

Fishery Management Report No. 06-60

The 2005 Pribilof District King Crab Survey

by

Robert K. Gish

December 2006

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		fork length	FL
deciliter	dL	Code	AAC	mid-eye-to-fork	MEF
gram	g	all commonly accepted		mid-eye-to-tail-fork	METF
hectare	ha	abbreviations	e.g., Mr., Mrs., AM, PM, etc.	standard length	SL
kilogram	kg			total length	TL
kilometer	km	all commonly accepted			
liter	L	professional titles	e.g., Dr., Ph.D., R.N., etc.		
meter	m	at	@	Mathematics, statistics	
milliliter	mL	compass directions:		<i>all standard mathematical</i>	
millimeter	mm	east	E	<i>signs, symbols and</i>	
		north	N	<i>abbreviations</i>	
		south	S	alternate hypothesis	H _A
		west	W	base of natural logarithm	<i>e</i>
		copyright	©	catch per unit effort	CPUE
		corporate suffixes:		coefficient of variation	CV
		Company	Co.	common test statistics	(F, t, χ^2 , etc.)
		Corporation	Corp.	confidence interval	CI
		Incorporated	Inc.	correlation coefficient	
		Limited	Ltd.	(multiple)	R
		District of Columbia	D.C.	correlation coefficient	
		et alii (and others)	et al.	(simple)	r
		et cetera (and so forth)	etc.	covariance	cov
		exempli gratia		degree (angular)	°
		(for example)	e.g.	degrees of freedom	df
		Federal Information		expected value	<i>E</i>
		Code	FIC	greater than	>
		id est (that is)	i.e.	greater than or equal to	≥
		latitude or longitude	lat. or long.	harvest per unit effort	HPUE
		monetary symbols		less than	<
		(U.S.)	\$, ¢	less than or equal to	≤
		months (tables and		logarithm (natural)	ln
		figures): first three		logarithm (base 10)	log
		letters	Jan, ..., Dec	logarithm (specify base)	log ₂ , etc.
		registered trademark	®	minute (angular)	'
		trademark	™	not significant	NS
		United States		null hypothesis	H ₀
		(adjective)	U.S.	percent	%
		United States of		probability	P
		America (noun)	USA	probability of a type I error	
		U.S.C.	United States	(rejection of the null	
			Code	hypothesis when true)	α
		U.S. state	use two-letter	probability of a type II error	
			abbreviations	(acceptance of the null	
			(e.g., AK, WA)	hypothesis when false)	β
				second (angular)	"
				standard deviation	SD
				standard error	SE
				variance	
				population	Var
				sample	var

Weights and measures (English)

cubic feet per second	ft ³ /s
foot	ft
gallon	gal
inch	in
mile	mi
nautical mile	nmi
ounce	oz
pound	lb
quart	qt
yard	yd

Time and temperature

day	d
degrees Celsius	°C
degrees Fahrenheit	°F
degrees kelvin	K
hour	h
minute	min
second	s

Physics and chemistry

all atomic symbols	
alternating current	AC
ampere	A
calorie	cal
direct current	DC
hertz	Hz
horsepower	hp
hydrogen ion activity	pH
(negative log of)	
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

FISHERY MANAGEMENT REPORT NO. 06-60

THE 2005 PRIBILOF DISTRICT KING CRAB SURVEY

by

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ABSTRACT

This report describes the 2005 Pribilof District king crab pot (trap) survey documenting the distribution and relative abundance of red king crabs *Paralithodes camtschaticus* and blue king crabs *P. platypus* around the Pribilof Islands during the fall. The primary purpose of this survey was to determine the potential for conducting a red king crab fishery without incurring substantial bycatch of blue king crabs. The Alaska Department of Fish and Game (ADF&G) conducted the survey aboard the chartered *F/V Scandies Rose*, a 39.6-m commercial crab-pot-fishing vessel. Results show a substantial overlap in the distribution of blue king crabs and legal-sized red king crabs. Results also show that red and blue king crabs in the Pribilof District are predominately larger, matured-sized crabs and provide no evidence of recruitment to either stock. Legal-sized red king crabs occurred in only a limited portion of the surveyed area and were encountered at only low abundance within that area of occurrence.

Key words: Red king crab, *Paralithodes camtschaticus*, blue king crab, *P. platypus*, Pribilof Islands, Pribilof District, distribution, relative abundance, pot (trap) survey

INTRODUCTION

The Pribilof District includes the Bering Sea waters between 168°00' W longitude and the United States-Russia Maritime Boundary Line of 1990, bounded to the north by the latitude of Cape Newenham (58°39' N latitude), bounded to the south by the latitude of Cape Sarichef (54°36' N latitude) between 168°00' W longitude and 171°00' W longitude, and bounded to the south by 55°30' N latitude between 171°00' W longitude and the United States-Russia Maritime Boundary Line of 1990. The commercial fisheries for red king crab *Paralithodes camtschaticus* and blue king crab *P. platypus* in the Pribilof District are managed by the Alaska Department of Fish and Game (ADF&G) under the State/Federal cooperative management regime established by the federal Fishery Management Plan (FMP) for Bering Sea/Aleutian Islands King and Tanner Crab as adopted by the North Pacific Fisheries Management Council (NPFMC 1998). The FMP defines a minimum stock size threshold (MSST) and maximum sustainable yield (MSY) biomass for stocks managed under the plan. The MSST sets the stock abundance threshold below which stocks are considered “overfished”; MSY biomass is the target for rebuilding of overfished stocks. An annual National Marine Fisheries Service (NMFS) summer eastern Bering Sea trawl survey provides the data used for estimating the levels of Bering Sea red and blue king crab stocks relative to MSST and MSY biomass and for the determination of the fishery total allowable catch (TAC) established by the state.

ADF&G first opened the Pribilof District red king crab *P. camtschaticus* fishery in 1993 and the fishery was prosecuted annually through the 1998 season, resulting in a total harvest of 6.3-million pounds worth \$28.6 million (Bowers et al. 2005). Historically, the Pribilof District king crab fishery was directed on blue king crab *P. platypus*. Annual landings of blue king crab fluctuated widely and the fishery was closed from the 1988/89 season through 1994. The Pribilof District king crab fishery opened as a directed red king crab fishery in 1993 and 1994 and the fishery was opened for both red and blue king crab concurrently during the fall 1995 through 1998 seasons. The Pribilof District has been closed to fishing for both red and blue king crab since 1999. The National Marine Fisheries Service (NMFS) survey results from 1999 indicated the Pribilof District blue king crab stock was below the threshold for a fishery opening (Stevens et al. 2000; Zheng and Kruse 1999b). Survey results from 1999 through 2002 showed continued decline of blue king crab stock when it was estimated to be below MSST and declared “overfished” (NPFMC 2002). However, Pribilof District red king crab stock abundance estimates continued to be well above MSST and approaching or above maximum sustainable yield (MSY) biomass through the closure period (NPFMC 2005). Also, estimated numbers of mature-sized and legal-sized male red king crabs during 1999-2005 were comparable to those during 1993-1998 (Vining and Zheng 2006). Hence the closure of the fishery for red king crabs since 1999 was not a response to low abundance estimates for mature-sized and legal-sized crabs. Instead, the Pribilof red king crab fishery has been closed to address conservation concerns resulting from two sources of uncertainty.

The first source of uncertainty concerns the potential for the bycatch of Pribilof blue king crab during prosecution of a red king crab fishery. Closure of the Pribilof red king crab fishery since 1999 has been due in large part to concerns over this potential for bycatch of blue king crab during that stock's period of decline (Bowers et al. 2005). The blue king crab bycatch concerns are difficult to substantiate; there is scant fishery observer data from historical Pribilof District king crab fisheries. Furthermore, no information is available on the distribution of either red or blue king crab during the fall fishery except for ADF&G statistical area catch and effort data collected from dockside interviews and fish tickets. Catch statistics by statistical area only provide information on legal-sized males and statistical areas are too large (approximately 900 nmi²) to provide needed information on distribution. Nonetheless, a large proportion of the annual harvest of both red and blue king crabs occurred in a single area (statistical area 697500) directly east of St. Paul Island (Morrison and Gish 1994, 1996, 1997a, 1997b; Morrison et al. 1998, 1999; Figure 1), suggesting significant potential for blue king crab bycatch in a directed red king crab fishery.

The second source of uncertainty is the reliability of population estimates for Pribilof red king crab afforded by the NMFS eastern Bering Sea trawl survey. Population estimates for this stock have low precision due to the low number of survey tows in which red king crabs are captured in the Pribilof District (NPFMC 2005, Rugolo et al. 2006b, Vining and Zheng 2006). Additionally, the distribution of legal-sized red king crabs captured by the trawl survey has often shown little concordance with the distribution of catch during the commercial fishery. For example, in 1994 and 1997 the highest densities of legal-sized red king crabs encountered during the trawl survey occurred to the west of St. Paul Island (Stevens et al. 1994, Stevens et al. 1998), whereas highest catches during the subsequent commercial fisheries occurred in the statistical area to the east of St. Paul Island (Morrison and Gish 1996, Morrison et al. 1998). Whether that lack of concordance reflects the poor precision afforded by the trawl survey or seasonal movements between the time of the survey (late June to early July) and the fishery season (September) is unknown. The low precision of the Pribilof red king crab stock estimates raises concerns for management of both the red king crab stock and protection of the blue king crab stock. Establishment of TACs on the basis of low precision estimates could result in overfishing of the red king crab stock, which in a prolonged fishery would increase the exposure of the blue king crab stock to the effects of bycatch during the fishery.

In September 2003, ADF&G performed the first pot survey for red and blue king crab in the Pribilof District during the fall to obtain information needed on the distribution and relative abundance of legal-sized red king crab relative to blue king crab during the normal fishing season (Gish and Pengilly 2004). The survey was designed to provide denser spatial sampling than the standard NMFS trawl survey within that area and included areas of highest catch and effort during the 1993-1998 commercial fisheries. The primary objective of the survey was to determine the potential for prosecuting a directed fishery for red king crabs in the Pribilof District while minimizing bycatch of blue king crab. The results of that survey showed a substantial overlap in the distribution of blue king crabs with legal-sized male red king crabs, a limited distribution within the surveyed area for both stocks, low and sporadic catches of both species, and no evidence for recruitment to either stock. Those results, coupled with the results of an ADF&G cost-recovery fishery on Pribilof District red king crab that was performed concurrent with the survey (Byersdorfer 2004), confirmed the poor reliability of the NMFS trawl survey results for use in establishing harvest levels for a Pribilof District red king crab fishery and the significant risk of blue king crab bycatch during a Pribilof District red king crab fishery

ADF&G performed a second pot survey on Pribilof District king crab from late September to late October 2005. The 2005 survey design was based on that established for the 2003 ADF&G pot survey, but with the removal of 21 stations and the addition of 52 new stations based on the distribution of king crab catch during the 2003 survey. This report documents the results of the survey pertaining to the distribution and relative abundance of red and blue king crabs around the Pribilof Islands during September/October 2005.

Although particular attention is given to results that are most relevant to the survey objectives, we also report on the catch of other commercial crab species encountered during the survey.

METHODS

SURVEY AREA AND DESIGN

Prior to the survey, a survey station pattern was developed based on the pattern used for the 2003 ADF&G pot survey (Gish and Pengilly 2004) and on the results for king crab from that survey. A primary survey area was established; it was bounded by 56° 30' N latitude to the south, 57° 30' N latitude to the north, 169° 00' W longitude to the east, and 171° 00' W longitude to the west. The survey station pattern within those boundaries was designed by first designating stations at the centers and corners of the stations in the 20 x 20-nmi survey grid established for the NMFS eastern Bering Sea trawl survey (Rugolo et al. 2006b). Additional stations were added to achieve 5-nmi spacing between stations for a total of 164 primary stations. Maintaining the 5-nmi spacing, secondary stations to the north (primarily from 57° 30' to 57° 55' N latitude and 168° 24' to 170° 44' W longitude), and east of St. Paul Island (from 57° to 57° 30' pots N latitude and 168° 20' to 169° W longitude) and east of St. George Island (from 56° 30' to 57° N latitude and 168° 44' to 169° W longitude) were established for a total of 282 stations (Figure 2). The secondary stations were to be fished dependent upon time available. The minimum goal for the survey was to fish 135 of the primary stations, with the 29 stations in the southwest corner having lowest priority due to the expectation that they were outside the distribution of king crab, and to fish 90 of the secondary stations at or adjacent to where red king crabs were captured during the 2003 survey.

Two-hundred-five stations were actually fished during the survey (Figure 3; Appendix A1), covering an area of 4,782 nmi². Those stations included all but 21 of the 174 stations fished during the 2003 ADF&G survey (Gish and Pengilly 2004); the 21 stations that were not repeated captured no king crabs during the 2003 survey. The area surveyed included the ADF&G shellfish statistical areas that accounted for 83% to 99% of the total annual Pribilof Islands red king crab harvests for the 1993 through 1998 seasons (Morrison and Gish 1994, 1996, 1997a, 1997b; Morrison et al. 1998, 1999). In particular, the survey area included statistical area 695700 (bounded by 57° 00' N latitude, 57° 30' N latitude, 169° 00' W longitude, and 170° 00' W longitude), which accounted for the largest portion of the total Pribilof red king crab harvest during 1993-1998 (36%) and of the total Pribilof Islands blue king crab harvest during 1995-1998 (42%). Hence the survey area includes the area of highest historical fishery production for the red and blue king crab fisheries. Additionally, the surveyed area covered most of the distribution of blue king crabs and legal red king crabs in the Pribilof District during the summer 2003 and 2004 NMFS eastern Bering Sea trawl surveys (Rugolo et al. 2003, 2006a) and the entire distribution of blue king crabs and legal red king crabs in the Pribilof District in the summer 2005 NMFS eastern Bering Sea trawl survey (Rugolo et al. 2006b)

The survey was conducted aboard the chartered vessel *F/V Scandies Rose*, a 39.6-m commercial crab-pot fishing vessel. Stations consisted of four pots arrayed in a north-south orientation with spacing of 0.125 nmi between adjacent pots and each station center was a minimum of 5 nmi apart; however, five stations had only three pots due to lost pots or the inadvertent setting of too many pots for hanging bait. Each station was fished once during this survey. The total number of pots fished during the survey was 815. Each pot measured 7' x 7' x 2.8', was fitted with 2.75" stretch mesh on all webbing, and had two opposing tunnel openings measuring 8" x 36". Pots were baited with two 2-quart containers of chopped Pacific herring *Clupea pallasii* and one Pacific cod *Gadus macrocephalus* used as hanging bait. Soak time for survey station pots ranged from 20.6 to 58.1 hours and averaged 33.4 hours. The first pot of the survey was set on September 23, 2005; the last survey pot was pulled on October 24, 2005.

“Niche” Fishing

In addition to and concurrent with the survey, simulated commercial fishing (“niche” fishing) was performed. Niche fishing was performed opportunistically at times that would not impede progress of the

survey. Choice of niche fishing locations was based on the knowledge the vessel captain had obtained from previous commercial fishing in this area, on results of this survey, and recent reports of red king crab caught in the groundfish fishery; the vessel captain determined the deployment configuration of pots to optimize the catch of king crab in such locations. Thirty-three pots were fished within the survey area, 29 pots targeted legal male red king crabs and four pots were set to specifically target blue king crabs. Additionally, 44 niche pots were set outside of the survey area all of which targeted legal male red king crabs; these additional pots covered an area of 32 nmi² adjacent to the survey area to the east-northeast of St. George Island (Figure 4). The same pots and configuration of those pots, as well as the same bait were used during niche fishing as in the survey. Soak times for niche-fishing pots ranged from 20.2 to 46.4 hours and averaged 37.9 hours.

CATCH SAMPLING

Species composition was determined for each pot fished during the survey, and all commercially important crab species were examined. The fork or total length was recorded for all commercially important fish species and all other fish and invertebrate species were enumerated. All red and blue king crabs obtained from all survey and niche fishing pots and all hair crabs *Erimacrus isenbeckii*, Tanner crabs *Chionoecetes bairdi* and snow crabs *C. opilio* captured in survey pots were enumerated and sampled for species, sex, size, shell condition, and (for females only) reproductive condition. Red and blue king crabs and hair crabs were measured for carapace length (CL) to the nearest whole mm from the posterior margin of the right eye socket to the midpoint of the rear margin of the carapace (Donaldson and Byersdorfer 2005). Tanner and snow crabs were measured for carapace width (CW) as the greatest straight line distance (excluding spines) across the carapace at a right angle to a line midway between the eyes to the midpoint of the posterior margin of the carapace (Jadamec et al. 1999). Male Tanner crabs were measured for carapace width (CW) to the nearest 0.1 mm for males and female Tanner crabs and all snow crabs were measured for CW to the nearest whole mm. Additionally, the chela height (CH), measured as the greatest height on the right chela excluding spines (Jadamec et al. 1999), of all male Tanner crabs was recorded to the nearest 0.1 mm, if no sign of regeneration was present. The fishery-legal status of male crabs was determined by the CW including spines relative to minimum legal size (≥ 6.5 in for red and blue king crab, ≥ 3.25 in for hair crab, ≥ 5.5 in for Tanner crab, and ≥ 3.1 in for snow crab). The shell age of each crab was recorded as new pliable shell, new-shell, old-shell or very old-shell according to the criteria provided in Donaldson and Byersdorfer (2005) for king crabs and in Jadamec et al. (1999) for Tanner and snow crabs.

