

Fishery Management Report No. 08-01

**Annual Management Report for the Commercial
Weathervane Scallop Fisheries in Alaska, 2005/06**

by

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Alaska Department of Fish and Game

Divisions of Sport Fish and Commercial Fisheries



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

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ABSTRACT

The Alaska commercial weathervane scallop *Patinopecten caurinus* fishery occurs in waters of the Alaska Territorial Sea and the Exclusive Economic Zone (EEZ) bound by Cape Spencer in Southeast Alaska through the Gulf of Alaska to the western boundary at the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990 in the Bering Sea. This report describes historic and present-day fishery management for the commercial weathervane scallop fishery occurring in the Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Bering Sea, Dutch Harbor, and Adak Registration Areas. A synopsis of the 2005/06 fishing season and stock status is discussed for each scallop registration area.

Key words: Weathervane scallop, *Patinopecten caurinus*, Southeastern Region, Central Region, Westward Region, fishery observer, Yakutat, Prince William Sound, Cook Inlet, Kodiak, Alaska Peninsula, Bering Sea, Dutch Harbor, Adak, Aleutian Islands, Fishery Management Plan, crab bycatch, fishery cooperative.

INTRODUCTION

Alaskan weathervane scallop *Patinopecten caurinus* populations were identified in 1953 by the U.S. Bureau of Commercial Fisheries during one of their surveys (Kaiser 1986). However, it was not until 1967 when declines of red king crab *Paralithodes camtschaticus* catches led to the first efforts to establish a weathervane scallop fishery (Kruse et al. 2005). In 1967, two Kodiak-based vessels, were converted to scallop dredging (Turk 2000). At this same time, scallop catches were declining in the eastern U.S. and Canadian fisheries on Georges Bank. By 1968, scallop vessels arrived in Alaska from the east coast. The scallop fishery expanded to 19 vessels consisting of New Bedford type scallop vessels, converted Alaska crab boats, salmon seiners, halibut longliners, and shrimp trawlers (Kaiser 1986).

The fishery developed from 1967 through 1973 as previously unfished scallop beds were identified and harvested (Shirley and Kruse 1995). This was followed by a period of declining scallop harvests from 1974 to the end of the decade. A smaller, more stable fishery followed through the 1980s.

By 1993, the fishery was again expanding with an influx of scallop vessels from the east coast of the United States (Table 1). The influx of vessels into the weathervane scallop fishery concerned the Alaska Department of Fish and Game (ADF&G) about crab bycatch and overharvest of the scallop resource. As a result of the increased effort, the weathervane scallop fishery was designated by the state of Alaska as a high impact emerging fishery on May 21, 1993, and was closed until a conservative management plan could be developed by the ADF&G (Kruse et al. 2005). The resulting Interim Management Plan for Commercial Scallop Fisheries in Alaska was approved by the ADF&G Commissioner in 1993 and finalized as regulation 5 AAC 38.076 Alaska Scallop Fishery Management Plan by the Alaska Board of Fisheries (BOF) in 1994. It includes a provision for onboard observer coverage, measures designed to limit efficiency and slow the pace of fishing, gear regulations that reduce the capture rate of small scallops, and crab bycatch limits (Barnhart 2003).

In 1997, participation in the Alaska weathervane scallop fishery was limited by vessel moratoria in both federal and state waters. In 2001, a federal license limitation program (LLP) replaced the federal moratorium permanently limiting participation in the exclusive economic zone (EEZ). During the same year, the majority of vessel owners formed a fishing cooperative. The result of these actions, associated with a conservative management approach by the ADF&G, has been a reduction in the statewide scallop harvest since the late 1990s (Table 1).

In the 1990s the fishery changed from short trips with numerous deliveries each season to long trips with fewer deliveries, as the majority of the fleet converted from icing to freezing of product onboard vessels (Barnhart 2000). Between the 1990 and 1994/95 seasons when the product was iced on board and delivered fresh, the fleet averaged 136 deliveries per year (Table 1). Of the 136 deliveries, 114 were made by vessels participating in the statewide fishery (outside of Cook Inlet). By 1996, all scallop catcher boats participating exclusively in the statewide fishery (outside of Cook Inlet) were converted to catcher-processors with freezing capability. Freezing product onboard allowed longer trips. As a result, the annual average number of deliveries between 1996/97 and 2002/03 for the catcher-processor fleet operating exclusively in the statewide fishery (outside of Cook Inlet), decreased to 20.

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. Scallop beds typically occur in mud, clay, silt, sand, or pebble substrates. Major scallop fishing locations in Alaska coastal waters are shown in Figure 1. Scallops are typically found at depths of 20–125 fathoms, with the majority of the fishing effort occurring between 40 and 60 fathoms (Barnhart and Rosenkranz 2006).

There are nine scallop fishing registration areas within Alaska (Figure 2). This report describes fisheries within the ADF&G Southeastern Region (Yakutat, Registration Area D), Central Region (Prince William Sound, Registration Area E and Cook Inlet, Registration Area H), and Westward Region, including Kodiak (Area K), Alaska Peninsula (Area M), Bering Sea (Area Q), Dutch Harbor (Area O), and Adak (Area R) scallop registration areas. Waters of the Territorial Sea and the EEZ are encompassed within each registration area. Registration Area D includes those waters in the Gulf of Alaska (GOA) north of Cape Spencer (58° 12.27' N lat., 136° 39.75' W long.) and east of the longitude of Cape Suckling at 144° W. long. Registration Area E includes those GOA waters west of the longitude of Cape Suckling at 144° W. long. and east of the longitude of Cape Fairfield (148° 50.25' W long). Registration Area H includes those GOA waters east of Cape Fairfield (148° 50.25' W long) and north of the latitude of Cape Douglas (58° 51.10' N. Lat.). Registration Area J includes GOA waters south of Cape Douglas (58° 51.10' N lat.), west of 148° 50.25' W long and the Bering Sea to the U.S.-U.S.S.R. Maritime Boundary Agreement Line of 1990.

MANAGEMENT HISTORY

HISTORIC MANAGEMENT MEASURES

From inception of the fishery in 1967 until the early 1990s when scallop vessels arrived from the east coast of the United States to Alaska, the fishery was open year-round in many parts of the state, without harvest restrictions. All vessels participating in the scallop fishery 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. Because vessels were registered with the state of Alaska, the state regulated the fishery in federal waters. In 1993, because of increased effort, the scallop fishery was declared high impact and emerging fishery on May 21, 1993 by the Commissioner of ADF&G and was closed until a conservative management plan could be developed by the department. The resulting Interim Management Plan for Commercial Scallop Fisheries in Alaska (5 AAC 38.076) included measures designed to

limit efficiency and slow the pace of fishing, gear regulations that reduce the capture rate of small scallops, onboard observer coverage and crab bycatch limits (Kruse et al. 1992).

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 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 of May through early-July.

Federal regulatory actions also changed the fishery. In January 1995, the captain of a scallop vessel returned his state of Alaska 1995 scallop interim use permit card to the Commercial Fisheries Entry Commission (CFEC) and proceeded to harvest scallops in the Gulf of Alaska EEZ with disregard to harvest limits, observer coverage, and all other state regulatory and 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 by the federal government from February 23, 1995 to August 1, 1996. Fishing in the EEZ was initially closed by federal emergency rule (60 FR 11054). Subsequent to expiration of the emergency rule on May 30, 1995, it was extended by the National Marine Fisheries Service (NMFS) for an additional 90 days through August 28, 1995. The emergency rule was activated to control unregulated scallop fishing in federal waters until a federal fishery management plan could be adopted closing the fishery in federal waters. Prior to the August 28, 1995 emergency rule expiration date, the North Pacific Fishery Management Council (NPFMC) submitted a draft FMP that closed federal waters to scallop fishing for up to one year, with an expiration date of August 28, 1996. Amendment 1 to the FMP became effective August 1, 1996 allowing the fishery to reopen in federal waters. Scallop fishing in state waters, scheduled to open July 1, 1996, was delayed until August 1, 1996 to coincide with the federal water opening. 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. The vessel moratorium remained in effect until June 30, 2000. The moratorium was replaced by the LLP that became effective on January 16, 2001. Between June 30, 2000 and January 16, 2001 the fishery was in open access status. In 1998, Amendment 3 to the federal FMP delegated authority to the state of Alaska to manage all aspects of the scallop fishery in federal waters, except limited access (Barnhart 2000). This included the authority to regulate vessels not registered under the laws of Alaska. There have been a total of 11 amendments to the scallop FMP.

In 1997, the Alaska legislature approved legislation (AS 16.43.906) enacting a temporary state waters (0-3 nautical miles) vessel moratorium. In 2001, the legislature authorized a 3-year extension of the moratorium, with an expiration date of July 1, 2004. During the 2002 legislative session, passage of House Bill (HB) 206 resulted in changes to the limited entry statutes allowing for a vessel-based limited entry program. The CFEC adopted regulations 20 AAC 05.1400 through 20 AAC 05.1444 to establish a vessel-based limited entry permit system for the statewide weathervane scallop fishery prior to the moratorium expiration on July 1, 2004. Eight vessel owners received permits to fish for weathervane scallops in state waters. However, the program has a sunset provision. Weathervane scallop fishing in state waters will revert to an open access fishery and vessel entry permits issued for the statewide weathervane scallop fishery will expire on December 31, 2008 unless statutory authority is extended.

CURRENT MANAGEMENT

The weathervane scallop fishery, in both state and federal waters, is managed by the ADF&G. Provisions of the Magnuson-Stevens Act and the scallop FMP apply in federal waters. Vessels eligible to fish in the EEZ are limited by the LLP, while vessels in state waters (0-3 nautical miles) are limited by a state limited entry vessel permit (Table 2).

Section 303(a)(7) of the Magnuson-Stevens Act requires all FMPs to describe and identify Essential Fish Habitat (EFH), which it defines as “those waters and substrate necessary to fish for spawning, breeding, feeding, or growth to maturity.” In addition, FMPs must minimize effects on EFH caused by fishing and identify other actions to conserve and enhance EFH. These EFH requirements are detailed in Amendment 5 to the FMP for the Scallop Fishery off Alaska (NPFMC 2005). The scallop fishery does not occur on any areas designated as Habitat Areas of Particular Concern (HAPC). According to the Environmental Impact Statement (EIS) for EFH Identification and Conservation in Alaska, the potential impacts on EFH from the scallop fishery are “minimal and temporary” (NMFS 2005).

The statewide regulatory fishing season for weathervane scallops, outside of the Cook Inlet Registration Area, is July 1 through February 15, while the regulatory fishing season in the Cook Inlet Registration Area is August 15 through October 31. Fisheries may be closed at any time by emergency order. Scallop guideline harvest ranges (GHRs) and crab bycatch limits (CBLs) for the 2005/06 season, excluding Cook Inlet, were announced by news release on June 3, 2005. The scallop GHR and CBLs for Cook Inlet were announced by news release on June 22, 2005. The upper limit of the combined GHRs in the Westward Region totaled 395,000 lb of scallop meats, in the Southeastern Region combined GHRs totaled 235,000 lb of scallop meats, Prince William Sound GHR limit was 50,000 lb of scallop meats, and in Cook Inlet the GHR limit was 7,000 lb of scallop meats.

CBLs for red king crabs, Tanner crabs *Chionoecetes bairdi* and snow crabs *Chionoecetes opilio* have been established for registration areas and districts within the weathervane scallop fishery. Hybrid *Chionoecetes* crabs are included in the snow crab CBL. Each registration area or district has separate CBLs. The bycatch of crabs in the scallop fishery is controlled through the use of the CBLs. The state first instituted CBLs in July 1993. Annual CBLs are established pre-season by the ADF&G based on the most current crab resource abundance information. However, in some registration areas or districts, the CBL is a fixed number of crabs and is not adjusted seasonally.

In the Kodiak, Alaska Peninsula, and Dutch Harbor Registration Areas, the CBLs are set at 0.5% or 1.0% of the total crab stock abundance estimate based on the most recent survey data (Table 3). In registration areas or districts where red king crab or Tanner crab abundance is sufficient to support a commercial crab fishery, the cap is set at 1.0% of the most recent red king crab or Tanner crab abundance estimate. In registration areas or districts where the red king crab or Tanner crab abundance is insufficient to support a commercial fishery, the CBL is set at 0.5% of the most recent red king crab or Tanner crab abundance estimate. Bycatch caps are expressed in numbers of crabs and include all sizes of crabs caught in the scallop fishery.

In the Kamishak District of the Cook Inlet Registration Area, the Tanner crab bycatch limit is 0.5% of the total crab stock abundance and the red king crab limit is fixed at 60 crabs. In the Prince William Sound Registration Area the CBL for Tanner crab is fixed at 0.5% of the total

crab stock abundance estimated from the 2000 scallop assessment survey. This resulted in bycatch limits of 2,700 and 8,700 for the east and west harvest areas.

CBLs in the Bering Sea (Scallop Registration Area Q) have evolved from fixed numbers in 1993 to a three tier approach used in the current fishery. In 1993, Bering Sea CBLs were set by the ADF&G to allow the fleet opportunity to explore and harvest scallop stocks while protecting the crab resource. CBLs were established at 260,000 Tanner and snow crab combined and 17,000 red king crabs. In 1995, ADF&G recommended that CBLs be established at 0.003176% of the best available population estimate of snow crab and 0.13542% of the best available population estimate of Tanner crab abundance in the Bering Sea. That equated to 300,000 snow and 260,000 Tanner crabs based on 1994 crab abundance estimates in Registration area Q. In Amendment 1 of the federal scallop FMP, the NPFMC approved the CBLs established by the ADF&G. The NPFMC also recommended that king crab bycatch limits be set within a range of 500 to 3,000 crabs annually. Beginning with the 1996/97 fishing season, ADF&G took a conservative approach and set the red king crab limit in Scallop Registration Area Q at 500 red king crabs annually.

From the 1996/97 through 1998/99 scallop fishing seasons, the CBL for Tanner and snow crabs in the Bering Sea was established annually by applying the percentages established for snow and Tanner crab limits in Amendment 1 of the FMP. In 1998, consistent with the Tanner crab rebuilding plan in the Bering Sea, crab bycatch limits were modified utilizing a three tier approach.

The current three tier approach was established utilizing the bycatch limits established in Amendment 1 of the FMP, 300,000 snow crab and 260,000 Tanner crab. The three tiers include (1) Tanner crab spawning biomass above minimum stock size threshold (MSST); bycatch limit is set at 260,000 crabs, (2) Tanner crab spawning biomass below MSST; bycatch limit is set at 130,000 crabs, and (3) Tanner crab spawning biomass is below MSST and the commercial fishing season is closed; Tanner crab limit is set at 65,000 crabs. A similar three tier approach was taken with the snow crab bycatch caps. The three tiers include (1) snow crab spawning biomass above the MSST; bycatch limit is set at 300,000 crabs, (2) snow crab spawning biomass below MSST; bycatch limit is set at 150,000 crabs, and (3) snow crab spawning biomass below MSST and the commercial fishing season is closed; the snow crab limit is set at 75,000 crabs.

Closures based on the fleet reaching CBLs have decreased over the years since inception of CBLs in 1993, possibly due to decreased crab abundance (Barnhart and Rosenkranz 2003). During the 1993/94 season, four statewide areas were closed due to attainment of CBLs. Since the 2000/01 season, two areas have closed due to crab bycatch.

One management tool used by ADF&G when setting annual GHRs is evaluation of catch per unit effort (CPUE). Fishery-dependent data such as CPUE is affected by many variables and therefore must be used with caution. CPUE is expressed in two ways, scallop round weight and scallop meat weight. These are standardized to a dredge-hour, which is defined as one dredge towed for 60 minutes. Round weight represents the retained weight in pounds 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 bushels of retained scallops and multiplying by an estimated average weight per bushel. Processed product (scallop meat in the form of adductor muscles) is typically weighed directly during the case-up process. Therefore, CPUE based on scallop meat weight vs an estimate of round weight, provides a more standard measure of fishery performance

across the fleet. Estimated round weight is used in conjunction with weighed scallop meats to determine estimated recovery rates.

OBSERVER PROGRAM

The Alaska Scallop Fishery Management Plan, 5 AAC 38.076 (g), allows ADF&G to require a vessel, in a scallop fishery with a guideline harvest range established by regulation, to carry an onboard observer unless the department determines that carrying an observer in that fishery will not serve the purpose of the onboard observer program. 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, CPUE, scallop meat-weight recovery, and location, area and depth fished (Barnhart and Rosenkranz 2003). Onboard observers report scallop harvest, number of tows, area fished, and crab bycatch to ADF&G tri-weekly during the season by radio, email, or satellite phone. 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. These data have been invaluable for preparing EFH and HAPC documents. For analyzing fine-scale spatial and temporal impacts of the fishery, observer data are critical.

Onboard observer coverage is funded by industry through direct payments to independent contracting agents (Barnhart 2003). Independent contracting agents provide personnel that are trained at the University of Alaska North Pacific Fisheries Observer Training Center (OTC) in Anchorage, Alaska.

INDUSTRY

Prior to the 2000/01 regulatory season, six of the nine LLP owners formed a cooperative under authority of the Fishermen's Cooperative Marketing Act, 48 Stat. 1213 (1934), 15 U.S.C. § 521. No federal or state regulations established the cooperative, nor is it managed by the ADF&G or any federal agency. The cooperative is a voluntary association of vessels with no legal harvest allocation. That is, there is no direct harvest allocation under state or federal regulations. Within the cooperative, vessel owners allocate themselves shares of the scallop GHRs and CBLs based on historic participation in the fishery. The majority of the owners opted to remove their boats from the fishery and arranged for their co-op shares to be caught by others members of the cooperative. The formation of the cooperative extended the fishing season over a longer time period compared to the pre-cooperative fishery.

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. The independent consultant reviews the crab bycatch data, fishing location information, and scallop harvest, allowing for real-time identification of any high crab abundance areas discovered during the fishery. If at any time, an area of high crab abundance is identified, the co-op fleet is provided with location information and directed to avoid fishing in that area. This mechanism only works if vessel operators submit their fishing data and crab bycatch to the consultant in a timely fashion.

Vessel operators also voluntarily release their confidential fishing information to ADF&G 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.

YAKUTAT REGISTRATION AREA

The Yakutat Registration Area is defined as Area D, described in 5 AAC 38.160, and all waters of District 16 as described in 5 AAC 31.105(p). These descriptions include those waters in the GOA north of the latitude of Cape Spencer (58° 12.27' N lat., 136° 39.75' W long.) and east of the longitude of Cape Suckling at 144° W. long. For management purposes these waters are divided into two management areas – Area D and District 16 (Figure 3). The waters of Yakutat Bay east of a line from the easternmost tip of Ocean Cape at 59°32.05' N. lat., 139°52.03' W. long. to the southernmost tip of Point Manby at 59°41.07' N. lat., 140°18.06' W. long. are closed to the taking of scallops (Figure 3).

HISTORIC BACKGROUND

The earliest years of the fishery occurred in Area D and were very productive. Previously unfished biomass supported harvests of over 900,000 pounds in 1968 and over 800,000 pounds in 1969 (Table 5). These years were followed by two decades of reduced effort and harvests. In late spring of 1991, Yakutat Bay was closed to commercial scallop dredging by the Board of Fisheries. A statewide trend of increasing interest and participation in scallop fisheries in the early 1990s culminated in a peak harvest of over one million pounds in Area D in 1992 (Table 5). In 1993, guideline harvest ranges were first established under the Interim Management Plan for Commercial Scallop Fisheries in Alaska for registration areas where scallop fishing traditionally occurred. This included the Yakutat Registration Area.

Season closures also went into effect in 1993, with separate winter and summer fisheries in 1993 and 1994 (Table 5). The Board of Fisheries formally changed the opening date for the winter fishery in late 1994 from January 1 to January 10, and from a split season to a single winter season. The single winter season lasted through 1997. At the Board of Fisheries meeting in 1997 the regulatory season was changed to July 1-February 15.

The fisheries in District 16 started in 1980 as stocks in Area D to the north and west were fished down (Table 5). Interest and harvests have been generally low and intermittent. District 16 stocks have been spared much of the roller coaster highs and lows prior to implementation of the ASFMP in 1993. Only a few vessels fished each season, with a maximum of eight vessels in 1994 (Table 5). The peak harvest of 162,888 pounds occurred in 1990 (Table 5), with an overall historical average of approximately 31,000 pounds in years when effort did occur. Prior to 1993, this fishery was open all year, with an accounting period of January 1 through December 31. Starting in 1993, the statewide management plan was implemented. For Southeast Alaska it specified a split season, with a winter fishery starting on January 1 and a summer fishery starting on July 1. In 1994, because of high anticipated effort and catch levels, the winter season opened and closed after a one-day fishery on January 20. The following summer season, which opened by regulation on July 1 and closed by emergency order on October 31, was not as intense because productive areas in other parts of the state were open concurrently. In 1995, there was only a winter fishery. There were two seasons in 1996. The first one opened in state waters only on January 10 and closed on January 20. The summer fishery opened in federal waters on August

1 and continued through the fall to close on November 29. In 1997, regulations changed so that the season was opened on July 1 and extended to February 15 (Bishop and Stratman 2006).

Mandatory observers are required on each vessel fishing for scallops in the Yakutat Registration Area. The observer program has two main goals: to monitor bycatch and to collect biological and commercial fishing information about the weathervane scallop. Observer sampling of the scallop catch and discarded scallops allows determination of the stock size composition. In addition, shells are collected for ageing in order to determine the age structure population dynamics of Yakutat Registration Area weathervane scallop populations (Bishop and Stratman 2006).

Dungeness and Tanner crab are captured incidentally in scallop dredges in the Yakutat fishery; however, there are no crab bycatch caps established. Although the Alaska State Fishery Management Plan states that bycatch limits may be required for scallop fisheries opened by permit, no bycatch limits have been established to date for the scallop fishery in the Yakutat Registration Area since there is yet no annual survey in existence to estimate the population of Tanner crab (Barnhart and Rosenkranz 2000).

2005/06 FISHERY

The 2005/06 scallop fishing season in the Yakutat Registration Area was open July 1, 2005 through February 15, 2006. Two catcher-processors fished in the Yakutat Registration Area. Recent increases in scallop prices led to increased effort and harvest during the 2005/06 Yakutat scallop fishery, with a total of about 214,000 lbs of scallop meats landed from Area D and District 16 combined (Tables 6 and 7). Yakutat Registration Area-wide CPUE, which averaged 46 lbs meat/dredge hr during the 2000/01–2004/05 seasons, fell to 39 lbs meat/dredge hr for 2005/06.

Based on inseason observer reports, estimated Tanner crab bycatch increased from less than 1,000 crabs during the 2004/05 season to 5,364 crabs during the 2005/06 Yakutat scallop fishery for Area D and District 16 combined. The Tanner crab bycatch rate also increased, moving from about 1/3 crab/dredge hr during 2004/05 to about 1 crab/dredge hr during 2005/06. These rates remain low compared to other scallop fishing areas in the state. An estimated 394 Dungeness crabs and 518 halibut were also incidentally caught in the 2005/06 Yakutat Registration Area scallop fishery.

Area D

Area D has as its western boundary the longitude of Cape Suckling (144° W. long.) and as its southern boundary a line extending seaward from the western tip of Cape Fairweather, at 58°47.89' N. lat., 137°56.68' W. long., to the intersection with the seaward limit of the three-nautical-mile territorial sea at 58°45.91' N. lat., 138°01.53 W. long (Figure 3).

The GHR for Area D was set at zero to 200,000 pounds of scallop meats (Table 7). Two catcher processors participated in the fishery in Area D. Based on indications from observer reports that upper-end harvest caps would be met, Area D was closed by emergency order on January 25, 2006. The Area D scallop harvest as reported on fish tickets totaled 199,351 pounds of scallop meats (Table 7).

Figure 6 depicts the estimated shell height (SH) distributions of the retained and discarded scallop catch in Area D, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the Area D

scallop population. Recruitment to the harvestable population (scallops >100 mm SH) appears to continue. Histograms of shell height distributions for Area D show few changes between the 2004/05 and 2005/06 seasons. Scallops in the 120–130 mm SH range continue to dominate harvests, with few larger animals taken. The average SH of retained scallops in Area D during the 2005/06 season was 123 mm as compared to 124 mm SH during the previous season (Table 7).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE expressed in lb of scallop meats per dredge-hour (meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 7. The graphs depicting round weight of retained scallops, meat weight of retained scallops, and total dredge hours demonstrate the increased effort seen in the 2005/06 fishery. The graph depicting CPUE shows little change in CPUE from the 2004/05 fishery, and relatively stable catch rates for the previous six seasons.

Stock Status

The weathervane scallop population in Area D of the Yakutat Registration Area is not annually surveyed and no estimate of abundance has been made. As scallop survey technology is advanced, this population will likely be surveyed. The 199,351 pounds of scallop meats harvested in the 2005/06 fishery was the highest harvest taken in the past six seasons (Table 7). However, due to fairly constant catch rates and a large increase in dredge hours (Table 7), it is more likely the increased harvest was due to an increase in effort, rather than an increased abundance of marketable sized scallops.

District 16

District 16 is defined in regulation as waters that are north of a line running west from the southernmost tip of Cape Spencer (58° 12.27' N lat., 136° 39.75' W long.) and south of a line extending seaward from the western tip of Cape Fairweather, at 58°47.89' N. lat., 137°56.68' W. long., to the intersection with the seaward limit of the three-nautical-mile territorial sea at 58°45.91' N. lat., 138°01.53 W. long (Figure 3).

