shucked meats were landed from six vessels (Table 7). Since the 1993/94 season, CPUE has ranged from 24 to 61 meat lb/drg-hr (Table 8). Commercial harvest data from this registration area was misreported in the 1980s as evidenced in logbooks seized by Fish and Wildlife Protection agents. The extent of misreporting in the 1980s is unknown but may have lead to artificially high catch data attributed to the Alaska Peninsula Registration Area in some years.

### **2002/03 FISHERY**

The Alaska Peninsula Registration Area did not open to scallop fishing for the 2002/03 season. It remained closed to preserve the remaining scallop resource and allow for stocks to increase. The department does not intend to reopen the Alaska Peninsula Registration Area until the 2003/04 season.

### **STOCK STATUS**

The weathervane scallop population in the Alaska Peninsula Registration Area is not currently surveyed and no estimate of abundance has been made. There are currently no plans to survey this population.

## **BERING SEA REGISTRATION AREA**

The Bering Sea Registration Area (Area Q) includes waters of the Bering Sea north of a line extending from the latitude of Cape Sarichef at 54° 36' N lat. to 171° W long., north to 55° 30' and west to the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990 (Figure 9). Waters closed to scallop fishing have been established to protect king crab stocks and juvenile Pacific halibut nursery areas.

### **HISTORIC BACKGROUND**

ADF&G records indicate that scallops were first harvested from the Bering Sea in 1987, and then again in 1990 and 1991 (Table 9). During those years few fishermen participated in any given year, so catch and effort information is confidential. However, the average annual catch for the three confidential years was 68,189 lb of shucked meats. No additional landings were made from this area until calendar year 1993 (1993 and 1993/94 seasons combined) when 605,953 lb of scallop meats were landed from ten vessels. During the 1994/95 fishery, 505,439 lb of shucked

meats were landed from eight vessels. The 1995/96 fishery was closed by federal emergency rule. Between regulatory seasons 1996/97 and 1999/2000 scallop catches were constrained by Tanner crab or snow crab *Chionoecetes opilio* bycatch limits, averaging 127,000 lb of shucked meats per year. In the 2000/01 season, 205,520 lb of shucked meats, slightly more than the 200,000 lb GHR upper limit, was landed from three vessels. This was the first season since 1994 that the scallop harvest reached the upper limit of the GHR without being constrained by crab bycatch limits. The 2001/02 scallop season was closed on October 31, based largely on poor fishery performance and not crab bycatch limits.

## **2002/03 FISHERY**

The GHR for the Bering Sea Registration Area was set at zero to 105,000 lb of shucked meats. Crab bycatch limits were established at 65,000 Tanner crabs, 300,000 *C. opilio* crabs and hybrid Tanner crabs, and 500 king crabs. Two catcher-processors participated in the Bering Sea fishery with initial effort in early September. The harvest reached 92,240 lb of shucked meats by early January 2003, when fishing operations stopped for the season (Table 9). The 2002/03 fishery closed by regulation on February 15, 2003. Projections based on inseason observer reports indicated a bycatch of 47,293 Tanner crabs, 71,140 *C. opilio* and hybrid Tanner crabs and two red king crabs.

The average scallop SH increased from 141 mm in the 2001/02 season to 149 mm in the 2002/03 season (Table 3). Since the 1993/94 season when onboard observers began collecting data, scallop SH has ranged from 141 mm to 151 mm. With the exception of the 1998/99 season, there has been little recruitment to the population (Figure 10). Predominately large, old animals support the fishery. A summary of the scallop catch in round lb, shucked scallop meat weight, dredge hours, and CPUE (meat lb/drg-hr ) is depicted in Figure 11. CPUE in the 2002/03 season was similar to that of the 2001/02 season at 45 meat lb/drg-hr (Table 10).

## **STOCK STATUS**

The weathervane scallop population in the Bering Sea Registration Area has not been surveyed. However, a scallop video stock assessment is planned for 2003. This fishery is prosecuted over a wide, poorly defined area. As more data is collected through the onboard observer program, the reproductive viability of this population has been questioned. The spatial distribution of individual scallops within the fished area is not conducive to successful broadcast spawning.

## **DUTCH HARBOR REGISTRATION AREA**

The Dutch Harbor Registration Area (Area O) includes Aleutian Island waters west of the longitude of Scotch Cap Light (164° 44' W long.), east of 171°W. long. and south of the latitude of Cape Sarichef at 54° 36' N lat. (Figure 12).

## **HISTORIC BACKGROUND**

In the Dutch Harbor Registration Area, closed waters were established in 1986 to protect crab nursery areas (Figure 12). Prior to the 1993 season, the registration area was open year-round to scallop dredging. At the March 1994 BOF meeting, the regulatory season date for this registration area was established as July 1 through February 15.

The first harvest of weathervane scallops from the Dutch Harbor Registration Area was in 1982 when 62,105 lb of scallop meats were landed from five vessels (Table 11). Catch data for most

years between 1985 and 1992 is confidential, because few vessels participated; however, the average annual catch for those years was 203,695 lb of scallop meats. Commercial harvest data from this registration area was misreported in the 1980s as evidenced in logbooks seized by Fish and Wildlife Protection agents. The extent of misreporting in the 1980s is unknown but may have lead to artificially high catch data attributed to the Dutch Harbor Registration Area in some years. In addition, productive grounds that contributed significantly to the overall harvest were closed by 1986. Since the 1993/94 season, catches have ranged from zero to 46,432 lb of scallop meats per regulatory season. Scallop fishing was limited to state waters during the 1995/96 season because the EEZ was closed by federal emergency rule. In 2000/01 and 2001/02, the fishery was closed by emergency order to allow the stocks to increase in size.

## **2002/03 FISHERY**

The Dutch Harbor Registration Area was open July 1, 2002 through February 15, 2003. The GHR was set at zero to 10,000 lb of shucked meats. A single vessel participated in this fishery, during early to mid-October. Inseason observer reports showed that approximately 1,781 Tanner crabs were caught from a bycatch limit of 10,700 Tanner crabs and 50 red king crabs. Final fish ticket summaries totaled 6,000 lb of shucked meats (Table 11).

The average scallop SH during the 2002/03 season was 133 mm compared to an average of 134 mm during the previous fishery in the 1999/2000 season. (Table 3). CPUE increased from an estimated 249 round lb/drg-hr in 1999/2000 to 322 round lb/drg-hr in 2002/03.

A range of scallop sizes supports the fishery (Figure 13). A summary of the scallop catch in round lb, shucked scallop meat weight, dredge hours, and CPUE (meat lb/drg-hr) in the Dutch Harbor Registration Area from 1993/94 through 2002/03 is depicted in Figure 14. Fishery performance, as measured by CPUE increased from 24 to 33 meat lb/drg-hr between 1999/2000 and 2002/03 (Table 12).

## **STOCK STATUS**

The weathervane scallop population in the Dutch Harbor Registration Area is not surveyed and no estimate of abundance has been made. There are currently no plans to survey this population.

## **ADAK REGISTRATION AREA**

The Adak Registration Area (Area R) includes Aleutian Island and Bering Sea waters west of 171°W. long., and east of the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990 and south of 55° 30' N. lat. (Figure 15).

## **HISTORIC BACKGROUND**

ADF&G records indicate that scallops were first harvested from the Adak Registration Area in 1979, and then again in 1992, and 1995. During those years few fishermen participated in any given year, so catch and effort information is confidential. Little is known about scallop populations in this area.

The Petrel Bank, between 51°30' N lat. and 54° 30' N lat., west of 179° W long. and east of 179° E long. was closed by emergency order on March 21, 1991 due to concerns about king crab bycatch in the *Chlamys* (pink scallop) fishery. On November 1, 1991, before the initial emergency order expired, a second emergency order was issued closing this area until June 1,



1994. This allowed time for the department to bring the conservation concerns to the attention of the BOF. In 1993, the BOF adopted the department's recommendation, and closed the area by regulation (Figure 15).

### **2002/03 FISHERY**

The 2002/03 fishery opened July 1, 2002 and closed by regulation on February 15, 2003. A GHR of zero to 75,000 lb was announced by news release. No vessels participated in the fishery during 2002/03 season.

### **STOCK STATUS**

The weathervane scallop population in the Adak Registration Area is not surveyed and no estimate of abundance has been made. There are currently no plans to survey this population. The continental shelf adjacent to the Aleutian Islands is narrow, providing limited weathervane scallop habitat.

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## **TABLES AND FIGURES**

**Table 1.**—Historic statewide commercial weathervane scallop catch, number of vessels, and number of landings, 1967-2002/03.

Year	Number Vessels	Number Landings <sup>a</sup>	Commercial Catch <sup>b</sup>
1967	2	6	778 <sup>c</sup>
1968	19	125	1,677,268
1969	19	157	1,849,947
1970	7	137	1,440,338
1971	5	60	931,151
1972	5	65	1,167,034
1973	5	45	1,109,405
1974	3	29	504,438
1975	4	56	435,672
1976	7	21	264,788
1977		No Effort	
1978		No Effort	
1979	1	4	24,826
1980	8	56	616,717 <sup>c</sup>
1981	18	101	924,441
1982	13	120	913,996
1983	5	30	192,310
1984	6	52	383,512
1985	7	47	615,564
1986	8	74	667,258
1987	4	54	599,947 <sup>d</sup>
1988	4	47	341,070
1989	7	55	534,763
1990	9	144	1,481,136
1991	6	136	1,136,649
1992	8	136	1,785,673
1993 <sup>e</sup>	7	51	568,077
1993/94	15	111	984,583
1994/95	15	104	1,240,775
1995/96	10	29	410,743 <sup>d</sup>
1996/97	9	30	732,424
1997/98	9	31	818,913
1998/99	8	35	822,096
1999/2000	10	22	837,971
2000/01	8	20	750,617
2001/02	6	26	572,838
2002/03	6	28	509,455

<sup>a</sup> Prior to and including 1995, reported number of landings equals number of fish tickets. After 1995, the reported number of landings equals number of off-loads. A off-load typically includes multiple fish tickets, normally one fish ticket per week.

<sup>b</sup> Pounds of shucked scallop meats.

<sup>c</sup> Deliveries of unshucked scallops were converted to shucked meats using a 10% conversion factor.

<sup>d</sup> Includes illegal harvest.

<sup>e</sup> January 1 through June 30.

**Table 2.-**Historic commercial catch, effort, and value of weathervane scallops, Kodiak Management Area, 1967 through 2002/03.