Females carrying a clutch of eggs were scored for percent clutch fullness, clutch condition (presence or absence of dead embryos), embryo development (uneyed, eyed, or hatching), and color of eggs. Otherwise females were scored as either barren and with clean pleopods or as barren with matted pleopods.

OCEANOGRAPHIC DATA COLLECTION

Data on temperature, depth, and conductivity (salinity) were obtained by deploying three submersible temperature (STR), two temperature/depth (TDR), and three conductivity/temperature/depth (CTD) data loggers in 88 pots fished at 86 survey stations chosen to provide coverage over the range of area and depths fished during the survey and with four pots fished during niche fishing (Figure 5). Two additional STRs were deployed, as survey temperature references, for the duration of the survey at 57° 27.53' North latitude, 169° 05.00' West longitude and 57° 17.47' North latitude, 169° 20.03' West longitude, which were within the area of king crab concentrations observed during the 2003 ADF&G pot survey. Summaries of the oceanographic data recorded by location are provided in Appendix B.

BENTHIC HABITAT DATA

Data on benthic habitat types were collected throughout the survey using a seabed classification system consisting of specialized hardware and associated software (QTC VIEW¹) that acquires data from the survey vessel's echo sounder for benthic habitat classification. Echo-sounder data were acquired at all times that the vessel was traveling in the survey area. Analysis of that data is still in progress and results will not be presented here. However, at present, it appears that the rough seas and high winds encountered during the survey affected the reliability of much of the data that were acquired.

RESULTS

A total of 38,158 crabs of commercially important species were captured during the survey and niche fishing (Table 1). The most abundant species was snow crab at 56.6% of the catch, followed by Tanner crab (35.4%), red king crab (8.8%), *C. bairdi* x *C. opilio* hybrid crab (0.7%), blue king crab (0.4%), and hair crab (0.1%). A total of 3,057 fish of 25 different species and 18,339 commercially unimportant invertebrates representing 78 taxa were also caught during the survey (Tables 1 and 2).

SURVEY CATCH COMPOSITION

A total of 37,097 crabs of commercially important species were captured during the station survey (Table 3). The most abundant species was snow crab at 56.2% of the catch, followed by Tanner crab (36.4%), red king crab (6.4%), *C. bairdi* x *C. opilio* hybrid crab (0.7%), blue king crab (0.3%), and hair crab (0.1%).

RED KING CRAB

Red king crabs were captured at 59 of the 205 stations fished during the survey (Figure 6; Appendix A1). Those stations were largely north, east and southeast of St. Paul Island and north of St. George Island, essentially in the center portion of the surveyed area. Females showed a limited spatial distribution, but were captured at more stations (40 stations) than males (captured at 35 stations) and were predominately captured at stations around St. Paul Island, shoreward of the stations at which males occurred. Legal males were captured at 30 stations.

A total of 2,371 red king crabs were captured during the survey (Table 3; Appendix A1), and they were almost exclusively larger, mature-sized animals. Female red king crabs dominated the catch; they represented 96.4% (2,285) of the captured red king crabs. The 86 males captured during the survey ranged in size from 54-mm CL to 204-mm CL (Figure 7) and 95.3% (82) of the males were ≥ 120 -mm CL, the size used to identify mature males for management purposes (Vining and Zheng 2006). Eighty-eight percent (76) of all captured males were of fishery legal size, none of those legal males would be considered new recruits to legal size (i.e., were new-shelled legal males < 150 -mm CL; Vining and Zheng 2006). Of the 10 sublegal males captured, 3 were pre-recruits estimated to be one molt from legal size (i.e., sublegal males ≥ 120 -mm CL; Vining and Zheng 2006). New-shelled crabs prevailed in the majority of size classes (Figure 7), representing 51.2% of all captured and shell-aged males.

The 2,285 captured female red king crabs during the survey ranged in size from 78-mm CL to 184-mm CL (Figure 8) and averaged 150-mm CL. Only 17 females were smaller than 102-mm CL, the estimated size at which 50% of Pribilof female red king crabs are mature (Otto et al. 1990). Additionally, 2,271 of 2,283 captured females that were examined for clutch condition were mature, as evidenced by the presence of eggs or empty egg cases. Of the mature females, over 99% carried eggs.

The stations that produced the most legal red king crabs (51 crabs or 67.1%) either straddled or were north of 57° 30' North latitude. No legal-sized males were captured at 175 of the 205 stations. Only six

¹ Product names used in this report are included for scientific completeness, but do not constitute a product endorsement.

stations accounted for 56.6% (43) of all captured legal males, and one station (station 206 in statistical area 695730) alone accounted for 23.7% (18) of all legal males captured. As a result, the station survey catch per unit effort (CPUE) of legal male red king crabs was very low over the entire survey area at <0.1 crabs per pot lift. In the 30 stations where legal males were captured, the CPUE for legal males was still only 0.6 crabs per pot lift. Even when considering only the six stations where the legal male CPUE was 1.0 crab per pot or greater, the CPUE was only 1.8 crabs per pot; the top station (206) for legal males the legal CPUE was 4.5 crabs per pot lift. The highly localized distribution of legal males is also revealed when examining the CPUE in the eight stations adjacent to the station that produced the highest catch of legal males the legal CPUE was only 0.9 crabs per pot lift.

BLUE KING CRAB

Blue king crabs were captured at 32 of the 205 stations fished during the 2005 survey (Figure 9). Males occurred at 16 of those locations and were northeast and east of St. Paul Island and northeast of St. George Island. Females occurred at 25 locations and were captured primarily east of St. Paul Island and northeast of St. George Island.

A total of 95 blue king crabs were caught during the survey, all but four males were large, mature-sized animals (Table 3; Appendix A1). Twenty-six (27.4%) of the captured blue king crabs were males and they ranged in size from 104-mm to 175-mm CL (Figure 10), and only one male crab was below 120-mm CL, the size used to identify mature males for management purposes (Vining and Zheng 2006). Twenty-two (84.6%) of the males were legal sized and only 4.5% (1) of the legal males would be considered newly recruited to legal size (i.e., were new-shelled legal males <149-mm CL; Vining and Zheng 2006). Males in new-shell condition were present over most of the size range of captured males, but accounted for only 26.9% (7) of all males.

The 69 female crabs captured during the station survey and niche fishing ranged in size from 113-mm CL to 147-mm CL (Figure 11). No female was <96-mm CL, the estimated size at 50% maturity for female Pribilof blue king crab (Somerton and MacIntosh 1983), and 88.4% (61) were between 115-mm CL and 139-mm CL. All of the females were mature as evidenced by the presence of eggs or empty egg cases. Consistent with biennial spawning in blue king crab (Somerton and MacIntosh 1985), only 47.8% (33) of the females carried eggs.

The distribution of blue king crab was restricted to the eastern portion of the survey area. The CPUE of legal-sized male blue king crabs over the entire station surveyed area was only 0.03 crabs per pot. There was no group of stations or single station in which the CPUE of legal male blue king crab was greater than 1.5 crabs per pot pull, and only one station with the survey high CPUE of 1.5 crabs per pot pull. The CPUE of legal males was 0.6 crabs per pot pull when considering only the 16 stations at which legal males occurred.

DISTRIBUTION OF LEGAL MALE RED KING CRABS RELATIVE TO BLUE KING CRABS DURING THE 2005 SURVEY

Of the 30 stations that legal male red king crabs occurred at and the 32 stations that blue king crabs occurred at, legal male red king crabs and blue king crabs co-occurred at 13 stations (Figure 12). There was no statistical area at which legal red king crabs occurred with a CPUE greater than 1 crab per pot pull without blue king crabs. There was a small geographic region north of 57° 30' North latitude and west of 169° 25' West longitude in which legal red king crabs occurred where only one blue king crab was captured. Catches of legal red king crab tended to occur along an arc offshore and around St. Paul Island beginning at station 41 (56°50' N latitude, 169°41' W longitude), extending northeast to station 174 (57°15' N latitude, 169°17' W longitude), then north to station 198 (57°15' N latitude, 169°17' W longitude), and finally extending northwest to station 224 (57°35' N latitude, 169°29' W longitude), with the highest catches coming from northeast of St. Paul Island. The stations with blue king crab tended to occur north and a little east of St George Island extending from station 41 to the south to station 228

(57°15' N latitude, 169°17' W longitude) to the north. Highest catches of blue king crab were to the southeast of the highest legal red king crab catches; however, those blue king crabs were within that arc of red king crab stations. Low catches of blue king crab occurred further offshore of that arc of red king crab stations.

Legal red king crabs and blue king crabs showed similar depth distributions. Legal red king crabs were captured only at depths from 34.0 to 42.5 fathoms; the depth range in which 73% (595) of the total 815 pot lifts were fished during the survey. Blue king crabs were captured primarily at those same depths (34.0 to 42.5 fathoms), with only one crab caught at 44 fathoms and one crab at 50 fathoms. Of the remaining pot lifts fished during the survey, 114 pots, or 14%, were fished from 11.0 to 33.5 fathoms and 106 pots, or 13%, were fished from 43.0 to 55.0 fathoms. The most commonly fished depths were from 36.0 to 41.0 fathoms (517 pot lifts, or 63% of total pot lifts) and 93% of legal red king crabs and 92% of blue king crabs were caught in that depth range; legal red king crabs, blue king crabs or both red and blue king crabs occurred in 18% (91) of the pots fished in that depth range, they co-occurred in only 5 of those pots.

Highest CPUE of both legal red king crabs and blue king crabs primarily occurred in pots fished at 37 to 41 fathoms (86% of the catch, but only 0.35 crabs per pot pull). The depth with highest catch of legal red king crab (24) was 38 fathoms, where 77 pot lifts produced a CPUE of 0.31 crabs per pot lift; for the depth range of 37 to 41 fathoms the CPUE was 0.16 crabs per pot lift. Blue king crab CPUE at 37.5 fathoms (depth of highest catch) was 0.28 crabs per pot lift, whereas for the depth range of 37 to 41 fathoms the CPUE was 0.19 crabs per pot lift. Both legal red king crabs and blue king crabs display a secondary increase centered around 41 fathoms where the CPUE averaged 0.21 for legal red king crab and 0.24 for blue king crab.

Although their distributions overlapped broadly by depth and geographic location, catch per station of legal red king crabs and blue king crabs was negatively associated; highest catches of legal red king crabs occurred at stations with low catches of blue king crabs and highest catches of blue king crabs occurred at stations with low catches of legal red king crabs. In the 49 stations at which either legal red king crab or blue king crab occurred, the catches for both were very low. At 35 of those stations, the CPUE for each of legal red king crabs and blue king crabs was <1.0 crab per pot lift and averaged 0.2 crab per pot lift. There were six stations at which the station CPUE for legal red king crab was ≥ 1.0 crab per pot lift (ranging up to 4.5 crabs per pot lift), and at those the station CPUE for blue king crabs was <0.2 crab per pot lift. At the eight stations at which CPUE for blue king crabs was >1.0 crab per pot lift (ranging from 1.3 to 3.3 crabs per pot lift); the CPUE for legal red king crabs was <0.2 crab per pot lift.

TANNER CRAB

Tanner crabs were captured at 181 of the 205 stations fished during the survey (Figure 13; Appendix A1). Male crabs occurred at 179 of those locations and were distributed throughout most the area surveyed except those adjacent to the islands. The highest numbers of Tanner crab were observed primarily between and west of the islands. Female Tanner crabs occurred at 137 locations and also were distributed throughout the area. Tanner crabs were predominantly southwest of St. Paul Island and north of St. George Island. A secondary area of distribution was north and northeast of St. Paul Island. A total of 13,500 Tanner crabs were caught during the survey, of which 88% were males (Table 3).

A total of 11,907 male Tanner crabs were captured during the survey. Due to carapace damage, eight males were not measured. Carapace width of the measured males ranged from 14.5 mm to 184.7 mm and averaged 118.2 mm; 76.3% were between 100-mm and 144-mm CW (Figure 14). Only 1,821 of the measured males (14.4%) were of fishery legal size (≥ 139.7 -mm CW including lateral spines). Crabs >112-mm CW (the size used to identify mature males for management purposes; Zheng and Kruse 1999a) comprised 62.7% of measured males. Shell age was recorded for 11,905 male Tanner crabs and 26.6% of those were in new-shell or new-pliable-shell condition.

There were 1,585 female Tanner crabs captured during the survey. Measured females (1,584) ranged in size from 31-mm to 141-mm CW and averaged 80.3-mm CW; 49.3% of the female crabs were between 75-mm and 89-mm CW (Figure 15, which depicts only measured and shell-aged crabs). Immature crabs accounted for 22.0% of the 1,583 females for which reproductive status was determined. Of the mature females examined, 97.7% were ovigerous; full clutches were observed in 32.1% of the ovigerous females, dead eggs were observed in less than 0.6% of the clutches, and eyed eggs were apparent in only 0.2% of the clutches. Shell age was recorded for 1,582 female Tanner crabs, of which 15.4% were in new-shell condition.

SNOW CRAB

Snow crabs were captured at 138 of the 205 stations fished during the survey (Figure 16; Appendix A1). Male crabs occurred at all of those locations and were distributed northeast of both islands; very few males were captured south and west of St. Paul Island and northwest of St. George Island. Female crabs occurred at 43 locations that were scattered to the northeast of both islands. A total of 20,850 snow crabs were caught during the survey and 99.4% of those were males (Table 3).

A total of 20,721 snow crab males were captured on the survey, of which 20,709 were sampled for CW measurements (12 were not measured due to broken or crushed carapaces). Carapace width of measured male crabs ranged from 41 mm to 160 mm and averaged 100.5 mm; prominent size modes were observed at 90-mm CW and 123-mm CW (Figure 17). Of the measured males, 89.8% were legal-sized (≥ 79 mm-CW including lateral spines), but only 47.7% were of the industry-preferred size (≥ 102 -mm CW). New-shell crabs comprised 5.7% of the 20,703 sampled males.

There were 129 female snow crabs captured during the survey. Reproductive status was determined for 128 of the females. Immature crabs accounted for 56.3% of those captured. Of the mature females, 43.8% were ovigerous; full clutches were observed in 0.8% of the ovigerous females and no eyed or dead eggs were apparent in any clutch. New-shell crabs accounted for 44.2% of all female snow crabs. The 128 female crabs measured ranged from 33-mm to 85-mm CW, and averaged 63.7-mm CW; there were two prominent 5-mm CW class modes at 50 to 54-mm CW (which accounted for 25.0% of the female crabs) and at 75 to 79-mm CW (which accounted for 21.1% of the female crabs, Figure 18).

TANNER CRAB X SNOW CRAB HYBRIDS

Crabs identified as Tanner crab x snow crab hybrids were captured at 78 of the 205 stations fished during the survey (Figure 19). Males occurred at all of those locations and were distributed to the northeast of both islands and to the west and northwest of St. Paul Island; their distribution was very similar to that observed for snow crab. Females occurred at nine locations widely scattered throughout the area inhabited by males and primarily northeast of St. Paul Island. A total of 259 hybrid crabs were caught during the survey (Table 3), of those crabs 94.5% were males; two crabs were determined to be hermaphrodites and sex was not recorded for one crab.

There were 242 male hybrid crabs, all were shell-aged and measured. Fishery legal status was determined using ≥ 79 -mm CW including lateral spines (the legal size for snow crabs); 208 (86.0%) were legal-sized, but only 110 (45.5%) were of the industry-preferred size for snow crabs (≥ 102 -mm CW). The CPUE of industry-preferred male hybrid crab was 0.13 crab per pot. Male new-shell crabs accounted for 41.3% of the catch, old-shell crabs comprised 54.1%, and very old-shell crabs were 4.6% of the catch. Carapace width of male hybrid crabs ranged from 52 to 141-mm CW and averaged 100.6-mm CW. Two prominent size modes were observed, they were centered around 88-mm CW and 107-mm CW (Figure 20).

There were 14 female hybrid crabs captured during the survey, half were new-shell crabs and half were old-shell crabs (Figure 20). Seven crabs were mature; six crabs carried eggs and no eyed or dead eggs were apparent. Carapace widths of the female crabs ranged from 55 to 82 mm and averaged 68.1 mm.

HAIR CRAB

Hair crabs were captured at 12 of the 205 stations fished during the survey (Table 3; Figure 19). Male crabs occurred at 10 of those stations and female crabs at two stations. The males were distributed east, northeast and southwest of St. Paul Island. Females were distributed just east of St. Paul Island and just northeast of St. George Island. A total of 22 hair crabs were caught, 90.9% were males.

There were 20 male hair crabs were captured and seven were of fishery legal size (Table 3). New-shell crabs were 45%, old-shell crabs were 45%, and very old-shell crabs were 10% of the catch. Carapace length of male crabs ranged from 47 to 108 mm and averaged 72.6 mm. Due to the low numbers of hair crabs captured, no real prominent 5 mm length class mode was observed (Figure 21).

There were two female hair crabs captured during the survey, both were new-shell crabs (Figure 21). Both crabs were mature and did not carry clutches. Carapace widths of the female crabs were 48 and 58 mm.