The GHR for District 16 was set at zero to 35,000 pounds of scallop meats (Table 6). Two catcher processors participated in the fishery in District 16. The upper end of the GHR was not reached in District 16 during the 2005/06 season and the fishery was closed by regulation on February 15, 2006. The District 16 scallop harvest as reported on fish tickets totaled 13,650 pounds of scallop meats (Table 6).

Figure 4 depicts the estimated shell height (SH) distributions of the retained and discarded scallop catch in District 16, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the District 16 scallop population. Recruitment to the harvestable population (scallops >100 mm SH) appears to continue. Histograms of shell height distributions for District 16 show slight changes from the 2004/05 to 2005/06 seasons, with a slightly higher percentage of smaller scallops taken in the 2005/06 season. Scallops in the 110–120 mm SH range continue to dominate harvests, with few larger animals taken. The average SH of retained scallops in District 16 during the 2005/06 season was 119 mm as compared to 120 mm SH during the previous season (Table 6).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE expressed in lb of scallop meats per dredge-hour

(meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 5. The graphs depicting round weight of retained scallops, meat weight of retained scallops, and CPUE show a decrease in harvest and CPUE from 2004/05 to the 2005/06 season. The graph depicting total dredge hours in the 2005/06 season shows little change in total effort from the 2004/05 season.

Stock Status

The weathervane scallop population in District 16 of the Yakutat Registration Area is not annually surveyed and no estimate of abundance has been made. As scallop survey technology is advanced, this population will likely be surveyed. The 13,650 pounds of scallop meats harvested in the 2005/06 fishery was a 45% reduction in harvest from the previous season (Table 6). With dredge hours remaining relatively stable between the 2004/05 and 2005/06 seasons, and a corresponding drop in harvest and CPUE between those same seasons (Table 6), it is possible that there was a decrease in abundance of marketable sized scallops in District 16.

PRINCE WILLIAM SOUND REGISTRATION AREA

Prince William Sound (PWS) Registration Area E includes territorial waters of Alaska from 144° 00' W. long. near Cape Suckling, to Cape Fairfield at 148°50.25' W. long. (Figure 8). The PWS Area is comprised of the Inside and Outside Districts. The Outside District is subdivided into the Eastern and Western Sections at 147° W. long. Only the Eastern Section of the Outside District is open to scallop fishing.

HISTORIC BACKGROUND

The commercial fishery for weathervane scallops in the PWS Area occurs in the proximity of Kayak Island and typically more than 3 miles from shore (Figure 8). From 1992 through 2004 total scallop harvests in the PWS area have ranged 18,000 lb in 1997-98 to 208,000 lb in 1992, while participation has ranged from 1 to 7 vessels (Table 8).

The initial scallop fishery in the PWS Area occurred in 1992. A harvest level of 64,000 lb for waters east of 147° 00' W. long. was determined in season using area-swept methods and a 10% harvest rate (unpublished survey data). The fishery began in February and closed in April with a harvest total of approximately 209,000 lb of meats by 4 vessels (Table 9). The discrepancy between the 1992 intended harvest level and actual harvest was attributed to a lack of timely and accurate catch reporting and insufficient data about the scallop biomass.

In 1993, the Interim Management Plan for Commercial Scallop Fisheries in Alaska established the GHR for weathervane scallops in Area E as 0-50,000 lb of scallop meats. The 1993 season opened July 15 with a 50,000 lb GHR cap and closed July 18 with seven vessels landing 63,068 lb of meats.

The Alaska Scallop Fishery Management Plan (BOF adopted in 1994) changed the season opening date from July 1 to January 10 with closure by emergency order. In addition, closure areas in eastern PWS and along the Copper River Delta to protect depressed Tanner crab and Dungeness crab stocks were identified. The 1994 commercial scallop season did not open due to the change in the season opening date as it would have resulted in doubling the harvest in a single cycle.

The 1995 weathervane scallop fishery opened January 10 and closed January 26 when the 50,000 lb GHR cap was attained. Subsequent to the closure, an unlicensed vessel fished in federal waters off of Kayak Island and harvested an additional 58,000 lb of scallop meats. Federal

fisheries managers subsequently closed all scallop fisheries in federal waters off Alaska. In August 1995, ADF&G initiated a fishery-independent scallop survey in waters east of Kayak Island to assess stock condition and effects of the postseason harvest.

The January 1996 commercial scallop season remained closed while federal fisheries regulations were restructured. However, ADF&G conducted a systematic area-swept assessment survey in the proximity of Kayak Island using an 8-ft New Bedford style dredge donated by the scallop industry. The dredge was equipped with a liner to maximize retention of scallops of all sizes to facilitate sampling for age, size, and sex. This initial effort established the precedent of a biennial survey to establish GHRs for two consecutive fishing seasons. In March of 1997, the BOF adopted a regulation changing season opening date from January 10 back to July 1.

In 1998, ADF&G expanded its assessment survey to include waters located west of Kayak Island and used these data to establish separate GHRs for waters east and west of Cape Saint Elias (Figure 9). Scallops beds were determined to occupy fairly discrete and limited areas with the highest concentrations occurring in federal waters. Based on results of this survey ADF&G announced a GHR of 6,000 and 14,000 lb of scallop meats for east and west areas respectively.

In March 2000, the BOF adopted regulations restricting the scallop fishery to the Eastern Section of the Outside District. This measure provided the opportunity for some exploration while protecting areas ADF&G did not assess. Based on improved results of the May 2000 assessment survey, GHRs were increased to 9,000 and 21,000 lb of scallop meats for areas east and west of Cape Saint Elias

The GHR for the 2002/03 and 2003/04 season scallop seasons was set at 6,000 lb and 14,000 lb for the east and west harvest areas respectively. During the 2002/03 season the west side closed on February 14 and the east side closed by regulation on February 15 with a harvest total of 15,641 lb from two vessels. Failure of the fishery to achieve the GHR was attributed to scheduling by participants. Catch rates in the fishery were comparable to previous seasons. During the 2003/04 season the west side closed on January 23 and the eastside closed on January 24 with a fishery harvest total of 19,980 lb from a single vessel.

Following the May 2004 assessment survey, The GHRs for the 2004/05 season were established at 26,000 lb and 24,000 lb for waters east and west of Cape Saint Elias. The east side closed on October 22 and the west side closed by regulation on February 15 with a fishery harvest total of 49,320 lb from two vessels.

2005/06 FISHERY

The 2005/06 scallop season opened July 1 with GHRs of 26,000 and 24,000 lb of scallop meats for harvest areas east and west of Cape Saint Elias. Waters west of the longitude of Cape Saint Elias were closed to commercial scallop fishing on August 13. Waters east of the longitude of Cape Saint Elias closed to commercial scallop fishing on August 22. The total harvest from three vessels was 49,205 lb, Tanner crab bycatch estimates were 173 and 234 for the east and west areas.

Figure 10 depicts the estimated shell height (SH) distributions of the retained and discarded scallop catch in the PWS fishery based on statistical resampling of the discarded and retained SH measurements in equal proportion. The 2005/06 histogram depicts a fairly narrow range of scallop sizes that supported the fishery with scallop SH of 125–140 mm comprising

approximately 77% of the catch sample. However, recruitment to the scallop population $SH < 120$ mm is better represented by a broader range of sizes than in other years.

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge-hours, and CPUE expressed in lb of scallop meats per dredge hour (meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 11. The 2005/06 fishery CPUE of 100 meat lb/drg-hr is slightly below average. However, a decline in CPUE was anticipated as two vessels each fished with a single six-ft dredge.

STOCK STATUS

The Central Region commercial fisheries research staff conducts scallop surveys via a systematic area-swept assessment. The survey conducts 1 nautical mile tows with an 8-foot scallop dredge equipped with a fine mesh liner to maximize retention of scallop samples that are used for assessing age and size composition and sexual maturity. Central Region staff is also conducting a dredge catchability study using cameras on the dredge and combining it with some preliminary video scallop work. Fishery-independent surveys of the east and west scallop beds adjacent to Kayak Island (Figure 9) were conducted in 1996, 1998, 2000, 2002 and 2004.

The 2002 assessment survey yielded poor results. Available age composition data indicated poor recruitment for this population. A decline in stock biomass would be expected given the relatively poor recruitment observed in recent years. However, it is likely that population biomass estimates were artificially low due to difficulties with the survey gear. As a precaution, ADF&G applied the GHR from the 1998 assessment levels to the 2002/03 and 2003/04 season scallop seasons.

Results of the 2004 assessment survey were substantially improved and GHRs of 26,000 lb and 24,000 lb for waters east and west of Cape Saint Elias were established by applying harvest rates of 5.2% and 5.3% to the respective population estimates. The combined GHRs are currently at the limit of the guideline harvest range cap established in regulation (0 - 50,000 lb). The GHL established in regulation appears to be appropriate for a long-lived species such as weathervane scallops with a maximum age in excess of 20 years.

Survey age composition has ranged from age-1 zero to age-20. The progression of strong cohorts is somewhat difficult to see in the data. The dominant age classes in most years are between seven and 12 years old, but the full range of age and size classes are observed in the survey data (Table 10). In 67% of the surveys, weighted age composition data indicated that well over ½ of the surveyed population was between ages seven and 12; however the catch of younger and older scallops is still good (Table 10). Such diversity in the age composition of the survey catch as well as in the fishery indicates relatively strong resilience to population disturbances.

COOK INLET REGISTRATION AREA

The Cook Inlet Management Area (Area H) as it applies to the commercial scallop fishery, is defined as those waters of Cook Inlet and the outer Kenai Peninsula located north of the latitude of Cape Douglas (58° 51.10' N. lat.) on the Alaska Peninsula and west of the longitude of Cape Fairfield (148° 50.25' W. long.) (Figure 12). The management area is divided into seven shellfish districts: Northern, Central, Kamishak, Southern, Barren Islands, Outer, and Eastern.

HISTORIC BACKGROUND

The commercial Pacific weathervane scallop fishery in the Cook Inlet Management Area dates to 1983 when the department first issued commissioner's permits for fishing (Table 11). Permits stipulated fishing in the Kamishak District only, with a single 6-foot dredge with 4-inch rings, logbooks, contact with ADF&G prior to and at the completion of each trip, and accommodation of a department observer upon request. By 1984, the dredge and ring size restrictions and a Southern District scallop closure were in regulation. In 1985, the BOF established an August 15 through October 31 regulatory season in the Kamishak District and a GHR of 10,000 to 20,000 pounds of scallop meats. Currently, the Southern District is closed to scallop fishing by regulation to protect crab stocks, while the Outer and Eastern Districts are open to exploratory fishing under a permit issued by ADF&G.

With the exception of a single landing from the Outer District in 1987, the "north" scallop bed, located east of Augustine Island in the Kamishak District produced all harvests from 1983 through 2001 (Table 11; Figure 13). Beginning in 2002 the "south bed" accounted for some or all of a given year's harvest.

2005 FISHERY

The 2005 scallop season in the Cook Inlet Area opened at noon August 15 with a 7,000 lb GHR. Fishing was restricted to the north bed based upon the May 2005 survey results that indicated a stable biomass for this area from the previous survey. The south bed remained closed due to a sharp decline in biomass apparent from the 2005 survey. Bycatch caps of 35,000 Tanner crab and 60 king crab were set based upon the dredge survey's Tanner crab catches and a static king crab bycatch level. Two vessels participated and catch data are confidential. The season closed at 0730 hours August 31 based upon catch projections indicating the GHR would be achieved at that time.

Kamishak District

The Kamishak Bay District is defined as all waters enclosed by a line from 59° 46.15' N. lat., 153° 00.70' W. long., then east to 59° 46.15' N. lat., 152° 20.00' W. long., then south to 59° 03.42' N lat., 152° 20.00' W. long., then southwesterly to Cape Douglas (58° 51.10' N. lat.; Figure 12).

Initial fishing in the Kamishak District began in 1983. In 1987, ADF&G closed the Kamishak scallop fishery by emergency order when the stock declined dramatically. Although the fishery reopened in 1988, no commercial effort occurred in Cook Inlet from 1988 through 1992 because fishermen anticipated poor fishery performance would result in further closure of the fishery. In 1993, the fishery "redeveloped" when three boats harvested 20,115 lb. Logbooks, shell samples, and fishery performance data revealed a small, but healthy, stock of scallops in the Kamishak District.

In early 1995, efforts of a single vessel commercially fishing scallops off the Prince William Sound Management Area exposed a regulatory loophole that resulted in a scallop fishing closure in all federal waters for the balance of 1995. This action effectively closed the Kamishak Bay fishery, which occurs almost exclusively in federal waters. Based on the 1995 closure and results of a 1996 survey, ADF&G set a 1996 fishery GHR of 28,000 lb. Subsequent fishery GHRs from 1997 to 2002 remained at the maximum 20,000 lb level and with the exception of 1998, when inclement weather restricted fishing by the single participating vessel, have been achieved prior to the regulatory

closure date (Table 12). ADF&G has monitored the fishery via logbooks, shell samples, onboard observations, and skipper interviews. Fishery CPUE in pounds of scallop meats caught per hour towed (lb/hr), increased steadily from approximately 50 lb/hr in 1996 to 1998 to a high of 73 lb/hr in 2000 and declined again in 2001. Effort has ranged from one to five vessels. Tanner crab bycatch caps, equal to 0.5% of the estimated Tanner crab abundance, have been set annually and have ranged from 20,000 to 35,000 crab. For king crab, the annual bycatch level has been set at 60, due to continued depression of those stocks. Annual crab bycatch has ranged from 205 to 10,200 Tanner crab and 9 to 53 king crab.

During the 2002 fishery, CPUE declined dramatically to 25 lb/hr and the incidence of “cluckers”, dead scallops with the valves connected but lacking soft tissues, increased to a level previously unobserved in Cook Inlet. Ages of cluckers sampled in the commercial fishery ranged from 2 to 16 years with the majority being age 6 to 8 years. Although age distributions of cluckers compared to live samples appeared similar, a Chi-square test showed a statistically significant difference ($\chi^2 < .01$, 15 d.f.). This difference may be partially attributable to the small sample size of cluckers (n = 110) relative to the live scallop sample size (n = 476) and natural mortality.

Scallops sampled from the 2002 fishery and analyzed by ADF&G’s pathology laboratory provided no conclusive explanation for the increased mortality in the stock but did suggest infestation by a polychaete worm *Polydora sp.* that can burrow through the scallop shell and cause toxic mortality. Typically, this occurs through formation of a “mud blister” or pustular abscess along the inner layer of the shell. Anecdotal information suggests that fishermen observed a greater incidence of mud blisters during the 2002 season. Salinity, water temperature, and substrate composition appear to be the determining factors in worm abundance.

Due to a low fishery CPUE and the time-intensive process of sorting live from dead scallops, fishery participants shifted to the “south” bed, located southeast of Augustine Island (Figure 13). Still within the Kamishak District, but previously unsurveyed by ADF&G, the new bed yielded a slightly higher CPUE of 33 lb/hr and a lower incidence of cluckers, reducing the catch sorting time. Age structure in the newly fished area was older with 50% of the scallop fishery samples being older than age 11. In response to the decline in CPUE, the unexplained mortality in the traditional fishing area, and the lack of assessment data for the new bed, ADF&G reduced the 2002 fishery GHLL to 9,000 lb.

Following a survey and stock assessment of both beds in May 2003, ADF&G announced the entire 20,000 lb GHLL would be harvested from the south bed (Table 12). This harvest level equated to approximately a 5.5% harvest rate. Although harvest data are confidential, catch rates in the fishery were approximately half those observed in 2002. In 2004, the fishery was also managed for a 20,000 lb GHLL. Although both beds were open to fishing, a maximum allowable harvest of 6,500 lb of meat was set for the north bed. In the preseason news release, ADF&G announced intent to use this opportunity to assess the status of scallops in the north bed. Catch rates in the north bed were less than half those observed in 2002 and fishing closed on August 19, approximately 4 days after opening. Fishing in the south bed closed September 9 due to catch rates below those observed in the 2003 fishery.

STOCK STATUS

Fishery-independent surveys of the north and south scallop beds in Kamishak Bay (Figure 13) were conducted in 2003, and 2005. In the years prior to 2003 (1984, 1996, 1998, 1999 and

2001), the survey covered only the north scallop bed (as the south bed had not yet been detected).

The survey conducts 1 nautical mile tows with an 8-foot scallop dredge equipped with a fine mesh liner to maximize retention of scallop samples that are used for assessing age and size composition and sexual maturity (Bechtol and Gustafson 2002). The survey involves a quasi-adaptive systematic sampling design using a grid of 1.0 by 1.0 nautical mile squares placed over a chart of the northern and southern weathervane scallop beds located directly east of Augustine Island (Figure 13). This survey is now conducted on a biennial basis with the next survey in 2007, and upcoming modifications to the sampling design will allow extrapolation of dredge tow data to be expanded to a standardized area.

The 2005 scallop biomass estimate for the north bed was 2.7 million lb and for the south bed, 1.37 million lb. Meat recoveries were 6.9% of whole scallop weight. The steep decline in biomass experienced by Kamishak District scallops has been reflected in both ADF&G's survey and fishery CPUE. The north bed declined by approximately 67% between the 2001 and 2003 surveys and appeared to stabilize based upon the 2005 survey. Similarly, the south bed declined by approximately 75% between the 2003 and 2005 surveys.

Survey age composition has ranged from young-of-the-year age zero to age 24 (Bechtol 2000; Bechtol and Gustafson 2002). The progression of strong cohorts can be seen growing across some calendar years, and young age classes tend to be the most abundant age classes in the survey. In 56% of the surveys, weighted age composition data indicated that over ½ of the surveyed population were between ages zero and seven; however the catch of older scallops is still quite good (Table 13). Such diversity in the age composition of the survey catch as well as in the fishery indicates relatively strong resilience to population disturbances. This is likely due to the fact that: (1) the population is supported by a wide range of age classes; and (2) the fishery is not strictly dependent upon recruitment pulses. Size-at-age indicates asymptotic growth for the Kamishak Bay scallop population. The greatest annual growth in height occurs during the first 5 years of life, with growth rates decreasing rapidly to less than 1% per year after about age 13. Annual growth in weight is greatest from about age 2 to age 5.

The regulatory maximum GHL for the Kamishak Bay scallop fishery is 20,000 lb of meats. A retrospective analysis using a preliminary age-structured model suggested that harvest rates of the Kamishak Bay population ranged from 2.6 to 4.7% of the estimated population (Bechtol 2000). These harvest rates are substantially less than the instantaneous natural mortality rate of 14% estimated by the age-structured model, and also less than the median natural mortality estimate of 15% calculated by several methods for weathervane scallops off Alaska. Thus, the 20,000 lb GHL established in regulation is moderately conservative, which is probably appropriate for a long-lived species such as weathervane scallops with a maximum age in excess of 20 years.

All other Districts

Aside from some exploratory fishing in the Outer District in 1987, there has been no interest in fishing for scallops in districts other than the Kamishak District. No concentrations of scallops have been identified during either department surveys or in anecdotal reports from fishermen. Although regulations provide for a permit fishery in the Outer and Eastern Districts, including an observer requirement, it is unlikely ADF&G would issue a permit for exploratory fishing without first

obtaining information on scallop abundance. ADF&G does not anticipate any interest in fishing these districts.

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 16). The Kodiak Registration Area is comprised of the Northeast, Shelikof, and Semidi Island Districts. Extensive areas are closed to scallop fishing to protect crab habitat.

HISTORIC BACKGROUND

In 1967, when commercial fishing for weathervane scallops originated in Alaska, vessel operators targeted fishing grounds along the east side of Kodiak Island. By 1968, 734,084 lb of scallop meats were landed from eight vessels (Table 14). 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, excluding 1995/96 when all federal waters within Alaska were closed to scallop fishing by federal emergency rule and state waters of the Kodiak Registration Area were closed by an ADF&G emergency order.

When the Alaska weathervane scallop fishery began in 1967, there were no closed seasons. Within two years from inception of the scallop fishery, concerns about dredging impacts on crab resources, specifically red king crab, began to develop. In 1969, by emergency order, the 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. During the early 1970s, to protect spawning, molting, or softshell red king crab, regulatory season opening dates of either June 1 or July 15 (depending upon geographical area) through March 31 were established by the BOF (Barnhart 2003). In 1990, to protect depressed red king and Tanner crab populations, the BOF closed scallop fishing in Kodiak's westside bays which had been previously closed to non-pelagic trawling. With development of the interim Alaska Scallop Fishery Management Plan in 1993, crab bycatch limits were developed for the Kodiak Area. In 1994, with passage of the Alaska Scallop Fishery Management Plan, the regulatory season for weathervane scallops in the Westward Region was established by the BOF as July 1 through February 15.

2005/06 FISHERY

The 2005/06 scallop fishing season was open July 1, 2005 through February 15, 2006. Two catcher-processors fished in the Kodiak Registration Area. To facilitate distribution of fishing effort and crab bycatch limits, red king crab districts as described in 5 AAC 34.405 were utilized.

Northeast District

The Northeast District (Figure 16) 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 scallop meats (Table 15). For a second consecutive year, the GHR for the Northeast District of the Kodiak Registration Area was subdivided into harvest caps by individual statistical area or group of statistical areas. A statistical area is a defined block 30' of latitude by 1° of longitude in offshore waters, and smaller irregular areas inshore which are used as catch reporting areas for shellfish harvest (Urban 1996). The harvest cap in statistical area 525702 was 30,000 lb of scallop meats while the harvest cap in statistical area 525630 was 25,000 lb of scallop meats. The remaining 25,000 lb of the overall GHR was allocated to any other waters open to scallop fishing in the Northeast District.

Three catcher-processors participated in the fishery with initial effort in early July. Based on inseason observer reports, an estimated 28,543 Tanner crabs and no red king crabs were caught from a bycatch limit of 449,403 Tanner crabs and 45 red king crabs. Based on indications from observer reports that upper-end harvest caps would be met, statistical area 525630 was closed on December 11, 2005, the remainder of the Northeast District except statistical area 525702 was closed on December 19, 2005, and statistical area 525702 was closed on January 17, 2006. The Northeast District scallop harvest as reported on fish tickets, totaled 79,990 lb of scallop meats (Table 15).

Figure 17 depicts the estimated SH distributions of the retained and discarded scallop catch in the Northeast District, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the Northeast District scallop population with above average recruitment in 2005/06, based on the estimated frequency of scallops <115 mm SH in the size distribution. A broad range of scallop sizes supports the fishery. The average SH of retained scallops in the Northeast District during the 2005/06 season was 139 mm as compared to 144 mm SH during the previous season (Table 16).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE expressed in lb of scallop meats per dredge-hour (meat lb/drg-hr) from the 1993/94 through 2005/06 seasons is depicted in Figure 18. Between the 1999/2000 and 2004/05 seasons, the fishery in this district was characterized by relatively steady effort (dredge hours), level harvest of meats, and stable to increasing fishery performance as measured by CPUE in meat lb/drg-hr. However, during the 2005/06 season, dredge hours increased and CPUE decreased with the entry of a participant unfamiliar with the fishing grounds.

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. As scallop survey technology is advanced, this population will likely be surveyed. Since the 1999/2000 season, the commercial catch has remained level, ranging from 77,119 to 80,470 lb of scallop meats (Table 16). Over the same time period, the estimated round weight of the retained scallop catch ranged from 681,192 lb to 952,972 lb (Table 17).

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 16).

The GHR for the Shelikof District was set at zero to 160,000 lb of scallop meats (Table 18). The district was divided into north and south zones at the latitude of Cape Chiniak, 58° 30' N lat., with a harvest cap in the north zone of 130,000 lb of scallop meats and a harvest cap in the south zone of 30,000 lb of scallop meats. Two catcher-processors participated in the fishery with initial effort in early-July. Based on inseason observer reports, an estimated 17,149 Tanner crabs and no red king crabs were caught from a bycatch limit of 51,822 Tanner crabs and 1,345 red king crabs. Based on indications from observer reports that upper-end harvest caps would be met, the north zone was closed on December 9, 2005. The remainder of the district including the south zone, closed on December 11, 2005. The Shelikof District scallop harvest as reported on fish tickets, totaled 159,941 lb of scallop meats (Table 16, 18).

Figure 19 depicts the estimated SH distributions of the retained and discarded scallop catch in the Shelikof District, based on statistical resampling of the discarded and retained SH measurements in equal proportion. The histograms depict annual recruitment to the Shelikof District scallop population with below average recruitment in 2005/06 based on the estimated frequency of scallops <115 mm SH in the size distribution. A broad range of scallop sizes has historically supported the fishery. The average SH of retained scallops in the Shelikof District during the 2005/06 season of 136 mm was similar to the average SH of 137mm recorded during the previous season. Since the 1993/94 season, the average annual SH has ranged from 128 mm to 140 mm (Table 16).

A summary of the scallop catch in round weight (lb) of retained scallops, meat weight (lb) of retained scallops, dredge hours, and CPUE (meat lb/drg-hr) in the Shelikof District from 1994/95 through 2005/06 is depicted in Figure 20. CPUE increased from 50 meat lb/drg-hr during the 2004/05 season to 70 meat lb/drg-hr in 2005/06 season (Table 18).

Stock Status

The weathervane scallop population in the Shelikof District of the Kodiak Registration Area is not currently surveyed. Experimental scallop video research was conducted in the Shelikof District in 2004. A scallop video stock assessment is planned for 2007. Between the 1998/1999 and 2003/04 seasons, the commercial catch remained level, as the department allowed the annual harvest to reach the upper limit of the GHR, set at 180,000 lb of scallop meats. However, in 2004/05, the season was closed prior to reaching the GHR cap due to the attainment of the CBL, and in the 2005/06 season, the GHR cap was lowered from 180,000 lb of scallop meats to 160,000 lb of scallop meats. The estimated round weight of the retained scallop catch between 1998/1999 and 2005/06 ranged from 1,454,806 lb to 2,129,025 lb, averaging 1,788,673 lb each season (Table 17).