Year	Number Vessels	Number Landings <sup>a</sup>	Commercial Catch (lb) <sup>b</sup>	Average Landing (lb) <sup>b</sup>	Average Price/lb	First Wholesale Est. Value (dollars)	Number Tows
1967 <sup>c</sup>	2	6	778	130	0.70	545	<sup>d</sup>
1968 <sup>c</sup>	8	89	734,084	8,248	0.85	623,971	<sup>d</sup>
1969	11	86	1,012,860	11,777	0.85	861,000	<sup>d</sup>
1970	7	102	1,417,612	13,898	1.00	1,500,000	<sup>d</sup>
1971	5	48	841,211	17,525	1.05	883,000	<sup>d</sup>
1972	5	68	1,038,793	15,276	1.15	1,200,000	<sup>d</sup>
1973	4	42	935,705	22,279	1.20	1,123,000	<sup>d</sup>
1974	3	14	147,945	10,568	1.30	192,000	<sup>d</sup>
1975	3	29	294,142	10,143	1.40	412,000	<sup>d</sup>
1976	1	6	75,245	12,541	1.59	119,000	<sup>d</sup>
1977				No Effort			
1978				No Effort			
1979	1	4	24,826	6,206	2.78	69,000	<sup>d</sup>
1980 <sup>c</sup>	7	33	355,200	10,763	3.60	1,278,720	<sup>d</sup>
1981	15	62	439,804	7,094	4.00	1,759,216	<sup>d</sup>
1982	8	62	435,645	7,026	3.25	1,416,000	<sup>d</sup>
1983	4	24	147,747	6,156	5.00	739,000	<sup>d</sup>
1984	7	37	309,502	8,365	4.00	1,238,000	<sup>d</sup>
1985	3	10	46,971	4,697	4.00	188,000	<sup>d</sup>
1986	5	21	180,600	8,600	4.25	767,550	<sup>d</sup>
1987	3	25	253,451	10,138	3.45	874,406	<sup>d</sup>
1988	3	21	195,811	9,324	3.68	720,584	<sup>d</sup>
1989	5	29	242,557	8,364	3.87	938,696	<sup>d</sup>
1990	7	73	689,497	9,445	3.43	2,364,974	10,950
1991	4	61	514,348	8,432	3.82	1,964,809	12,884
1992	3	43	389,854	9,066	3.96	1,543,822	8,328
1993 <sup>e,f</sup>	4	16	88,279	5,517	5.15	454,637	1,708
1993/94	10	48	315,626	6,576	5.15	1,625,474	7,028
1994/95	10	32	355,628	11,113	5.79	2,052,543	6,449
1995/96				Season Closed			
1996/97	4	13	268,545	20,657	6.30	1,691,833	2,760
1997/98	5	14	360,339	25,739	6.50	2,342,203	4,757
1998/99	8	12	301,600	25,133	6.40	1,930,240	3,515
1999/2000	6	9	266,012	29,557	6.25	1,662,575	2,673
2000/01	5	7	260,052	37,150	5.50	1,430,286	1,989
2001/02	4	8	257,582	32,459	5.50	1,428,196	2,439
2002/03	3	11	260,580	23,689	5.20	1,355,016	2,779

<sup>a</sup> Prior to 1995/96, reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals number of off-loads.

<sup>b</sup> Pounds of shucked scallop meats.

<sup>c</sup> Deliveries of unshucked were converted to shucked meats using a 10% conversion factor.

<sup>d</sup> Not available.

<sup>e</sup> January 1 - June 30.

<sup>f</sup> Includes harvest from exploratory fishery.

**Table 3.-** Commercial harvest, average shell height from retained catch, and catch per unit effort from observer data, Westward Region, 1993/94 through 2002/03.

Year	REGISTRATION AREA/DISTRICT <sup>a</sup>																	
	Kodiak Area									Alaska Peninsula			Bering Sea			Dutch Harbor		
	Northeast District			Shelikof District			Semidi District			Harvest <sup>b</sup>	SH <sup>c</sup>	CPUE <sup>d</sup>	Harvest <sup>b</sup>	SH <sup>c</sup>	CPUE <sup>d</sup>	Harvest <sup>b</sup>	SH <sup>c</sup>	CPUE <sup>d</sup>
1993/94	155,187	144	319	105,017	128	467	55,487	145	319	112,087	119	575	284,414	146	598	38,731	128	517
1994/95	35,517	151	220	313,741	131	404	<sup>e</sup>	153	<sup>e</sup>	65,282	127	372	505,439	147	535	1,931	158	291
1995/96	Season Closed			Season Closed			Season Closed			Season Closed			Season Closed			26,950	134	277
1996/97	11,430	144	253	219,305	136	537	37,810	154	283	12,560	126	398	150,295	147	619	No Effort		
1997/98	95,858	140	439	258,346	139	565	6,135	147	176	51,616	135	374	97,002	151	482	5,790	127	326
1998/99	120,010	127	497	179,870	137	522	1,720	151	149	63,290	128	383	96,795	147	514	46,432	128	417
1999/2000	77,119	131	689	187,963	130	442	930	152	253	75,535	124	386	164,929	145	562	6,465	134	249
2000/01	79,965	135	619	180,087	134	608	No Effort			7,660	119	299	205,520	142	708	Season Closed		
2001/02	80,470	140	720	177,112	140	539	No Effort			Season Closed			140,871	141	554	Season Closed		
2002/03	80,000	140	646	180,580	138	489	No Effort			Season Closed			92,240	149	468	6,000	133	322

<sup>a</sup> Confidential data voluntarily released by vessel operators.

<sup>b</sup> Harvest in pounds of shucked meats.

<sup>c</sup> Scallop shell height (SH) in mm.

<sup>d</sup> Catch per unit effort (CPUE) in estimated round weight of retained scallops per dredge-hour.

<sup>e</sup> Confidential.

**Table 4.-** Kodiak Registration Area, Northeast District, scallop fishery summary statistics.

Season	Number vessels	GHR ceiling <sup>a</sup> (lb meat)	Dredge hours	Catch (lb meat)	CPUE (lb meat per dredge hr)
1993/94	10	NA	6,940	155,187	22
1994/95	7	NA	1,773	35,517	20
1995/96		Closed			
1996/97	3	NA	581	11,430	20
1997/98	3	NA	2,604	95,858	37
1998/99	4	NA	2,749	120,010	44
1999/2000	3	75,000	1,384	77,119	56
2000/01	4	80,000	1,101	79,965	73
2001/02	3	80,000	1,142	80,470	70
2002/03	2	80,000	1,350	80,000	59

<sup>a</sup> Not applicable. A GHR ceiling was not established.

**Table 5.-** Kodiak Registration Area, Shelikof District, scallop fishery summary statistics.

Season	Number vessels	GHR ceiling <sup>a</sup> (lb meat)	Dredge hours	Catch (lb meat)	CPUE (lb meat per dredge hr)
1993/94	5	NA	2,491	105,017	42
1994/95	11	NA	8,662	314,051	36
1995/96		Closed			
1996/97	3 <sup>b</sup>	NA	3,491	219,305	63
1997/98	4	NA	5,492	258,346	47
1998/99	8	NA	4,081	179,870	44
1999/2000	6	180,000	4,304	187,963	44
2000/01	5	180,000	2,907	180,087	62
2001/02	4	180,000	3,398	177,112	52
2002/03	3	180,000	3,799	180,580	48

<sup>a</sup> Not applicable. A GHR ceiling was not established.

<sup>b</sup> One additional vessel fished but data are not available.



**Table 6.-** Kodiak Registration Area, Semidi District, scallop fishery summary statistics.

Season	Number vessels	GHR ceiling <sup>a</sup> (lb meat)	Dredge hours	Catch (lb meat)	CPUE (lb meat per dredge hr)
1993/94	6 <sup>b</sup>	NA	1,819	55,487	32
1994/95	2	NA	272	Confidential	
1995/96		Closed			
1996/97	3	NA	1,017	37,810	37
1997/98	1	NA	349	6,135	18
1998/99	2	NA	106	1,720	16
1999/2000	1	NA	45	930	21
2000/01		NA		No Effort	
2001/02		NA		No Effort	
2002/03		NA		No Effort	

<sup>a</sup> Not applicable. A GHR ceiling was not established.

<sup>b</sup> Two additional vessels registered but did not fish.

**Table 7.-**Historic commercial catch, effort and value of weathervane scallops, Alaska Peninsula Registration Area, 1975 through 2002/03.

Year	Number Vessels	Number Landings <sup>a</sup>	Commercial Catch (lb) <sup>b</sup>	Average Landing (lb) <sup>b</sup>	Average Price/lb	First Wholesale Est. Value (dollars)	Number Tows <sup>c</sup>
1975	1	1	2,508	2,508	1.40	3,511	<sup>c</sup>
1976			No Effort				
1977			No Effort				
1978			No Effort				
1979			No Effort				
1980			No Effort				
1981			Confidential				
1982	6	20	205,691	10,284	3.35	689,064	<sup>c</sup>
1983			Confidential				
1984			No Effort				
1985			Confidential				
1986			No Effort				
1987			Confidential				
1988			Confidential				
1989			No Effort				
1990			Confidential				
1991			Confidential				
1992			No Effort				
1993 <sup>d</sup>			Confidential				
1993/94	8	7	112,152	16,012	5.15	577,583	949
1994/95	7	11	65,282	5,935	5.79	377,983	1,006
1995/96			Closed				
1996/97	2 <sup>e</sup>	2	12,560	6,280	6.30	79,128	185
1997/98	4	6	51,616	8,603	6.50	335,504	1,054
1998/99	4	4	63,290	15,822	6.40	405,056	684
1999/200	5	5	75,535	15,107	6.25	472,094	1,107
2000/01	3	3	7,660	2,553	5.50	42,130	189
2001/02			Closed				
2002/03			Closed				

<sup>a</sup> Prior to 1995/96, the reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals the number of off-loads.

<sup>b</sup> Pounds of shucked scallop meats.

<sup>c</sup> Not available.

<sup>d</sup> January 1-June 30.

<sup>e</sup> Vessel operators released confidential data.

**Table 8.**-Alaska Peninsula Registration Area scallop fishery summary statistics.

Season	Number vessels	GHR ceiling <sup>a</sup> (lb meat)	Dredge hours	Catch (lb meat)	CPUE (lb meat per dredge hr)
1993/94	8	NA	1,847	112,152	61
1994/95	7	NA	1,664	65,282	39
1995/96		Closed			
1996/97	2	200,000	327	12,560	38
1997/98	4	200,000	1,752	51,616	29
1998/99	4	200,000	1,612	63,290	39
1999/2000	5	200,000	2,025	75,535	37
2000/01	3	33,000	320	7,660	24
2001/02		Closed			
2002/03		Closed			

<sup>a</sup> Not applicable. A GHR ceiling was not established.