NICHE FISHING

The 77 pots fished during niche fishing resulted in a total catch of 19 legal males, 3 sublegal males, 964 female red king crabs, 18 legal males, no sublegal males and 57 female blue king crabs (Figure 22, Appendix A2). Within the survey area, 14 legal male, 2 sublegal male and all of the female red king crabs were captured in the 29 pots set to target red king crabs for a CPUE of 0.5, 0.1 and 33 crabs per pot, respectively. Three legal male red king crabs were captured in one of the four pots set to target blue king crabs. The overall distribution of red king crabs captured during niche fishing within the survey area was consistent with that observed during the survey. Legal male red king crabs were captured at locations adjacent to survey stations where legal males were present, except the three that were caught in the four pots that were set to target blue king crabs. Female red king crabs were captured east and east-southeast of St. Paul Island at locations close to those stations which produced the highest catches females during the survey. Niche fishing in the region to the east-northeast of St. George Island outside of the survey area, a total of two legal and one sublegal male red king crabs were captured in 44 pots; the CPUE of this effort was <0.05 crab per pot pull. The pots set in this region were in response to reports from the longline groundfish fleet of recent catches of red king crabs in that area.

Niche fishing for blue king crabs was very limited as only four pots total were set to specifically to target blue king crabs within the survey area; a total of 18 legal male and 57 female blue king crabs were captured in those four pots, while no sublegal blue king crabs were captured. The CPUE for this effort was 4.5 crabs per pot pull for legal males and 14.3 crabs per pot pull for females. No blue king crabs were captured in any of the 73 pots set specifically to target red king crabs. Blue king crabs were captured east-northeast of St. Paul Island between stations which produced catches of blue king crab in the station survey.

DISCUSSION

Results of the 2005 Pribilof District king crab pot survey were similar for red king crab and blue king crab in several respects. Both species showed a distribution limited to eastern and northern portions of the surveyed area. All red king crabs were captured at stations north and east of St. Paul Island and north of St. George. In general, red king crabs were shoreward toward St. Paul Island when compared to blue king crab. Blue king crabs were captured at stations east of St. Paul Island and north and northeast of St. George Island and generally more offshore from St. Paul Island compared to red king crab. Red and blue king crab also showed a similar distribution by depth during the pot survey. Larger, mature-sized animals dominated the catch of both species during the survey, and survey results showed no indications for either species of potential recruitment to the mature stock or to the fishery in the near future. Catch per station of male red king crab and all blue king crab was low at the stations where king crabs were captured. Female red king crab displayed substantial numbers at 6 stations where the CPUE ranged from 35 to 153 crabs per pot pull and 99.2% of the mature female red king crabs were ovigerous. Overall, both species of king crab were less common than were observed in the 2003 ADF&G pot survey (Gish and Pengilly 2004) and

far less common than either Tanner crabs or snow crabs in terms of the number of animals captured or the number of stations at which they were captured. With the exception of red king crab females, the catch of king crabs was down in comparison to the 2003 pot survey even though more stations were surveyed in 2005 than in 2003. The 2005 survey did occur later in the fall than the 2003 survey, with only the first week overlapping with the previous effort.

Because the pot survey had a denser spatial distribution of survey stations than the NMFS trawl survey, it afforded greater insights into the characteristics of the distribution of legal male red king crab than the trawl survey. The pot survey results showed that legal red king crabs in September/October 2005 had a limited distribution in the Pribilof District and that within that limited distribution densities were generally low. Legal male red king crabs were absent in 175 of the 205 survey stations. In those stations at which legal red king crab males were captured, the number captured was low; only 76 were captured in 30 stations and the highest catch at any station was only 18 (4.5 crabs per pot). However, the 2003 pot survey, during which one station produced a catch of 157 legal male red king crabs (Gish and Pengilly 2004), showed that high densities of legal males in this area can be highly localized and appear unpredictably within the survey area. That feature of the distribution of red king crab in the Pribilof District has posed problems for reliable abundance estimation using data from the summer NMFS trawl survey (Rugolo et al. 2003, 2006a, 2006b; Vining and Zheng 2004, 2006). Efforts to find localized high densities of legal red king crabs through niche fishing were not successful, but did confirm the local high densities of female red king crabs observed during the survey.

Some commercial fishers with experience fishing for king crabs in the Pribilof District have reported that red king crabs tend not to be captured in the same areas as blue king crabs. Like the 2003 pot survey (Gish and Pengilly 2004), results from the 2005 pot survey provided some support for that observation. During both the 2003 and 2005 pot surveys, the highest catches of legal red king crabs occurred at stations with low catches of blue king crabs and the highest catches of blue king crabs occurred at stations with low catches of legal red king crabs. However, during both surveys, blue king crabs overlapped broadly in distribution with legal red king crabs. Moreover, the areas that are occupied predominately by blue king crabs or predominately by legal red king crabs appear to be highly localized; stations in which blue king crabs dominated the king crab catch were interspersed among stations in which legal red king crabs dominated the catch. Hence, although legal red king crabs and blue king crabs may not occupy the same area in abundance at the same time, it would be difficult to define closure areas prior to a commercial season for red king crab in the Pribilof District that would assure minimizing bycatch of blue king crab and still maintain sufficient numbers of legal red king crabs to justify a fishery.

Results on the geographic and size distributions for the Pribilof red and blue king crab from the 2005 pot survey generally corroborated results reported from the trawl survey performed by NMFS earlier in the summer of 2005 (Rugolo et al. 2006b, Vining and Zheng 2006). However, the NMFS survey captured a legal red king crab southwest of St. Paul Island at 57°6.4' N latitude, 170°33.5' W longitude during the summer 2005 trawl survey (Rugolo et al. 2006b) whereas no legal males were captured during the September/October 2005 pot survey at any of the stations southwest of St. Paul Island, including four stations that surrounded that capture location. In 2005, neither the trawl survey nor the pot survey performed offered evidence of juvenile crabs that could provide recruitment to the mature or fishable component of either stock. Data collected by the trawl survey in 2005 were used to estimate abundance of blue and red king crab in the Pribilof District (Vining and Zheng 2006). Although population estimates were not computed from the data collected from the pot survey, the results of the pot survey for blue king crab were consistent with the extremely low abundance estimated for blue king crabs from the trawl survey data. Both surveys indicated that the blue king crab stock is depressed with no indication of stock conditions improving in the near future. On the other hand, the summer 2005 trawl survey also provided data that resulted in an estimate for legal red king crab abundance in the Pribilof District of 0.8 million crabs (Vining and Zheng 2006). However, given the results of the 2005 pot survey, it is doubtful that even a small commercial red king crab fishery (e.g., 0.5 million pounds or roughly 70,000 animals) could have

been prosecuted in the fall of 2005 without a prolonged season that would increase the bycatch of blue king crab. Furthermore, results of the niche fishing component of the survey were extremely poor, with a CPUE of legal red king crabs of 0.25 crab per pot pull and 0.97 crab per pot pull for all blue king crabs.

Changes in biological productivity have been linked to changes in the Bering Sea environment (Schumacher et al. 2003; Livingston and Wilderbuer 2004; Overland, and Stabeno (2004); Lovvorn et al. 2005; Grebmeier 2006). The apparent lack of king crab recruitment in the Pribilof Islands area may reflect a large-scale environmental event affecting abundance and distribution. The extent to which these changes affect the red and blue king crabs distribution and abundance is not known. The Pribilof District will be the site of another ADF&G king crab pot survey in fall of 2008 to gain additional information on the distribution and condition of red and blue king crab stocks.

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TABLES AND FIGURES

Table 1.-Catches of crabs and fish of commercial importance and all other fish, ranked by number of occurrences, during the 2005 Pribilof District pot survey and concurrent niche fishing.

Scientific Name	Common Name	Total
Commercial Crab		
<i>Chionoecetes opilio</i>	Snow Crab	20,850
<i>Chionoecetes bairdi</i>	Tanner Crab	13,500
<i>Paralithodes camtschaticus</i>	Red King crab	3,357
<i>Chionoecetes hybrid</i>	Hybrid Tanner Crab	259
<i>Paralithodes platypus</i>	Blue King Crab	170
<i>Erimacrus isenbeckii</i>	Hair Crab	22
		38,158
Commercial Fish		
<i>Gadus macrocephalus</i>	Pacific Cod	931
<i>Limanda aspera</i>	Yellowfin Sole	435
<i>Hippoglossus stenolepis</i>	Pacific Halibut	62
<i>Theragra chalcogramma</i>	Walleye Pollock	14
<i>Sebastes polyspinis</i>	Northern Rockfish	6
<i>Lepidopsetta polyxystra</i>	Northern Rock Sole	2
<i>Atheresthes stomias</i>	Arrowtooth Flounder	1
<i>Hippoglossoides elassodon</i>	Flathead Sole	1
<i>Pleurogrammus monopterygius</i>	Atka Mackerel	1
		1,453
Other Fish		
<i>Hemilepidotus jordani</i>	Yellow Irish Lord	1,433
<i>Myoxocephalus verrucosus</i>	Warty Sculpin	82
<i>Myoxocephalus polyacanthocephalus</i>	Great Sculpin	22
<i>Podothecus acipenserinus</i>	Sturgeon Poacher	19
<i>Bathymaster signatus</i>	Searcher	13
Family Cottidae	Sculpin Unidentified	12
<i>Anarhichas orientalis</i>	Bering Wolffish	5
<i>Malacocottus kincaidi</i>	Blackfin Sculpin	4
<i>Hemitripterus bolini</i>	Bigmouth Sculpin	4
<i>Bathyraja parmifera</i>	Alaska Skate	2

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Table 1.-Page 2 of 2.

Scientific Name	Common Name	Total
Other Fish (Cont.)		
<i>Blepsias bilobus</i>	Created Sculpin	2
<i>Icelinus burchami</i>	Dusky Sculpin	2
<i>Myoxocephalus jaok</i>	Plain Sculpin	1
<i>Hexagrammos decagrammus</i>	Kelp Greenling	1
<i>Aptocyclus ventricosus</i>	Smooth Lumpsucker	1
<i>Lycodes brevipes</i>	Shortfin Eelpout	1
		<hr/> 1,604

Table 2.-Catches of commercially unimportant invertebrates, ranked by number of occurrences, during the 2005 Pribilof District pot survey and concurrent niche fishing.

Scientific Name	Common Name	Total
<i>Asterias amurensis</i>	Purple-Orange Sea Star	12,575
<i>Hyas lyratus</i>	Pacific Lyre Crab	1,923
<i>Ophiura sarsi</i>	Notched Brittlestar	419
<i>Evasterias</i> sp.	Sea Star Unidentified	339
<i>Fusitriton oregonensis</i>	Hairy Triton	279
Class Scyphozoa	Scyphozoan Jellyfish	270
<i>Buccinum polare</i>	Polar Whelk	270
<i>Buccinum scalariforme</i>	Ladder Whelk	267
<i>Strongylocentrotus droebachiensis</i>	Green Sea Urchin	240
<i>Boltenia ovifera</i>	Sea Onion	208
<i>Pagurus ochotensis</i>	Alaskan Hermit Crab	204
<i>Elassochirus tenuimanus</i>	Widehand Hermit Crab	177
<i>Neptunea pribiloffensis</i>	Pribilof Whelk	173
<i>Chrysaora</i> sp.	Pelagiidae Jellyfish	73
<i>Buccinum angulosum</i>	Angular Whelk	71
<i>Octopus dofleini</i>	Giant Octopus	67
<i>Styela</i> sp.	Sea Squirt Unidentified	67
<i>Pagurus aleuticus</i>	Aleutian Hermit Crab	58
<i>Halocynthia aurantium</i>	Sea Peach	54
<i>Oregonia gracilis</i>	Graceful Decorator Crab	43
Family Paguridae	Hermit Crab Unidentified	43
<i>Elassochirus cavimanus</i>	Purple Hermit Crab	38
<i>Neptunea lyrata</i>	Lyre Whelk	37
<i>Pagurus capillatus</i>	Hairy Hermit Crab	33
<i>Neptunea ventricosa</i>	Fat Whelk	30
<i>Cucumaria fallax</i>	Sea Football	28
<i>Hyas coarctatus</i>	Circumboreal Toad Crab	24
<i>Serripes laperousii</i>	Broad Cockle	22
<i>Ophiopholis longispina</i>	Brittle Star	22
Order Actiniaria	Sea Anemone Unidentified	19

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Table 2.-Page 2 of 3.

Scientific Name	Common Name	Total
<i>Leptasterias arctica</i>	North Pacific Sea Star	19
Order Hydroida	Hydroid Unidentified	18
<i>Plicifusus kroyeri</i>	Kroeyer's Plicifus	18
<i>Pagurus trigonocheirus</i>	Fuzzy Hermit Crab	17
<i>Gorgonocephalus eucnemis</i>	Basketstar	16
<i>Buccinum plectrum</i>	Sinuuous Whelk	15
<i>Ophiopholis aculeata</i>	Ubiquitous Brittle Star	15
<i>Flustra serrulata</i>	Leafy Bryozoan	15
<i>Pagurus confragosus</i>	Knobbyhand Hermit Crab	14
Class Bivalvia	Bivalve Unidentified	13
<i>Lethasterias nanimensis</i>	Blackspined Sea Star	13
<i>Pododesmus macroschisma</i>	Alaska Falsejingle	11
<i>Chlamys rubida</i>	Reddish Scallop	10
<i>Buccinum</i>	Buccinum Whelk Unidentified	8
<i>Evasterias troschelii</i>	Mottled Sea Star	8
<i>Colus halli</i>	Shrew Whelk	4
<i>Clinocardium ciliatum</i>	Hairy cockle	4
<i>Gersemia</i> sp.	Sea Raspberry	3
<i>Eunoe nodosa</i>	Giant Scale Worm	3
<i>Colus</i> sp.	Colus Whelk Unidentified	3
<i>Neptunea heros</i>	Northern Neptune	3
<i>Macoma nasuta</i>	Bent-nose Macoma	3
Order Clypeasteroidea	Sand Dollar Unidentified	3
<i>Pagurus dalli</i>	Whiteknee Hermit Crab	2
Class Gastropoda eggs	Snail Eggs	2
<i>Evasterias echinosoma</i>	Giant Sea Star	2
Phylum Porifera	Sponge Unidentified	2
Phylum Bryozoa	Bryozoan Unidentified	2
<i>Eunoe depressa</i>	Depressed Scale Worm	1
<i>Cancer oregonensis</i>	Pygmy Cancer Crab	1

-continued-

Table 2.-Page 3 of 3.

Scientific Name	Common Name	Total
<i>Elassochirus gilli</i>	Pacific Red Hermit Crab	1
<i>Placetron wosnessenskii</i>	Scaled crab	1
<i>Cryptochiton stelleri</i>	Giant Pacific Chiton	1
<i>Neptunea</i> sp. eggs	Neptunea Species Eggs	1
<i>Crepidula</i> sp.	Slipper Shell Unidentified	1
<i>Volutopsius</i> sp.	Melon Snail Unidentified	1
<i>Neptunea borealis</i>	Little Neptune	1
<i>Modiolus modiolus</i>	Northern Horse Mussel	1
<i>Musculus niger</i>	Black Mussel	1
Family Cardiidae	Cockle Unidentified	1
<i>Macoma</i> sp.	Macoma Clam	1
<i>Siliqua alta</i>	Alaska Razor Clam	1
Class Asteroidea	Sea Star Unidentified	1
<i>Crossaster papposus</i>	Rose Sea Star	1
<i>Ctenodiscus crispatus</i>	Common Mud Star	1
<i>Dipsacaster borealis</i>	Northern Sea Star	1
Class Ophiuroidea	Brittle Star Unidentified	1
Class Holothuroidea	Sea Cucumber Unidentified	1
		<hr/> 18,339

Table 3.-Crabs of commercial importance captured during the 2005 Pribilof District king crab survey.

Species		Number	CPUE
Red King Crab	Legal Males	76	0.09
	Sublegal Males	10	0.01
	Females	<u>2,285</u>	2.80
	Total	2,371	
Blue King Crab	Legal Males	22	0.03
	Sublegal Males	4	<0.01
	Females	<u>69</u>	0.08
	Total	95	
Tanner Crab	Legal Males	1,821	2.23
	Sublegal Males	10,086	12.38
	Females	<u>1,585</u>	1.94
	Total	13,500 ^a	
Snow Crab	Legal Males ^b	9,882	12.13
	Sublegal Males ^b	10,827	13.28
	Females	<u>129</u>	0.16
	Total	20,850 ^c	
Tanner crab x Snow Crab Hybrid Crab	Legal Males ^b	110	0.13
	Sublegal Males ^b	132	0.16
	Females	<u>14</u>	0.02
	Total	259 ^d	
Hair Crab	Legal Males	7	0.01
	Sublegal Males	13	0.02
	Females	<u>2</u>	<0.01
	Total	22	
Total		37,097	

^a Total includes 8 additional unmeasured male Tanner crabs.

^b Large males are 102mm and greater, small male are less than 102mm.

^c Total includes 12 additional unmeasured male snow crabs.

^d Total includes 1 unsexed and 2 hermaphrodite hybrid crabs.