Semidi Island District

The Semidi Island 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 16). A GHR has not been developed for this district.

State waters of the Semidi Island District were closed to scallop dredging by the BOF at the March 2000 meeting; however, federal waters (EEZ) remain open. No fishing activity occurred

in the Semidi Island District during the 2005/06 fishing season, although it was open from July 1, 2005 to February 15, 2006.

Since the 1993/94 season, harvest has ranged from zero to 55,487 lb of scallop meats (Table 16, 19). Considering years when fishing occurred, CPUE ranged from 16 to 37 meat lb/drg-hr, which is lower than any other registration area or district within the Westward Region (Table 16, 19).

Stock Status

The weathervane scallop population in the Semidi Island 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 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 21).

Areas closed to fishing include all state waters and offshore waters of Unimak Bight and Mitrofanina Island. Justification for the Unimak Bight closure adopted in the early 1970s was to protect king crab habitat. Closing the area to weathervane scallop fishing removed potential conflict with other gear types such as crab pots. The Mitrofanina Island closure was adopted in the mid-1980s to protect Tanner crabs.

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 a reported 205,691 lb of scallop meats were landed from six vessels (Table 18). Since the 1993/94 season, CPUE has ranged from 24 to 61 meat lb/drg-hr (Table 19). 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.

2005/06 FISHERY

In the Alaska Peninsula Registration Area, the historically important scallop grounds between 160° W long. and 161° W long. were open for a small exploratory fishery with a GHR of 0 to 10,000 lb of scallop meat (Table 19). The GHR for the remainder of the registration area, outside of 160° W long. and 161° W long. was 0 to 10,000 lb of scallop meat, for a total GHR of 0 to 20,000 lb for the area (Table 21).

There was no effort in this fishery during the 2005/06 season (Table 20).

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 22). Large portions of the eastern Bering Sea shelf and the Pribilof Islands Habitat Conservation Area are closed to scallop fishing to protect blue king crab *Paralithodes platypus*, red king crab, juvenile Pacific halibut *Hippoglossus stenolepis*, and to provide for habitat conservation.

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 22). 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 scallop meats. No additional landings were made from this area until calendar year 1993 (January 1-June 30, 1993 and 1993/94 regulatory seasons combined) when 605,953 lb of scallop meats were landed from ten different vessels. During the 1994/95 fishery, 505,439 lb of scallop meats were landed from eight different vessels. The 1995/96 fishery was closed by federal emergency rule which closed all federal waters within Alaska. Between the 1993/94 and 1999/2000 regulatory seasons, scallop catches were constrained by Tanner crab or snow crab CBLs. Over this same time period, catches averaged 127,000 lb of scallop meats per season. Since the 2000/01 season, the Bering Sea fishery has not been constrained by CBLs.

2005/06 FISHERY

The GHR for the Bering Sea Registration Area was set at zero to 50,000 lb of scallop meat (Table 23). One catcher-processor participated in the Bering Sea fishery during December 2005. Inseason observer reports showed that an estimated 16,618 Tanner crabs, 5,532 snow and hybrid crabs, and zero red king crabs were caught from a bycatch limit of 65,000 Tanner crabs, 150,000 snow and hybrid crabs and 500 red king crabs. The 2005/06 fishery closed by regulation on February 15, 2006. The Bering Sea scallop harvest as reported on fish tickets, totaled 23,220 lb of scallop meats (Table 22, 23).

Figure 23 depicts the estimated SH distributions of the retained and discarded scallop catch in the Bering Sea Registration Area, based on statistical resampling of the discarded and retained SH measurements in equal proportion. With exception of the 1998/99 and 2001/02 seasons, there has been little recruitment to the population. Predominately large, old animals support the fishery. Since the 1993/94 season when onboard observers began collecting data, average scallop SH has ranged from 141 mm to 154 mm (Table 16). The 2005/06 average SH of 154 mm is the largest since record keeping began in 1993. Bering Sea scallops are among the largest scallops harvested in the Westward Region.

A summary of the scallop catch in round weight (lb) of retained scallops, scallop meat weight (lb) of retained scallops, dredge hours, and CPUE (meat lb/drg-hr) is depicted in Figure 24. The 2005/06 season CPUE of 39 meat lb/drg-hr was slightly higher than the previous season's CPUE of 36 meat lb/drg-hr, the lowest since onboard data collection was initiated during the 1993/94 season (Table 23).

STOCK STATUS

Experimental scallop video stock assessment research was conducted in May 2003. The video stock assessment survey methodology is in a developmental phase; however, there are some interesting results with regard to scallop distribution in the Bering Sea. Typically, scallop beds in the Gulf of Alaska are elongated, have well defined margins and are oriented in a north-south direction consistent with the prevailing coastal currents. However, the Bering Sea scallop bed does not exhibit those same characteristics. The margins are not well defined; nor is it oriented in a north-south direction. The scallops are distributed over a large area at low densities; however, at least one weathervane scallop was counted from each video tow. This is consistent with the low CPUE in this fishery. Small scale aggregations of weathervane scallops necessary for successful broadcast spawning were infrequently observed on the video. This is consistent with data collected from the onboard observer program.

The 2005/06 harvest of 23,220 lb of scallop meats was double that of the previous season, when the harvest was the lowest since observers began collecting data (Table 23). The highest catch occurred in calendar year 1993 when 605,953 lb of scallop meats were harvested. Calendar year 1993 includes the pre-scallop management plan harvest of 321,539 lb taken from January 1, 1993 – June 30, 1993 and the post-scallop management plan harvest of 284,414 lb beginning July 1, 1993 (recorded as the 1993/94 regulatory season; Table 22).

Since inception of the onboard observer program in July 1993 (1993/94 season), the estimated round weight of the retained scallop catch ranged from 129,220 lb in 2004/05 to 5,942,912 lb in 1994/95 (Table 17).

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 25).

HISTORIC BACKGROUND

In the Dutch Harbor Registration Area, closed waters were established in 1986 to protect crab nursery areas (Figure 25). 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 24). 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 (Table 25). Scallop fishing was limited to state waters during the 1995/96 season because federal waters statewide were closed to scallop fishing by federal emergency rule.

2005/06 FISHERY

The Dutch Harbor Registration Area remained closed for stock conservation.

STOCK STATUS

The Dutch Harbor Registration Area was open one season, 2002/03, out of the last six seasons (Table 24, 25). During that open season one vessel participated, but stopped fishing due to low catches, prior to achieving the upper-end of the GHR. The Dutch Harbor Registration Area may remain closed for up to five years to allow adequate time for juvenile scallops to mature and spawn prior to reopening the fishery under a conservative GHR.

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.- Russia Convention Line of 1867 and south of 55° 30' N. lat. (Figure 26).

HISTORIC BACKGROUND

ADF&G records indicate that weathervane 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 pink scallop *Chlamys* fishery (Figure 26). 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 ADF&G 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.

2005/06 FISHERY

The 2005/06 fishery opened July 1, 2005 and closed by regulation on February 15, 2006. The GHR for the Adak Registration Area was set at zero to 75,000 lb of scallop meat. No vessels participated in the fishery during 2005/06 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 number of vessels, number of landings, and harvest, 1967–2005/06.

Year	Number Vessels	Number Landings ^a	Harvest ^b
1967	2	6	778 ^c
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 ^c
1980	8	56	616,717 ^c
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 ^d
1987	4	54	599,947 ^d
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 ^e	7	51	568,077
1993/94	15	111	984,583
1994/95	15	104	1,229,384 ^d
1995/96	10	29	410,753 ^d
1996/97	9	30	732,424
1997/98	9	31	818,913
1998/99	8	35	820,845
1999/2000	10	22	838,046

-continued-

Table 1.—Page 2 of 2

Year	Number Vessels	Number Landings ^a	Harvest ^b
2000/01	8	20	750,617
2001/02	6	26	572,838
2002/03	6	28	509,455
2003/04	4	32	500,379
2004/05	5	22	431,594
2005/06	4	23	532,741

AVERAGE 1990-1994/95 was 136 deliveries per year. January 1-June 30, 1993 deliveries were combined with 1993/94 deliveries and considered a single year. AVERAGE 1995/96-2002/03 was 28 deliveries per year.

^a Prior to and including 1994/95, reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals number of off-loads. An off-load typically includes multiple fish tickets, normally one fish ticket per week.

^b Pounds of shucked scallop meats.

^c Deliveries of unshucked scallops were converted to shucked meats using a 10% conversion factor.

^d Includes illegal harvest of 59,720 pounds.

^e January 1 through June 30.

Table 2.—Federal and State Weathervane Scallop Permits, 2005/06.

<u>Federal Scallop License Limitation Permits</u>			
<u>License Holder</u>	<u>Vessel Name</u>	<u>MLOA^a</u>	<u>Dredge-Size Restriction</u>
Ocean Fisheries, LLC ^b	Ocean Hunter	102	None
Alaska Scallop, LLC ^c	Provider	96	None
Forum Star, Inc.	Forum Star	97	None
Hogan, Thomas C.	Kilkenny	75	2 scallop dredges combined width less than or equal to 20 feet (6.1m)
Hulse, Max et al.	Wayward Wind	79	2 scallop dredges combined width less than or equal to 20 feet (6.1m)
Gilmartin, Thomas ^d	Arctic Storm	70	None
Provider, Inc	Provider	124	None
Pursuit, Inc	Pursuit	101	None

<u>State Scallop Limited Entry Vessel Permits^e</u>			
<u>License Holder</u>	<u>Vessel Name</u>	<u>Vessel Length</u>	<u>Permitted Vessel Size</u>
Ocean Fisheries, LLC	Ocean Hunter	102	Over 80'
Provider, Inc	Provider	123	Over 80'
Carolina Boy, Inc	Carolina Boy	95	Over 80'
Forum Star, LLC	Forum Star	96	Over 80'
Future Fisheries	Pursuit	101	Permit Cancelled
La Brisa, Inc	Wayward Wind	79	80' or less
Hogan, Thomas C.	Kilkenny	75	80' or less
Gilmartin, Thomas	Arctic Storm	57	80' or less

^a Maximum length overall measured in feet

^b Original permit holder was Carolina Boy, Inc.

^c Original permit holder was Carolina Girl, Inc.

^d Original permit holder was Oceanic Research Services

^e State limited entry vessel permits do not have gear restrictions.

Gear restrictions are contained in Alaska Administrative Code Chapter 38.

Table 3.—Crab bycatch limits by registration area and district, in percent of the crab abundance estimate or number of crab.

Scallop Registration Areas	Red King Crab	Tanner Crab	Snow Crab
Yakutat (D)			
District 16	a	a	NA
Remainder of Area D	a	a	NA
Prince William Sound (E)			
Eastern Section of outside District	a	East = 2,700; West = 8,700	NA
Cook Inlet (H)			
Kamishak District	60 crabs ^b	0.5%	NA
Outer/Easter/Barren Island Districts	a	a	NA
Kodiak (K)			
Northeast District	0.5% or 1.0%	0.5% or 1.0%	NA
Shelikof District	0.5% or 1.0%	0.5% or 1.0%	NA
Semidi District	Regulated inseason	Regulated inseason	NA
Alaska Peninsula (M)	0.5% or 1.0%	0.5% or 1.0%	NA
Bering Sea (Q)	500 crabs ^b	3 Tier Approach	3 Tier Approach
Dutch Harbor (O)	0.5% or 1.0%	0.5% or 1.0%	NA
Adak (R)	50 ^c	10,000 ^c	NA

^a Bycatch caps not established.

^b Based on 0.5% of the Tanner crab population estimated from the 2000 scallop assessment survey

^c Bycatch limit set to allow scallop fleet opportunity to explore and harvest scallop stocks while protecting the crab resource.

NA = Not applicable

Table 4.— Historic commercial catch, effort, and value of weathervane scallops, Yakutat, Area D, 1969–2005/06.

Season	Number Vessels	Number Landings ^a	Commercial	Average	First Wholesale		
			Catch (lb) ^b	Landing (lb) ^c	Average Price/lb	Est. Value (dollars)	Number Tows ^d
1969	14	59	837,087	14,188	0.85	711,524	e
1970	2	2	22,726	11,363	1.00	22,726	e
1971	3	10	84,948	8,475	1.05	89,195	e
1972	4	6	128,241	21,374	1.15	147,477	e
1973	4	4	173,700	43,425	1.20	208,440	e
1974	2	15	356,493	23,766	1.30	463,441	e
1975	6	11	122,853	11,168	1.40	171,994	e
1976	6	15	189,543	12,636	1.59	301,373	e
1977	2	3	22,121	7,374	e	e	e
1978				No Effort			
1979	1	1	30	30	2.78	83	e
1980	6	22	255,667	18,262	3.60	920,401	e
1981	10	36	455,858	12,663	4.00	1,823,432	e
1982	6	26	181,939	7,015	3.25	591,302	e
1983				No Effort			
1984	2			Confidential			
1985	2			Confidential			
1986	2			Confidential			
1987	1			Confidential			
1988	1			Confidential			
1989	1			Confidential			
1990	8	48	428,046	8,918	3.43	1,468,198	3,203
1991	5	55	402,571	7,319	3.82	1,537,821	3,849
1992	7	60	1,063,838	17,731	3.96	4,212,798	8,023
1993 ^f	5	7	122,770	17,539	5.15	632,266	1,039
1993 ^g	8	9	141,423	15,714	5.15	728,328	1,160
1994	11	18	253,060	14,059	5.79	1,465,217	2,096
1995	10	18	242,491	13,472	e	e	2,597
1996	4	15	238,736	15,916	6.30	1,504,037	2,102
1997	4	8	242,940	30,368	6.50	1,579,110	1,958
1998/99	8	49	241,678	4,932	6.40	1,546,739	2,193
1999/2000	3	22	249,681	11,349	6.25	1,560,506	1,720
2000/01	3	34	195,699	5,756	5.50	1,076,345	2,111

-continued-

Table 4.—page 2 of 2.

Season	Number Vessels	Number Landings ^a	Commercial	Average	First Wholesale		
			Catch (lb) ^b	Landing (lb) ^c	Average Price/lb	Est. Value (dollars)	Number Tows ^d
2001/02	2 ^h	20	103,800	5,190	5.50	570,900	1,096
2002/03	2 ^h	20	122,718	6,136	5.20	638,134	1,243
2003/04	2 ^h	23	160,918	6,996	5.25	844,820	1,716
2004/05	2 ^h	16	86,950	5,434	5.50	478,225	1,194
2005/06	2 ^h	38	199,351	5,246	8.50	1,694,484	2,585

^a Reported number of landings equals number of fish tickets.

^b Pounds of scallop meats as reported on fish tickets.

^c Pounds of scallop meats.

^d July 1, 1993-2005/06, number of tows are from vessel logbook data contained in the observer database.

^e Not available.

^f January 1, 1993-June 30, 1993, prior to onboard observer requirement.

^g July 1, 1993-December 31, 1993.

^h Confidential data voluntarily released by vessel operators.

Table 5.—Historic commercial catch, effort, and value of weathervane scallops, Yakutat, District 16, 1980–2005/06.

Season	Number Vessels	Number Landings ^a	Commercial	Average	First Wholesale		
			Catch (lb) ^b	Landing (lb) ^c	Average Price/lb	Est. Value (dollars)	Number Tows ^d
1980	2	2	5,850	2,925	e	e	e
1981	1	1	7,693	7,693	e	e	e
1982	2	3	26,915	8,972	e	e	e
1983	1			Confidential			
1984	2			Confidential			
1985				No Effort			
1986				No Effort			
1987				No Effort			
1988				No Effort			
1989				No Effort			
1990	4	9	162,888	18,099	3.43	558,706	718
1991	3	9	39,817	4,424	3.82	152,101	665
1992	2			Confidential			
1993 ^f	1			Confidential			
1993	1			Confidential			
1994	8	10	27,613	2,761	5.79	159,879	241
1995	7	8	33,302	4,163	e	e	599
1996	2 ^g	4	34,060	8,515	6.30	214,578	554
1997	4	5	22,890	4,578	6.50	148,785	299
1998/99	3	6	34,153	5,692	6.40	218,579	359
1999/2000	2 ^g	5	34,624	6,925	6.25	216,400	291
2000/01	3	11	30,904	2,809	5.50	169,972	244
2001/02	2 ^g	7	20,398	2,914	5.50	112,189	193
2002/03	2 ^g	3	3,685	1,228	5.20	19,162	55
2003/04	2 ^g	2	1,072	536	5.25	5,628	12
2004/05	2 ^g	6	24,430	4,072	5.50	134,365	213
2005/06	2 ^g	4	13,650	3,413	8.50	116,025	197

^a Reported number of landings equals number of fish tickets.

^b Pounds of shucked scallop meats as reported on fish tickets.

^c Pounds of shucked scallop meats.

^d 1994-2005/06, number of tows are from vessel operator logbook/observer database.

^e Not available.

^f January 1, 1993-June 30, 1993, prior to onboard observer requirement.

^g Confidential data voluntarily released by vessel operators.

Table 6.–Yakutat, District 16 scallop fishery summary statistics, 1993–2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Commercial Catch (lb meat) ^c	CPUE (lb meat per dredge hr)	Estimated round weight of scallop catch	CPUE (Estimated round weight of scallops per dredge hr)	Average Shell Height ^d
1993	1	35,000				Confidential		
1994	7 ^e	35,000	408	27,613	68	239,867	587	147 ^f /151 ^g
1995	6 ^e	35,000	1,095	33,302	30	447,469	409	132
1996	2 ^h	35,000	917	34,060	37	422,064	460	126 ^f /133 ^g
1997	4	35,000	561	22,890	41	265,882	474	128
1998/99	3	35,000	702	34,153	49	384,286	547	123
1999/2000	2 ^h	35,000	674	34,624	51	292,625	434	125
2000/01	3	35,000	476	30,904	65	310,370	652	118
2001/02	2 ^h	35,000	417	20,398	49	245,319	588	119
2002/03	2 ^h	35,000	100	3,685	37	60,928	609	120
2003/04	2 ^h	35,000	18	1,072	59	16,780	839	121
2004/05	2 ^h	35,000	419	24,430	58	326,228	780	120
2005/06	2 ^h	35,000	407	13,650	34	209,487	515	119

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Average scallop shell heights (SH) in mm.

^e One additional vessel fished by waiver without an observer; data not included.

^f Winter season.

^g Summer season.

^h Confidential data voluntarily released by vessel operator.

Table 7.—Yakutat, Area D scallop fishery summary statistics, 1993–2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Commercial Catch (lb meat) ^c	CPUE (lb meat per dredge hr)	Estimated round weight of scallop catch	CPUE (Estimated round weight of scallops per dredge hr)	Average Shell Height ^d
1993 ^e	7 ^f	250,000	1,999	141,423	71	2,082,824	1,042	118
1994	10 ^f	250,000	4,130	253,060	61	3,337,283	808	121 ^g /122 ^h
1995	8 ⁱ	250,000	4,730	242,491	51	3,214,968	680	124
1996	4	250,000	4,438	238,736	54	3,195,254	720	121 ^g /122 ^h
1997	4	250,000	3,956	242,940	61	3,282,860	830	119
1998/99	8	250,000	4,192	241,678	58	3,475,996	829	123
1999/2000	3	250,000	3,840	249,681	65	3,119,103	812	124
2000/01	3	250,000	4,241	195,699	46	2,734,559	645	123
2001/02	2 ^j	200,000	2,406	103,800	43	1,521,537	632	121
2002/03	2 ^j	200,000	2,439	122,718	50	1,541,867	632	123
2003/04	2 ^j	200,000	3,358	160,918	48	1,939,004	577	126
2004/05	2 ^j	200,000	2,134	86,950	41	1,262,499	592	124
2005/06	2 ^j	200,000	5,089	199,351	39	2,662,031	523	123

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Average scallop shell height (SH) in mm.

^e July 1, 1993-December 31, 1993, after onboard observer requirement.

^f One additional vessel fished by waiver without an observer; data not included.

^g Winter season.

^h Summer season.

ⁱ Two additional vessels fished by waiver without observers; data not included.

^j Confidential data voluntarily released by vessel operators.

Table 8.—Historic commercial catch, effort, and value of weathervane scallops, Prince William Sound Registration Area, 1992–2005/06.

Season	Number Vessels	Number Landings ^a	Commercial	Average	First Wholesale		
			Catch (lb) ^b	Landing (lb) ^c	Average Price/lb	Est. Value (dollars)	Number Tows ^d
1992	4	14	208,836	52,209	3.96	826,991	1,925
1993 ^e			No Effort				
1993 ^f	7	7	63,068	9,009	5.15	324,800	379
1994/95	Season closed due to regulatory change						
1995/96	3	5	108,000 ^g	21,600 ^h		^h	243
1996/97	Season closed due to overharvest in 1995/96 from illegal fishing						
1997/98	1 ⁱ	1	18,000	18,000	6.50	117,000	99
1998/99	2 ⁱ	2	19,650	9,825	6.40	125,760	104
1999/2000	2 ⁱ	2	20,410	10,205	6.25	127,562	65
2000/01	3	8	30,266	3,783	5.50	166,463	201
2001/02	1 ⁱ	7	30,090	4,299	5.50	165,495	138
2002/03	2 ⁱ	5	15,641	3,128	5.20	81,333	150
2003/04	1 ⁱ	4	19,980	4,995	5.25	104,895	114
2004/05	2 ⁱ	6	49,320	8,220	5.50	271,260	336
2005/06	3	9	49,205	5,467	8.50	418,242	549

^a Reported number of landings equals number of fish tickets.

^b Pounds of scallop meats as reported on fish tickets.

^c Pounds of scallop meats.

^d July 1, 1993-2005/06, number of tows are from vessel logbook data contained in the observer database.

^e January 1, 1993-June 30, 1993, prior to onboard observer requirement.

^f July 1, 1993-December 31, 1993.

^g Catch includes illegal harvest by one vessel; effort data not available for that vessel.

^h Not available.

ⁱ Confidential data voluntarily released by vessel operators.

Table 9.—Prince William Sound Registration Area scallop fishery summary statistics, 1992–2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Commercial Catch (lb meat) ^c	CPUE (lb meat per dredge hr)	Estimated round weight of scallop catch	CPUE (Estimated round weight of scallops per dredge hr)	Average Shell Height ^d
1992 ^e	4	^f	^g	208,836	^g	^g	^g	^g
1993 ^h	1				No Effort			
1993 ⁱ	7	50,000	638	63,068	99	850,718	1,333	124
1994/95				Season closed due to regulatory change				
1995/96	3	50,000	^j	108,000 ^k	^j	^j	^j	125
1996/97				Season closed due to overharvest in 1995/96 from illegal fishing				
1997/98	1 ^l	17,200	171	18,000	105	257,230	1,504	123
1998/99	2 ^l	20,000	179	19,650	110	334,152	1,867	132
1999/2000	2 ^l	20,000	149	20,410	137	211,140	1,417	132
2000/01	3	30,000	221	30,266	137	361,032	1,634	131
2001/02	1 ^l	30,000	263	30,090	114	511,761	1,946	136
2002/03	2 ^l	20,000	122	15,641	121	231,140	1,895	131
2003/04	1 ^l	20,000	216	19,980	93	261,720	1,212	136
2004/05	2 ^l	50,000	614	49,320	80	407,617	664	134
2005/06	3	50,000	491	49,205	100	818,741	1,667	131

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Average scallop shell height (SH) in mm.

^e Prior to onboard observer requirement.

^f Not established.

^g Not available.

^h January 1, 1993-June 30, 1993, prior to onboard observer requirement.

ⁱ July 1, 1993-December 31, 1993

^j Confidential.

^k Catch includes illegal harvest by one vessel.

^l Confidential data voluntarily released by vessel operators.

Table 10.—Assigned ages of weathervane scallops from research surveys at Kayak Island, Prince William Sound Management Area, 1996-2004.

Year	Bed	Number Aged	Number of scallops at age (years) ^a															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16+
1996	East	5,050	198	7	13	115	24	149	682	1,609	1,844	177	72	66	31	25	12	26
1998	East	2,564	290	8	12	3	11	15	37	77	405	707	529	175	113	59	65	58
1998	West	2,953	47	8	40	42	144	264	277	392	687	598	312	63	45	13	9	12
2000	East	5,240	418	58	165	94	25	28	71	123	203	791	1,339	1,090	566	114	109	46
2000	West	9,701	32	43	140	69	101	186	513	899	1,467	1,607	2,196	1,835	494	61	17	41
2002	East	697	4	34	10	12	19	7	1	6	3	33	43	123	126	161	100	15
2002	West	3,168	7	8	6	19	124	28	63	105	111	353	588	601	619	378	129	29
2004	East	593	12	24	12	53	54	12	19	9	13	24	29	42	60	63	85	82
2004	West	465	57	26	3	5	14	3	9	5	22	23	50	57	63	57	33	38

^a Survey ages were assigned to all measured scallops using a height-at-age matrix developed from aged shells, except for scallops in 2004. Scallops in 2004 are only those that were aged.

Table 11.—Historic commercial catch, effort, value of weathervane scallops, Cook Inlet Registration Area, 1983–2005.