**Table 9.**-Historic commercial catch, effort and value of weathervane scallops, Bering Sea Registration Area, 1987 through 2002/03.

Year	Number Vessels	Number Landings <sup>a</sup>	Commercial Catch (lb) <sup>b</sup>	Average Landing (lb) <sup>b</sup>	Average Price/lb	First Wholesale Est. Value (dollars)	Number Tows
1987				Confidential			
1988				No Effort			
1989				No Effort			
1990				Confidential			
1991				Confidential			
1992				No Effort			
1993 <sup>c</sup>	6	22	321,539	14,615	5.22	1,678,434	3,711
1993/94	9	16	284,414	17,776	5.22	1,484,641	3,578
1994/95	8	29	505,439	17,429	6.00	3,032,634	6,619
1995/96				Season Closed			
1996/97	1 <sup>d</sup>	2	150,295	75,147	NA	NA	952
1997/98	2 <sup>d</sup>	5	97,002	19,400	7.05	683,864	1,276
1998/99	4	4	96,795	24,198	6.30	609,808	1,175
1999/2000	2	4	164,929	41,232	6.25	1,030,806	1,736
2000/01	3	4	205,520	51,380	5.50	1,130,360	1,608
2001/02	3	5	140,871	28,174	5.25	739,572	1,406
2002/03	2	5	92,240	18,448	5.20	479,648	1,012

<sup>a</sup> Prior to 1995/96, reported number of landings is equal to number of fish tickets. After 1995/96, the reported number of landings is equal to the number of off-loads.

<sup>b</sup> Pounds of shucked scallop meats.

<sup>c</sup> January 1- June 30.

<sup>d</sup> Vessel operators released confidential data.

**Table 10.**-Bering Sea Registration Area scallop fishery summary statistics.

Season	Number vessels	GHR ceiling <sup>a</sup> (lb meat)	Dredge hours	Catch (lb meat)	CPUE (lb meat per dredge hr)
1993/94	9	NA	5,764	284,414	49
1994/95	8	NA	11,113	505,439	45
1995/96		Closed			
1996/97	1	600,000	2,313	150,295	65
1997/98	2	600,000	2,246	97,002	43
1998/99	4	400,000	2,319	96,795	42
1999/2000	2	400,000	3,294	164,929	50
2000/01	3	200,000	3,355	205,520	61
2001/02	3	200,000	3,072	140,871	46
2002/03	2	105,000	2,038	92,240	45

<sup>a</sup> Not applicable. A GHR ceiling was not established.

**Table 11.-**Historic commercial catch, effort, and value of weathervane scallops, Dutch Harbor Registration Area, 1982 through 2002/03.

Year	Number Vessels	Number Landings <sup>a</sup>	Commercial Catch (lb) <sup>b</sup>	Average Landings (lb) <sup>b</sup>	Average Price/lb	First Wholesale Est. Value (dollars)	Number Tows <sup>d</sup>
1982	5	8	62,105	7,763	3.11	193,147	
1983				No Effort			
1984				No Effort			
1985				Confidential			
1986	5	37	406,642	10,990	3.50	1,423,247	8,752
1987				Confidential			
1988				Confidential			
1989				Confidential			
1990				Confidential			
1991				Confidential			
1992				Confidential			
1993/94	3	6	39,346	6,558	d	d	572
1994/95	3	3	1,931	644	d	d	52
1995/96	1 <sup>c</sup>	2	26,650	13,475	d	d	747
1996/97				No Effort			
1997/98	1 <sup>c</sup>	1	5,790	5,790	7.05	40,819	105
1998/99	4	5	46,432	9,286	6.30	295,522	479
1999/2000	1 <sup>c</sup>	1	6,465	6,465	6.25	40,500	167
2000/01				Season Closed			
2001/02				Season Closed			
2002/03	1 <sup>c</sup>	1	6,000	6,000	5.20	31,200	115

<sup>a</sup> Prior to 1995/96, reported number of landings is equal to number of fish tickets. After 1995/96, the reported number of landings is equal to the number of off-loads.

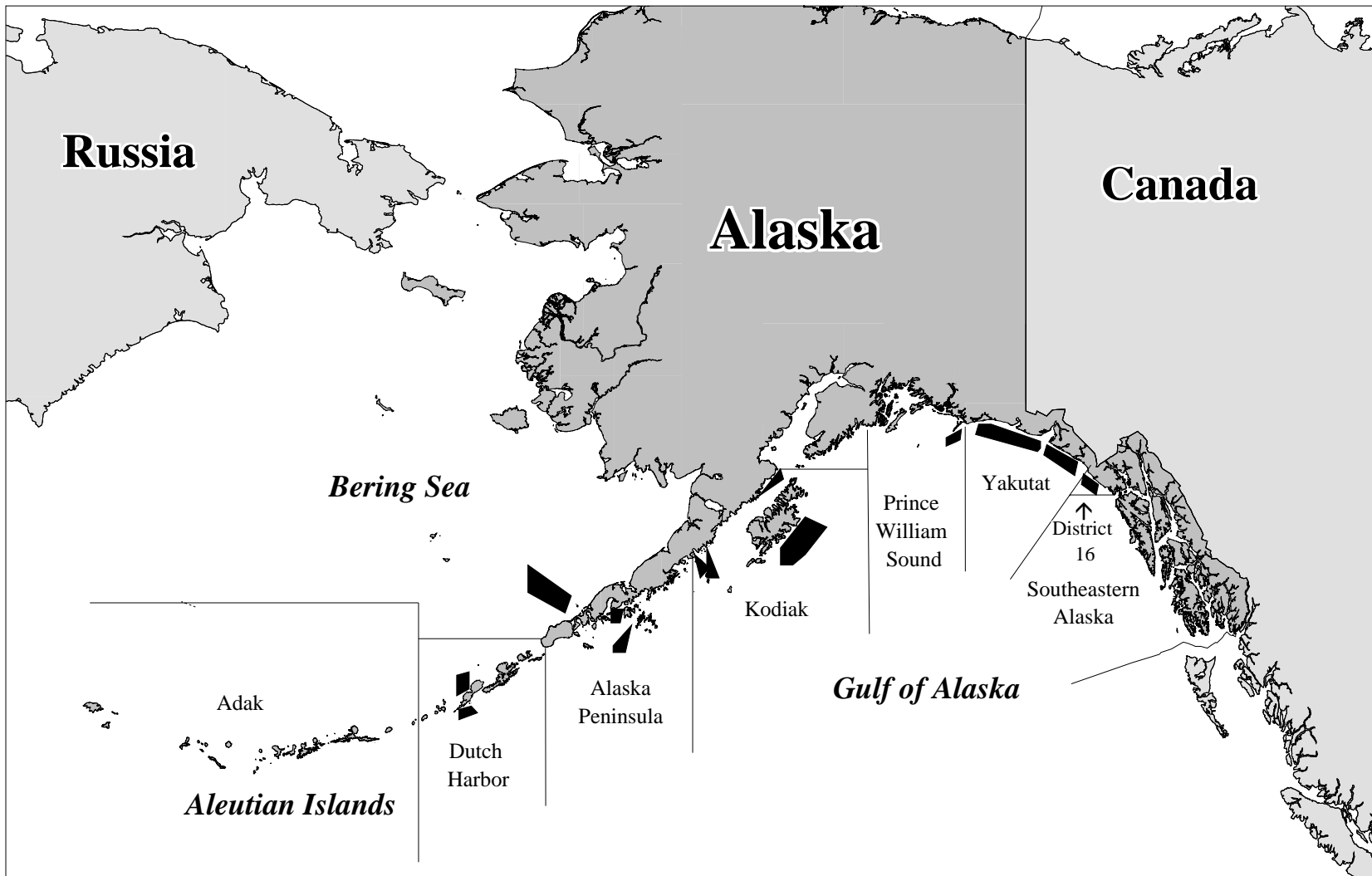
<sup>b</sup> Pounds of shucked scallop meats.

<sup>c</sup> Vessel operator released confidential data.

<sup>d</sup> Not available.

**Table 12.-**Dutch Harbor Registration Area scallop fishery summary statistics.

Season	Number vessels	GHR ceiling (lb meat)	Dredge hours	Catch (lb meat)	CPUE (lb meat per dredge hr)
1993/94	3	170,000	838	39,346	46
1994/95	3	170,000	81	1,931	24
1995/96	1	170,000	1,047	26,950	26
1996/97		170,000		No Effort	
1997/98	1	170,000	171	5,790	34
1998/99	4	110,000	1,025	46,432	45
1999/2000	1	110,000	273	6,465	24
2000/01		Closed			
2001/02		Closed			
2002/03	1	10,000	184	6,000	33