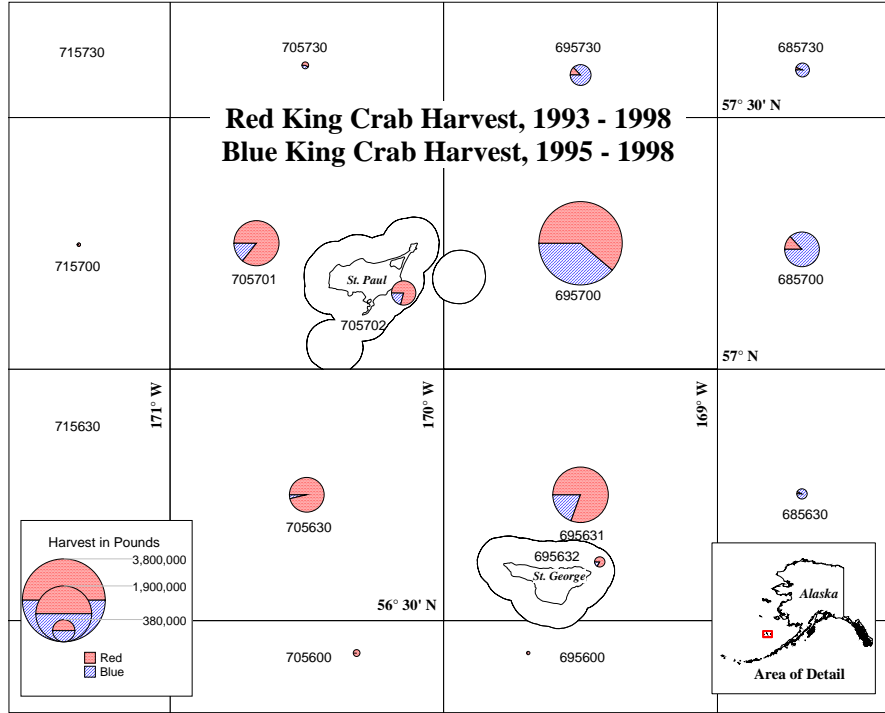


Figure 1.-King crab harvest in the Pribilof District by statistical area for the years 1993 through 1998.

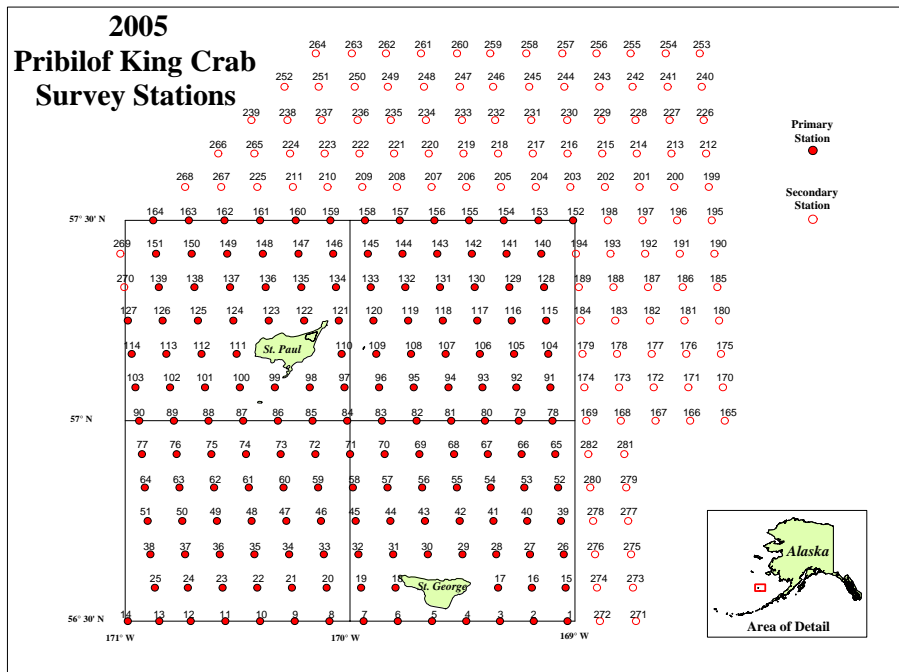


Figure 2.-The 2005 Pribilof District king crab survey area showing the location of primary and secondary stations.

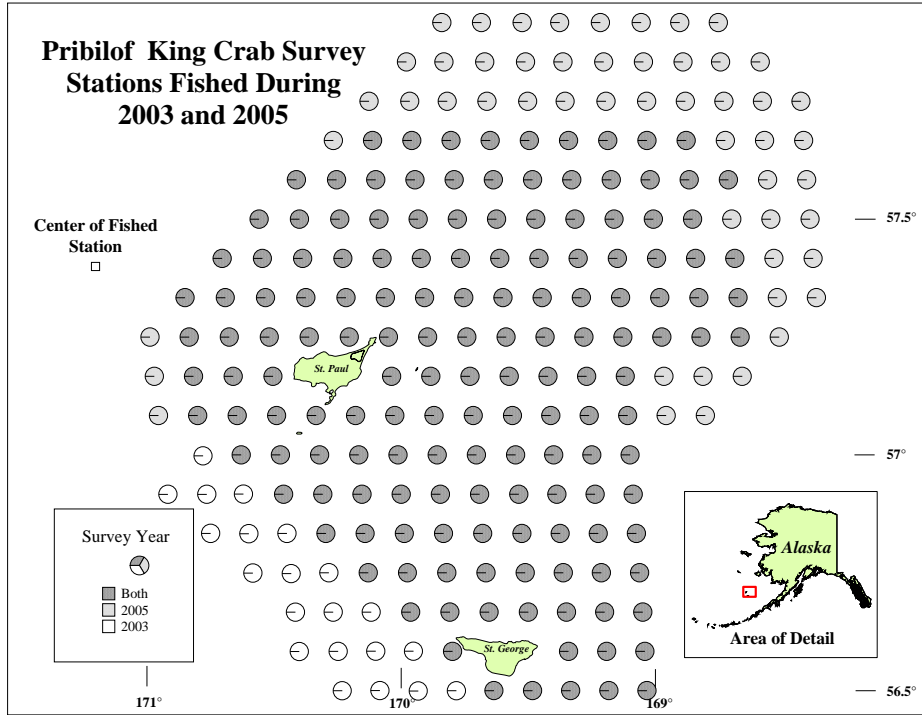


Figure 3.-Comparison of stations fished in 2003, 2005 and in both surveys.

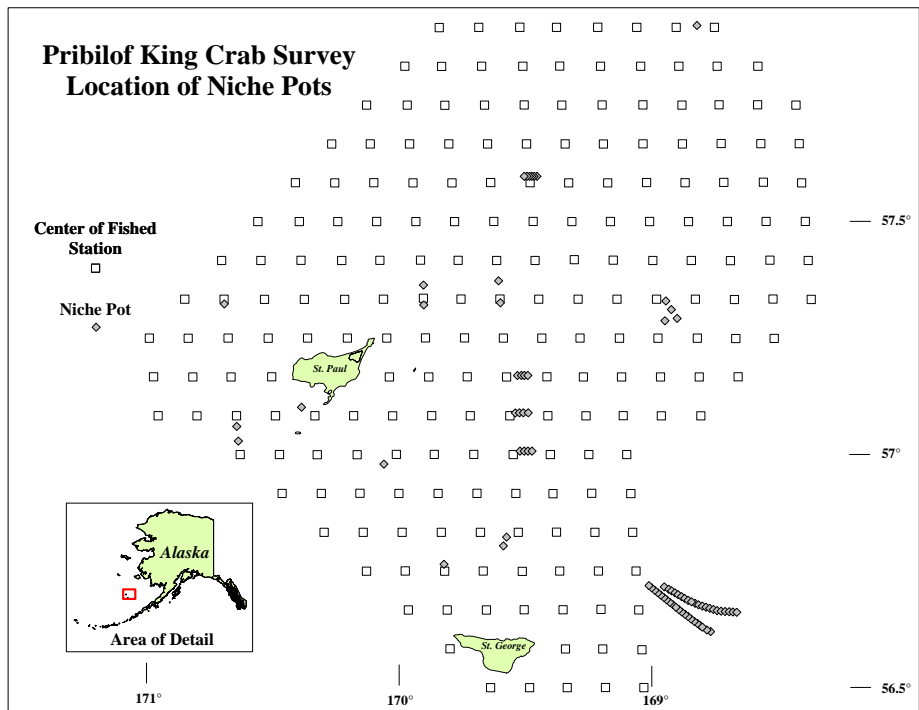


Figure 4.-Location of niche pots fished during the 2005 survey.

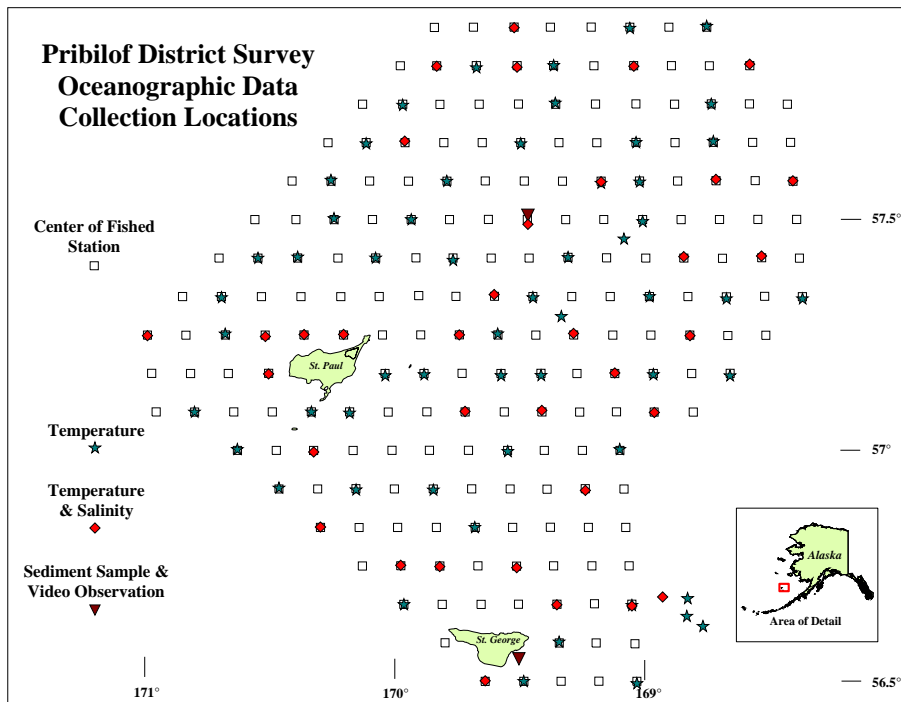


Figure 5.-Oceanographic data collection sites sampled in the Pribilof District during the 2005 survey.

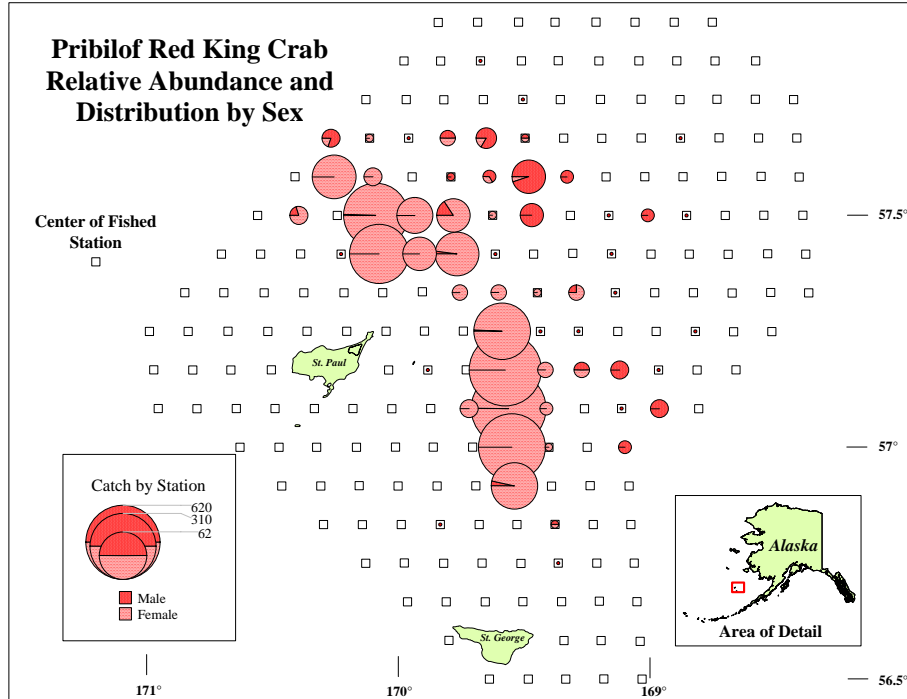


Figure 6.-Distribution and relative abundance by sex of red king crab captured in the Pribilof District during the 2005 survey.

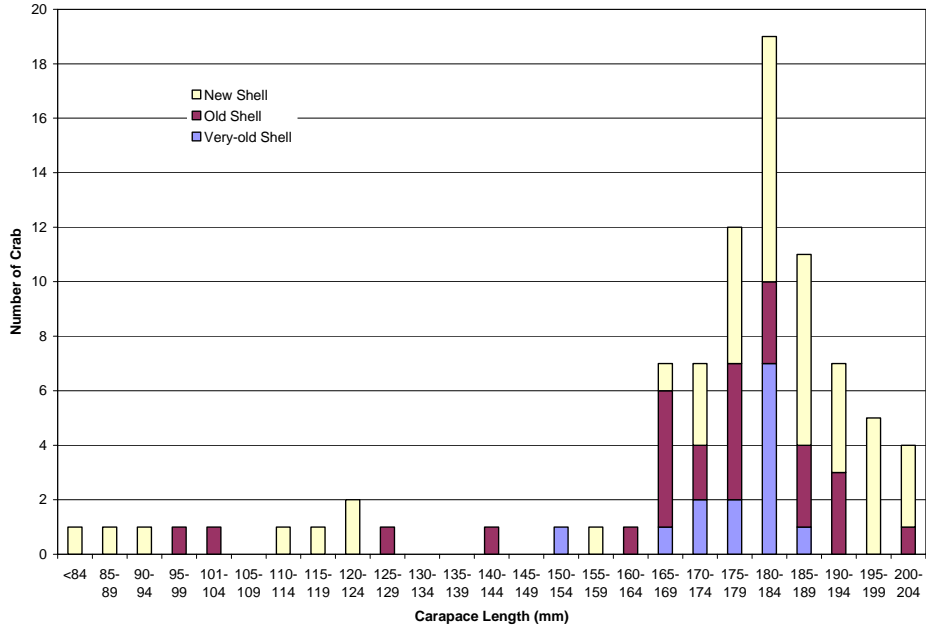


Figure 7.-Male red king crab length frequency, by 5-mm size classes, showing shell-age categories ($n=86$).

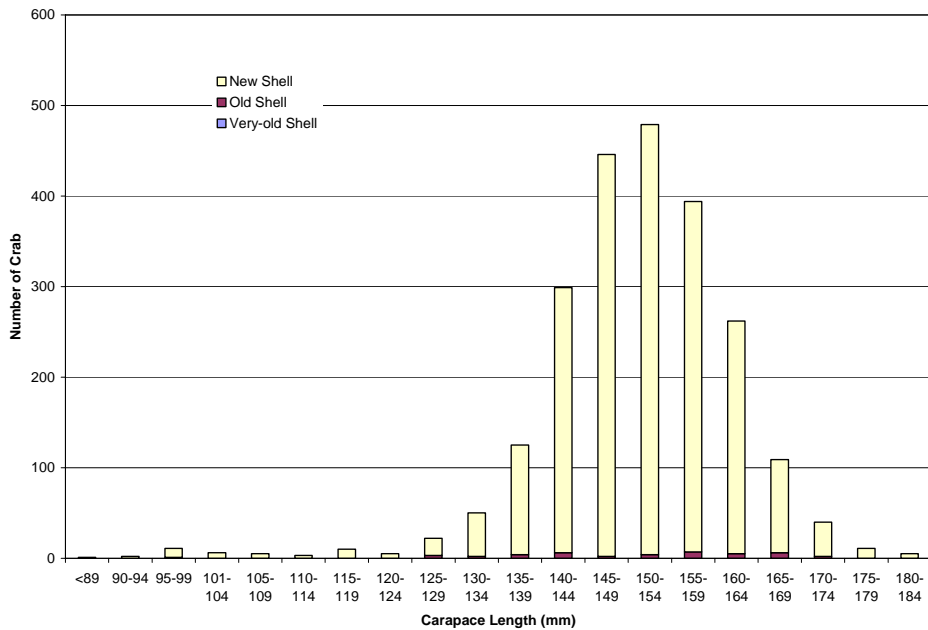


Figure 8.-Female red king crab length frequency, by 5-mm size classes, showing shell-age categories ($n=2,285$).

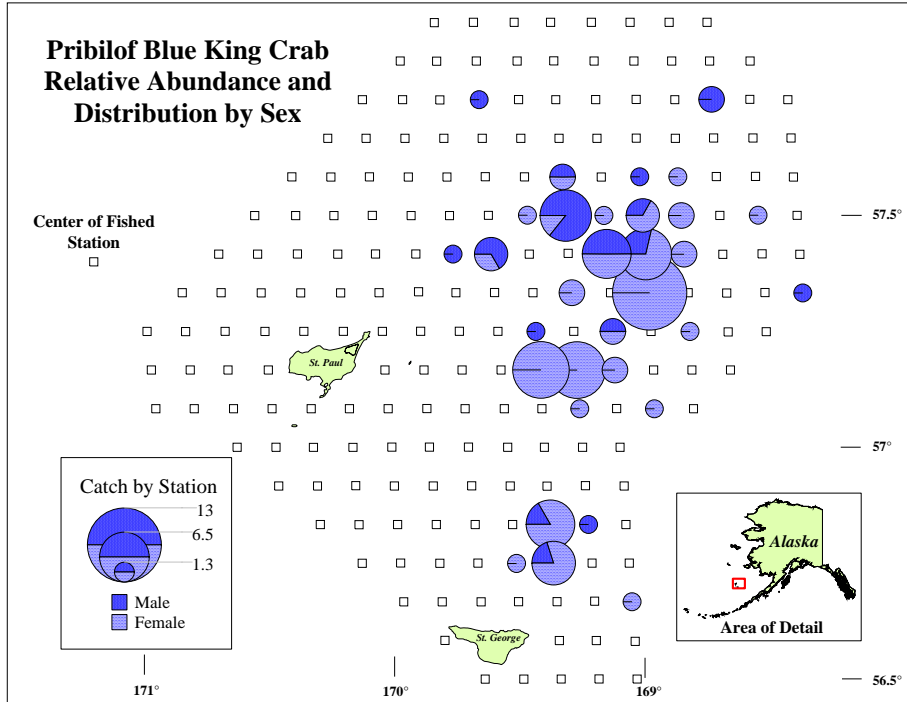


Figure 9.-Distribution and relative abundance by sex of blue king crab captured in the Pribilof District during the 2005 survey.