Season	Number Vessels	Number Landings ^a	Commercial Catch (lb) ^b	Estimated deadloss discarded at sea (lb) ^c	Average Landing (lb) ^d	Average Price/lb	Est. Value (dollars)	Number Tows
1983				Confidential				
1984	3	9	6,305	^e	701	3.64	22,950	^e
1985				Confidential				
1986	3	12	15,364	^e	1,280	6.34	97,408	^e
1987				Confidential				
1988				No Effort				
1989				No Effort				
1990				No Effort				
1991				No Effort				
1992				No Effort				
1993	3	15	20,115	^e	1,341	4.63	93,132	543
1994	4	11	20,431	^e	1,857	5.85	119,521	467
1995			Federal waters closed - no effort in State waters					
1996	5	21	28,228	^e	1,344	7.00	197,596	514
1997	3	10	20,336	^e	2,034	6.16	125,270	^e
1998				Confidential				
1999	3	14	20,086	229	1,435	7.82	157,072	304
2000	3	5	20,030	486	4,006	3.94	78,918	249
2001				Confidential				
2002	3	5	8,383	208	1,677	6.39	53,567	219
2003				Confidential				
2004	3	6	5,891	226	982	9.58	56,436	180
2005				Confidential				

^a Reported number of landings equals number of fish tickets.

^b Pounds of scallop meats as reported on fish tickets.

^c Estimated pounds of scallop meats based on an estimate of broken-shell scallops discarded at sea, not included in Commercial Catch column.

^d Pounds of scallop meats.

^e Not available.

Table 12.—Cook Inlet Registration Area scallop fishery summary statistics, 1993–2005.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^{c,d}	Estimated deadloss discarded at sea (lb meat) ^e	CPUE (lb meat per dredge hr)
1993	3	f	529	20,115	e	38
1994	4	f	454	20,431	e	45
1995		Federal waters closed, no effort in State waters				
1996	5	28,000	534	28,228	e	53
1997	3	20,000	394	20,336	e	52
1998	1	20,000			Confidential	
1999	3	20,000	333	20,086	229	60
2000	3	20,000	276	20,030	486	73
2001	2	20,000			Confidential	
2002	3	20,000	311	8,383	208	27
2003	2	20,000			Confidential	
2004	3	20,000	364	5,891	226	16
2005	2	7,000			Confidential	

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Does not include estimated deadloss discarded at sea.

^d Pounds of scallop meats as reported on fish tickets.

^e Estimated pounds of scallop meats based on an estimate of broken-shell scallops discarded at sea.

^f Not available.

Table 13.—Assigned ages of weathervane scallops from research surveys in Kamishak Bay, Cook Inlet Management Area, 1984-2005.

Year	Heights		No.Aged	Number of scallops at age (years) ^a																	
	No. measured	Mean (mm)		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18+
1984	1,989	not calculated	1,999	256	302	787	91	3	13	82	65	18	41	62	99	86	58	18	15	2	1
1996	1,942	120.6	798	769	227	846	948	341	70	129	197	231	316	473	692	507	178	74	38	55	83
1998	2,770	139.8	323	32	69	481	381	306	360	236	123	62	87	89	99	155	105	95	44	16	30
1999	7,424	144.3	565	250	154	272	1,228	781	1,090	713	396	183	282	288	302	464	352	322	167	66	114
2001	5,402	153.3	588	60	129	201	110	156	1,128	364	825	443	323	152	252	321	242	245	217	138	96
2003-North	1,874	144.6	518	105	145	52	81	69	82	150	250	193	125	84	100	130	127	59	44	47	20
2003-South	3,388	136.6	552	306	568	115	345	187	147	208	416	307	248	311	219	146	329	326	344	213	225
2005-North	2,234	149.0	600	22	63	134	273	88	128	92	189	291	334	270	152	116	68	87	59	76	74
2005-South	2,194	110.5	420	131	838	189	295	80	88	51	62	80	87	81	85	65	40	59	58	54	85

^a In the 1984 survey all scallops caught less 4" (age1-3) were aged, with up to 20 greater than 4" (age 4 and older) shells per tow were aged. Between 1996-2005 surveys ages were assigned to all measured scallops using height-at-size matrix developed from aged shells.

Table 14.—Historic commercial catch, effort, and value of weathervane scallops, Kodiak Registration Area, 1967–2005/06.

Year	Number Vessels	Number Landings ^a	Commercial	Average	First Wholesale		
			Catch (lb) ^b	Landing (lb) ^b	Average Price/lb	Est. Value (dollars)	Number Tows
1967 ^c	2	6	778	130	0.70	545	^d
1968 ^c	8	89	734,084	8,248	0.85	623,971	^d
1969	11	86	1,012,860	11,777	0.85	861,000	^d
1970	7	102	1,417,612	13,898	1.00	1,500,000	^d
1971	5	48	841,211	17,525	1.05	883,000	^d
1972	5	68	1,038,793	15,276	1.15	1,200,000	^d
1973	4	42	935,705	22,279	1.20	1,123,000	^d
1974	3	14	147,945	10,568	1.30	192,000	^d
1975	3	29	294,142	10,143	1.40	412,000	^d
1976	1	6	75,245	12,541	1.59	119,000	^d
1977				No Effort			
1978				No Effort			
1979	1	4	24,826	6,206	2.78	69,000	^d
1980 ^c	7	33	355,200	10,763	3.60	1,278,720	^d
1981	15	62	439,804	7,094	4.00	1,759,216	^d
1982	8	62	435,645	7,026	3.25	1,416,000	^d
1983	4	24	147,747	6,156	5.00	739,000	^d
1984	7	37	309,502	8,365	4.00	1,238,000	^d
1985	3	10	46,971	4,697	4.00	188,000	^d
1986	5	21	180,600	8,600	4.25	767,550	^d
1987	3	25	253,451	10,138	3.45	874,406	^d
1988	3	21	195,811	9,324	3.68	720,584	^d
1989	5	29	242,557	8,364	3.87	938,696	^d
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 ^{e,f}	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				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

-continued-

Table 14.-Page 2 of 2

Year	Number Vessels	Number Landings ^a	Commercial	Average	First Wholesale		
			Catch (lb) ^b	Landing (lb) ^b	Average Price/lb	Est. Value (dollars)	Number Tows
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
2003/04	2 ^g	13	259,976	19,998	5.25	1,364,874	2,397
2004/05	2 ^g	9	254,727	28,303	5.50	1,400,998	2,454
2005/06	3	12	239,931	19,994	5.50	1,319,620	2,101

^a 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.

^b Pounds of scallop meats as reported on fish tickets.

^c Deliveries of unshucked scallops were converted to scallop meats using a 10% conversion factor.

^d Not available.

^e January 1-June 30.

^f Includes harvest from exploratory fishery.

^g Confidential data voluntarily released by vessel operators.

Table 15.—Kodiak Registration Area, Northeast District, scallop fishery summary statistics, 1993/94-2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^c	CPUE (lb meat per dredge hr)
1993/94	10	^d	6,940	155,122	22
1994/95	7	^d	1,773	35,207	20
1995/96			Closed		
1996/97	3	^d	581	11,430	20
1997/98	3	^d	2,604	95,858	37
1998/99	4	^d	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 ^e	80,000	1,350	80,000	59
2003/04	2 ^e	80,000	1,248	79,965	64
2004/05	2 ^e	80,000	1,227	80,105	65
2005/06	3	80,000	1,759	79,990	45

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e Confidential data voluntarily released by vessel operators.

Table 16.—Commercial harvest, average shell height from retained catch, and catch per unit effort from observer data, Westward Region, 1993/94–2005/06.

Year	REGISTRATION AREA/DISTRICT ^a																			
	Kodiak Area									Alaska Peninsula			Bering Sea			Dutch Harbor				
	Northeast District			Shelikof District			Semidi District			Harvest ^b	SH ^c	CPUE ^d	Harvest ^b	SH ^c	CPUE ^d	Harvest ^b	SH ^c	CPUE ^d	Harvest ^b	SH ^c
1993/94	155,122	144	22	105,017	128	42	55,487	145	32	112,152	119	61	284,414	146	49	38,731	128	46		
1994/95	35,207	151	20	313,741	131	36	^e	153	^e	65,282	127	39	505,439	147	45	1,931	158	24		
1995/96	Closed			Closed			Closed			Closed			Closed			26,950	134	26		
1996/97	11,430	144	20	219,305	136	63	37,810	154	37	12,560	126	38	150,295	147	65	No Effort				
1997/98	95,858	140	37	258,346	139	47	6,135	147	18	51,616	135	29	97,002	151	43	5,790	127	34		
1998/99	120,010	127	44	179,870	137	44	1,720	151	16	63,290	128	39	96,795	147	42	46,432	128	45		
1999/2000	77,119	131	56	187,963	130	44	930	152	21	75,610	124	37	164,929	145	50	6,465	134	24		
2000/01	79,965	135	73	180,087	134	62	No Effort			7,660	119	24	205,520	142	61	Closed				
2001/02	80,470	140	70	177,112	140	52	No Effort			Closed			140,871	141	46	Closed				
2002/03	80,000	140	59	180,580	138	48	No Effort			Closed			92,240	149	45	6,000	133	33		
2003/04	79,965	145	64	180,011	135	55	No Effort			No Effort			42,590	148	42	Closed				
2004/05	80,105	144	65	174,622	137	50	No Effort			No Effort			10,050	144	36	Closed				
2005/06	79,990	139	45	159,941	136	70	No Effort			No Effort			23,220	154	39	Closed				

^a Confidential data voluntarily released by vessel operators.
^b Harvest in pounds of scallop meats.
^c Average scallop shell height (SH) in mm.
^d Catch per unit effort (CPUE) in pounds of scallop meats per dredge hour.
^e Confidential.

Table 17.—Estimated round weight of the retained commercial scallop catch and catch per unit effort, Westward Region, 1993/94–2005/06.

REGISTRATION AREA/DISTRICT ^a													
Kodiak Area													
Year	Northeast District		Shelikof District		Semidi District		Alaska Peninsula		Bering Sea		Dutch Harbor		Total
	Harvest ^b	CPUE ^c	Harvest ^b	CPUE ^c	Harvest ^b	CPUE ^c	Harvest ^b	CPUE ^c	Harvest ^b	CPUE ^c	Harvest ^b	CPUE ^c	Harvest ^b
1993/94	2,214,427	319	1,169,664	467	579,836	319	1,061,925	575	3,447,681	598	432,970	517	8,906,503
1994/95	389,202	220	3,522,517	404	^d	^d	619,473	372	5,942,912	535	23,590	291	10,497,694
1995/96	Closed		Closed		Closed		Closed		Closed		289,398	276	289,398
1996/97	147,269	253	1,878,268	537	288,117	283	130,235	398	1,432,160	619	No Effort		3,876,049
1997/98	1,143,926	439	3,101,152	565	61,320	176	654,960	374	1,082,825	482	55,725	326	6,099,908
1998/99	1,365,836	497	2,129,025	522	15,806	149	617,120	383	1,193,071	514	427,422	417	5,748,280
1999/2000	952,972	689	1,903,345	442	11,310	253	781,596	386	1,851,620	562	68,070	249	5,568,913
2000/01	681,192	619	1,768,376	608	No Effort		95,510	299	2,376,601	708	Closed		4,921,679
2001/02	822,110	720	1,830,265	539	No Effort		Closed		1,700,578	554	Closed		4,352,953
2002/03	871,918	646	1,857,466	489	No Effort		Closed		952,958	468	59,116	322	3,741,458
2003/04	747,517	600	1,724,498	529	No Effort		No Effort		537,552	527	Closed		3,009,567
2004/05	848,527	692	1,641,608	473	No Effort		No Effort		129,220	470	Closed		2,619,355
2005/06	831,378	473	1,454,806	638	No Effort		No Effort		231,700	385	Closed		2,517,884

^a Confidential data voluntarily released by vessel operators.

^b Harvest in pounds of round scallops.

^c Catch per unit effort (CPUE) in estimated round weight of retained scallops per dredge-hour.

^d Confidential.

Table 18.—Kodiak Registration Area, Shelikof District, scallop fishery summary statistics, 1993/94–2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^c	CPUE (lb meat per dredge hr)
1993/94	5	d	2,491	105,017	42
1994/95	11	d	8,662	314,051	36
1995/96			Closed		
1996/97	3 ^e	d	3,491	219,305	63
1997/98	4	d	5,492	258,346	47
1998/99	8	d	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
2003/04	2 ^f	180,000	3,258	180,011	55
2004/05	2 ^f	180,000	3,467	174,622	50
2005/06	2 ^f	160,000	2,280	159,941	70

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e One additional vessel fished but data are not available.

^f Confidential data voluntarily released by vessel operators.

Table 19.—Kodiak Registration Area, Semidi Island District, scallop fishery summary statistics, 1993/94–2004/05.

Season	GHR				
	Number vessels	ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^c	CPUE (lb meat per dredge hr)
1993/94	6 ^d	e	1,819	55,487	32
1994/95	2	e	272	Confidential	
1995/96				Closed	
1996/97	3	e	1,017	37,810	37
1997/98	1 ^f	e	349	6,135	18
1998/99	2 ^f	e	106	1,720	16
1999/2000	1 ^f	e	45	930	21
2000/01		e		No Effort	
2001/02		e		No Effort	
2002/03		e		No Effort	
2003/04		e		No Effort	
2004/05		e		No Effort	
2005/06		e		No Effort	

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Two additional vessels registered but did not fish.

^e Not established.

^f Confidential data voluntarily released by vessel operators.

Table 20.—Historic commercial catch, effort and value of weathervane scallops, Alaska Peninsula Registration Area, 1975–2005/06.

Year	Number Vessels	Number Landings ^a	Commercial	Average	Average Price/lb	First Wholesale	Number Tows
			Catch (lb) ^b	Landing (lb) ^b		Est. Value (dollars)	
1975	1	1	2,508	2,508	1.40	3,511	^c
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	^c
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 ^d			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 ^e	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
1999/2000	5	5	75,610	15,122	6.25	472,563	1,107
2000/01	3	3	7,660	2,553	5.50	42,130	189
2001/02			Closed				
2002/03			Closed				
2003/04			No Effort				
2004/05			No Effort				
2005/06			No Effort				

-continued-

Table 20.—Page 2 of 2

^a Prior to 1995/96, the reported number of landings equals number of fish tickets. After 1995/96, the reported number of landings equals number of offloads.

^b Pounds of scallop meats.

^c Not available.

^d January 1-June 30.

^e Confidential data voluntarily released by vessel operators.

Table 21.—Alaska Peninsula Registration Area scallop fishery summary statistics.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^c	CPUE (lb meat per dredge hr)
1993/94	8	^d	1,847	112,152	61
1994/95	7	^d	1,664	65,282	39
1995/96			Closed		
1996/97 ^e	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	75,610	37
2000/01	3	33,000	320	7,660	24
2001/02			Closed		
2002/03			Closed		
2003/04 ^f		10,000	No Effort		
2004/05 ^f		10,000	No Effort		
2005/06 ^g		20,000	No Effort		

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e Confidential data voluntarily released by vessel operators.

^f The area between 160° W long. and 161° W long. was closed. The remainder of the registration area was open to fishing.

^g The area between 160° W long. and 161° W long. was open for 0 to 10,000 pounds. The remainder of the district was open to an additional 0 to 10,000 pounds.

Table 22.—Historic commercial catch, effort and value of weathervane scallops, Bering Sea Registration Area, 1987–2006/07.

Year	Number Vessels	Number Landings ^a	Commercial Catch (lb) ^b	Average Landing (lb) ^b	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 ^c	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				Closed			
1996/97	1 ^e	2	150,295	75,147	^d	^d	952
1997/98	2 ^e	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 ^e	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 ^e	5	92,240	18,448	5.20	479,648	1,012
2003/04	2 ^e	3	42,590	14,197	5.25	223,597	517
2004/05	2 ^e	2	10,050	5,025	5.25	52,762	145
2005/06	1 ^e	1	23,220	23,220	8.50	197,370	303

^a 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.

^b Pounds of scallop meats.

^c January 1- June 30.

^d Not available.

^e Confidential data voluntarily released by vessel operators.

Table 23.—Bering Sea Registration Area scallop fishery summary statistics, 1993/94–2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^c	CPUE (lb meat per dredge hr)
1993/94	9	^d	5,764	284,414	49
1994/95	8	^d	11,113	505,439	45
1995/96			Closed		
1996/97	1 ^e	600,000	2,313	150,295	65
1997/98	2 ^e	600,000	2,246	97,002	43
1998/99	4	400,000	2,319	96,795	42
1999/2000	2 ^e	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 ^e	105,000	2,038	92,240	45
2003/04	2 ^e	105,000	1,020	42,590	42
2004/05	1 ^e	50,000	275	10,050	37
2005/06	1 ^e	50,000	602	23,220	39

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Not established.

^e Confidential data voluntarily released by vessel operators.

Table 24.—Historic commercial catch, effort, and value of weathervane scallops, Dutch Harbor Registration Area, 1982–2005/06.

Year	Number Vessels	Number Landings ^a	Commercial Catch (lb) ^b	Average Landings (lb) ^b	Average Price/lb	First Wholesale Est. Value (dollars)	Number Tows ^c
1982	5	8	62,105	7,763	3.11	193,147	^c
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	38,731	6,558	5.15	199,465	572
1994/95	3	3	1,931	644	5.79	11,180	52
1995/96	1 ^d	2	26,950	13,475	^c	^c	747
1996/97				No Effort			
1997/98	1 ^d	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 ^d	1	6,465	6,465	6.25	40,500	167
2000/01				Closed			
2001/02				Closed			
2002/03	1 ^d	1	6,000	6,000	5.20	31,200	115
2003/04				Closed			
2004/05				Closed			
2005/06				Closed			

^a 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.

^b Pounds of scallop meats.

^c Not available.

^d Confidential data voluntarily released by vessel operators.

Table 25.—Dutch Harbor Registration Area scallop fishery summary statistics, 1993/94–2005/06.

Season	Number vessels	GHR ceiling (lb meat) ^a	Dredge hours ^b	Catch (lb meat) ^c	CPUE (lb meat per dredge hr)
1993/94	3	170,000	838	38,731	46
1994/95	3	170,000	81	1,931	24
1995/96	1 ^d	170,000	1,047	26,950	26
1996/97		170,000		No Effort	
1997/98	1 ^d	170,000	171	5,790	34
1998/99	4	110,000	1,025	46,432	45
1999/2000	1 ^d	110,000	273	6,465	24
2000/01				Closed	
2001/02				Closed	
2002/03	1 ^d	10,000	184	6,000	33
2003/04				Closed	
2004/05				Closed	
2005/06				Closed	

^a Pounds of scallop meats.

^b Dredge-hour is one dredge fished for 60 minutes.

^c Pounds of scallop meats as reported on fish tickets.

^d Confidential data voluntarily released by vessel operators.

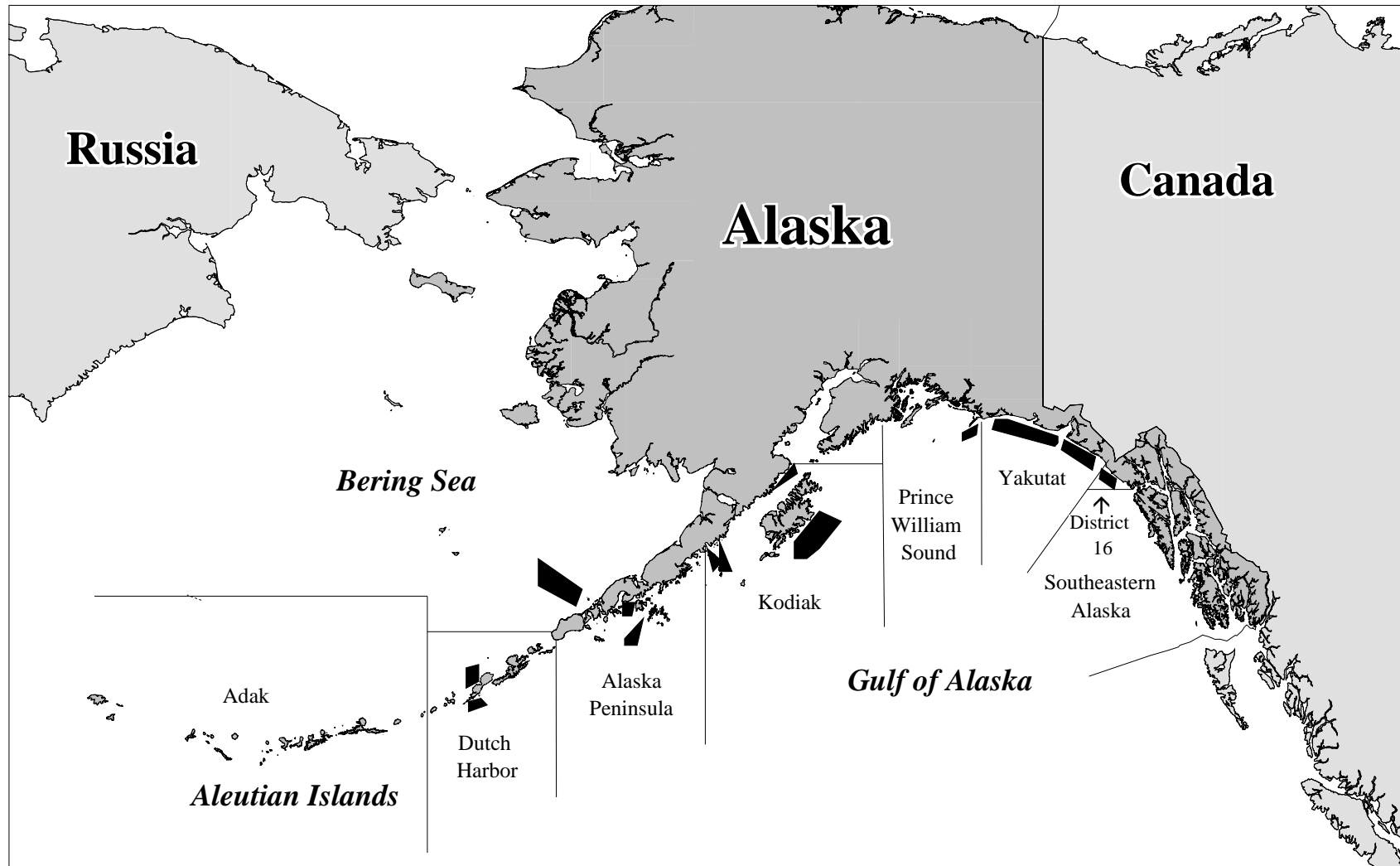


Figure 1.—Major weathervane scallop fishing locations in coastal waters of Alaska.

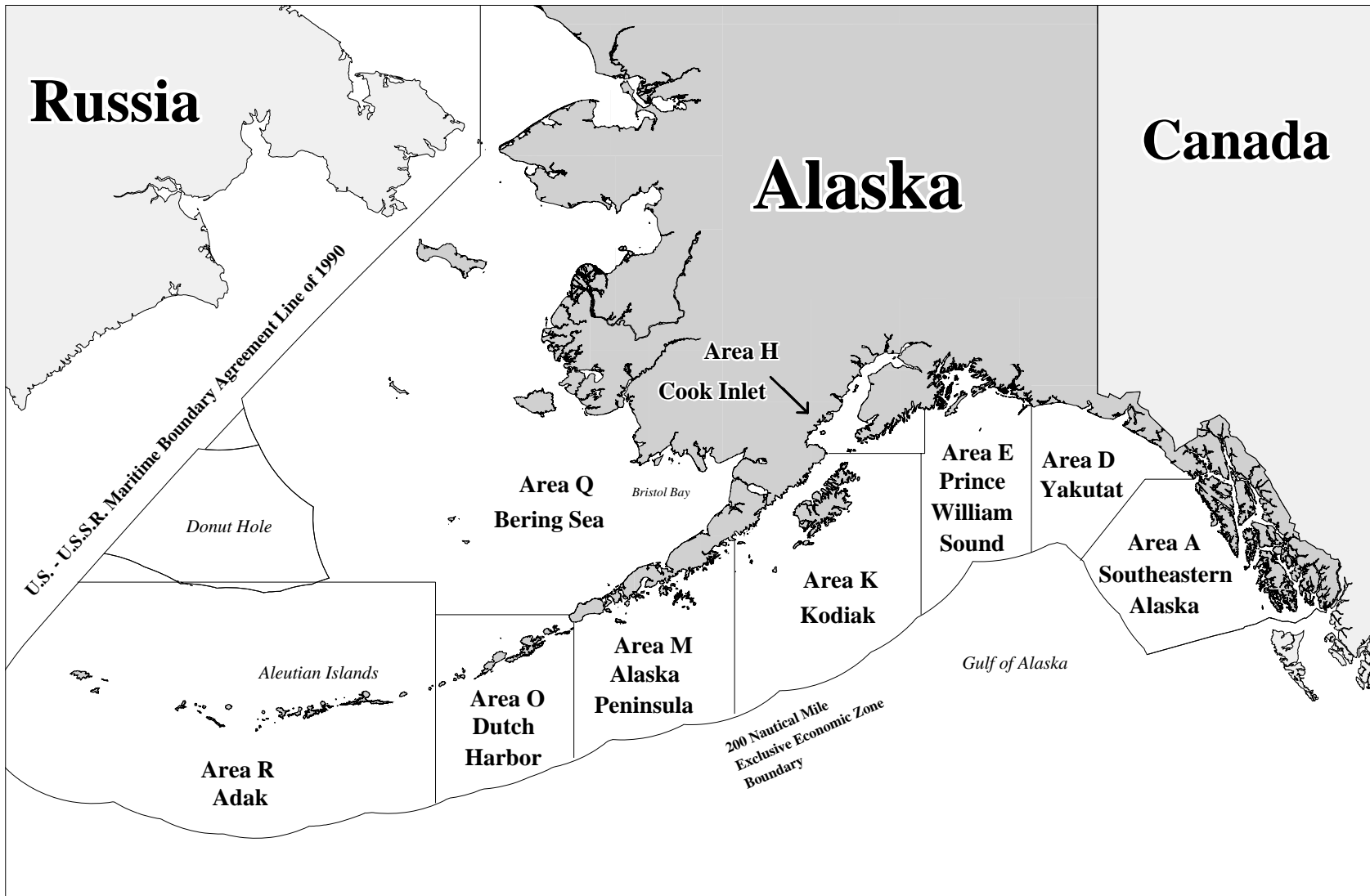


Figure 2.—State of Alaska weathered scallop fishing registration areas.