**Figure 1.**—Major weathervane scallop fishing locations in coastal waters of Alaska.



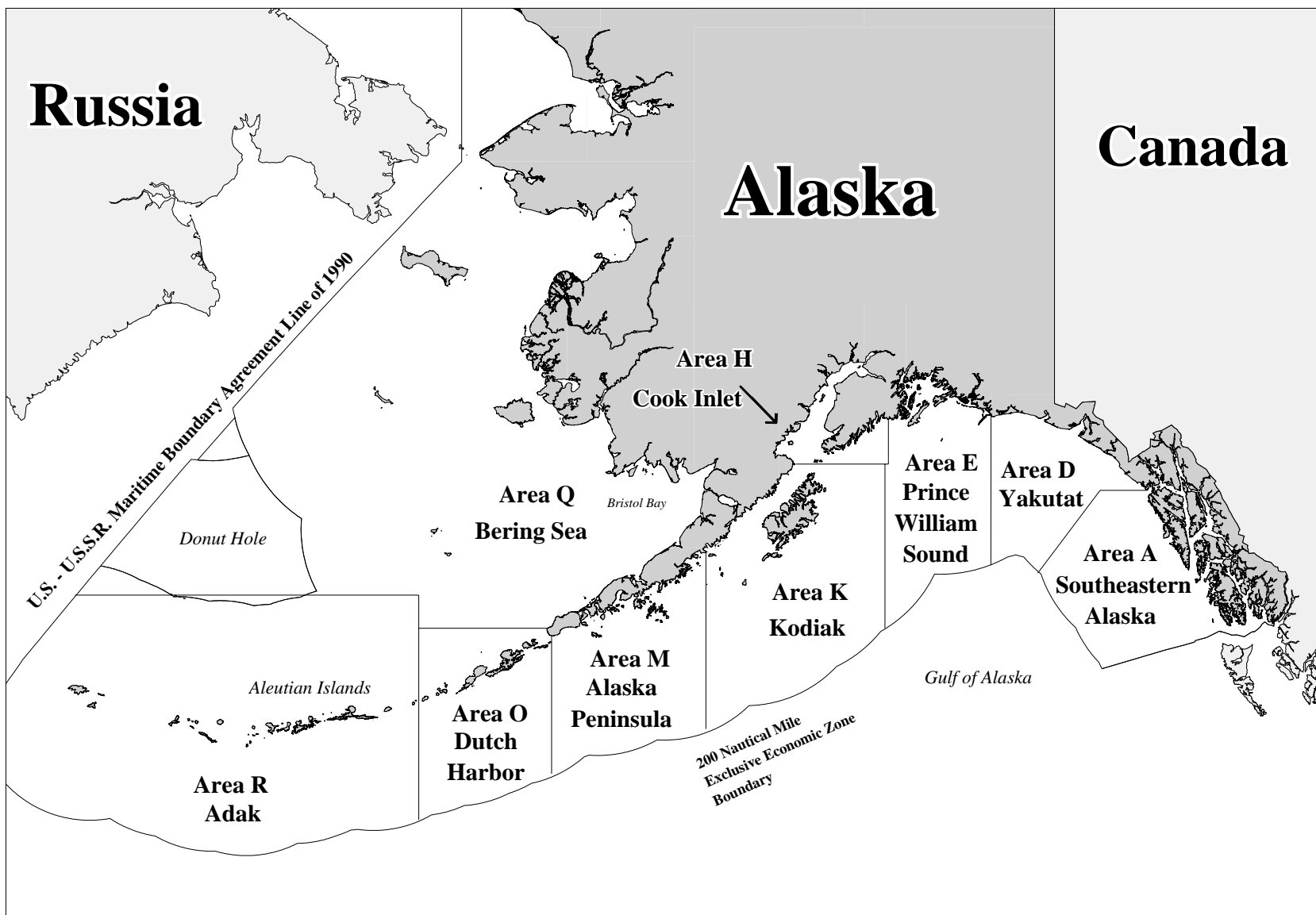


Figure 2.-State of Alaska weathervane scallop fishing registration areas.

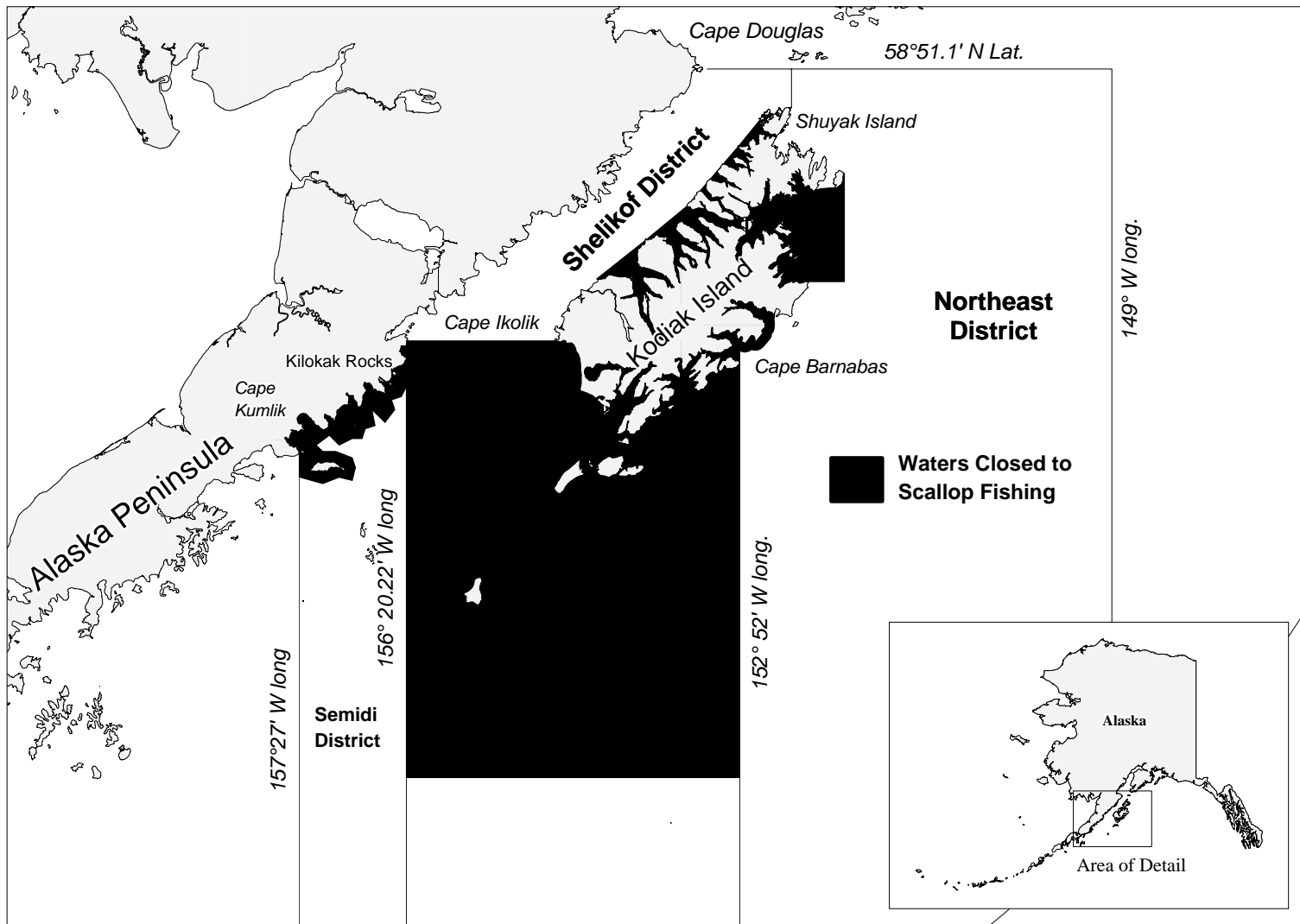
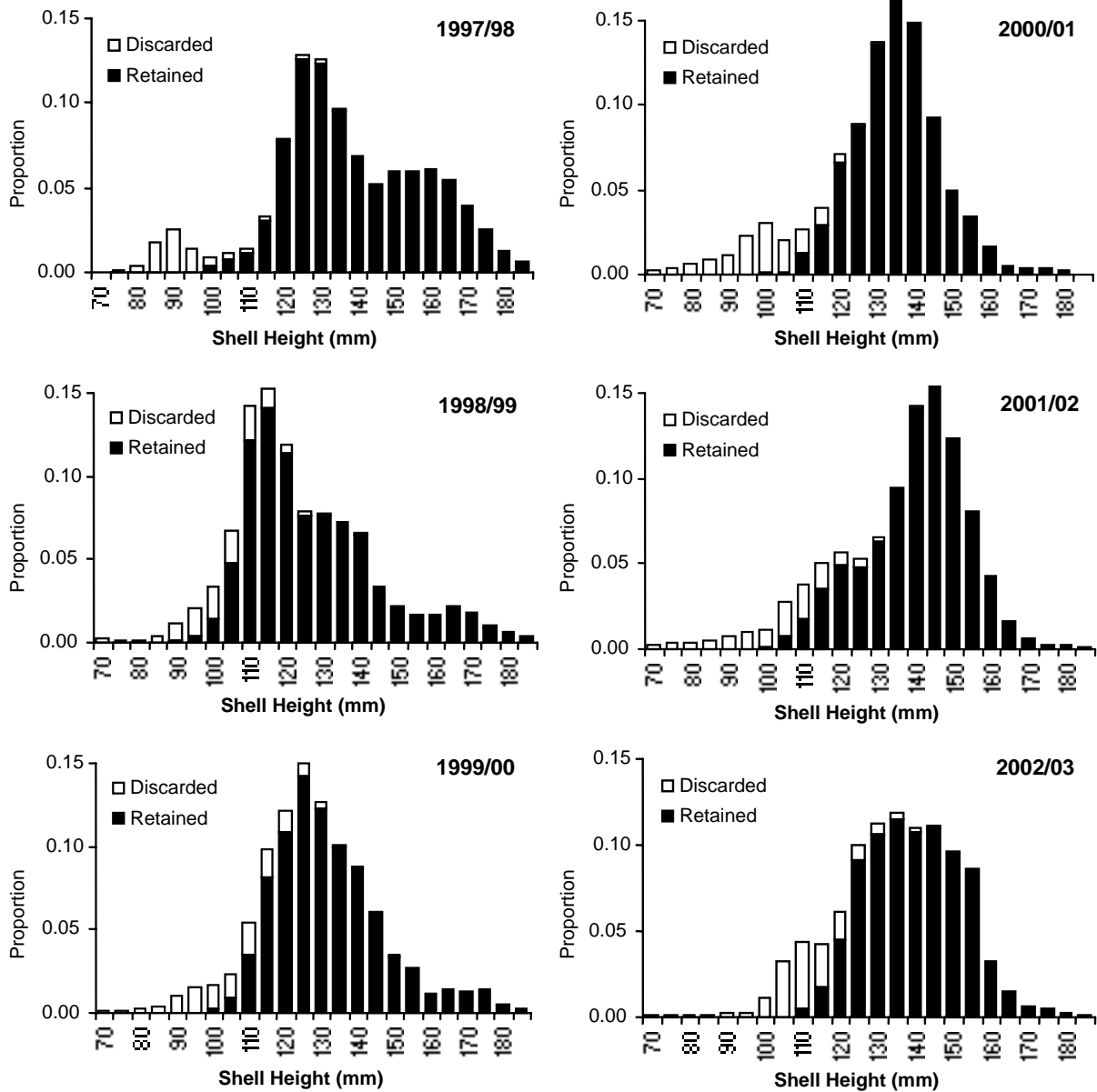
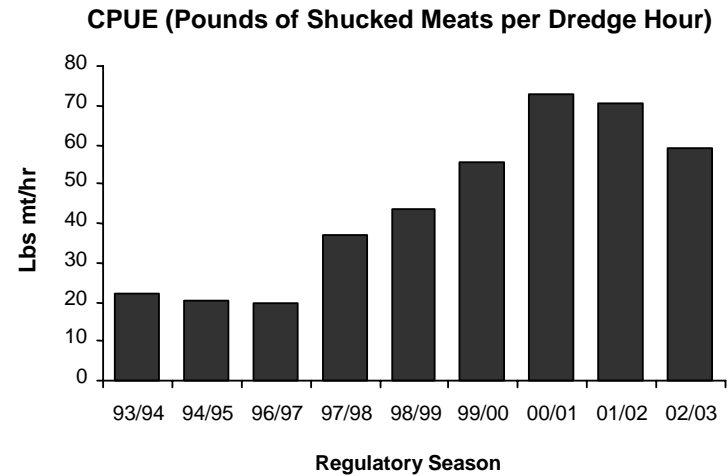
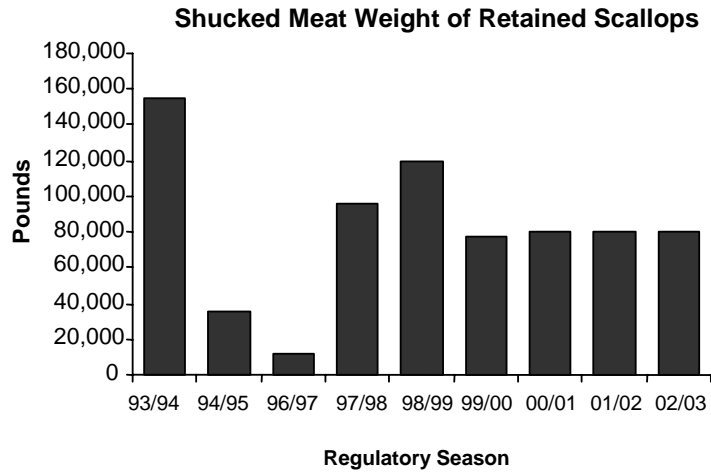
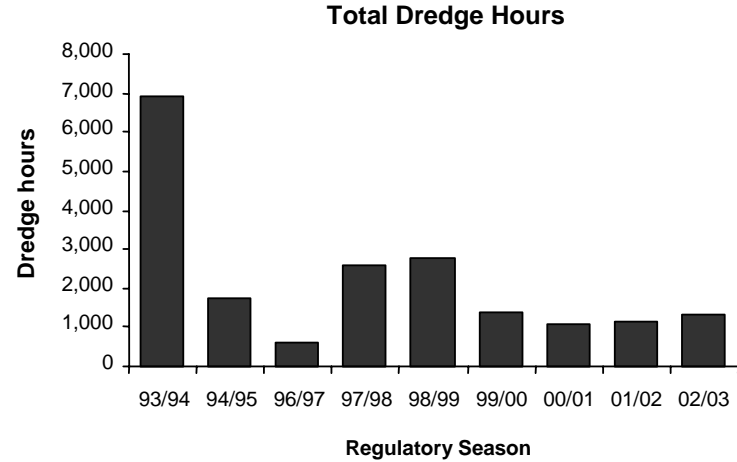
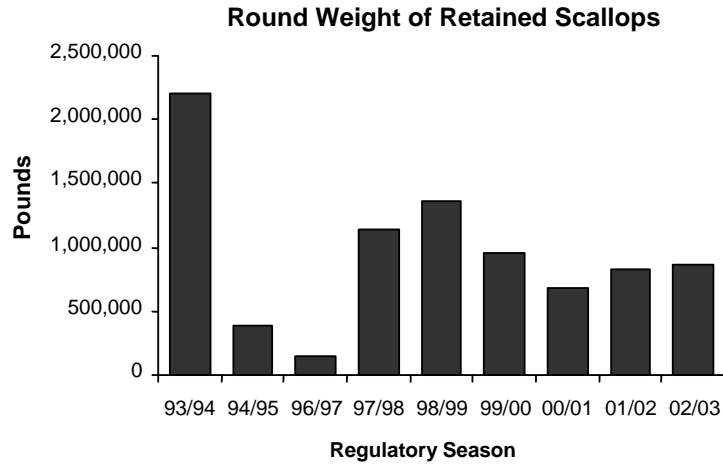