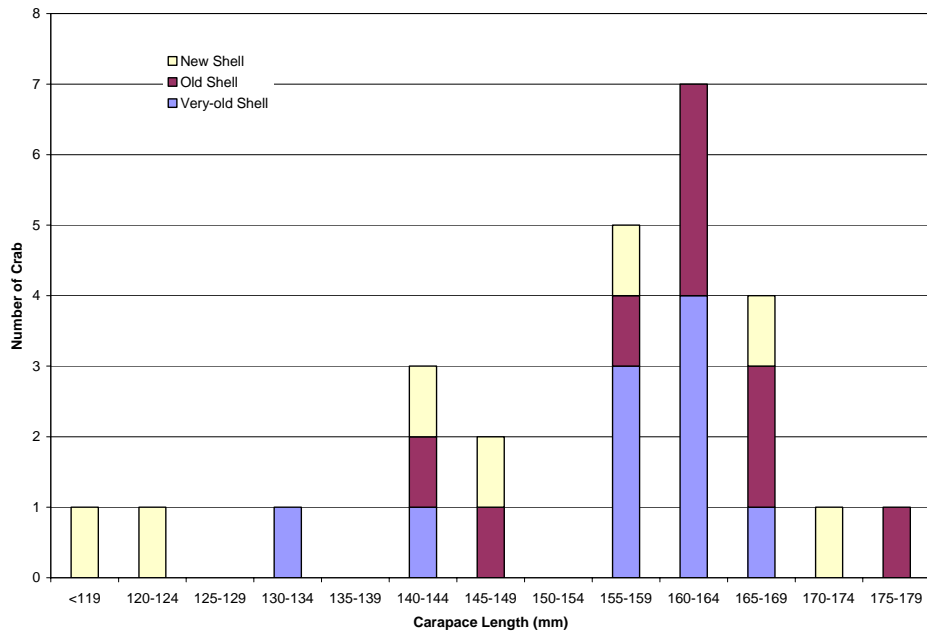


Figure 10.-Male blue king crab length frequency, by 5-mm size classes, showing shell-age categories ($n=26$).

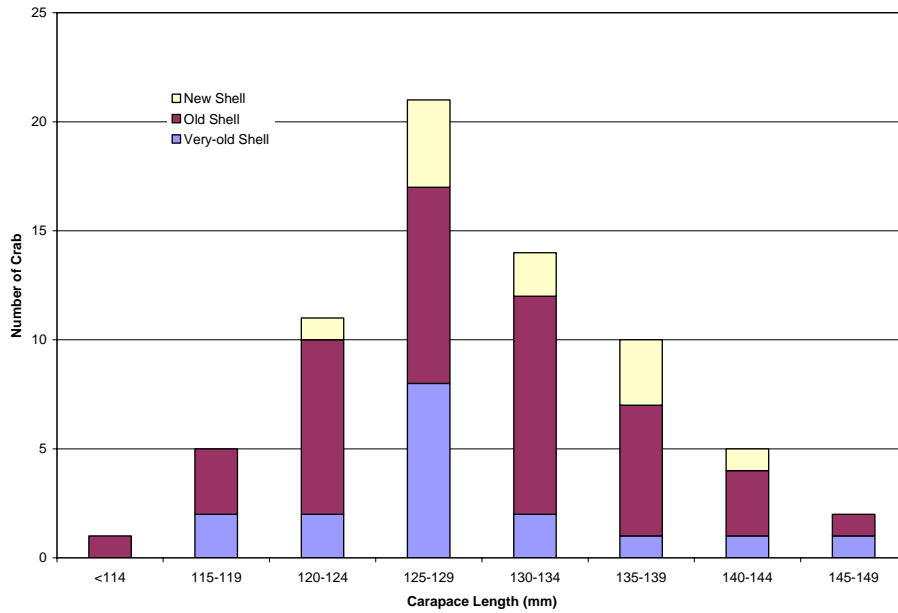


Figure 11.-Female blue king crab length frequency, by 5-mm size classes, showing shell-age categories ($n=69$).

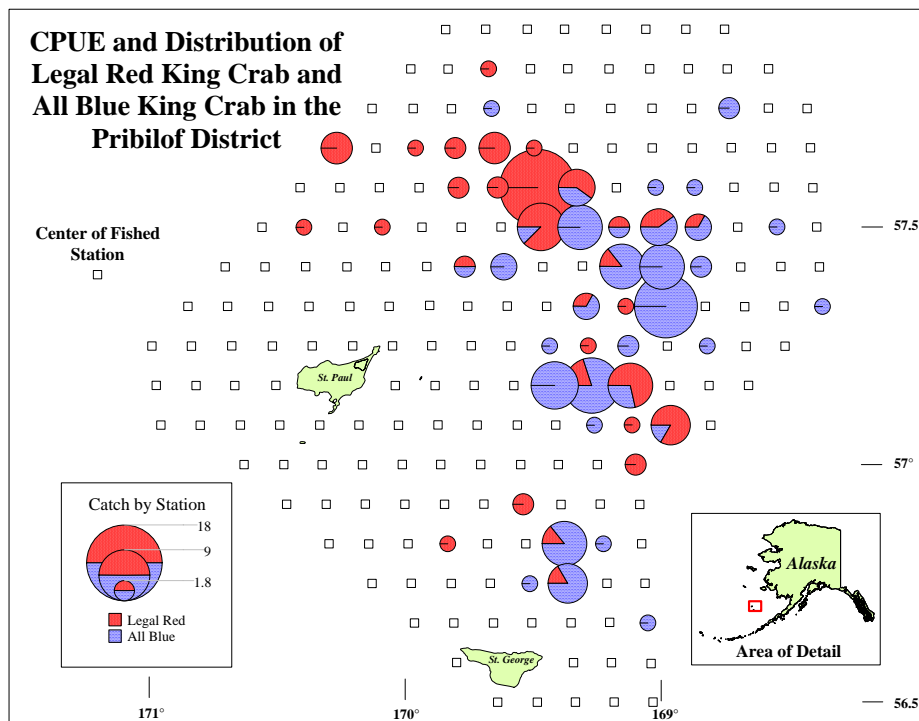


Figure 12.-CPUE and distribution of legal red king crab and all blue king crab captured in the Pribilof District during the 2005 survey.

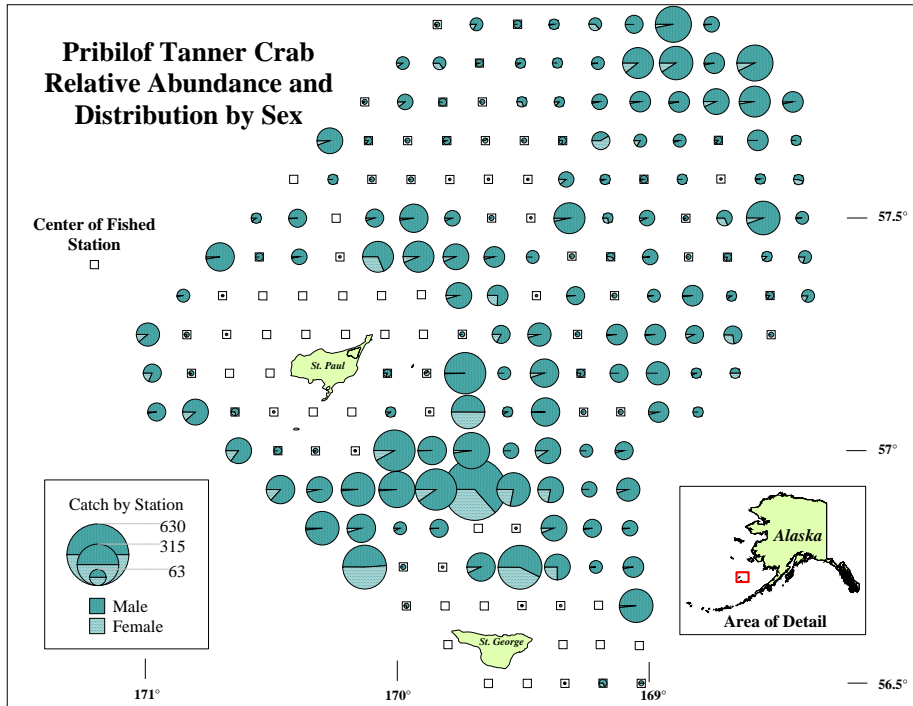


Figure 13.-Distribution and relative abundance by sex of Tanner crab captured in the Pribilof District during the 2005 survey.

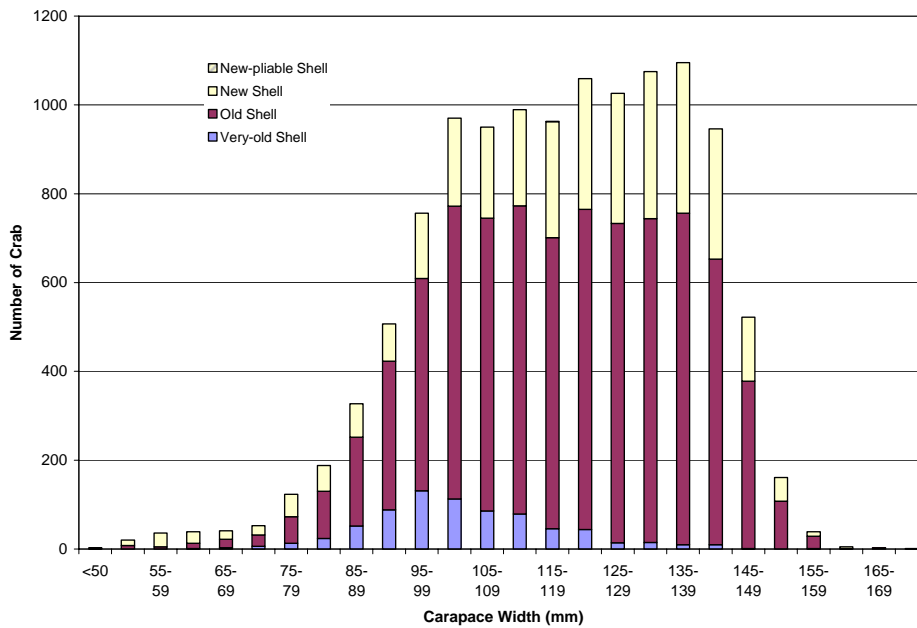


Figure 14.-Male Tanner crab width frequency, by 5-mm size classes, showing shell-age categories ($n=11,897$).

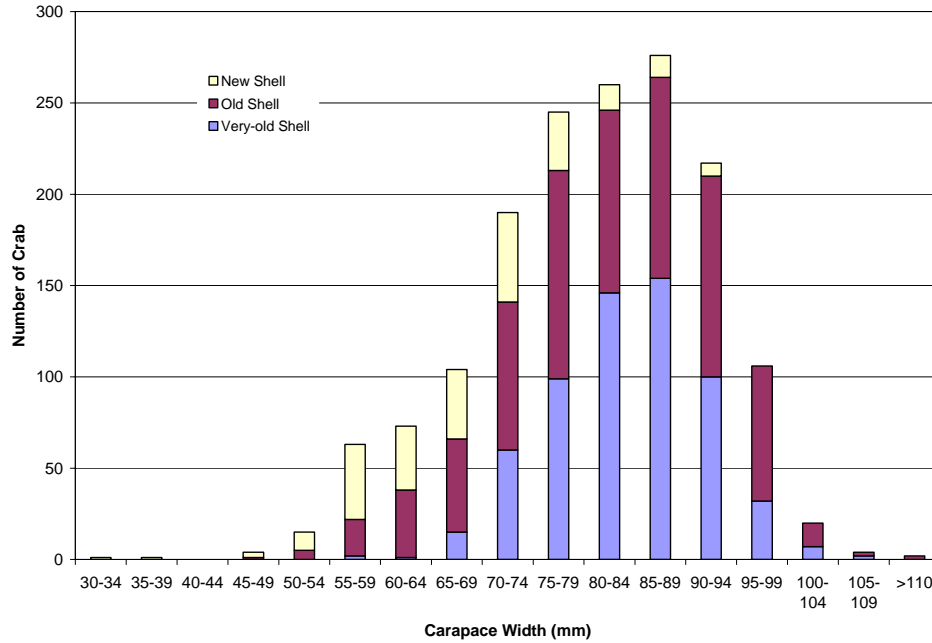


Figure 15.-Female Tanner crab width frequency, by 5-mm size classes, showing shell-age categories ($n=1,581$).

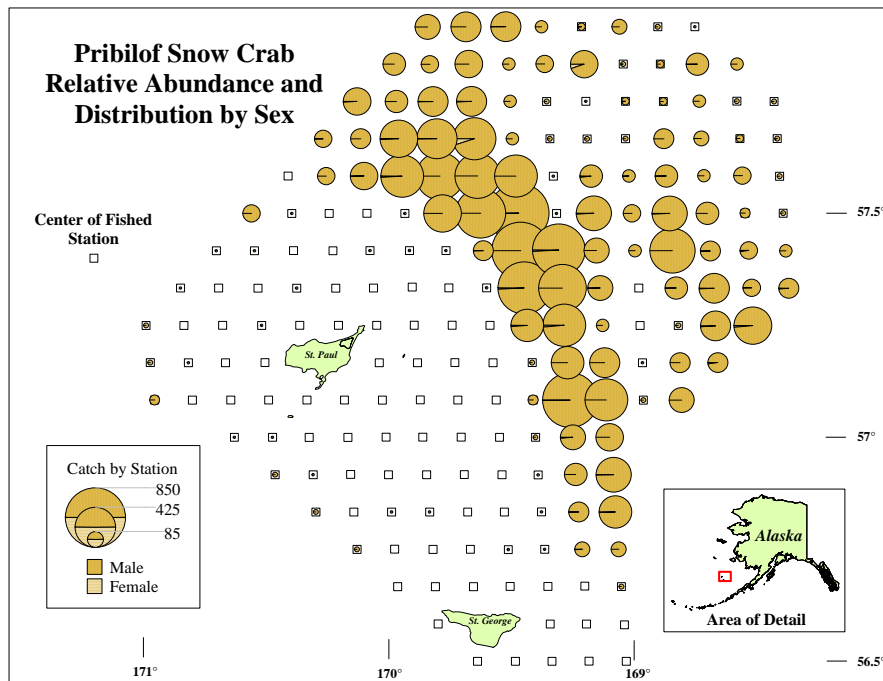


Figure 16.-Distribution and relative abundance by sex of snow crab captured in the Pribilof District during the 2005 survey.

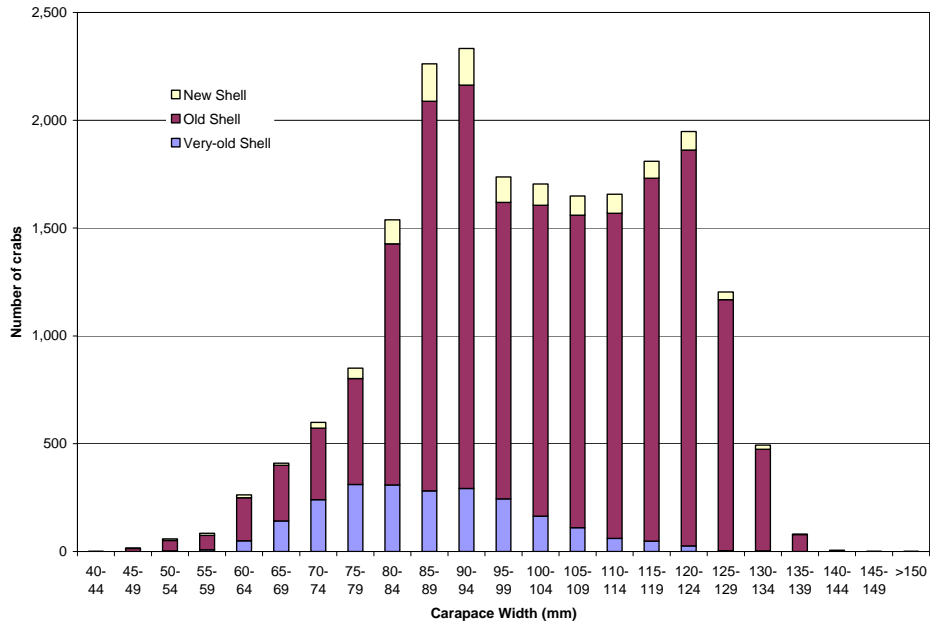


Figure 17.-Male snow crab width frequency, by 5-mm size classes, showing shell-age categories ($n=20,703$).