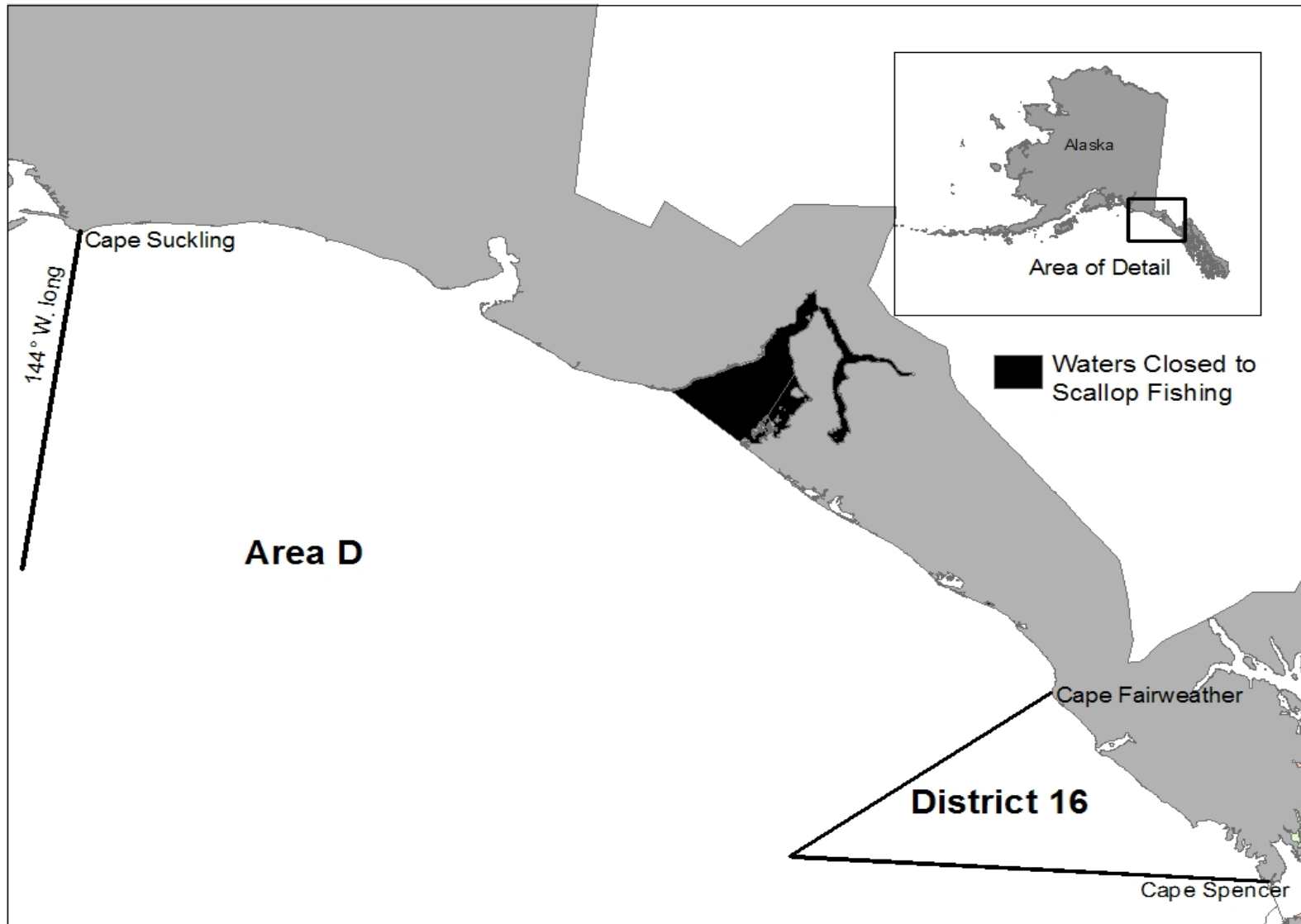


Figure 3.–Yakutat weathervane scallop fishing registration area and closed waters.

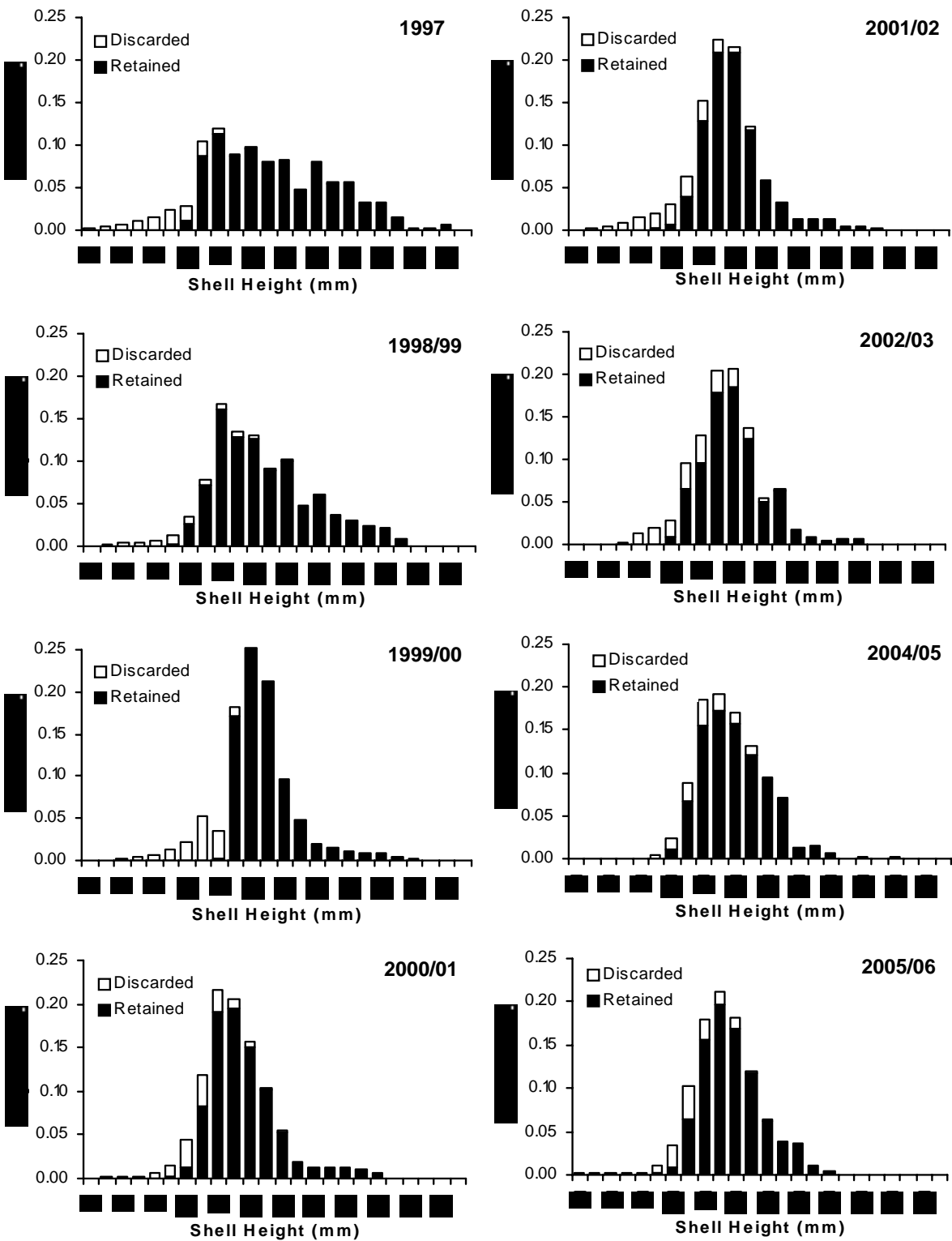


Figure 4.—Yakutat, District 16, scallop shell heights from resampling observer data, 1997–2005/06.

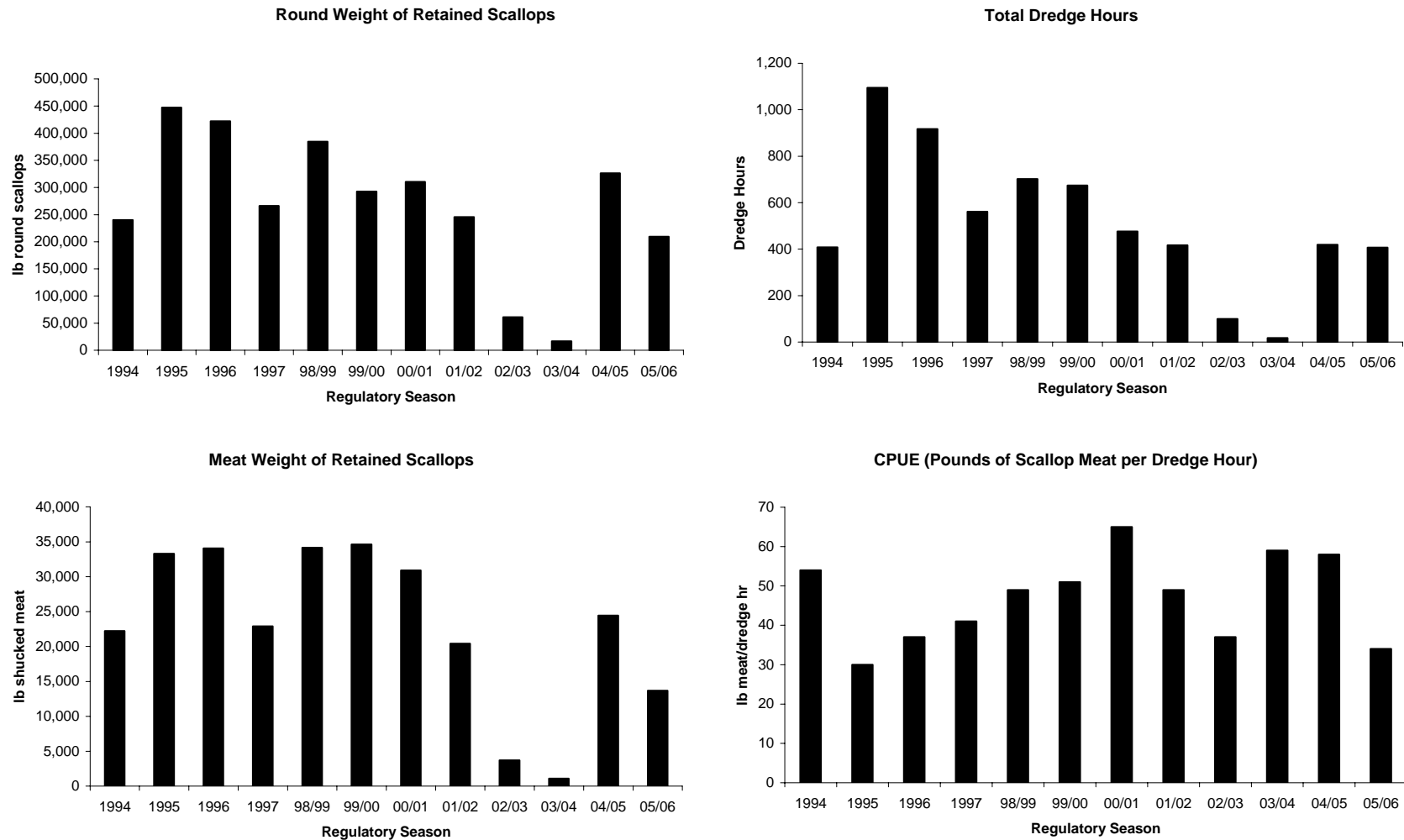


Figure 5.—Weathervane scallop harvest by round weight, dredge hours, and CPUE, District 16, Yakutat Registration Area, 1994–2005/06.

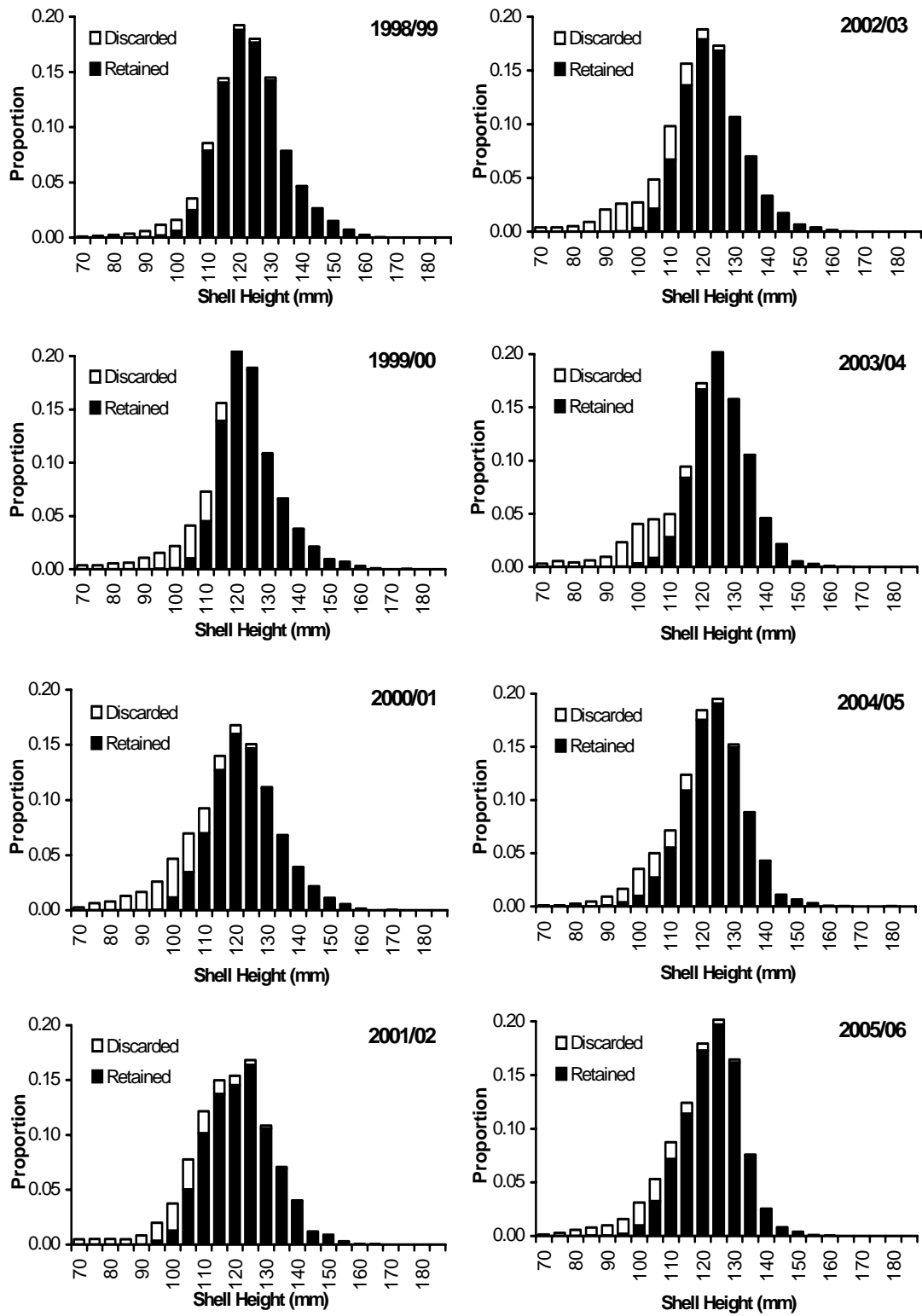


Figure 6.—Yakutat Area D, Scallop shell heights from resampling observer data, 1998/99–2005/06.

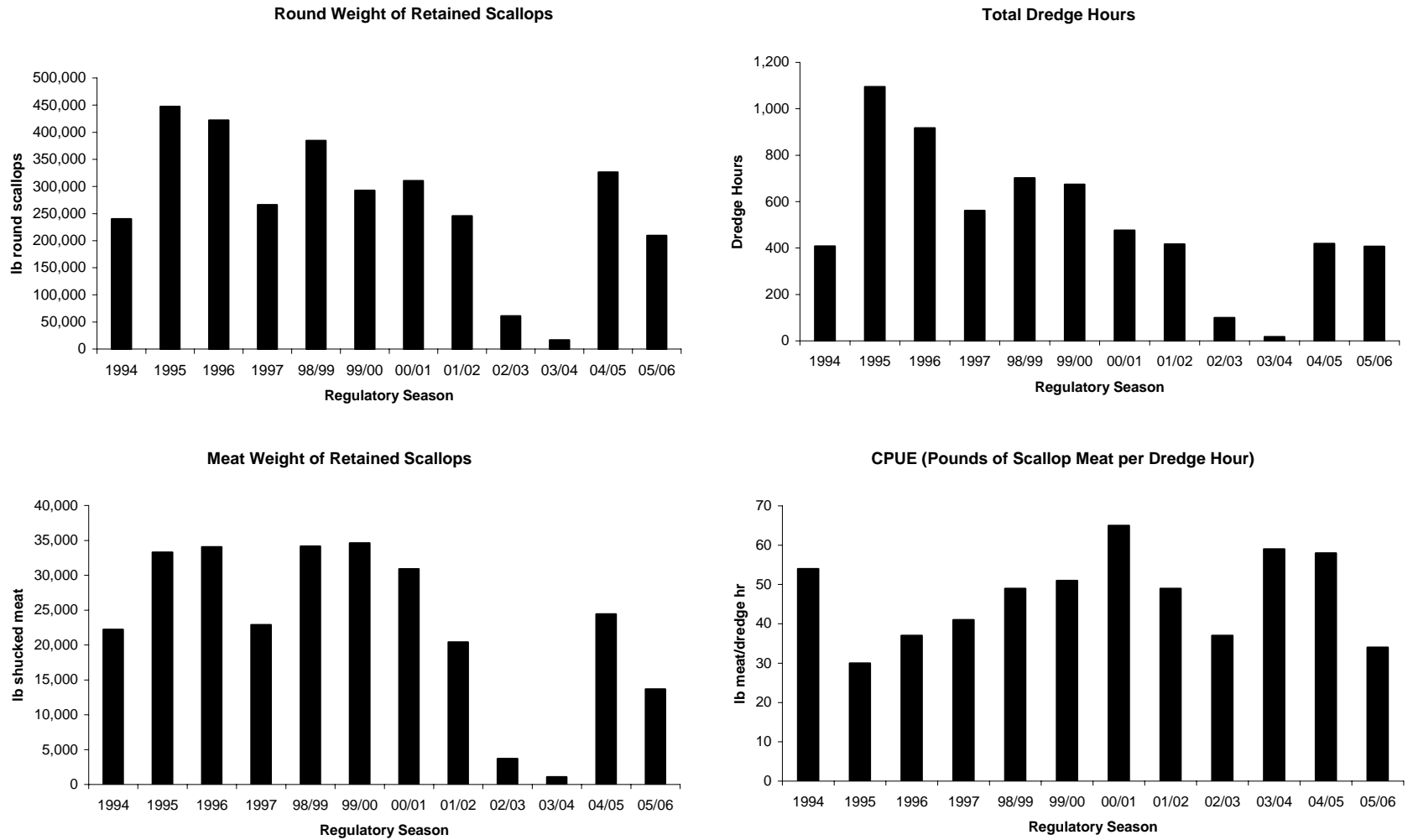


Figure 7.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Area D, Yakutat Registration Area, 1993–2005/06.

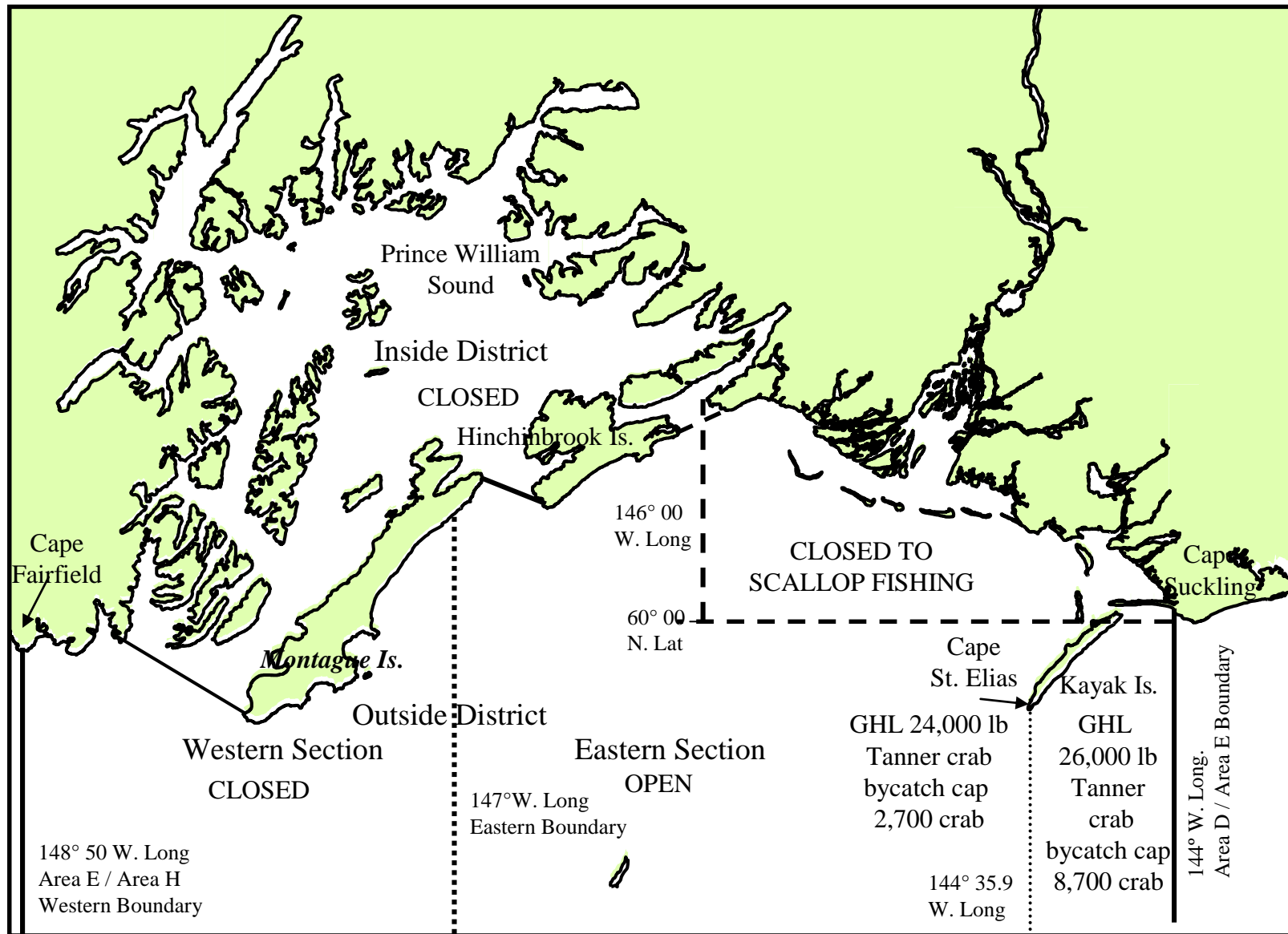


Figure 8.-Prince William Sound scallop fishing registration area and closed waters, 2005/06.