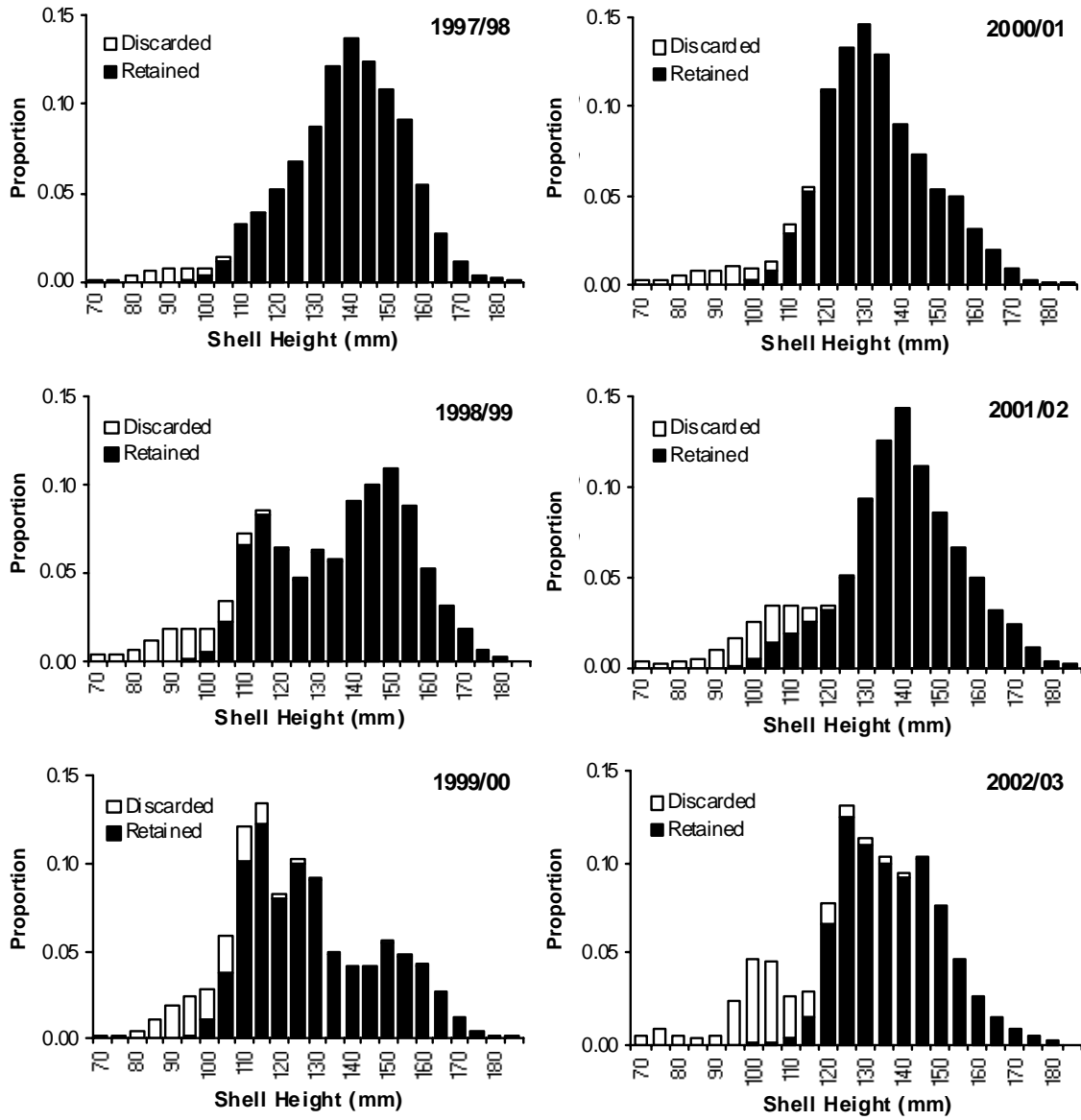
Figure 3.-Kodiak weathervane scallop fishing registration area and closed waters.



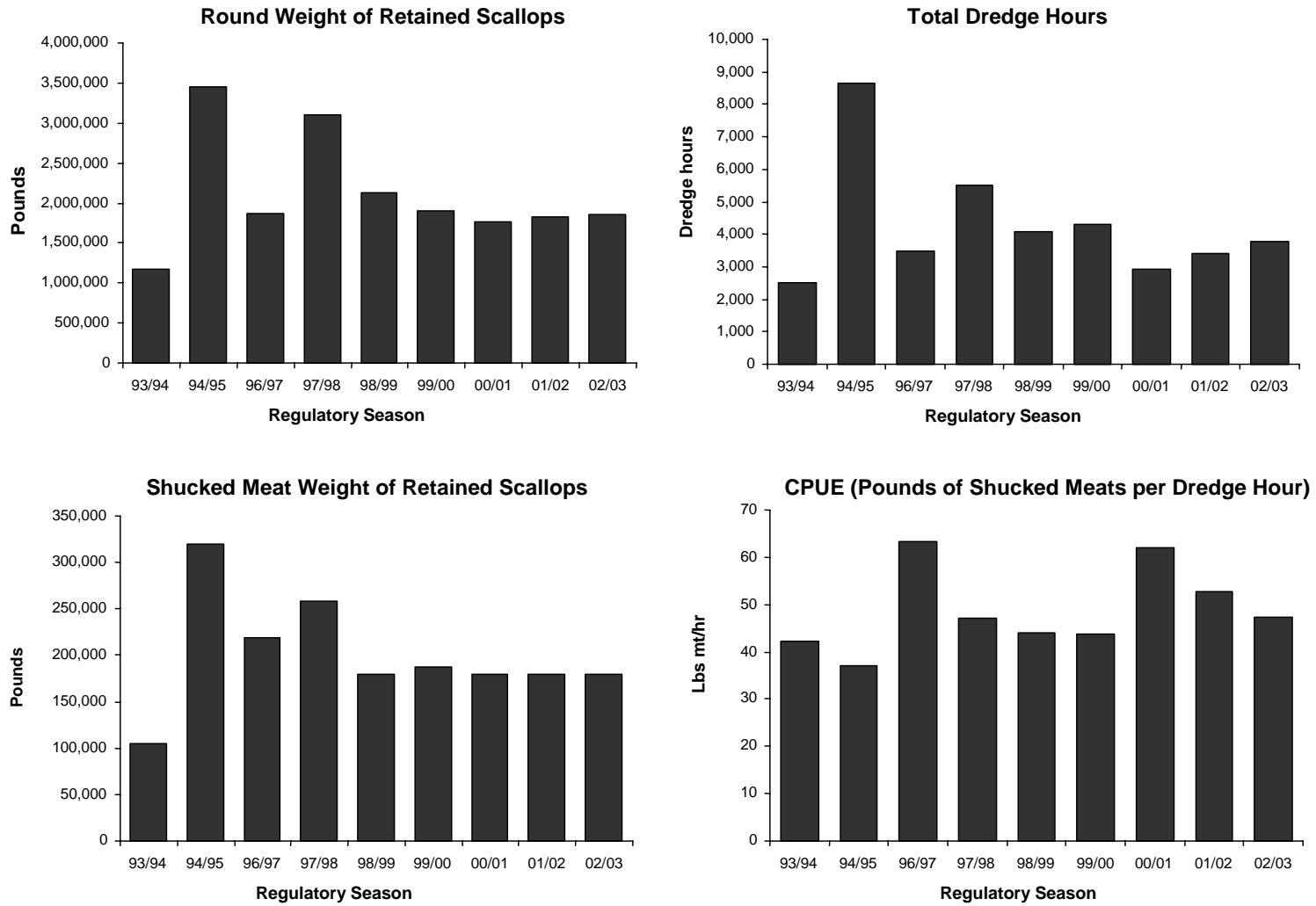
**Figure 4.**-Estimated shell height distribution of scallops caught in the Northeast District, Kodiak Registration Area, 1997/98 through 2002/03.