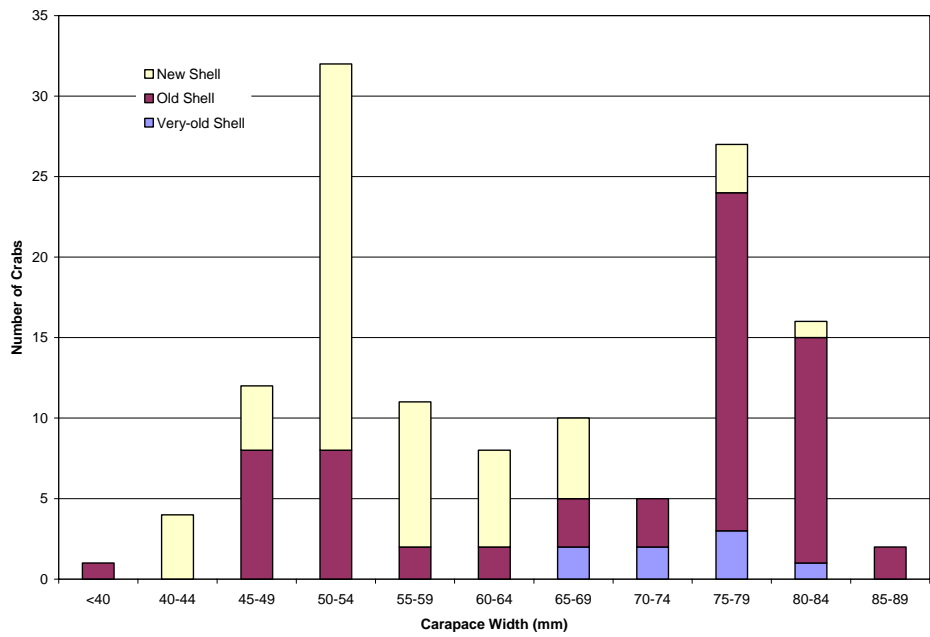


Figure 18.-Female snow crab width frequency, by 5-mm size classes, showing shell-age categories ($n=128$).

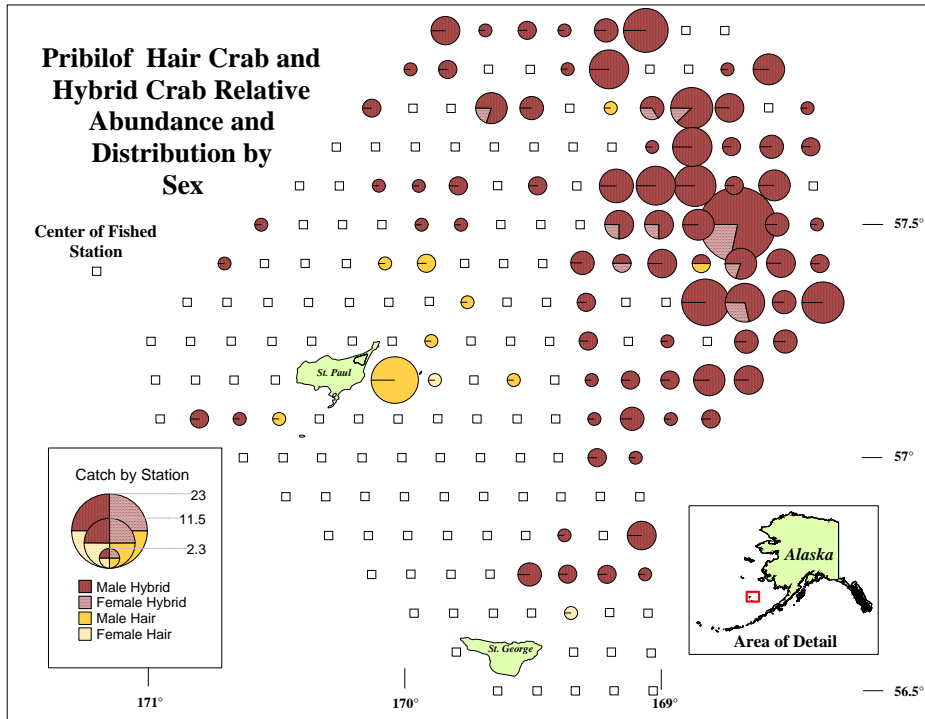


Figure 19.-Distribution and relative abundance by sex of Tanner crab x snow crab hybrid and hair crab captured in the Pribilof District during the 2005 survey.

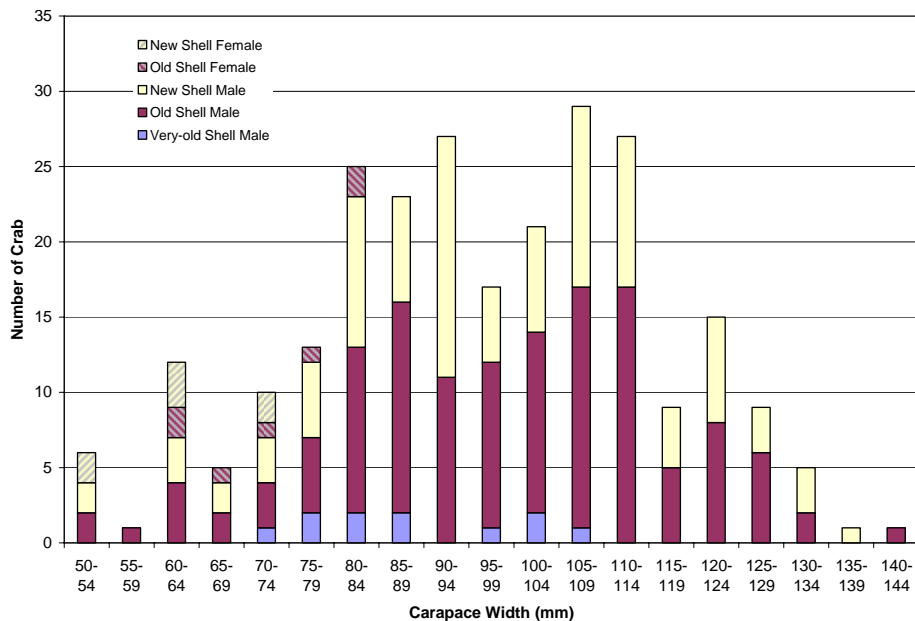


Figure 20.-Male and female Tanner crab x snow crab hybrid width frequency, by 5-mm size classes, showing shell-age categories (male $n=242$, female $n=14$).

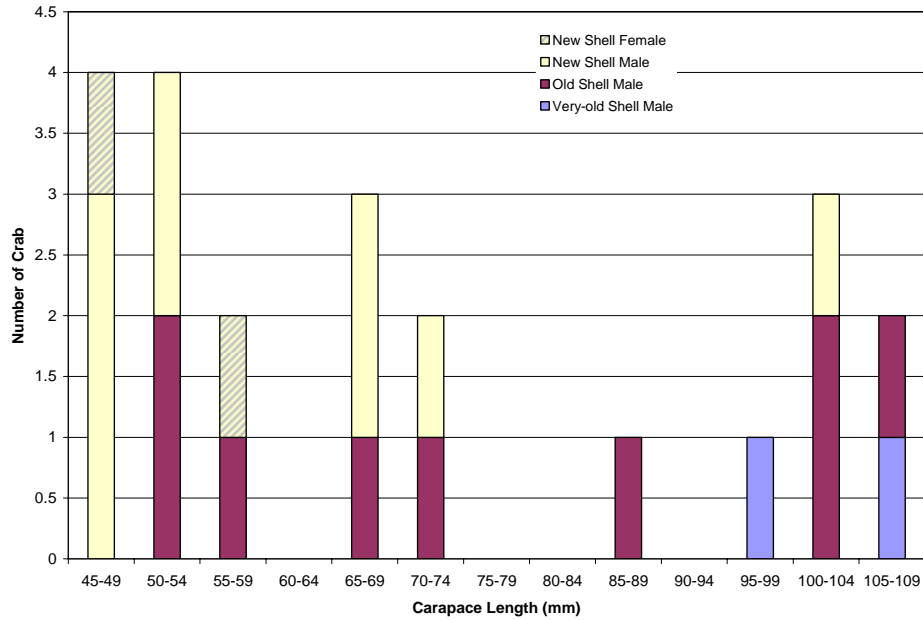


Figure 21.-Male and female hair crab length frequency showing shell-age categories (male $n=20$, female $n=2$).

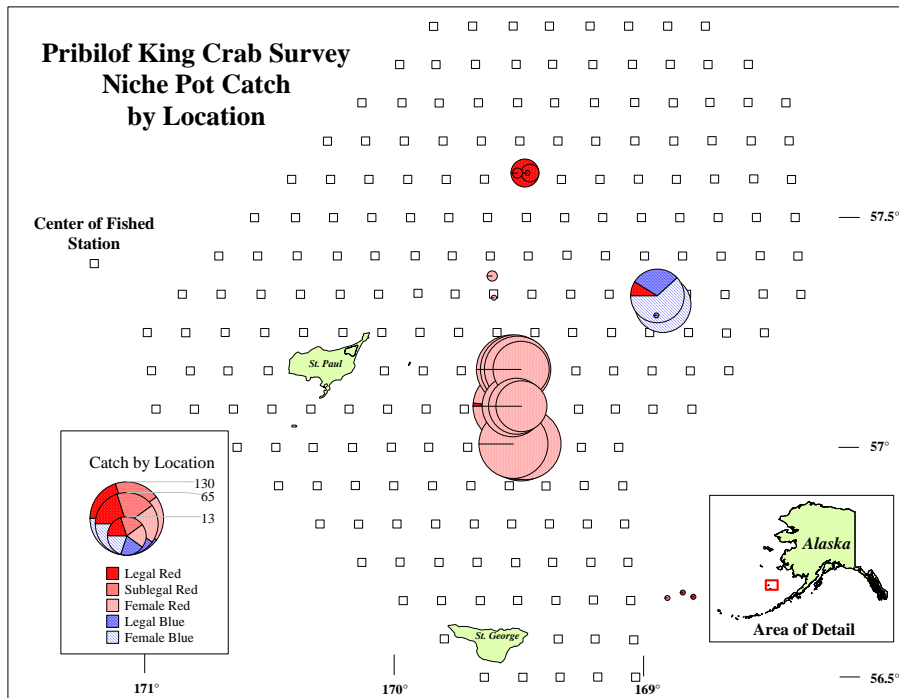


Figure 22.-Distribution and relative abundance by sex and species of king crabs captured in niche fishing pots in the Pribilof District, 2005.

APPENDIX A. CRAB CATCH DATA

Appendix A1.-Catch by station (4 pots per station) of red king crabs, blue king crabs, Tanner crabs, and snow crabs during the 2005 Pribilof District king crab survey.

Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
1	10/1	54.8	56	29.98	169	01.89	0	0	0	0	0	0	0	3	3	0	0	0
2	10/1	53.0	56	29.99	169	11.02	0	0	0	0	0	0	0	8	4	0	0	0
3	10/1	49.0	56	29.98	169	20.10	0	0	0	0	0	0	0	2	1	0	0	0
4	10/10	43.3	56	29.97	169	29.04	0	0	0	0	0	0	0	0	0	0	0	0
5	10/10	44.9	56	29.97	169	38.31	0	0	0	0	0	0	0	0	0	0	0	0
15	10/1	43.6	56	34.84	169	02.37	0	0	0	0	0	0	0	0	0	0	0	0
16	10/1	38.5	56	34.95	169	11.65	0	0	0	0	0	0	0	0	0	0	0	0
17	10/1	29.1	56	34.96	169	20.53	0	0	0	0	0	0	0	0	0	0	0	0
18	10/10	38.9	56	34.97	169	47.93	0	0	0	0	0	0	0	0	0	0	0	0
26	10/1	49.9	56	39.98	169	03.10	0	0	0	0	0	1	26	189	4	12	1	0
27	10/1	37.3	56	40.05	169	12.07	0	0	0	0	0	0	0	0	0	0	0	0
28	10/1	36.4	56	39.99	169	21.08	0	0	0	0	0	0	0	0	1	0	0	0
29	10/10	42.0	56	40.00	169	30.32	0	0	0	0	0	0	0	1	1	0	0	0
30	10/10	39.9	56	39.97	169	39.26	0	0	0	0	0	0	0	0	0	0	0	0
31	10/10	40.9	56	39.97	169	48.60	0	0	0	0	0	0	0	0	0	0	0	0
32	10/10	48.1	56	39.97	169	57.81	0	0	0	0	0	0	0	5	2	0	0	0
39	10/2	48.0	56	44.97	169	03.77	0	0	0	0	0	0	28	63	3	71	15	0
40	10/2	46.0	56	44.98	169	12.68	0	0	0	0	0	0	14	22	1	62	11	1
41	10/2	42.5	56	44.98	169	21.87	1	0	0	1	0	4	22	76	33	0	1	0
42	10/9	41.0	56	44.94	169	30.78	0	0	0	0	0	1	15	184	148	1	0	0
43	10/9	40.6	56	44.98	169	40.05	0	0	0	0	0	0	2	144	11	0	0	0
44	10/9	41.4	56	44.97	169	49.20	0	0	0	0	0	0	0	0	2	0	0	0
45	10/11	44.0	56	44.99	169	58.57	0	0	0	0	0	0	3	2	0	0	0	0

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Appendix A1.-Page 2 of 9.

Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Males	Females	Males	Females	Males	Females	Large ^a	Small ^a		
							Legal	Sublegal	Legal	Sublegal	Legal	Sublegal	Legal	Sublegal				
46	10/11	49.3	56	44.97	170	07.78	0	0	0	0	0	0	34	128	168	3	9	0
52	10/2	44.6	56	49.97	169	04.56	0	0	0	0	0	0	7	40	1	161	138	2
53	10/2	44.0	56	49.98	169	13.52	0	0	0	1	0	0	13	62	2	39	83	1
54	10/2	41.0	56	49.98	169	22.64	1	0	1	1	0	5	32	103	9	4	1	0
55	10/9	36.9	56	49.97	169	31.72	0	0	0	0	0	0	0	2	0	0	0	0
56	10/9	36.1	56	49.98	169	40.70	0	0	0	0	0	0	0	0	0	0	0	0
57	10/9	38.5	56	49.97	169	50.00	1	0	0	0	0	0	20	53	1	0	1	0
58	10/11	38.8	56	49.97	169	59.31	0	0	0	0	0	0	11	29	3	2	0	0
59	10/11	45.1	56	49.96	170	08.55	0	0	0	0	0	0	39	121	8	0	0	0
60	10/11	50.8	56	49.97	170	17.84	0	0	0	0	0	0	70	149	4	3	12	0
65	10/2	43.5	56	54.96	169	05.00	0	0	0	0	0	0	14	102	6	183	162	1
66	10/2	41.5	56	55.00	169	14.27	0	0	0	0	0	0	20	42	0	64	96	0
67	10/2	39.6	56	54.94	169	23.47	0	0	0	0	0	0	47	60	30	1	0	0
68	10/9	35.8	56	54.97	169	32.32	2	0	57	0	0	0	46	120	47	0	0	0
69	10/9	34.8	56	54.99	169	41.53	0	0	0	0	0	0	110	289	229	0	0	0
70	10/9	36.5	56	54.97	169	50.76	0	0	0	0	0	0	60	213	30	0	0	0
71	10/11	38.0	56	54.97	170	00.08	0	0	0	0	0	0	41	190	3	0	0	0
72	10/11	42.3	56	54.99	170	09.32	0	0	0	0	0	0	61	154	3	0	0	0
73	10/11	46.6	56	54.97	170	18.50	0	0	0	0	0	0	32	110	5	1	2	0
74	10/11	50.1	56	54.97	170	27.79	0	0	0	0	0	0	2	131	21	4	8	0
78	10/3	42.5	56	59.98	169	05.97	2	1	0	0	0	0	11	62	3	158	73	0
79	10/3	40.5	56	59.98	169	14.97	0	0	0	0	0	0	14	20	0	114	71	3
80	10/3	38.5	56	59.98	169	24.10	0	0	2	0	0	0	64	69	14	4	9	0
81	10/8	32.0	56	59.98	169	32.91	0	0	332	0	0	0	14	42	0	0	0	0

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Appendix A1.-Page 3 of 9.

Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females		
							Legal	Sublegal	Legal	Sublegal	Legal	Sublegal	Legal	Sublegal	Large ^a	Small ^a		
82	10/8	33.0	56	59.99	169	42.31	0	0	0	0	0	0	55	174	5	0	0	0
83	10/8	34.0	56	59.99	169	51.68	0	0	0	0	0	0	20	133	1	0	0	0
84	10/12	35.4	56	59.99	170	00.66	0	0	0	0	0	0	29	261	26	0	0	0
85	10/12	36.5	56	59.97	170	10.00	0	0	0	0	0	0	0	1	1	0	0	0
86	10/12	34.0	56	59.97	170	19.48	0	0	0	0	0	0	2	4	1	0	0	0
87	10/12	41.9	56	59.98	170	28.45	0	0	0	0	0	0	6	14	0	0	1	0
88	10/13	46.4	56	59.98	170	37.77	0	0	0	0	0	0	12	101	20	1	3	0
91	10/3	41.0	57	04.99	169	06.78	1	0	0	0	0	0	5	6	0	278	192	0
92	10/3	40.0	57	04.97	169	15.62	0	0	0	0	0	1	3	6	0	444	304	2
93	10/3	38.0	57	04.98	169	24.69	0	0	3	0	0	0	63	109	1	15	27	0
94	10/8	32.8	57	04.97	169	33.70	0	1	612	0	0	0	5	15	2	0	0	0
95	10/8	30.1	57	04.98	169	43.12	0	0	5	0	0	0	7	96	102	0	0	0
96	10/8	32.0	57	04.98	169	52.29	0	0	0	0	0	0	2	1	0	0	0	0
97	10/12	32.0	57	04.97	170	01.56	0	0	0	0	0	0	0	24	3	0	0	0
98	10/12	20.5	57	04.98	170	10.84	0	0	0	0	0	0	0	0	0	0	0	0
99	10/12	18.6	57	04.97	170	20.02	0	0	0	0	0	0	0	0	0	0	0	0
100	10/12	30.4	57	04.97	170	29.38	0	0	0	0	0	0	1	0	0	0	0	0
101	10/13	40.8	57	04.97	170	38.63	0	0	0	0	0	0	1	12	5	0	0	0
102	10/13	47.0	57	04.97	170	48.04	0	0	0	0	0	0	7	106	15	0	0	0
103	10/13	51.3	57	04.98	170	57.27	0	0	0	0	0	0	7	69	2	25	6	0
104	10/3	40.5	57	09.97	169	07.20	5	0	0	0	0	2	9	58	0	189	70	0
105	10/3	39.5	57	09.97	169	16.26	2	0	2	0	0	8	4	12	4	186	92	0
106	10/3	37.5	57	09.98	169	24.92	0	0	4	0	0	8	59	101	9	9	1	0
107	10/8	30.3	57	09.96	169	34.52	0	0	492	0	0	0	2	43	0	0	0	0

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Appendix A1.-Page 4 of 9.

Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
108	10/8	23.5	57	09.98	169	43.83	0	0	0	0	0	0	11	307	2	0	0	0
109	10/8	26.0	57	09.97	169	52.97	0	1	0	0	0	0	1	1	4	0	0	0
110	10/12	20.6	57	09.97	170	02.33	0	0	0	0	0	0	0	13	3	0	0	0
111	10/13	30.9	57	09.98	170	30.28	0	0	0	0	0	0	0	0	0	0	0	0
112	10/13	38.1	57	09.97	170	39.95	0	0	0	0	0	0	0	0	0	0	0	0
113	10/13	44.5	57	09.96	170	49.00	0	0	0	0	0	0	0	9	2	0	1	0
114	10/13	48.6	57	09.98	170	58.33	0	0	0	0	0	0	3	58	14	3	5	0
115	10/4	40.0	57	14.97	169	07.68	0	0	0	1	0	1	24	67	2	34	16	0
116	10/4	39.5	57	14.99	169	17.06	1	0	0	0	0	0	4	4	0	153	292	7
117	10/4	37.0	57	14.96	169	26.12	0	0	1	1	0	0	25	84	5	155	141	4
118	10/7	31.4	57	14.98	169	35.26	0	1	141	0	0	0	11	52	13	0	0	0
119	10/7	24.0	57	15.00	169	44.50	0	0	0	0	0	0	5	6	0	0	0	0
120	10/7	21.8	57	15.00	169	53.76	0	0	0	0	0	0	0	0	0	0	0	0
121	10/15	17.1	57	14.98	170	02.94	0	0	0	0	0	0	0	0	0	0	0	0
122	10/15	13.6	57	14.99	170	12.28	0	0	0	0	0	0	0	0	0	0	0	0
123	10/15	12.1	57	14.98	170	21.77	0	0	0	0	0	0	0	0	0	0	0	0
124	10/14	33.6	57	14.97	170	31.09	0	0	0	0	0	0	0	0	0	1	0	0
125	10/14	39.4	57	14.98	170	40.64	0	0	0	0	0	0	0	3	0	0	0	0
126	10/14	43.5	57	14.96	170	50.12	0	0	0	0	0	0	0	4	1	0	0	0
127	10/13	47.8	57	14.97	170	59.36	0	0	0	0	0	0	7	90	12	5	4	0
128	10/4	39.5	57	19.97	169	08.26	1	0	0	0	0	0	2	6	0	90	84	1
129	10/4	39.5	57	19.97	169	17.53	1	0	3	0	0	2	25	53	1	475	109	0
130	10/4	38.0	57	19.98	169	26.85	0	0	2	0	0	0	0	3	0	341	334	6
131	10/7	33.1	57	20.01	169	36.08	0	0	4	0	0	0	8	62	23	0	2	0

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Appendix A1.-Page 5 of 9.

Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
132	10/7	31.5	57	19.99	169	45.33	0	0	4	0	0	0	6	119	6	0	0	0
133	10/7	31.9	57	20.10	169	54.25	0	0	0	0	0	0	0	0	0	0	0	0
134	10/15	27.0	57	19.98	170	03.74	0	0	0	0	0	0	0	0	0	0	0	0
135	10/15	28.8	57	19.97	170	12.96	0	0	0	0	0	0	0	0	0	0	0	0
136	10/15	35.0	57	19.97	170	22.51	0	0	0	0	0	0	0	0	0	1	0	0
137	10/14	36.0	57	19.97	170	32.01	0	0	0	0	0	0	0	0	0	0	0	0
138	10/14	40.5	57	19.98	170	41.61	0	0	0	0	0	0	1	1	2	0	0	0
139	10/14	44.0	57	19.97	170	50.94	0	0	0	0	0	0	10	28	1	2	1	0
140	10/4	37.5	57	25.00	169	09.16	1	0	0	2	1	3	0	10	7	140	37	0
141	10/4	39.0	57	25.06	169	18.41	0	0	0	0	0	0	0	6	0	291	362	6
142	10/4	39.5	57	24.97	169	27.75	0	0	0	0	0	0	1	37	0	484	298	0
143	10/7	36.3	57	24.97	169	36.88	0	0	1	1	1	1	17	80	4	103	16	1
144	10/7	34.0	57	24.98	169	46.01	1	0	46	1	0	0	17	115	9	0	1	0
145	10/7	34.0	57	25.00	169	54.92	0	0	18	0	0	0	12	164	12	3	2	0
146	10/15	32.0	57	24.98	170	04.59	0	0	164	0	0	0	7	118	57	1	0	0
147	10/15	35.3	57	24.97	170	13.66	0	0	1	0	0	0	0	1	0	0	0	0
148	10/15	36.5	57	24.98	170	23.31	0	0	0	0	0	0	5	49	2	0	0	0
149	10/14	38.5	57	24.97	170	32.84	0	0	0	0	0	0	4	10	0	3	0	0
150	10/14	41.3	57	24.97	170	42.17	0	0	0	0	0	0	31	123	4	1	1	0
152	10/5	37.0	57	29.98	169	00.51	2	1	0	1	0	2	7	46	4	27	62	0
153	10/5	37.0	57	29.98	169	09.83	1	0	0	0	0	1	1	15	6	147	172	3
154	10/5	37.0	57	29.97	169	18.99	0	0	0	5	1	1	34	157	7	3	2	0
155	10/5	38.5	57	30.00	169	28.18	7	0	0	0	0	1	0	2	0	336	511	3
156	10/6	38.0	57	29.99	169	37.53	0	0	2	0	0	0	2	6	0	266	364	0

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Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
157	10/6	36.5	57	29.97	169	46.86	0	3	16	0	0	0	7	38	3	265	118	0
158	10/6	36.5	57	29.97	169	56.05	0	0	21	0	0	0	32	117	4	3	0	0
159	10/16	36.5	57	29.98	170	05.35	1	0	278	0	0	0	9	66	4	0	0	0
160	10/16	37.0	57	29.97	170	14.59	0	0	2	0	0	0	9	38	2	0	0	0
161	10/16	38.0	57	29.97	170	23.72	1	0	4	0	0	0	14	63	1	3	0	0
162	10/14	39.0	57	29.97	170	33.55	0	0	0	0	0	0	5	23	3	92	5	0
173	10/22	41.0	57	04.97	168	48.36	0	0	0	0	0	0	1	24		135	39	0
174	10/22	41.0	57	04.97	168	57.73	5	0	0	0	0	1	15	78	4	7	0	0
177	9/24	41.0	57	09.99	168	39.51	0	0	0	0	0	0	1	15	16	58	67	3
178	10/22	40.5	57	09.97	168	48.75	0	0	0	0	0	0	4	22	2	90	26	0
179	10/23	40.0	57	09.97	168	57.95	0	0	1	0	0	0	25	81	0	1	0	0
181	9/24	40.5	57	14.95	168	30.93	0	0	0	0	0	0	2	6	0	31	344	6
182	9/24	40.0	57	14.92	168	40.07	0	0	0	0	0	0	1	46	18	88	158	3
183	10/23	40.0	57	14.97	168	49.18	0	0	1	0	0	1	11	52	5	8	1	0
184	10/23	39.5	57	14.97	168	58.54	0	0	0	0	0	0	17	85	2	0	0	0
185	9/24	39.5	57	19.95	168	22.16	0	0	0	1	0	0	4	33	8	51	78	2
186	9/24	40.0	57	20.00	168	31.22	0	0	0	0	0	0	1	10	2	53	55	1
187	9/24	39.5	57	19.93	168	40.40	0	0	0	0	0	0	0	27	3	73	175	2
188	10/23	39.5	57	19.98	168	49.66	0	0	0	0	0	0	12	77	2	84	73	1
189	10/23	38.5	57	19.98	168	58.87	0	0	0	0	0	13	8	26	1	0	0	0
190	9/24	38.5	57	24.95	168	22.87	0	0	0	0	0	0	0	31	8	28	27	0
191	9/24	38.5	57	25.02	168	31.96	0	0	0	0	0	0	0	20	3	57	50	3
192	9/24	39.0	57	24.94	168	41.35	0	0	0	0	0	0	0	12	3	50	72	1
193	10/21	38.0	57	24.97	168	50.62	0	0	0	0	0	2	1	9	0	163	335	0

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Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
194	10/23	38.0	57	24.97	168	59.76	0	0	0	2	0	5	8	40	1	39	17	0
195	9/25	37.5	57	30.00	168	23.54	0	0	0	0	0	0	3	33	1	6	6	0
196	9/25	38.0	57	30.00	168	32.86	0	0	0	0	0	1	7	209	13	24	14	0
197	9/25	38.0	57	29.98	168	42.08	0	0	0	0	0	0	5	33	18	44	109	0
198	10/21	37.5	57	29.97	168	51.30	1	0	0	0	0	2	2	5	1	126	222	3
199	9/25	37.5	57	34.95	168	24.42	0	0	0	0	0	0	0	15	12	8	5	0
200	9/25	37.0	57	35.04	168	33.51	0	0	0	0	0	0	5	16	1	39	58	0
201	9/25	37.5	57	35.01	168	42.91	0	0	0	0	0	0	1	2	0	22	38	0
202	10/21	36.5	57	34.98	168	52.11	0	0	0	0	0	1	3	24	0	63	93	1
203	10/21	37.0	57	35.00	169	01.26	0	0	0	0	1	0	2	14	1	19	31	1
204	10/5	36.5	57	34.97	169	10.48	0	0	0	0	0	0	4	24	2	56	94	3
205	10/5	36.5	57	34.97	169	19.75	3	0	0	1	0	1	9	45	7	1	0	0
206	10/5	38.0	57	34.97	169	28.89	18	0	1	0	0	0	0	2	0	217	257	0
207	10/6	38.0	57	34.99	169	38.27	2	0	1	0	0	0	0	1	0	207	327	0
208	10/6	38.0	57	34.96	169	47.48	2	0	0	0	0	0	1	1	0	188	376	0
209	10/6	38.0	57	34.97	169	56.73	0	0	0	0	0	0	3	7	0	251	230	5
210	10/16	38.0	57	34.98	170	06.05	0	0	5	0	0	0	6	5	0	167	45	1
211	10/16	38.5	57	34.97	170	15.29	0	0	46	0	0	0	5	21	0	62	25	0
212	9/25	37.5	57	40.01	168	25.00	0	0	0	0	0	0	0	23	0	5	8	1
213	9/25	36.5	57	40.01	168	34.14	0	0	0	0	0	0	6	93	0	12	11	0
214	9/25	37.0	57	40.02	168	43.56	0	0	0	0	0	0	1	10	2	27	50	0
215	10/21	36.5	57	39.98	168	52.73	0	0	1	0	0	0	1	40	2	36	85	0
216	10/21	36.5	57	39.98	169	02.10	0	0	0	0	0	0	4	32	7	6	5	0
217	10/5	36.0	57	39.96	169	11.51	0	0	0	0	0	0	0	27	38	2	5	0

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Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
218	10/5	37.0	57	39.98	169	20.61	0	0	0	0	0	0	0	14	4	9	7	0
219	10/5	37.0	57	39.97	169	29.76	1	0	1	0	0	0	0	5	0	25	20	0
220	10/6	37.0	57	39.98	169	39.01	4	1	1	0	0	0	0	4	6	220	240	25
221	10/6	37.5	57	39.97	169	48.21	2	0	2	0	0	0	1	11	1	152	260	1
222	10/6	38.0	57	39.97	169	57.54	1	0	0	0	0	0	1	4	0	121	247	3
223	10/16	38.5	57	39.97	170	06.87	0	0	2	0	0	0	1	15	3	80	50	0
224	10/16	39.0	57	39.97	170	16.04	4	0	1	0	0	0	20	113	8	80	26	1
225	10/16	39.0	57	34.97	170	24.65	0	0	4	0	0	0	4	13	3	172	89	0
226	10/20	37.5	57	44.97	168	25.77	0	0	0	0	0	0	3	82	3	3	12	0
227	10/20	37.5	57	45.01	168	34.86	0	0	0	0	0	0	4	173	5	4	4	0
228	10/20	37.5	57	45.01	168	44.05	0	0	0	2	0	0	2	121	9	7	42	0
229	10/21	37.5	57	44.97	168	52.84	0	0	0	0	0	0	9	86	3	11	12	0
230	10/21	35.0	57	44.99	169	02.12	0	0	0	0	0	0	7	82	3	1	24	1
231	10/19	34.5	57	44.98	169	11.81	0	0	0	0	0	0	3	48	2	2	0	0
232	10/19	36.5	57	44.97	169	21.40	0	0	0	0	0	0	1	18	3	6	7	0
233	10/19	36.5	57	44.98	169	30.30	0	1	0	0	0	0	3	15	8	8	44	0
234	10/18	37.0	57	44.98	169	39.75	0	0	0	1	0	0	0	8	0	66	186	2
235	10/18	37.5	57	44.95	169	49.17	0	0	0	0	0	0	1	13	0	130	130	1
236	10/18	38.5	57	44.98	169	58.11	0	0	0	0	0	0	3	47	6	95	62	0
237	10/16	38.4	57	44.97	170	07.74	0	0	0	0	0	0	1	7	1	77	128	2
241	10/20	37.5	57	49.97	168	34.81	0	0	0	0	0	0	2	211	17	9	41	0
242	10/20	38.0	57	49.97	168	44.49	0	0	0	0	0	0	4	95	3	30	125	1
243	10/20	38.5	57	49.98	168	53.58	0	0	0	0	0	0	4	181	19	11	6	0
244	10/20	35.5	57	49.98	169	02.66	0	0	0	0	0	0	8	148	19	4	5	1

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Station	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab			Tanner Crab		Snow Crab			
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females	Legal	Sublegal	Males	Females	Large ^a	Small ^a
							Legal	Sublegal			Legal	Sublegal			Legal	Sublegal		
245	10/19	33.5	57	49.97	169	12.20	0	0	0	0	0	0	6	31	1	12	182	11
246	10/19	36.0	57	49.99	169	21.87	0	0	0	0	0	0	3	20		8	79	0
247	10/19	36.5	57	49.97	169	30.65	0	0	0	0	0	0	5	17	2	24	25	0
248	10/18	37.5	57	49.98	169	40.42	1	0	0	0	0	0	1	15	1	48	156	0
249	10/18	38.0	57	49.95	169	49.94	0	0	0	0	0	0	1	29	16	22	73	0
250	10/18	38.5	57	49.96	169	58.65	0	0	0	0	0	0	1	33	4	73	85	0
255	10/20	37.5	57	54.97	168	45.13	0	0	0	0	0	0	0	53	1	0	4	0
256	10/20	38.0	57	54.97	168	54.22	0	0	0	0	0	0	2	239	8	3	4	0
257	10/19	36.5	57	54.97	169	03.58	0	0	0	0	0	0	4	67	0	19	64	0
258	10/19	36.0	57	54.98	169	12.87	0	0	0	0	0	0	1	25	15	12	11	1
259	10/19	36.0	57	54.97	169	22.65	0	0	0	0	0	0	6	20	1	12	42	0
260	10/18	36.5	57	54.98	169	31.35	0	0	0	0	0	0	1	14	0	95	142	1
261	10/18	37.5	57	54.97	169	41.11	0	0	0	0	0	0	0	39	8	92	152	0
262	10/18	38.0	57	54.95	169	50.50	0	0	0	0	0	0	1	4	1	73	101	0
Total							95	13	3,249	40	4	126	1,821	10,086	1,585	9,882	10,827	129

^a Small snow crab defined as <102-mm CW, large snow crab defined as ≥102-mm CW (industry preferred size).

Appendix A2.-Catch by pot of red and blue king crabs during niche fishing in the Pribilof District, 2005.