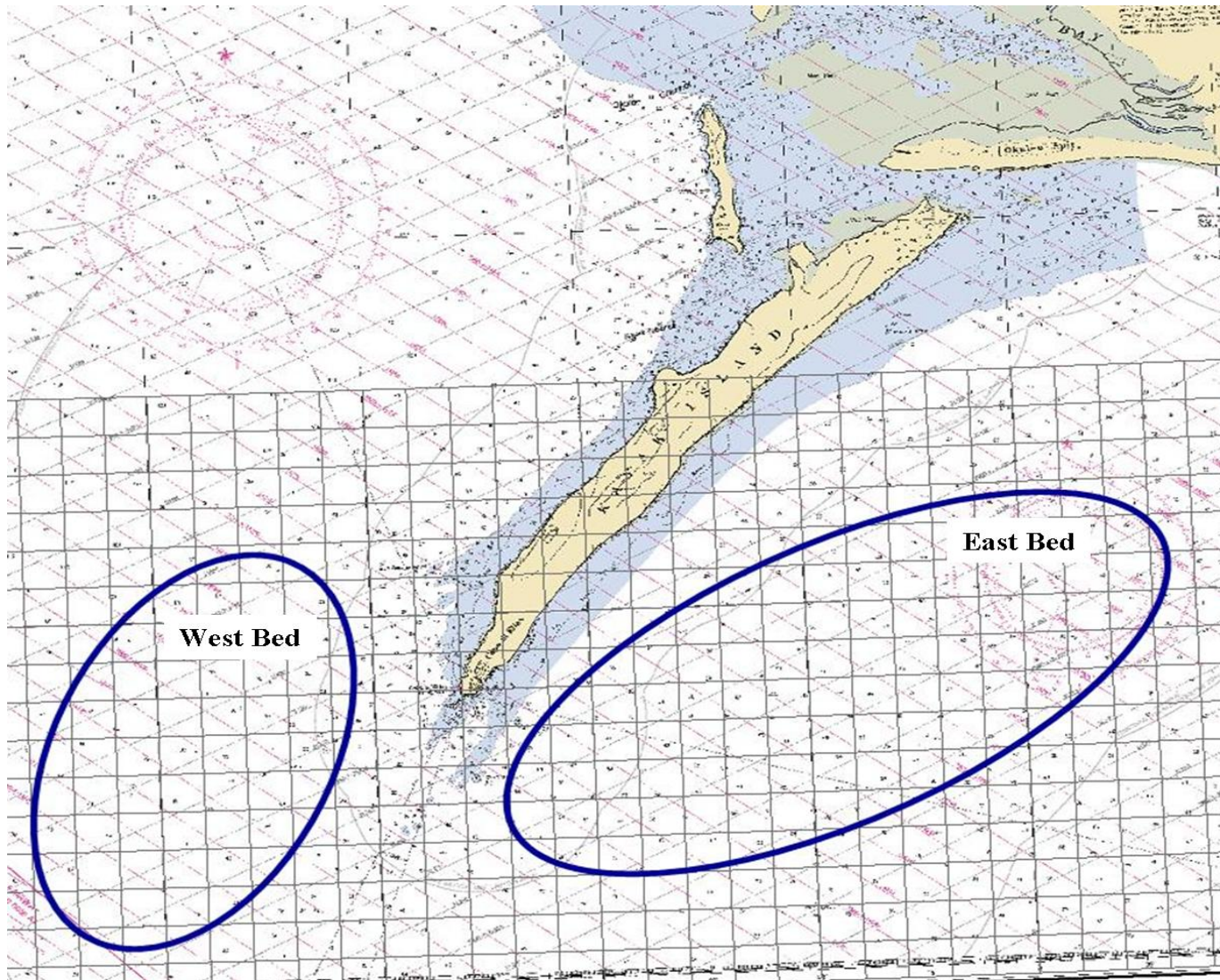


Figure 9.—Approximate location of weathervane scallop beds located east and west of Kayak Island, Prince William Sound Management Area.

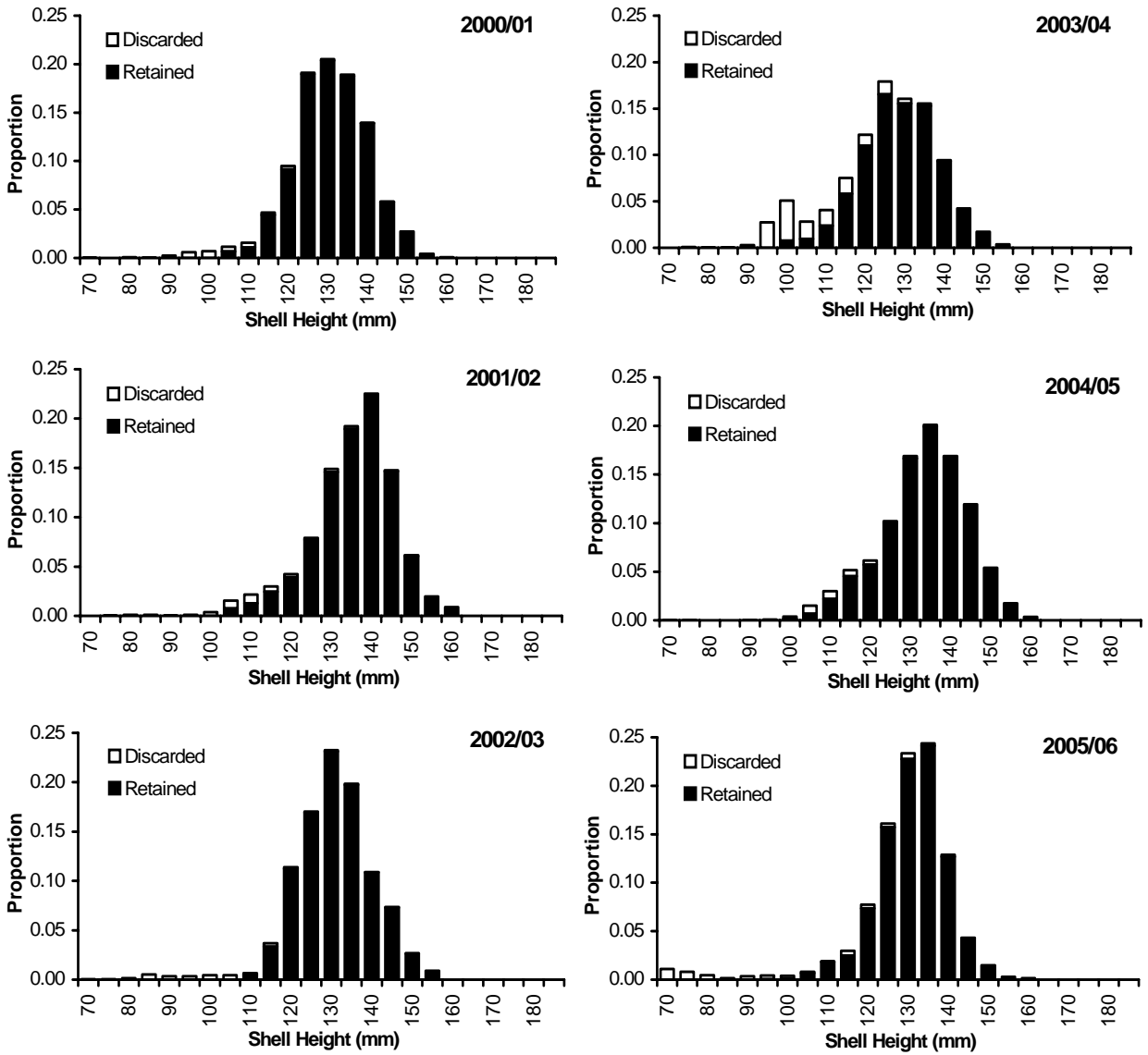


Figure 10.—Prince William Sound Registration Area scallop shell heights from resampling observer data, 2000/01–2005/06.

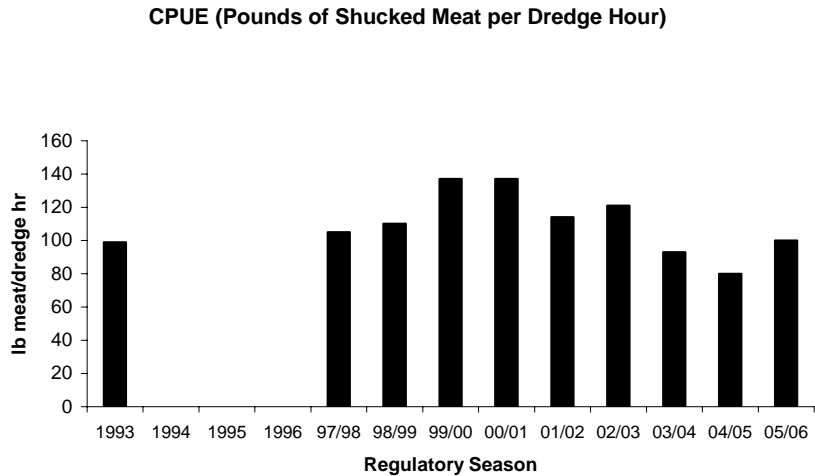
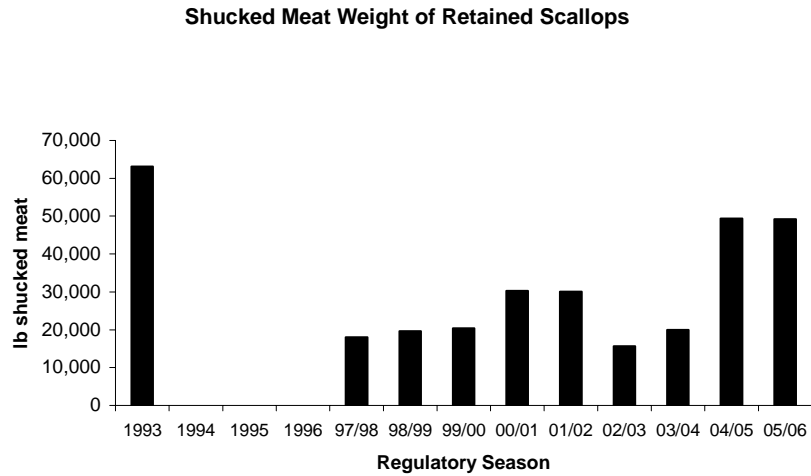
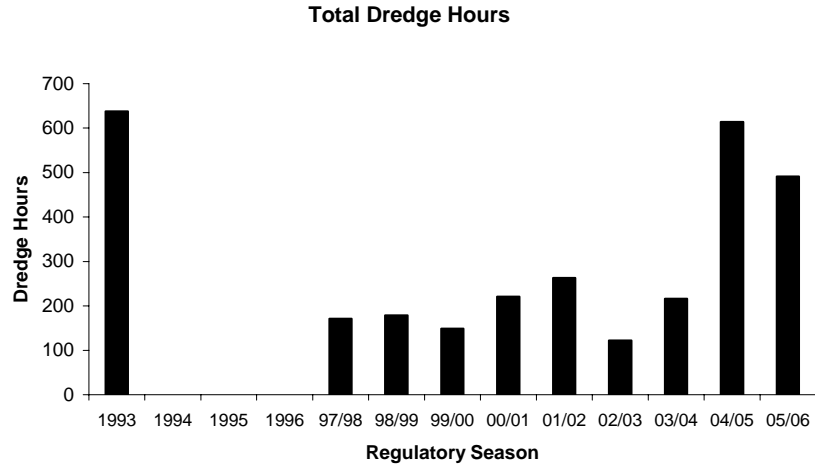
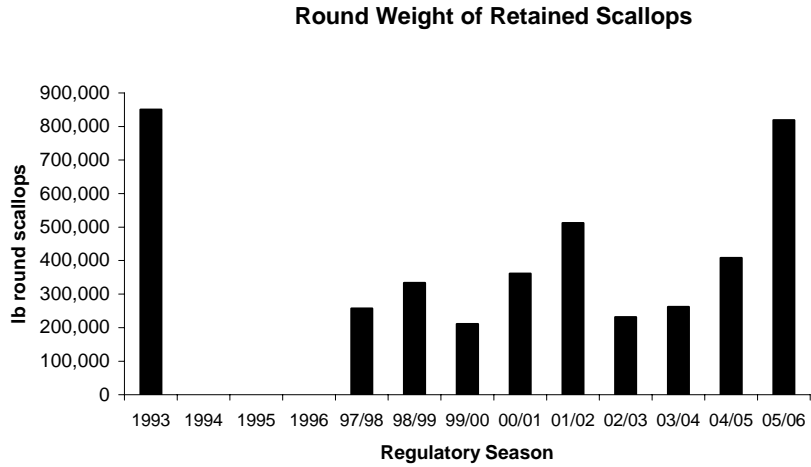


Figure 11.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Prince William Sound Registration Area, 1993–2005/06.

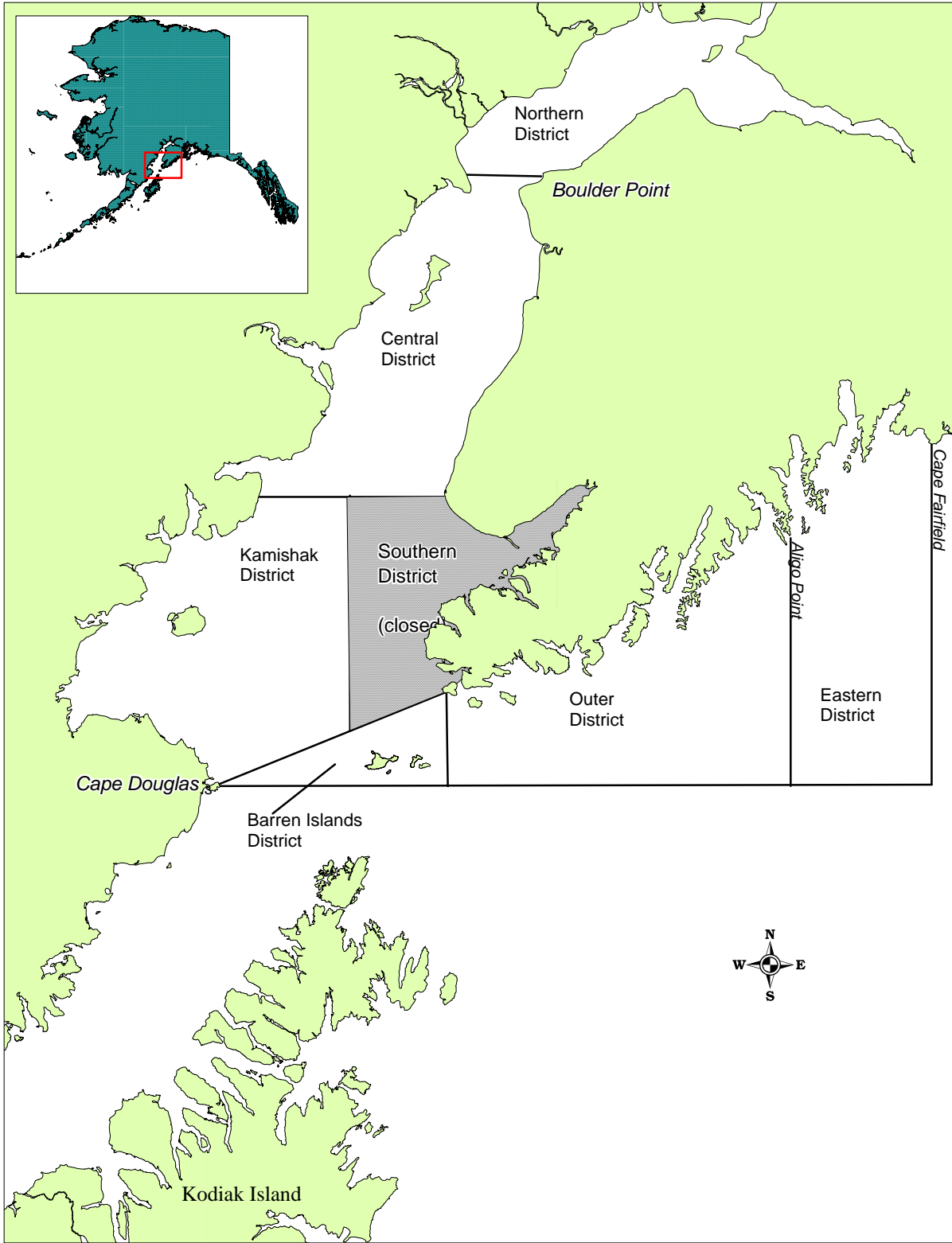


Figure 12.—Cook Inlet weathervane scallop registration area.

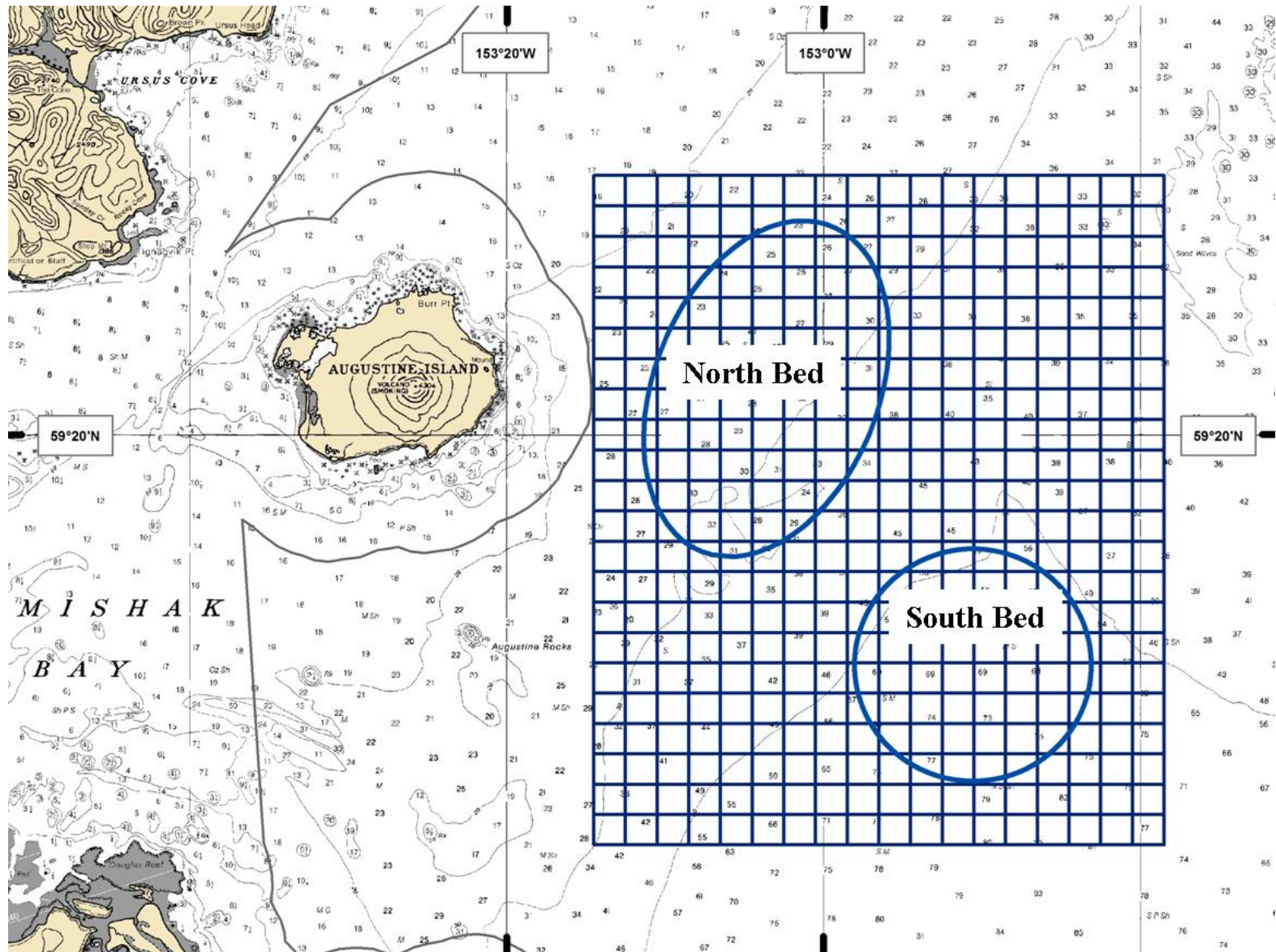


Figure 13.—Approximate locations of the north and south weathervane scallop beds in the Kamishak District of Cook Inlet.

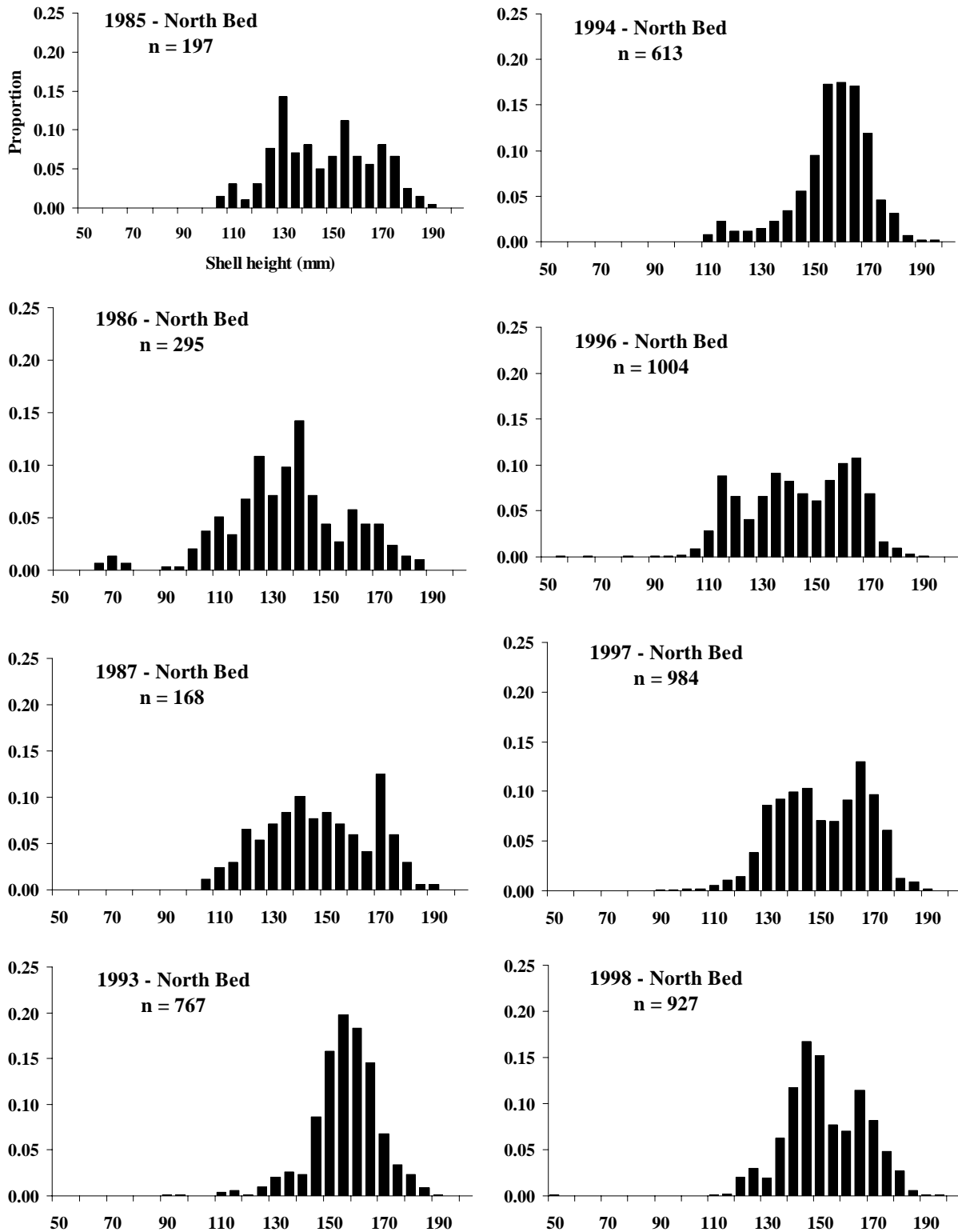


Figure 14.—Shell height frequencies of commercial weathervane scallop harvest samples from the north bed Kamishak District of Cook Inlet, 1983 - 2005.

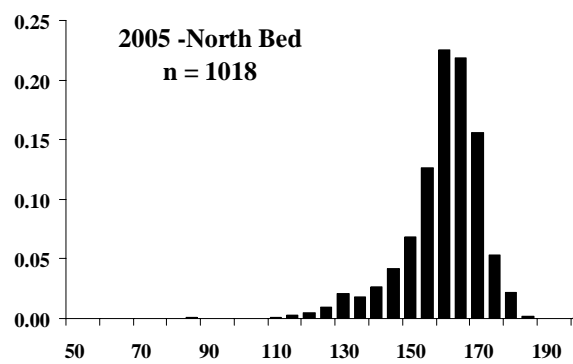
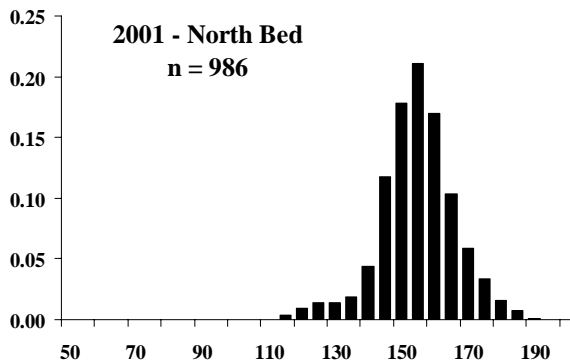
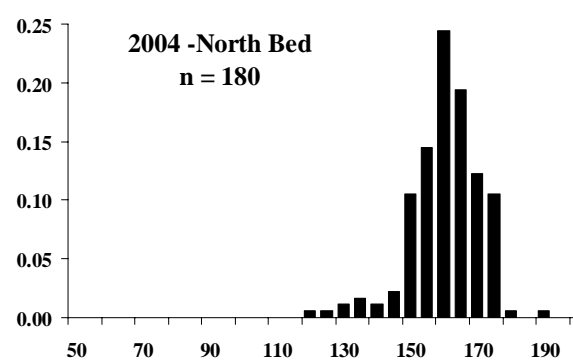
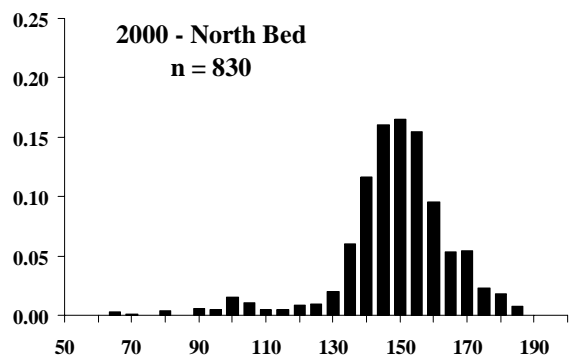
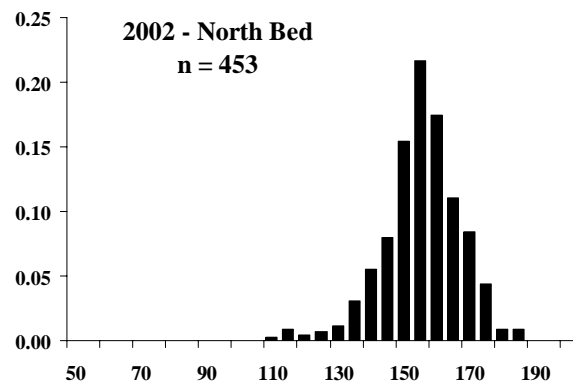
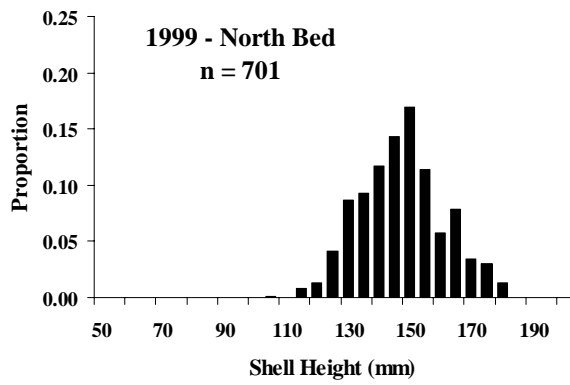


Figure 14.—Page 2 of 2.