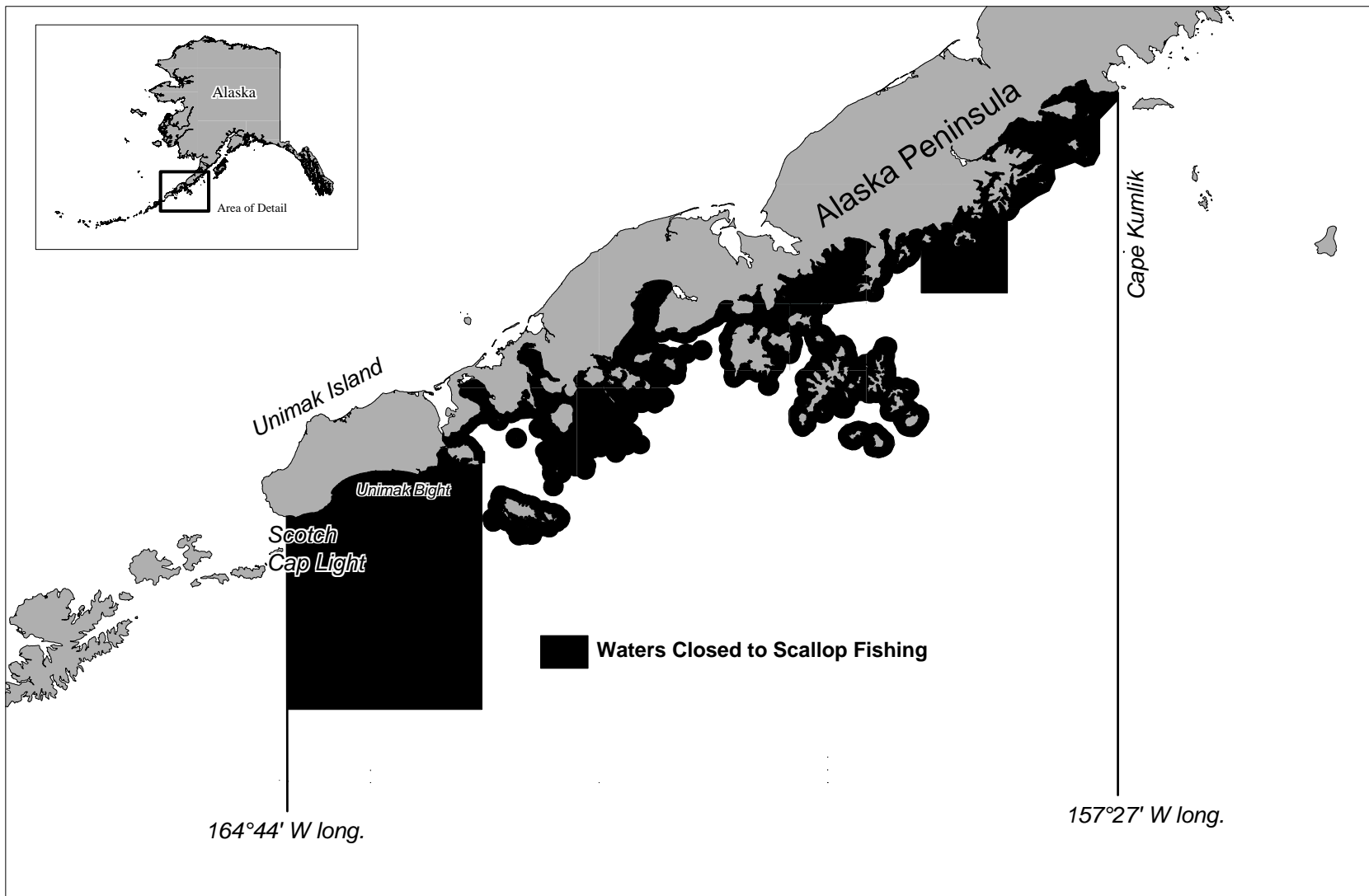
**Figure 5.-**Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Northeast District, Kodiak Registration Area, 1993/94 through 2002/03.



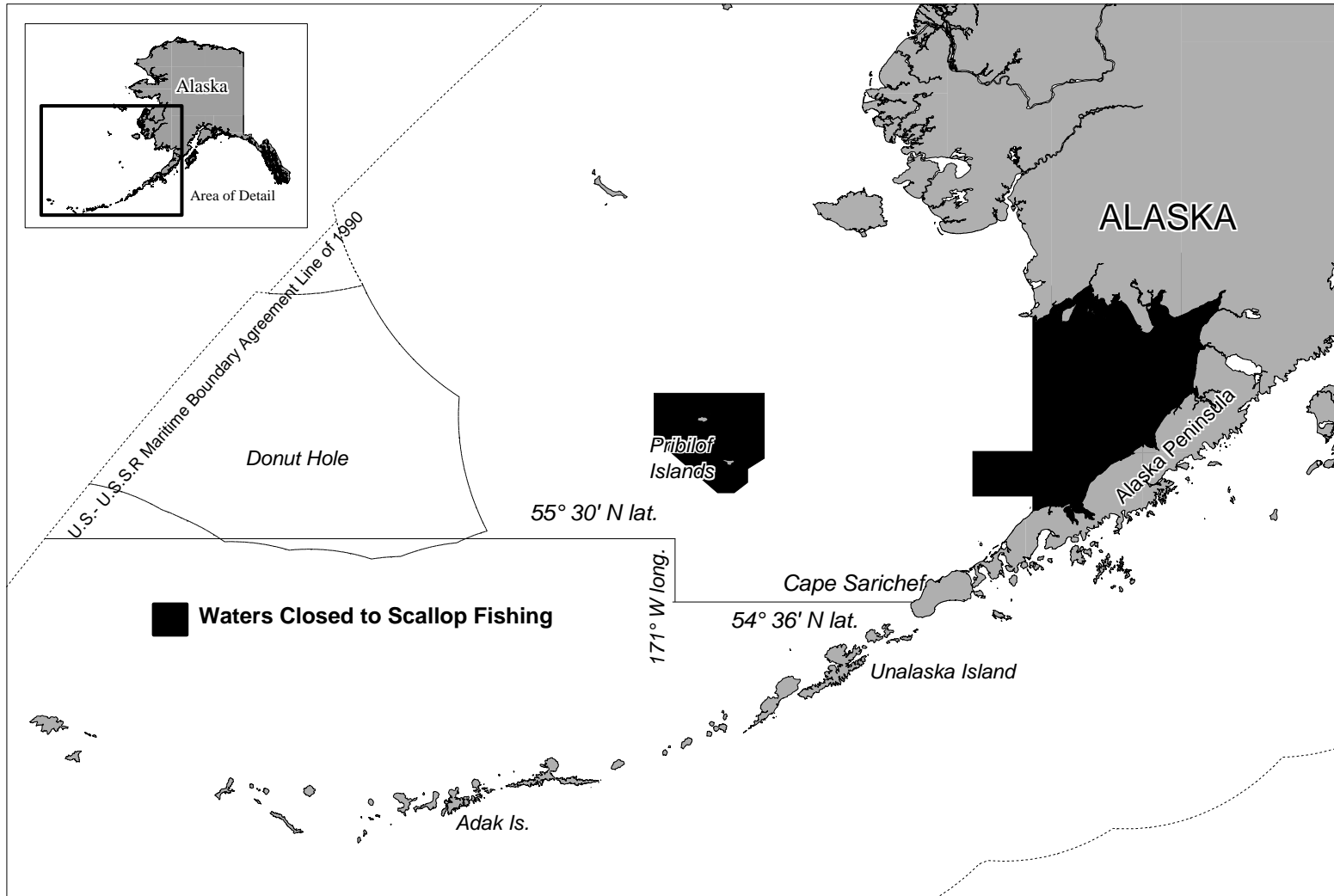
**Figure 6.**-Estimated shell height distribution of scallops caught in the Shelikof District, Kodiak Registration Area, 1997/98 through 2002/03.



**Figure 7.-**Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Shelikof District, Kodiak Registration Area, 1993/94 through 2002/03.