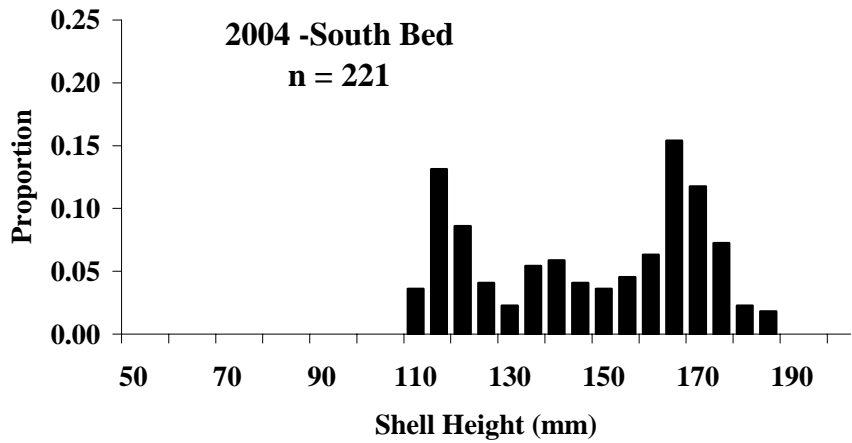
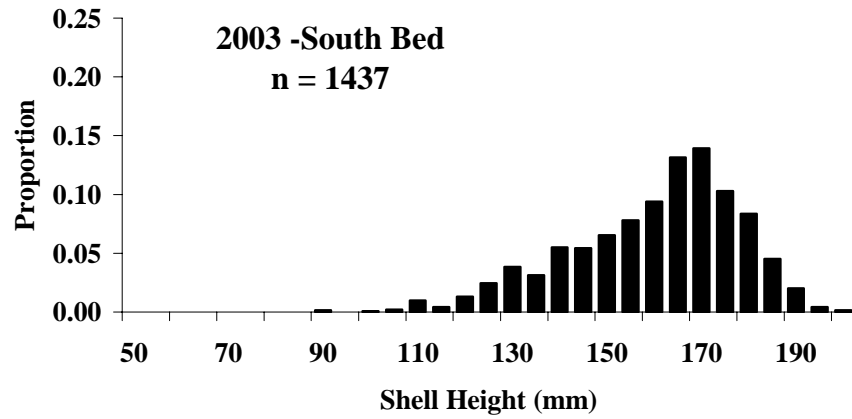
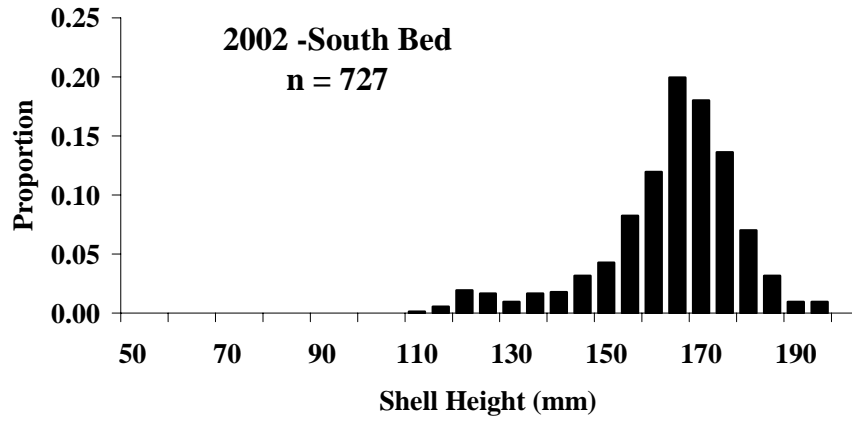


Figure 15.—Shell height frequencies of commercial weathervane scallop harvest samples from the south bed, Kamishak District of Cook Inlet, 2002 - 2004.

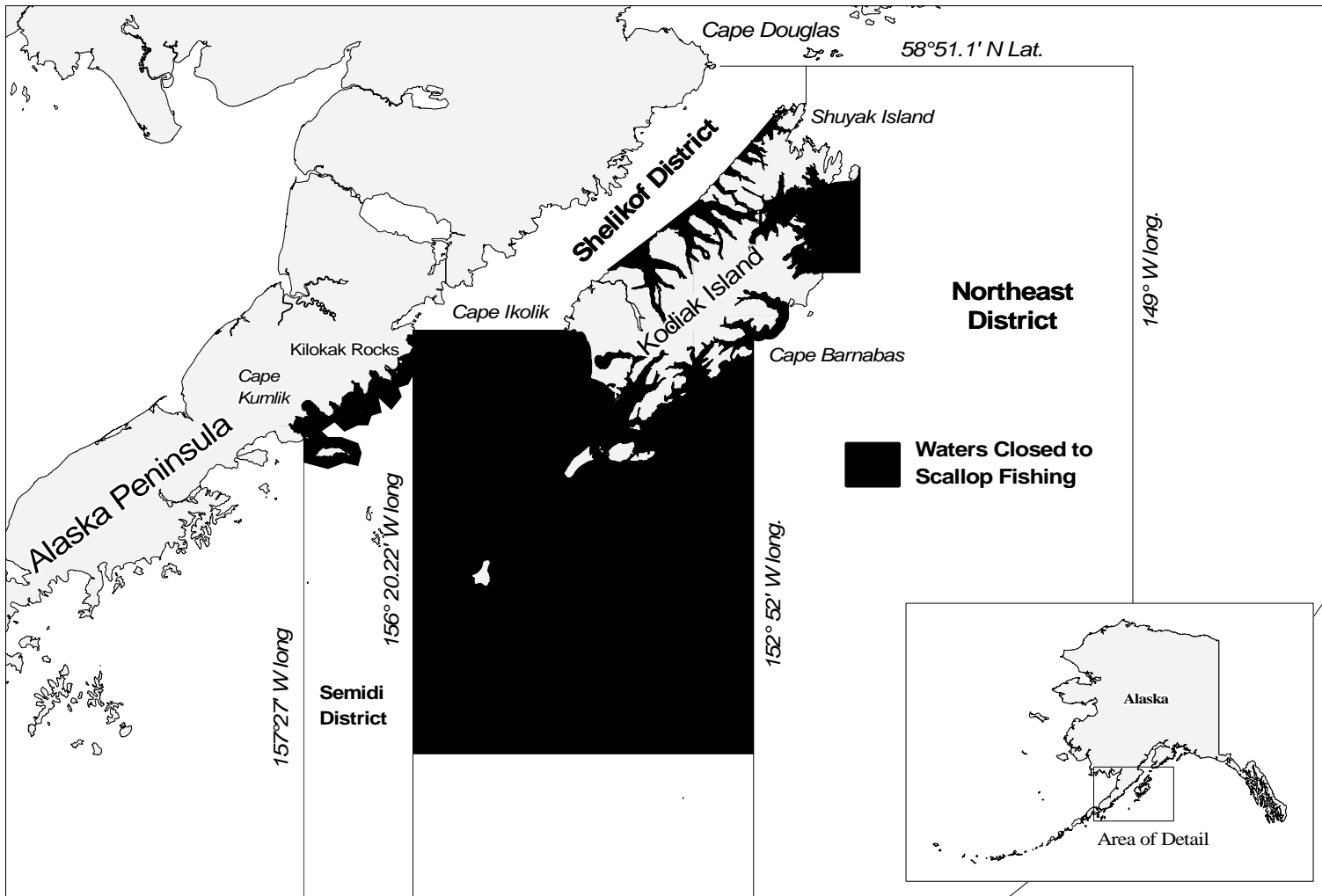


Figure 16.—Kodiak weathervane scallop registration area and closed waters.

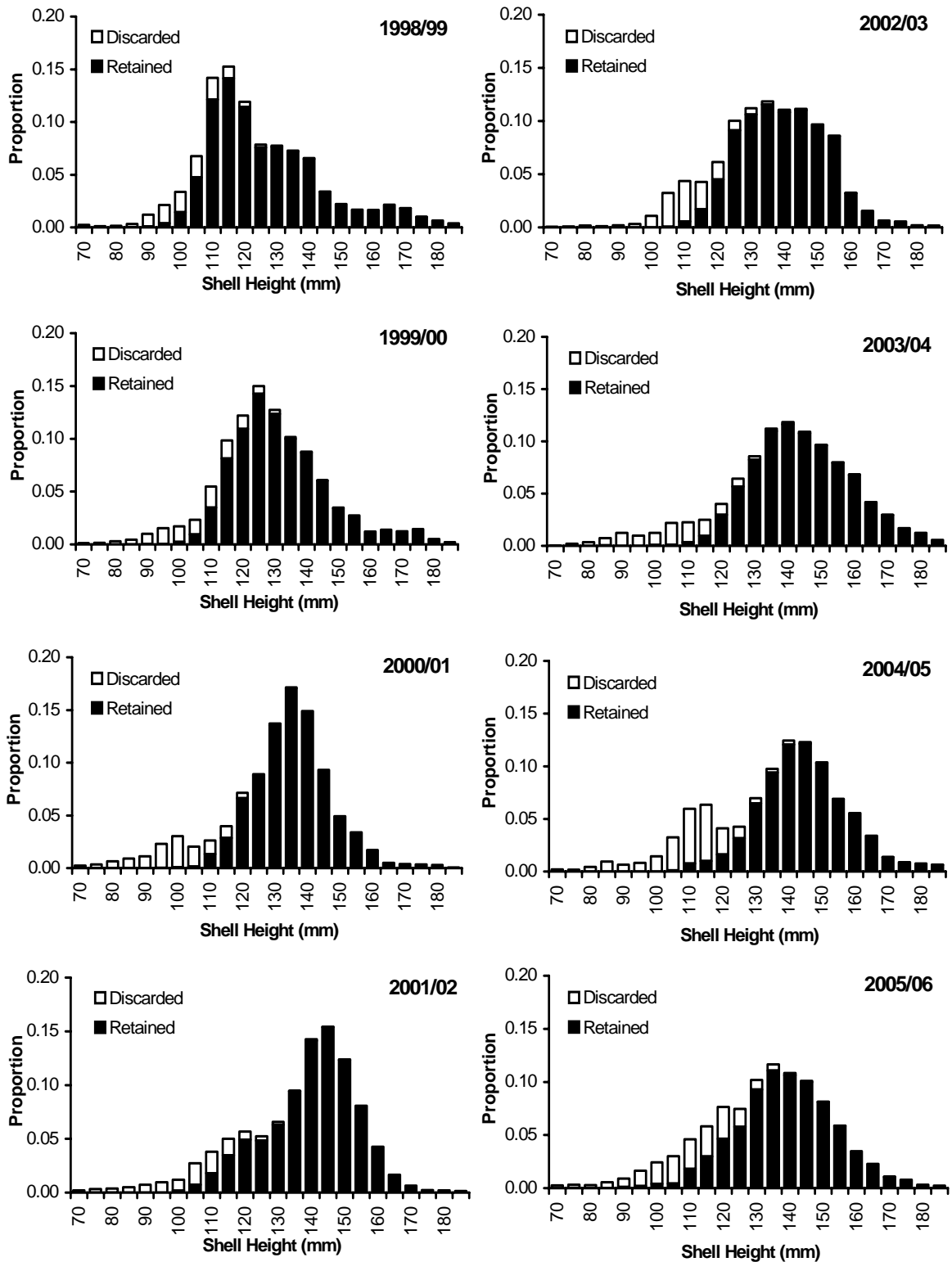


Figure 17.—Kodiak Northeast District scallop shell heights from resampling observer data, 1998/99–2005/06.

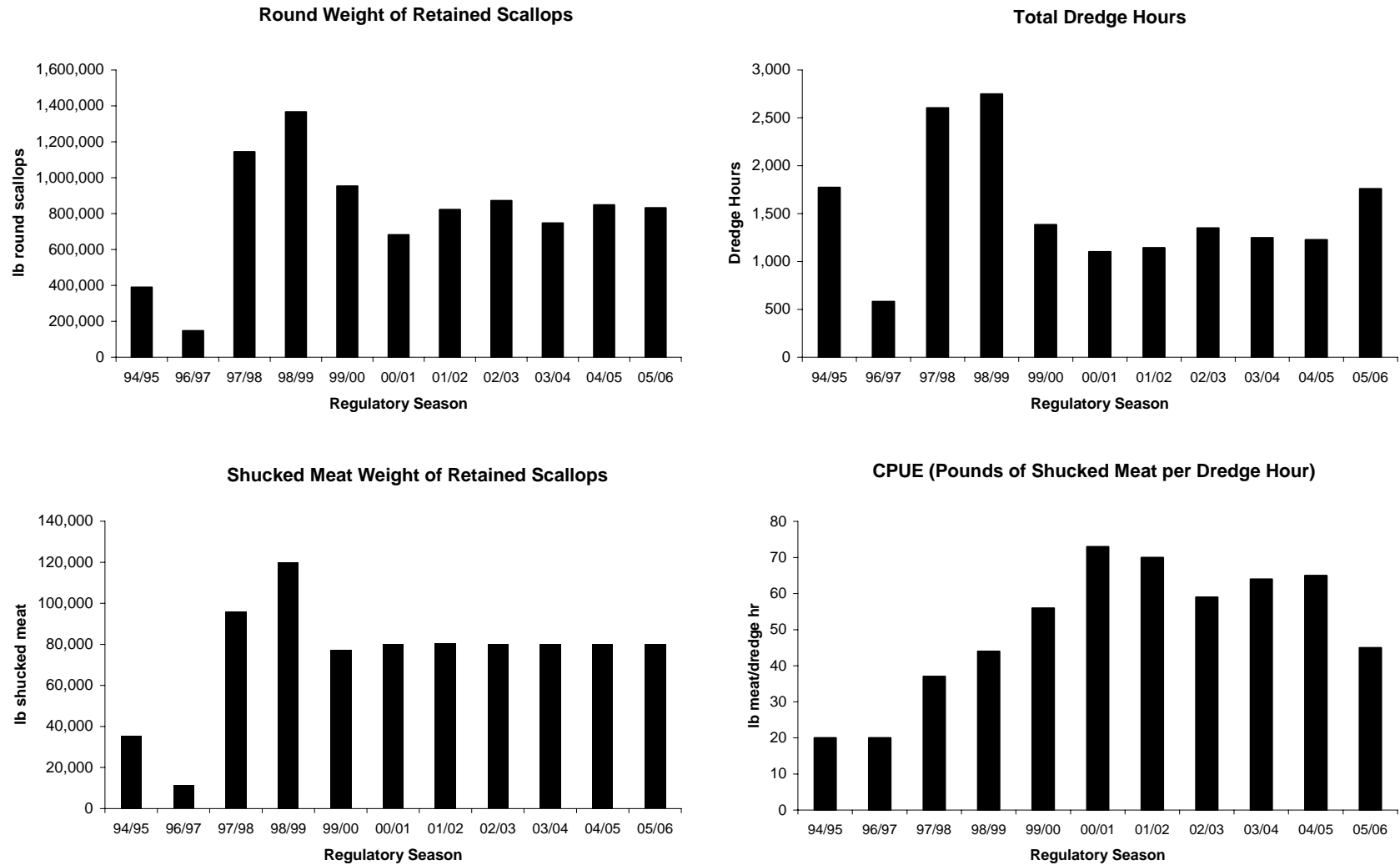


Figure 18.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Northeast District, Kodiak Registration Area, 1994/95–2005/06.

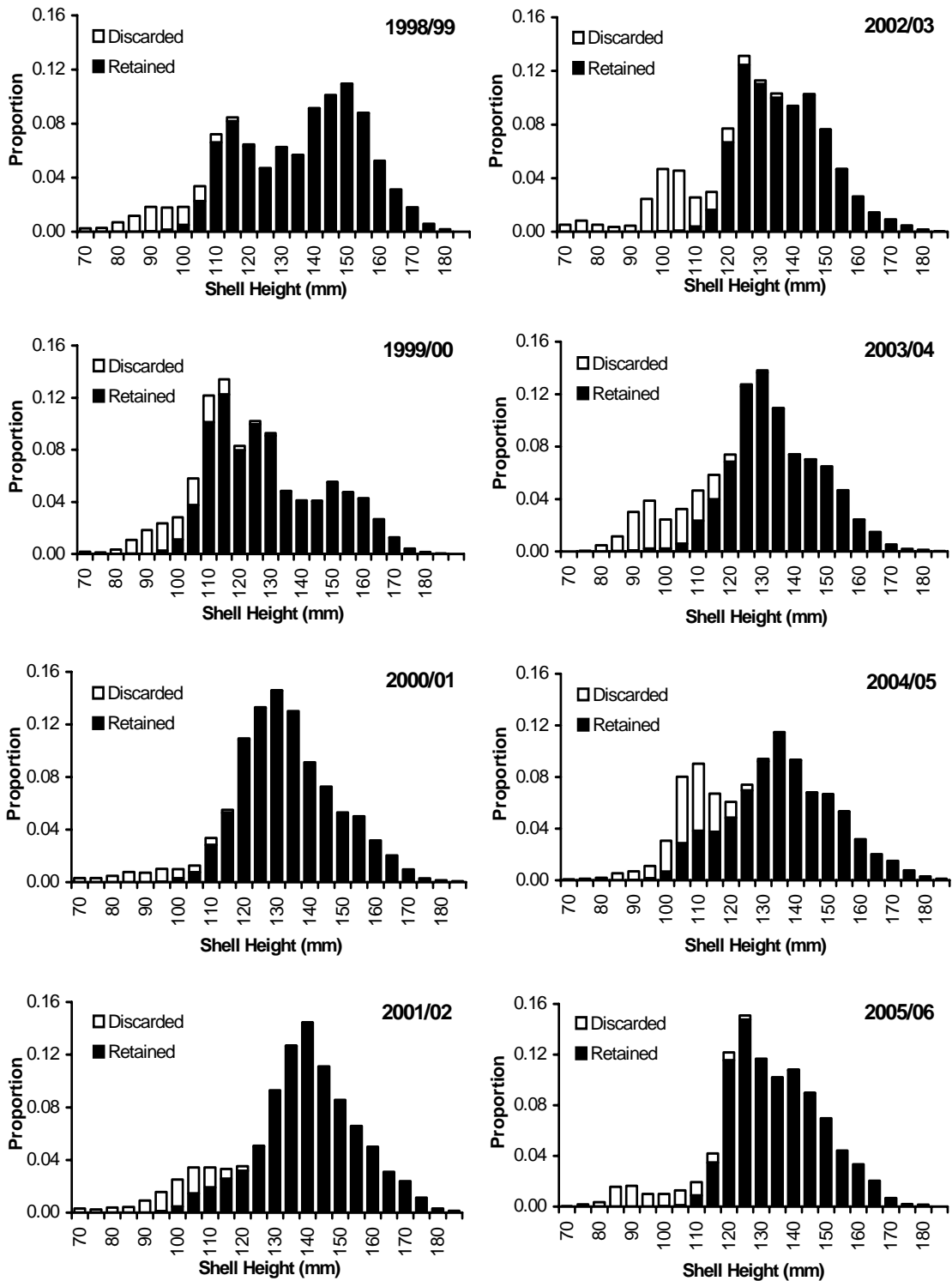


Figure 19.—Kodiak Shelikof District scallop shell heights from resampling observer data, 1998/99–2005/06.

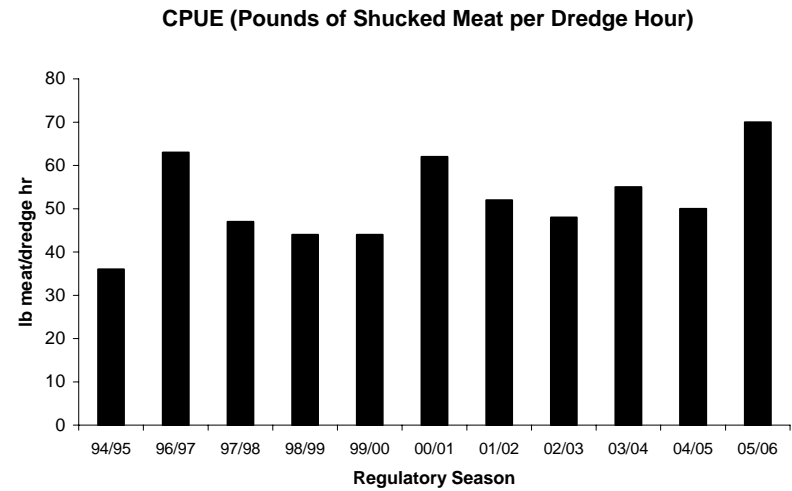
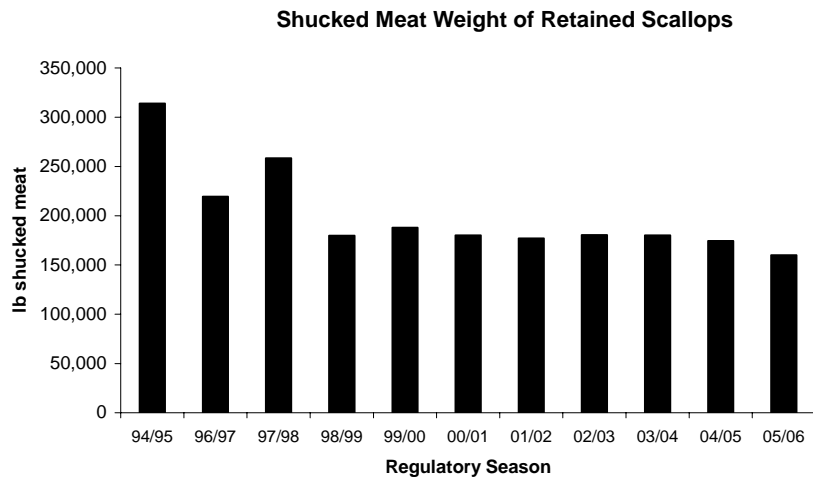
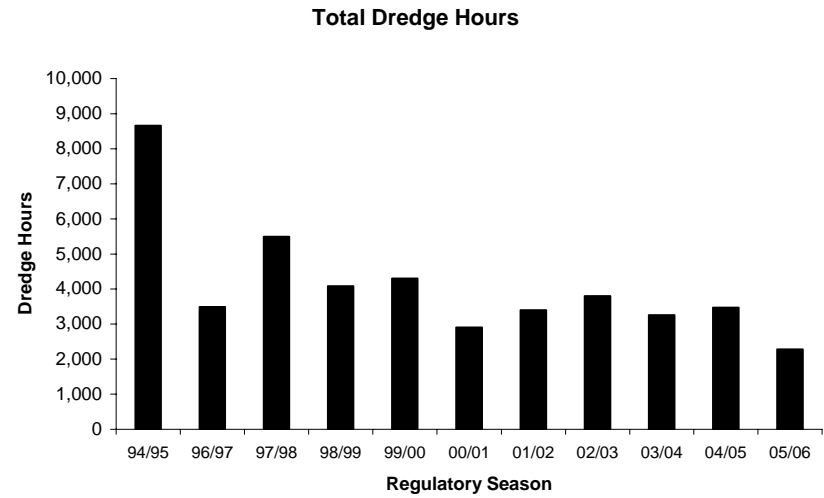
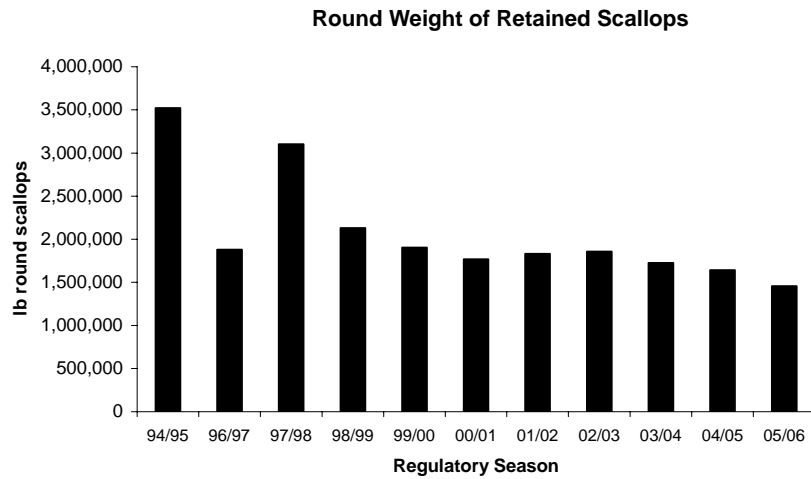


Figure 20.—Weathervane scallop harvest by round weight, scallop meat weight, dredge hours, and CPUE, Shelikof District, Kodiak Registration Area, 1994/95–2005/06.