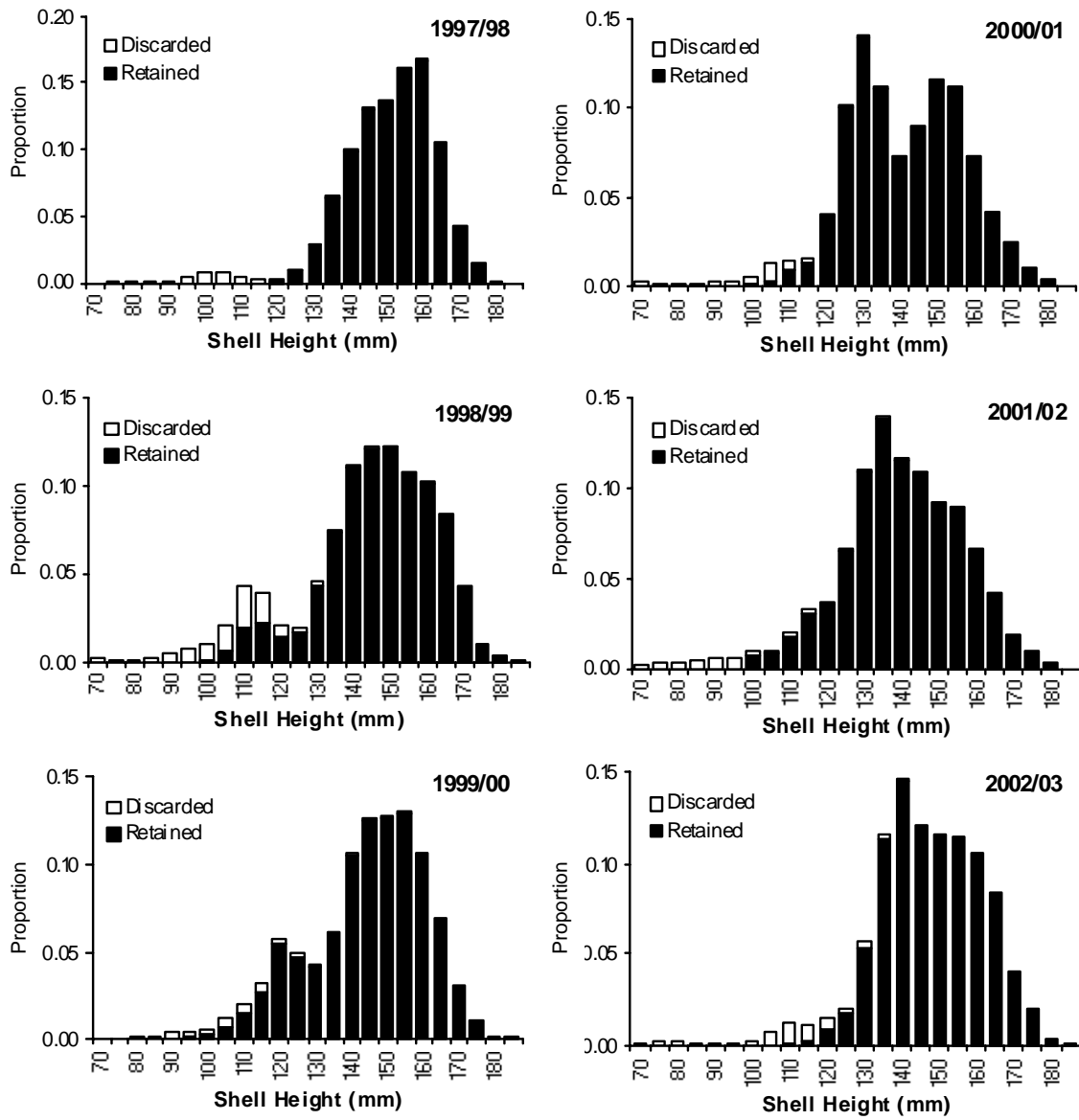


**Figure 8.**-Alaska Peninsula weathervane scallop fishing registration area and closed waters.

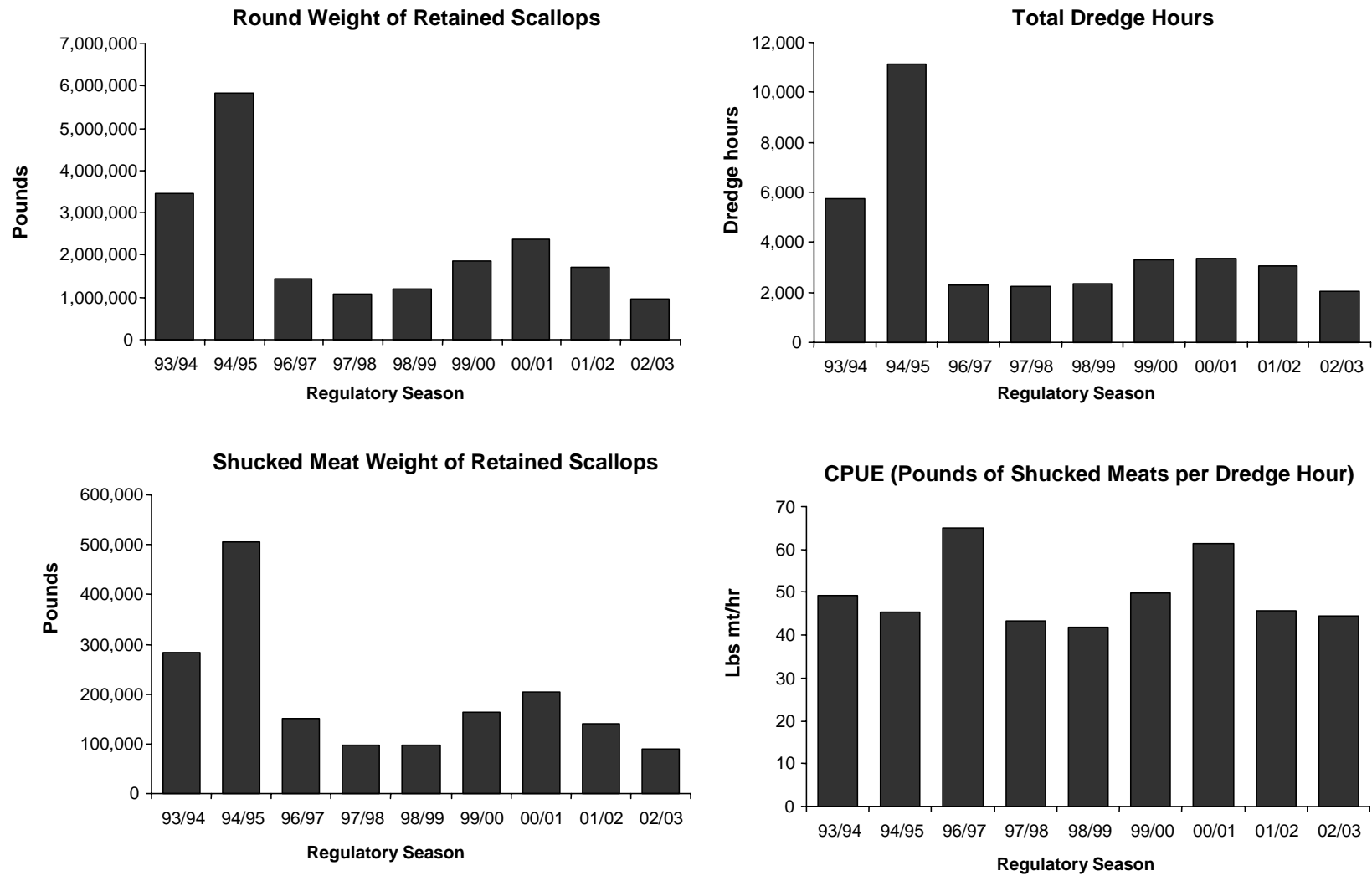


**Figure 9.**-Bering Sea weathervane scallop fishing registration area and closed waters.

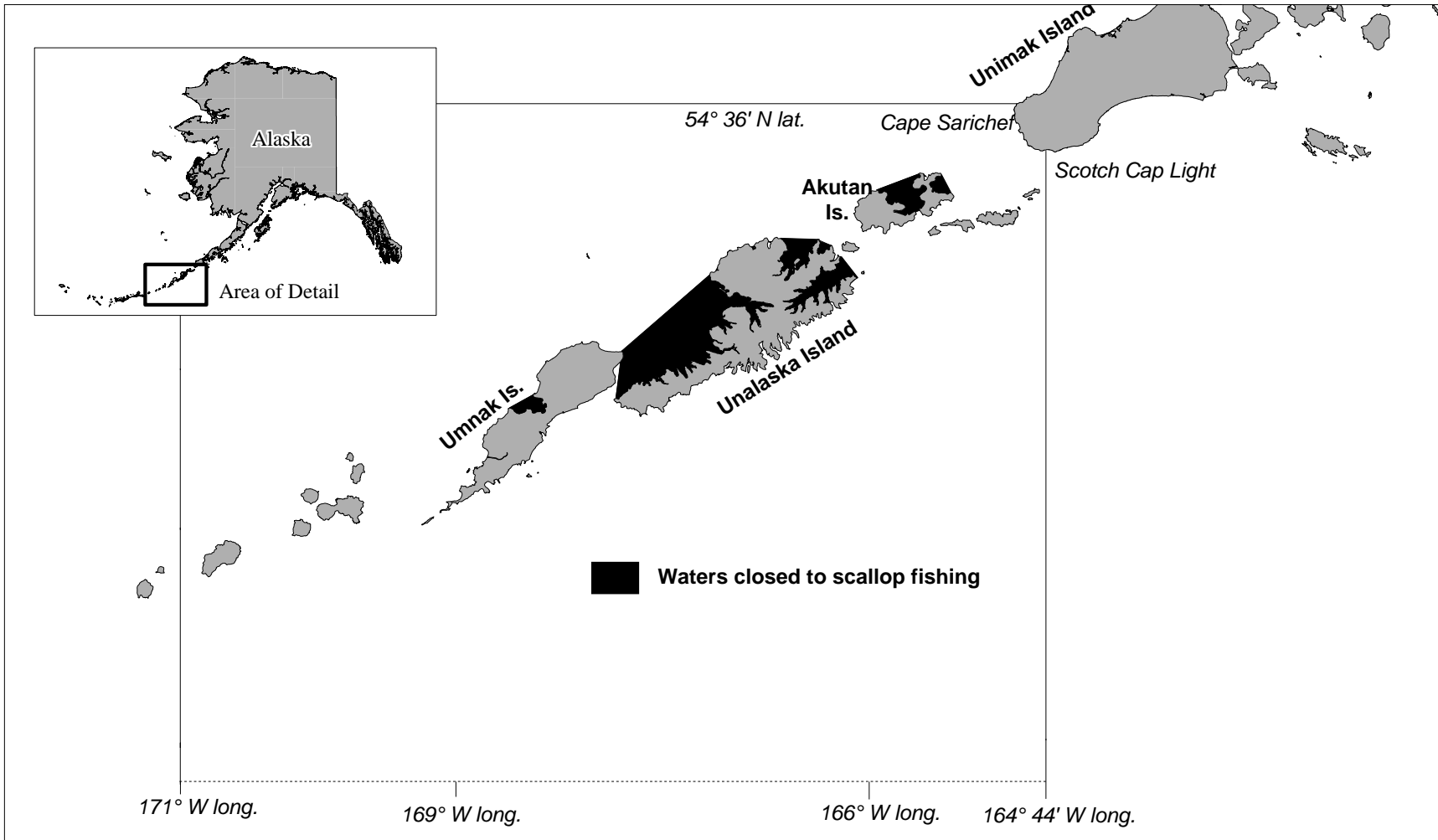




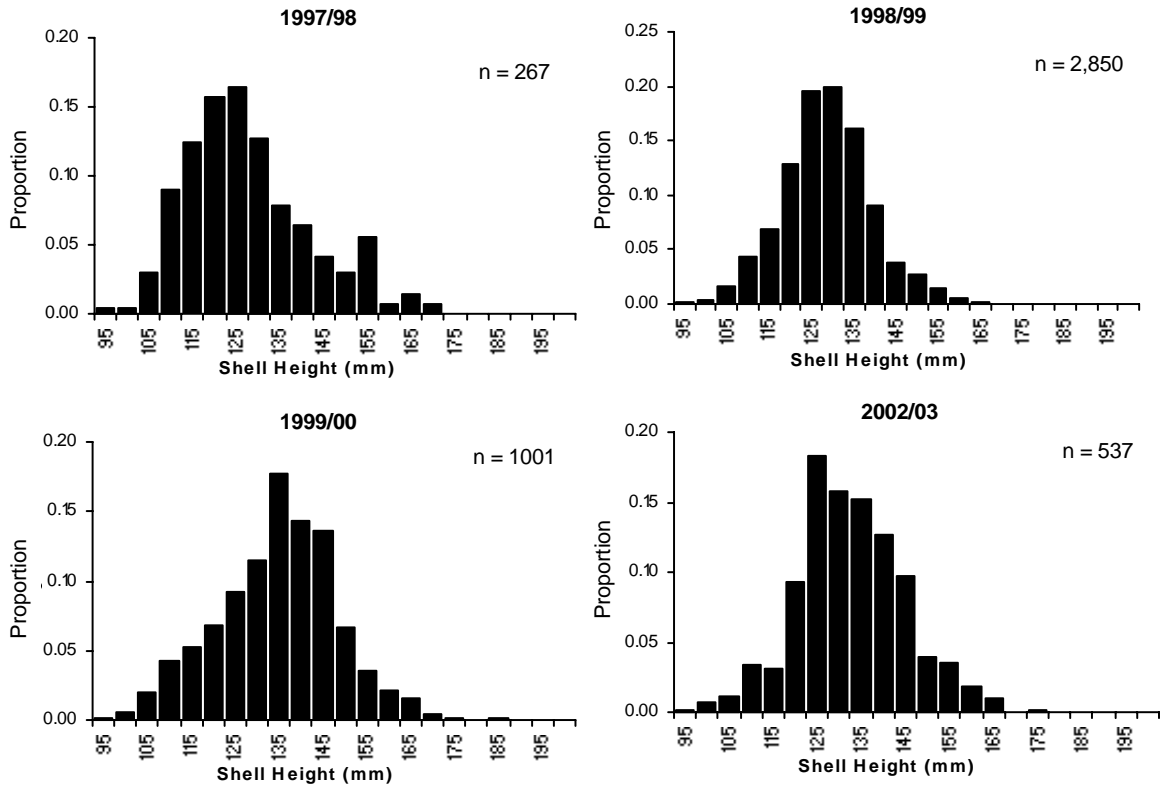
**Figure 10.**-Estimated shell height distribution of scallops caught in the Bering Sea Registration Area, 1997/98 through 2002/03.



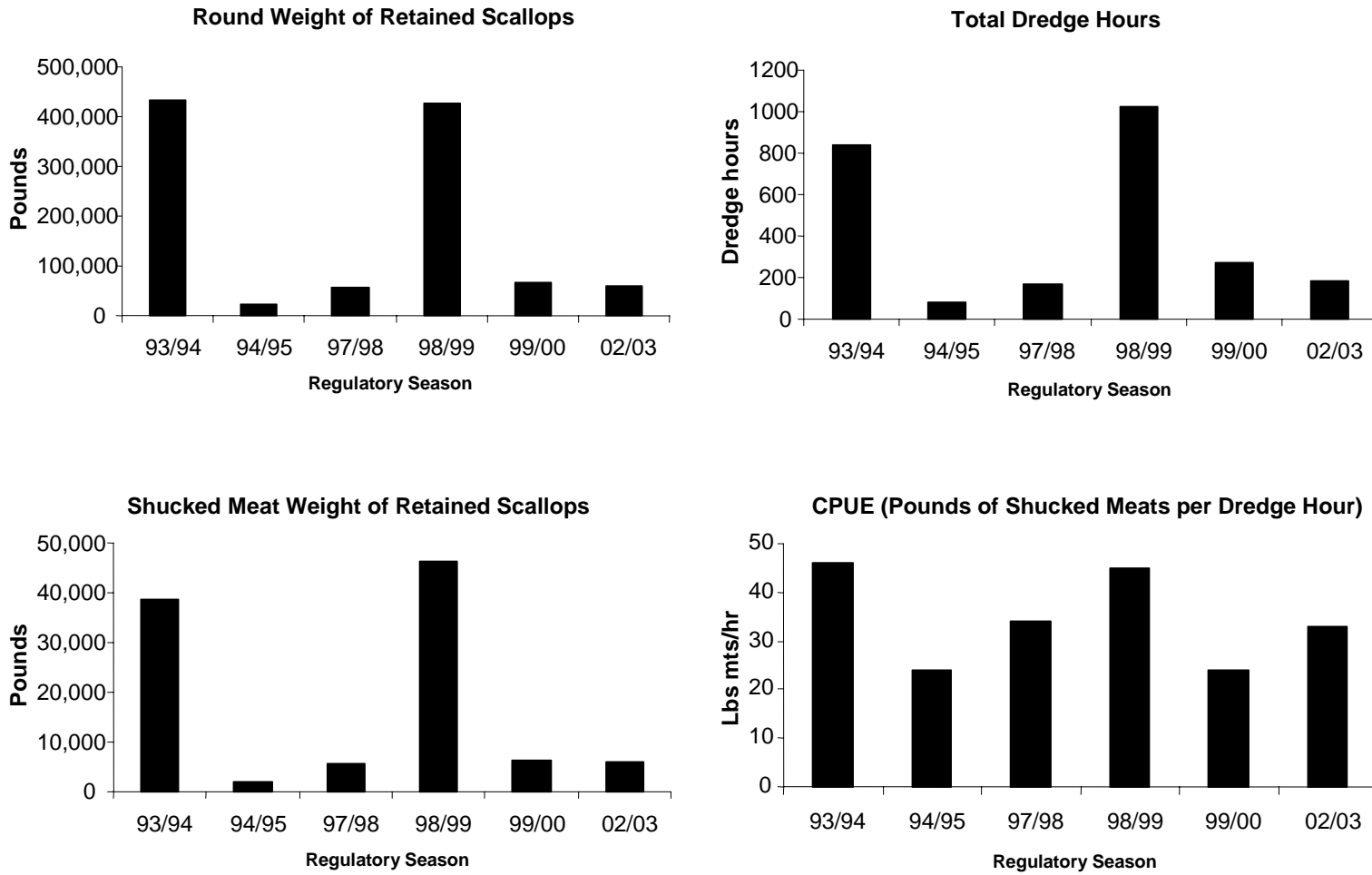
**Figure 11.**-Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Bering Sea Registration Area, 1993/94 through 2002/03.



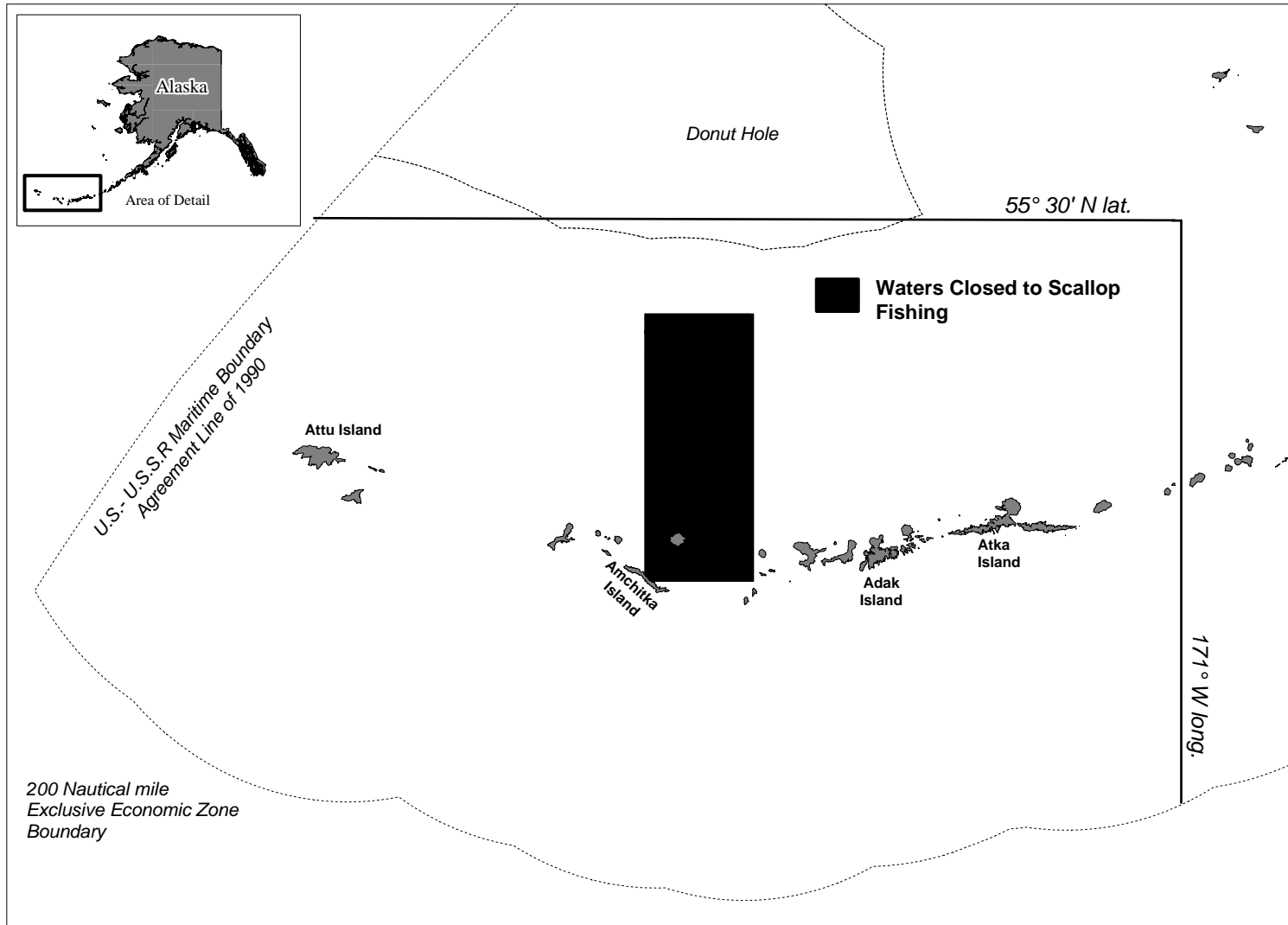
**Figure 12.-**Dutch Harbor weathervane scallop fishing registration area and closed waters.



**Figure 13.**-Shell height distribution observed in the retained scallop catch, Dutch Harbor Registration Area, 1997/98 through 2002/03.



**Figure 14.**-Weathervane scallop harvest by round weight, shucked meat weight, dredge hours, and CPUE, Dutch Harbor Registration Area, 1993/94 through 2002/03 excluding years with confidential data and closed seasons.



**Figure 15.-**Adak weathervane scallop fishing registration area and closed waters.