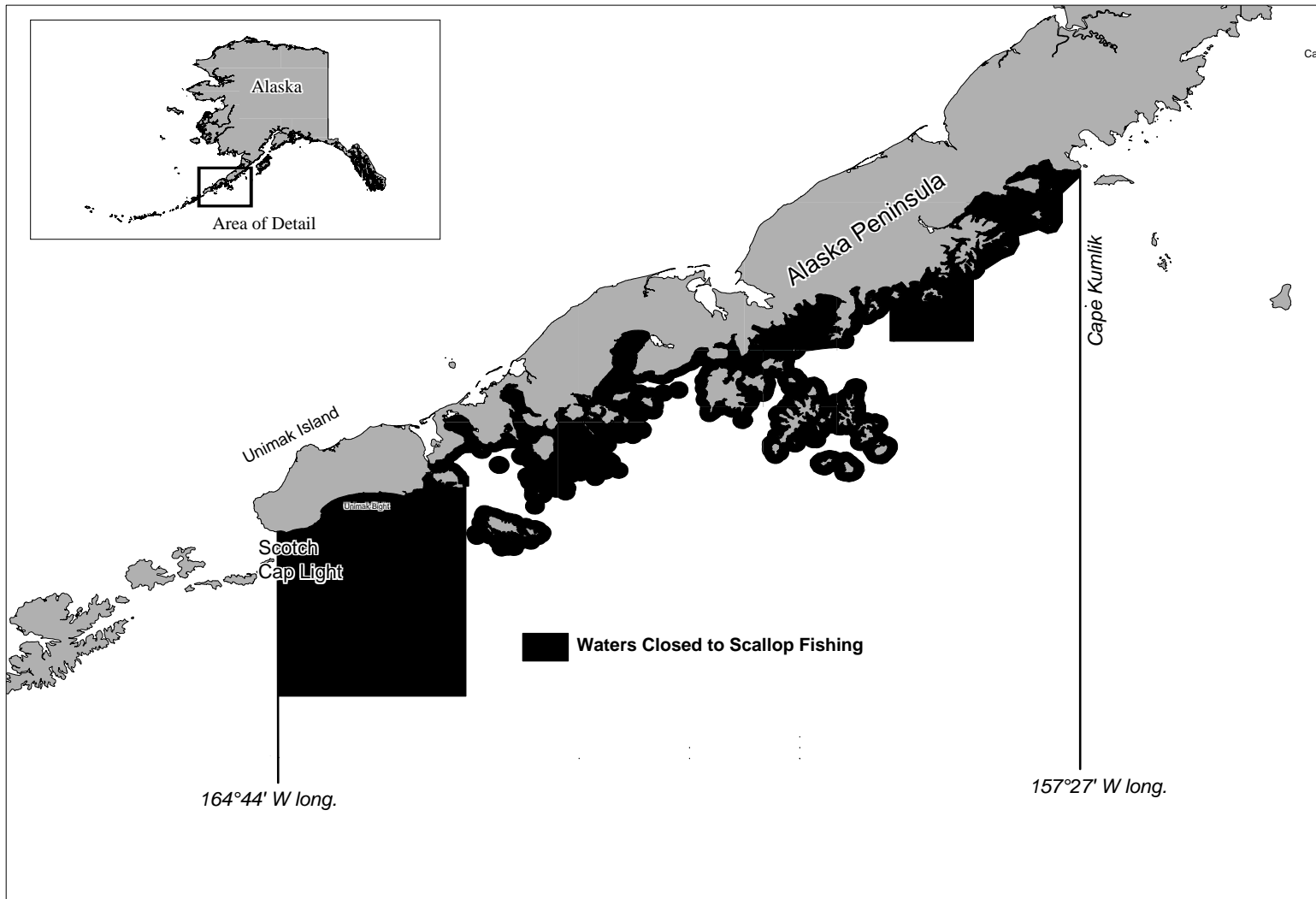


Figure 21.—Alaska Peninsula weathervane scallop registration area and closed waters.

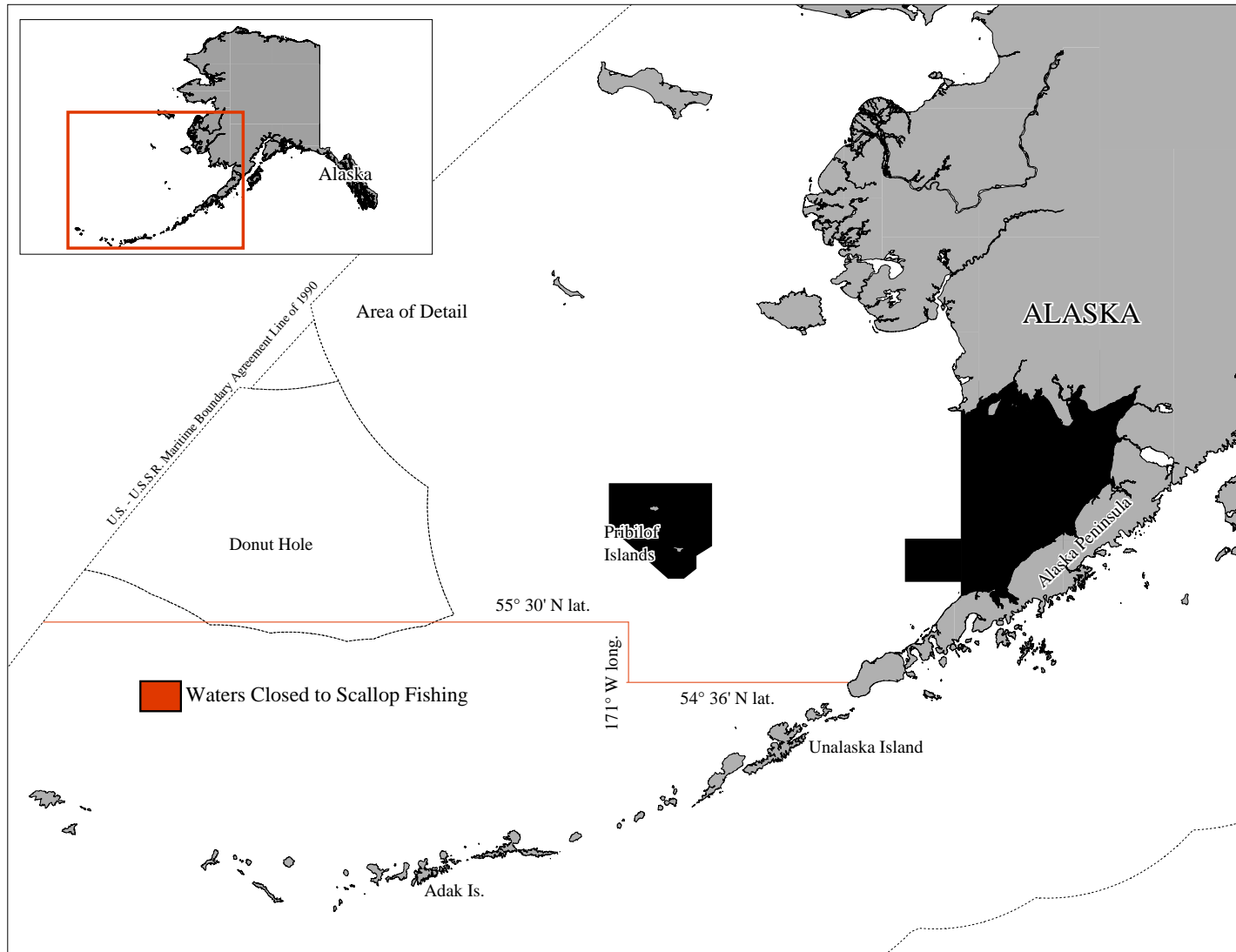


Figure 22.—Bering Sea weathervane scallop registration area and closed waters.

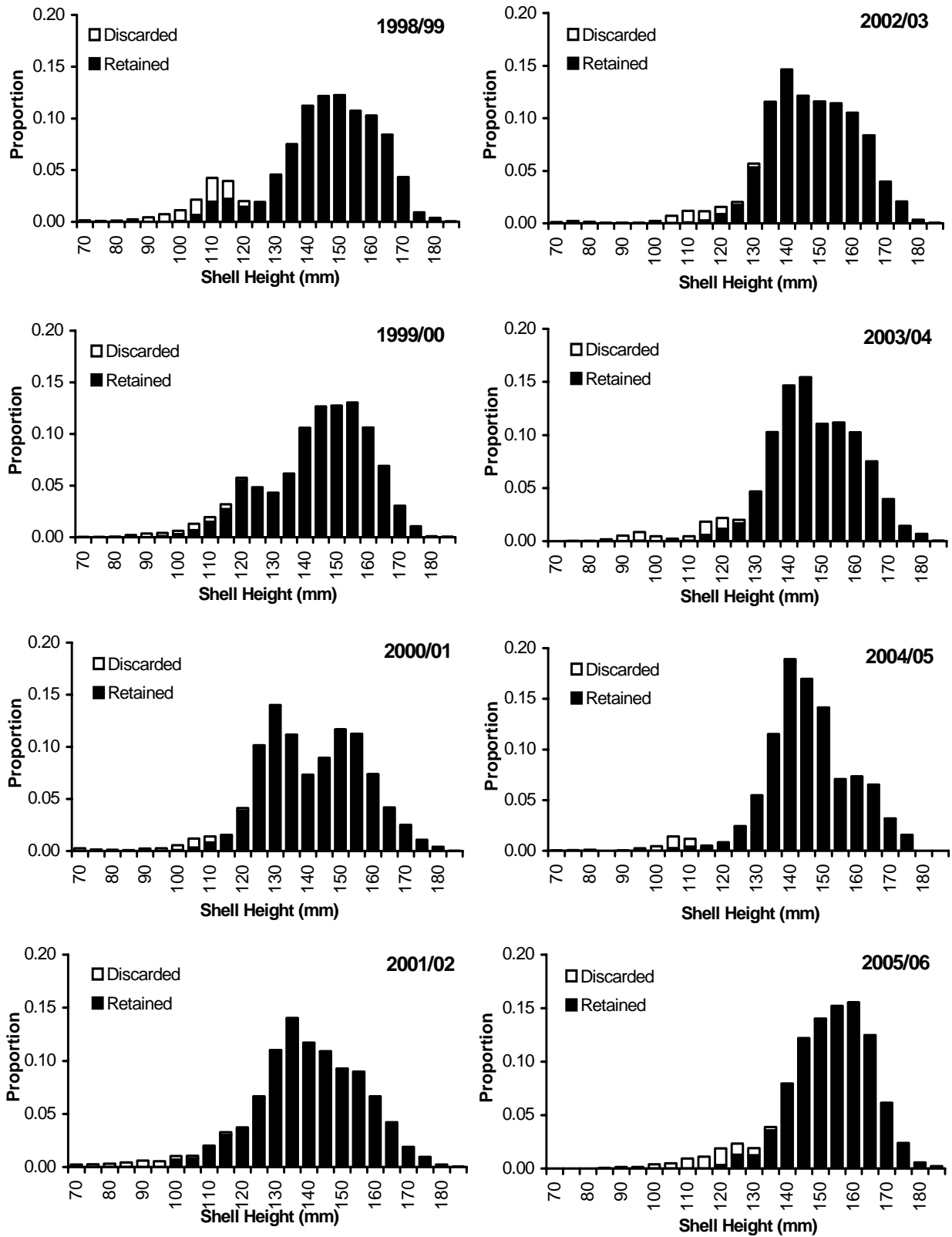


Figure 23.—Bering Sea Registration Area scallop shell heights from resampling observer data, 1998/99–2005/06.

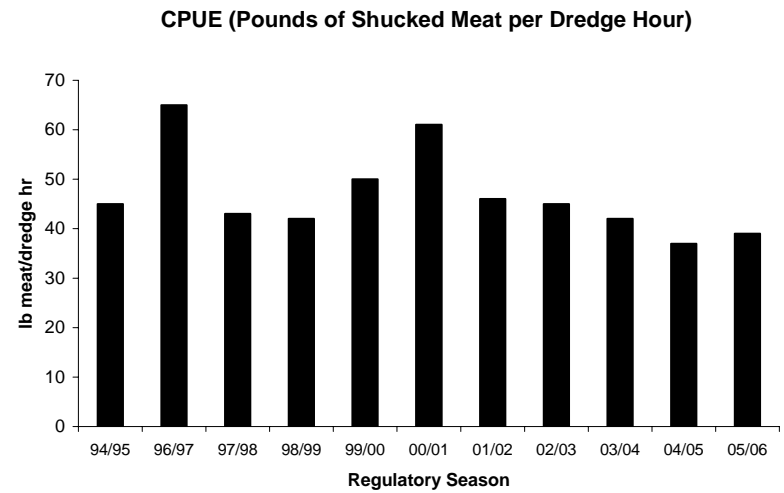
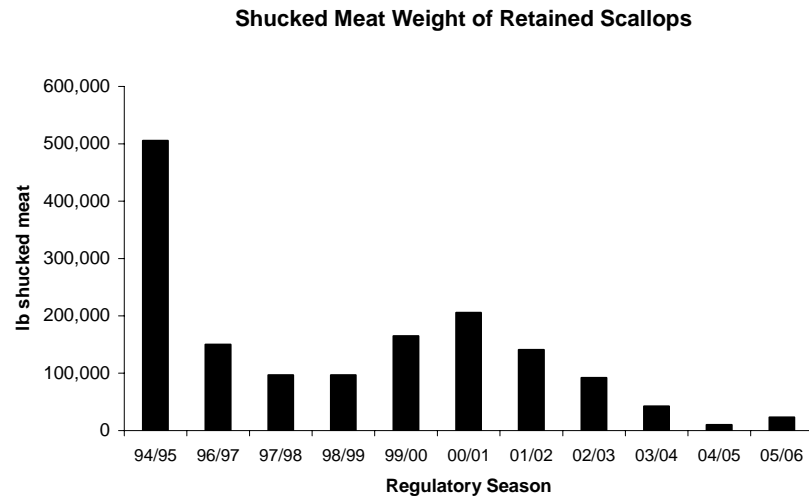
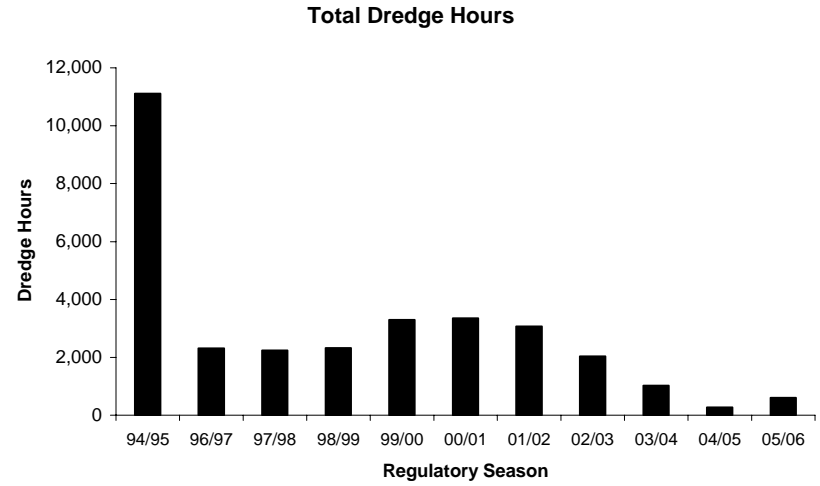
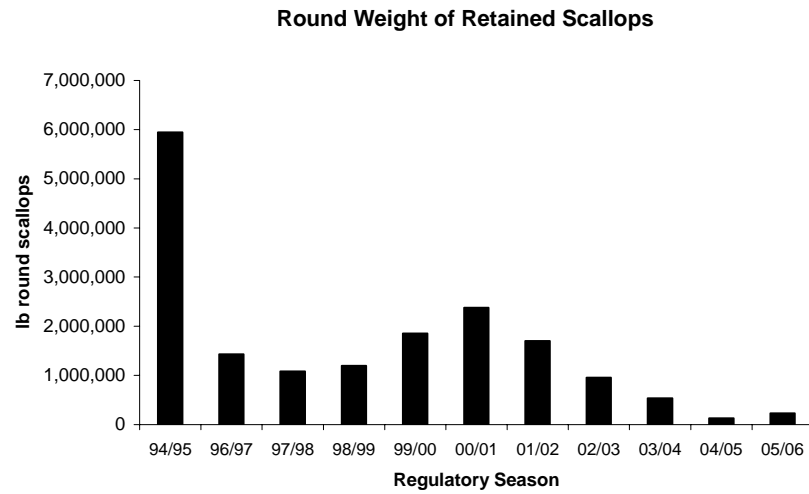


Figure 24.—Weathervane scallop harvest by round weight, meat weight, dredge hours, and CPUE, Bering Sea Registration Area, 1994/94–2005/06.

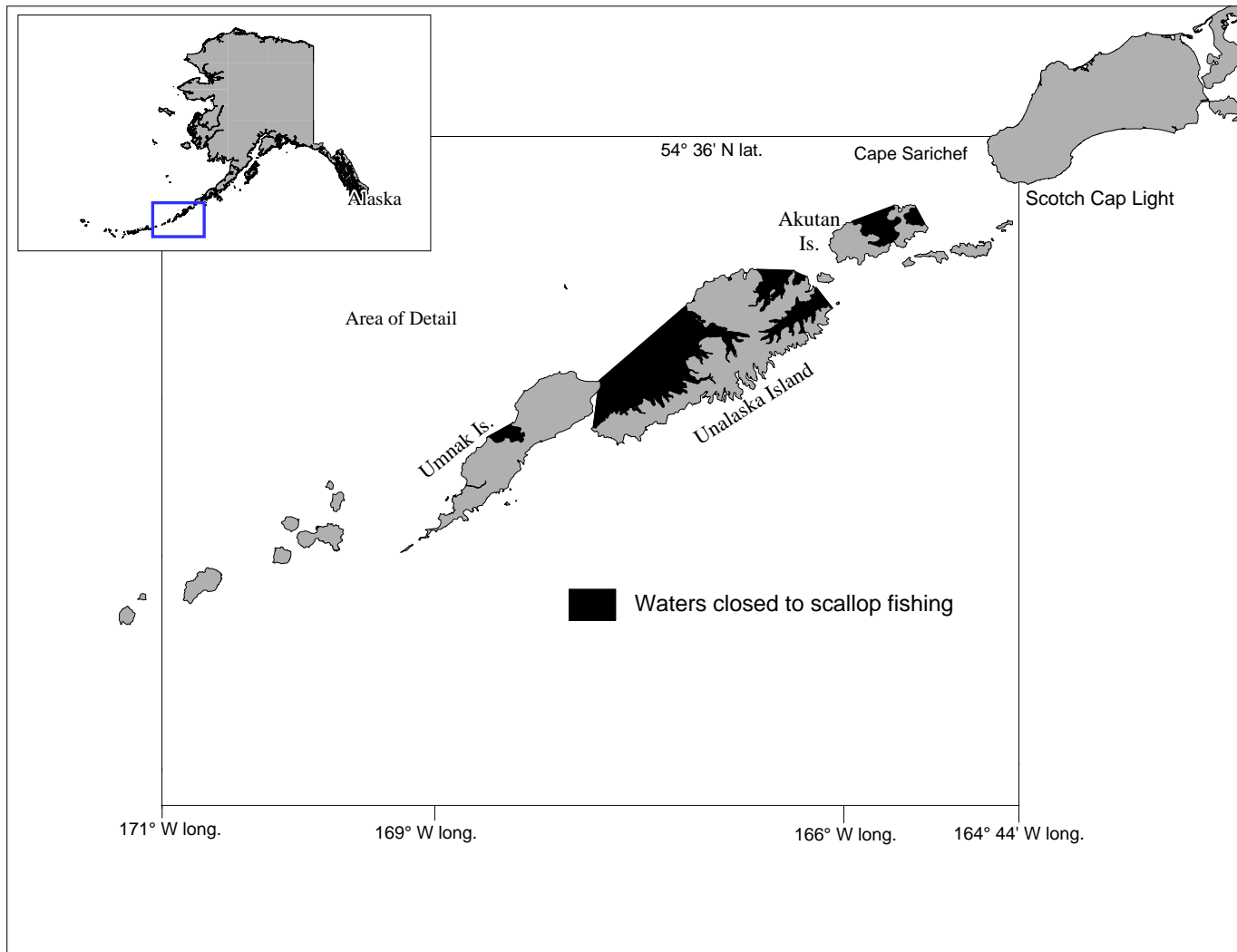


Figure 25.—Dutch Harbor weathervane scallop registration area and closed waters.

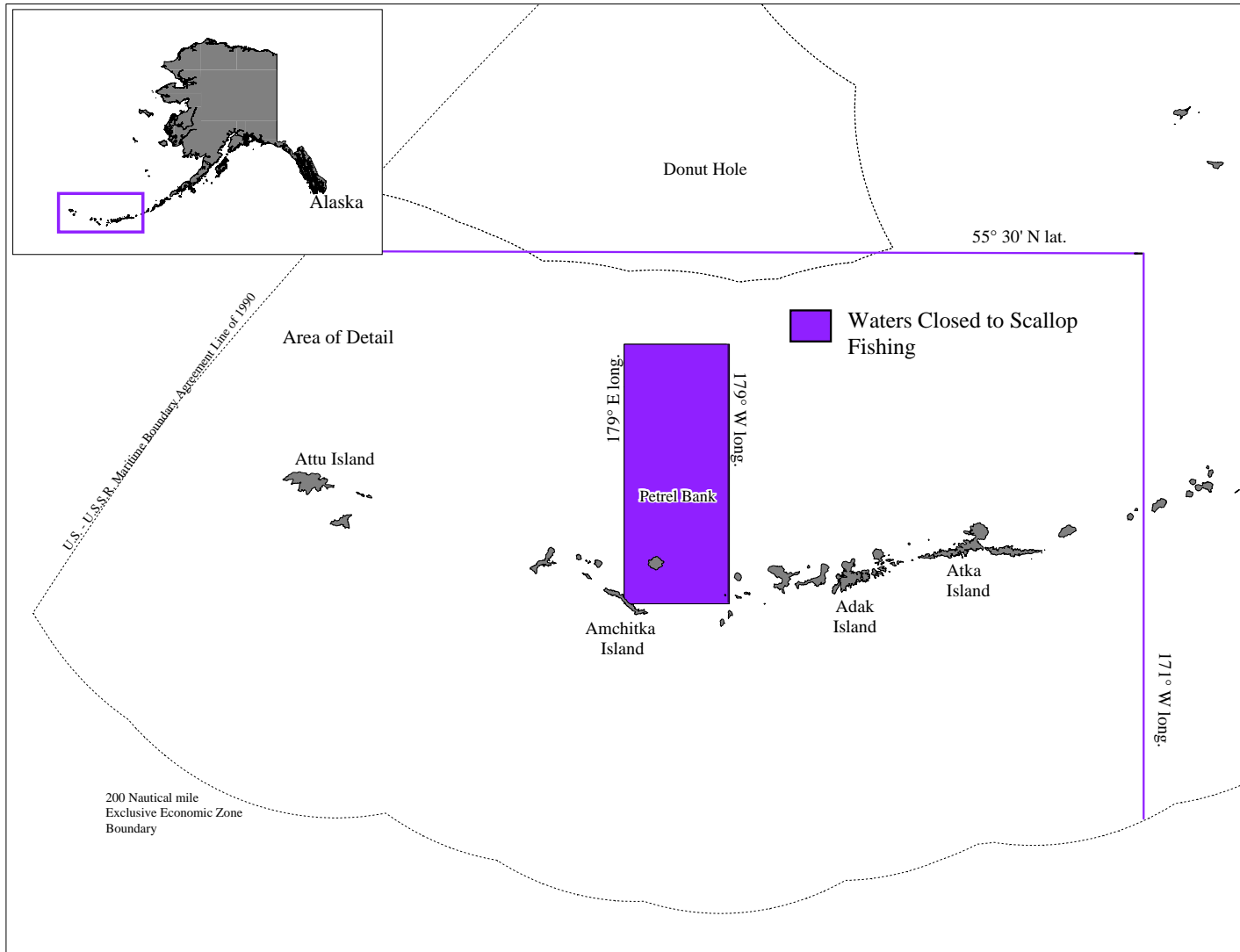


Figure 26.—Adak weathervane scallop registration area and closed waters.

APPENDIX A

Appendix A1.—Commercial harvests of weathervane scallops from Prince William Sound, 1992–2005.

Year	No. of Vessels	Harvest^a (meat lb)	Harvest objective^b (meat lb)	Season (hours)	Comments
1992	4	208,836	64,000		
1993	7	63,068	50,000	67	
1994		Fishery rescheduled to 1995			Season start date changed.
1995	2	108,000	50,000	390	Additional 60,000 lb of illegal harvest.
1996	0		0		Closed due to illegal harvest.
1997	1	18,000	17,200	141	
1998	2	19,650 combined	6,000 East 14,000 West	78	
1999	2	20,410 combined	6,000 East 14,000 West	54 East 84 West	
2000	3	30,266 combined	9,000 East 21,000 West	744 East 783 West	
2001	1	30,090 combined	9,000 East 21,000 West	5,367 East 5,441 West	
2002	2	15,641 combined	6,000 East 14,000 West	5,544 East 5,517 West	
2003	1	19,980 combined	6,000 East 14,000 West	5,004 East 4,984 West	
2004	2	49,320 combined	26,000 East 24,000 West	2,748 East 5,367 West	
2005	3	49,205 combined	26,000 East 24,000 West	1,264 East 1,048 West	

^a Harvest total for east and west areas combined are provided by provisions of confidentiality releases.

^b Separate GHs were established for areas east and west of Kayak Island beginning in 1998.