SPN	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab		
			Degrees	Minutes	Degrees	Minutes	Males	Females	Legal	Sublegal	Males	Females
217	10/5	38.0	57	17.20	169	03.10	0	0	0	1	0	0
218	10/5	37.0	57	17.50	169	06.00	0	0	0	7	0	36
219	10/5	37.5	57	18.65	169	04.63	0	0	0	0	0	0
220	10/5	37.5	57	19.76	169	03.33	3	0	0	10	0	21
293	10/6	38.0	57	35.79	170	32.71	3	0	0	0	0	0
294	10/6	38.0	57	35.79	170	32.04	1	0	0	0	0	0
295	10/6	38.0	57	35.80	170	31.48	6	0	0	0	0	0
296	10/6	38.0	57	35.80	170	30.94	0	0	0	0	0	0
297	10/6	38.0	57	35.79	170	30.36	0	0	0	0	0	0
298	10/6	38.0	57	35.79	170	29.68	2	0	0	0	0	0
303	10/7	33.0	57	19.52	170	24.02	0	0	1	0	0	0
308	10/7	34.0	57	22.35	170	23.59	0	0	2	0	0	0
327	10/7	30.5	57	19.24	170	05.83	0	0	0	0	0	0
332	10/7	33.5	57	21.80	170	05.76	0	0	0	0	0	0
376	10/9	35.5	56	48.23	170	24.76	0	0	0	0	0	0
377	10/9	35.5	56	49.35	170	25.50	0	0	0	0	0	0
402	10/9	40.0	56	45.85	170	10.64	0	0	0	0	0	0
411	10/9	33.0	57	0.42	170	28.69	0	0	89	0	0	0
412	10/9	33.5	57	0.42	170	29.69	1	0	103	0	0	0
413	10/9	33.5	57	0.42	170	30.60	0	2	121	0	0	0
414	10/9	33.5	57	0.42	170	31.54	0	0	107	0	0	0
415	10/9	34.0	57	5.33	170	27.58	1	0	103	0	0	0
416	10/9	34.5	57	5.35	170	28.57	0	0	54	0	0	0
417	10/9	34.0	57	05.35	170	29.50	0	0	39	0	0	0
418	10/9	34.5	57	05.35	170	30.63	0	0	31	0	0	0
419	10/9	34.0	57	10.15	170	28.08	0	0	100	0	0	0
420	10/9	34.5	57	10.16	170	29.04	0	0	99	0	0	0
421	10/9	35.5	57	10.16	170	29.73	0	0	74	0	0	0
422	10/9	36.5	57	10.16	170	30.53	0	0	41	0	0	0
487	10/12	37.0	56	58.75	171	56.36	0	0	0	0	0	0
516	10/12	30.5	57	06.07	171	36.79	0	0	0	0	0	0
557	10/13	42.5	57	03.60	171	21.42	0	0	0	0	0	0
558	10/13	44.5	57	01.71	171	21.81	0	0	0	0	0	0
587	10/14	40.0	57	19.36	171	18.48	0	0	0	0	0	0
768	10/20	38.0	57	55.22	169	10.72	0	0	0	0	0	0
853	10/24	52.0	56	42.94	169	02.95	0	0	0	0	0	0
854	10/24	53.0	56	42.63	169	04.02	0	0	0	0	0	0
855	10/24	53.5	56	42.43	169	04.70	0	0	0	0	0	0
856	10/24	53.5	56	42.17	169	05.50	0	0	0	0	0	0
857	10/24	54.0	56	41.96	169	06.21	0	0	0	0	0	0

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SPN	Date	Depth (fm)	Latitude		Longitude		Red King Crab			Blue King Crab		
			Degrees	Minutes	Degrees	Minutes	Males Legal	Females Sublegal	Females	Males Legal	Females Sublegal	
858	10/24	54.0	56	41.69	169	07.04	0	0	0	0	0	0
859	10/24	54.0	56	41.47	169	07.79	0	0	0	0	0	0
860	10/24	54.5	56	41.21	169	08.60	0	0	0	0	0	0
861	10/24	55.5	56	41.02	169	09.42	1	0	0	0	0	0
862	10/24	55.5	56	40.82	169	10.27	0	0	0	0	0	0
863	10/24	56.0	56	40.63	169	11.09	0	0	0	0	0	0
864	10/24	56.5	56	40.47	169	12.00	1	0	0	0	0	0
865	10/24	57.0	56	40.33	169	12.86	0	0	0	0	0	0
866	10/23	57.5	56	40.18	169	13.74	0	0	0	0	0	0
867	10/23	58.0	56	40.04	169	14.60	0	0	0	0	0	0
868	10/23	58.5	56	39.89	169	15.50	0	0	0	0	0	0
869	10/23	58.5	56	39.82	169	16.43	0	0	0	0	0	0
870	10/23	58.5	56	39.78	169	17.39	0	0	0	0	0	0
871	10/23	59.0	56	39.74	169	18.36	0	0	0	0	0	0
872	10/23	59.0	56	39.71	169	19.26	0	0	0	0	0	0
873	10/23	59.0	56	39.68	169	20.16	0	0	0	0	0	0
874	10/24	59.0	56	37.20	169	13.96	0	0	0	0	0	0
875	10/24	59.0	56	37.40	169	13.06	0	0	0	0	0	0
876	10/24	58.0	56	37.76	169	12.00	0	0	0	0	0	0
877	10/24	58.0	56	37.96	169	11.48	0	0	0	0	0	0
878	10/24	57.0	56	38.22	169	10.85	0	0	0	0	0	0
879	10/24	57.0	56	38.50	169	10.09	0	0	0	0	0	0
880	10/24	56.0	56	38.80	169	09.35	0	0	0	0	0	0
881	10/24	56.0	56	39.12	169	08.62	0	0	0	0	0	0
882	10/24	56.0	56	39.40	169	07.90	0	0	0	0	0	0
883	10/24	55.0	56	39.70	169	07.16	0	0	0	0	0	0
884	10/24	55.0	56	40.01	169	06.43	0	0	0	0	0	0
885	10/24	54.0	56	40.32	169	05.74	0	1	0	0	0	0
886	10/24	54.0	56	40.63	169	05.02	0	0	0	0	0	0
887	10/24	53.0	56	40.94	169	04.28	0	0	0	0	0	0
888	10/24	53.0	56	41.29	169	03.51	0	0	0	0	0	0
889	10/24	52.0	56	41.57	169	02.86	0	0	0	0	0	0
890	10/24	52.0	56	41.87	169	02.14	0	0	0	0	0	0
891	10/24	51.0	56	42.18	169	01.43	0	0	0	0	0	0
892	10/24	51.0	56	42.49	169	00.72	0	0	0	0	0	0
893	10/24	51.0	56	42.82	170	59.98	0	0	0	0	0	0
894	10/24	50.0	56	43.10	170	59.30	0	0	0	0	0	0
Total							19	3	964	18	0	57

APPENDIX B. OCEANOGRAPHIC DATA

Appendix B1.-Oceanographic data obtained by station (except where noted) during the 2005 Pribilof king crab survey and niche fishing, ND represents no data available for that parameter.

Station Number	Latitude		Longitude		Number of Observations	Deployed		Retrieved		Temperature °C			Depth (fm)	Salinity (PSU)
	Degrees	Minutes	Degrees	Minutes		Date	Time	Date	Time	Max	Min	Mean		
1	56	29.76	169	01.89	191	30-Sep	05:43	1-Oct	13:38	4.8	4.7	4.7	ND	ND
4	56	30.03	169	29.04	197	9-Oct	05:07	10-Oct	14:00	7.7	5.0	6.3	ND	ND
5	56	30.03	169	38.30	198	9-Oct	05:43	10-Oct	14:45	7.5	4.9	6.1	44.3	33.39
17	56	35.16	169	20.54	200	30-Sep	10:14	1-Oct	19:30	7.8	6.7	7.2	ND	ND
26	56	39.77	169	03.09	192	30-Sep	06:58	1-Oct	15:00	4.8	4.6	4.7	49.4	33.08
26	56	39.91	169	03.10	192	30-Sep	07:00	1-Oct	15:04	4.8	4.6	4.7	50.1	ND
28	56	39.92	169	21.08	202	30-Sep	10:50	1-Oct	20:27	7.3	6.9	7.1	38.2	33.37
32	56	40.03	169	57.83	202	9-Oct	07:22	10-Oct	16:58	6.1	4.9	5.0	48.8	ND
42	56	44.74	169	30.75	176	8-Oct	05:09	9-Oct	10:25	7.7	5.7	7.1	42.6	33.31
44	56	44.90	169	49.18	193	8-Oct	09:15	9-Oct	17:30	7.6	6.1	7.2	41.6	32.98
45	56	45.05	169	58.58	208	10-Oct	11:15	11-Oct	21:58	6.0	5.4	5.7	45.0	33.55
52	56	50.05	169	04.56	181	1-Oct	11:36	2-Oct	17:48	5.2	4.9	4.9	45.0	ND
56	56	50.05	169	40.81	190	8-Oct	07:58	9-Oct	15:39	7.9	7.5	7.7	37.5	ND
60	56	50.03	170	17.84	194	10-Oct	07:23	11-Oct	15:48	5.4	4.9	5.0	51.3	33.36
66	56	54.79	169	14.25	172	1-Oct	10:23	2-Oct	15:03	6.0	5.4	5.6	41.6	33.39
70	56	54.90	169	50.76	195	8-Oct	10:23	9-Oct	18:59	8.0	7.2	7.6	ND	ND
72	56	54.93	170	09.31	204	10-Oct	09:25	11-Oct	19:29	6.9	5.7	6.0	43.5	ND
74	56	55.16	170	27.79	192	10-Oct	06:04	11-Oct	14:03	5.2	4.8	4.9	ND	ND
78	57	00.18	169	06.01	191	2-Oct	06:13	3-Oct	14:08	5.4	5.2	5.3	ND	ND
81	56	59.91	169	32.90	201	7-Oct	08:33	8-Oct	18:00	8.4	8.1	8.3	ND	ND
86	56	59.77	170	19.46	200	11-Oct	07:24	12-Oct	16:37	8.2	7.9	8.1	34.7	33.19
88	57	00.17	170	37.79	201	12-Oct	10:02	13-Oct	19:35	5.8	5.2	5.4	ND	ND
93	57	05.18	169	24.72	207	2-Oct	08:59	3-Oct	19:34	6.4	6.2	6.2	38.4	33.01
95	57	05.04	169	43.13	189	7-Oct	07:25	8-Oct	14:51	8.5	8.3	8.4	30.4	33.15

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Station Number	Latitude		Longitude		Number of Observations	Deployed		Retrieved		Temperature °C			Depth (fm)	Salinity (PSU)
	Degrees	Minutes	Degrees	Minutes		Date	Time	Date	Time	Max	Min	Mean		
98	57	04.91	170	10.85	196	11-Oct	06:24	12-Oct	15:01	8.3	7.7	8.2	21.4	ND
99	57	05.05	170	20.02	201	11-Oct	08:00	12-Oct	17:33	8.2	8.1	8.1	ND	ND
102	57	05.03	170	48.06	186	12-Oct	06:44	13-Oct	13:46	6.0	5.0	5.4	47.6	ND
104	57	10.04	169	07.20	188	2-Oct	05:07	3-Oct	12:22	5.7	5.6	5.6	41.5	33.39
106	57	09.79	169	24.90	206	2-Oct	08:31	3-Oct	19:00	6.3	6.0	6.1	38.2	ND
107	57	09.77	169	34.51	215	7-Oct	09:32	8-Oct	21:21	8.4	7.1	8.0	ND	ND
109	57	09.90	169	52.96	185	7-Oct	06:14	8-Oct	13:02	9.0	8.2	8.4	27.1	ND
110	57	09.77	170	02.30	195	11-Oct	05:39	12-Oct	14:07	8.3	8.0	8.1	ND	ND
111	57	09.92	170	30.28	197	12-Oct	08:47	13-Oct	17:35	8.1	7.9	8.0	31.9	32.84
115	57	15.16	169	07.71	224	3-Oct	09:49	4-Oct	23:16	5.7	5.6	5.7	ND	ND
116	57	15.19	169	17.08	203	3-Oct	07:05	4-Oct	16:50	5.9	5.8	5.8	39.2	33.42
118	57	15.20	169	35.30	182	6-Oct	05:19	7-Oct	11:36	8.1	6.5	7.0	ND	ND
119	57	15.00	169	44.50	197	6-Oct	08:03	7-Oct	16:50	8.5	8.4	8.4	24.7	32.77
122	57	15.05	170	12.29	182	14-Oct	06:50	15-Oct	13:10	8.0	7.8	7.9	14.6	32.82
123	57	15.04	170	21.76	189	14-Oct	09:35	15-Oct	17:05	8.0	7.8	7.9	ND	ND
124	57	14.78	170	31.05	180	13-Oct	05:03	14-Oct	11:00	8.0	7.9	7.9	33.4	33.24
125	57	15.18	170	40.68	194	13-Oct	08:49	14-Oct	17:08	7.7	7.4	7.5	ND	ND
127	57	14.90	170	59.35	182	12-Oct	05:04	13-Oct	11:22	6.4	5.4	5.7	48.7	33.64
130	57	19.91	169	26.84	191	3-Oct	05:47	4-Oct	13:42	6.0	5.7	5.8	38.3	ND
131	57	20.23	169	36.14	185	6-Oct	05:49	7-Oct	12:30	6.9	6.2	6.5	34.8	33.37
138	57	19.91	170	41.59	192	13-Oct	08:12	14-Oct	16:19	7.4	7.2	7.3	41.3	ND
141	57	25.13	169	18.43	216	3-Oct	08:06	4-Oct	20:12	5.6	5.4	5.4	ND	ND
144	57	24.77	169	46.00	191	6-Oct	06:53	7-Oct	14:48	7.5	6.7	7.1	34.6	ND
148	57	25.18	170	23.32	186	14-Oct	08:31	15-Oct	15:34	8.0	7.4	7.7	37.0	ND

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Station Number	Latitude		Longitude		Number of Observations	Deployed		Retrieved		Temperature °C			Depth (fm)	Salinity (PSU)
	Degrees	Minutes	Degrees	Minutes		Date	Time	Date	Time	Max	Min	Mean		
149	57	25.03	170	32.85	185	13-Oct	06:13	14-Oct	13:00	6.9	6.6	6.8	ND	ND
152	57	29.79	169	00.50	190	20-Oct	06:20	21-Oct	13:59	6.7	6.7	6.7	ND	ND
155	57	30.07	169	28.18	209	4-Oct	10:31	5-Oct	21:28	5.5	5.4	5.4	39.2	33.41
158	57	30.03	169	56.06	196	5-Oct	11:02	6-Oct	19:37	6.4	6.0	6.2	36.9	ND
160	57	30.17	170	14.61	193	15-Oct	06:17	16-Oct	14:27	7.4	7.0	7.2	ND	ND
174	57	04.90	168	57.73	184	21-Oct	05:07	22-Oct	11:49	6.8	6.3	6.6	ND	ND
177	57	09.75	168	39.55	141	23-Sep	14:40	24-Sep	14:10	5.8	5.2	5.2	ND	ND
179	57	09.90	168	57.95	307	21-Oct	07:06	23-Oct	10:13	7.0	6.7	6.8	41.0	ND
183	57	14.90	168	49.17	310	21-Oct	08:20	23-Oct	12:02	6.9	6.6	6.8	40.1	33.15
185	57	19.76	168	22.13	161	23-Sep	19:08	24-Sep	21:57	5.4	5.0	5.1	ND	ND
187	57	19.75	168	40.40	147	23-Sep	15:51	24-Sep	16:16	6.8	5.1	5.2	39.7	ND
189	57	20.05	168	58.86	316	21-Oct	09:46	23-Oct	14:24	6.8	6.5	6.7	58.9	ND
191	57	25.23	168	32.00	151	23-Sep	17:05	24-Sep	18:10	5.1	5.0	5.0	38.7	33.41
193	57	25.17	168	50.65	184	20-Oct	05:09	21-Oct	11:52	6.8	6.7	6.7	38.5	33.45
195	57	30.20	168	23.53	166	24-Sep	07:27	25-Sep	11:14	5.0	4.8	4.9	ND	ND
199	57	35.02	168	24.43	165	24-Sep	06:52	25-Sep	10:28	5.0	4.8	4.9	38.8	33.37
201	57	35.20	168	42.92	167	24-Sep	10:43	25-Sep	16:46	5.4	5.2	5.3	38.0	32.96
203	57	34.93	169	01.26	193	20-Oct	06:58	21-Oct	15:06	6.8	6.7	6.8	36.9	ND
204	57	34.90	169	10.49	195	4-Oct	06:13	5-Oct	14:38	5.6	5.5	5.5	37.5	33.07
204	57	34.77	169	10.51	196	4-Oct	06:14	5-Oct	14:46	5.7	5.4	5.4	38.0	ND
207	57	34.80	169	38.24	147	5-Oct	06:59	6-Oct	12:40	5.4	5.2	5.3	ND	ND
208	57	35.03	169	47.49	188	5-Oct	08:45	6-Oct	16:04	8.0	5.6	5.8	ND	ND
211	57	35.16	170	15.31	194	15-Oct	06:54	16-Oct	15:10	6.8	6.5	6.6	38.8	ND
214	57	40.20	168	43.56	179	24-Sep	10:03	25-Sep	16:00	5.4	5.1	5.2	38.1	ND

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Station Number	Latitude		Longitude		Number of Observations	Deployed		Retrieved		Temperature °C			Depth (fm)	Salinity (PSU)
	Degrees	Minutes	Degrees	Minutes		Date	Time	Date	Time	Max	Min	Mean		
216	57	40.05	169	02.11	199	20-Oct	08:52	21-Oct	18:01	6.9	6.7	6.8	ND	ND
219	57	39.91	169	29.76	204	4-Oct	09:17	5-Oct	19:11	5.4	5.3	5.4	ND	ND
222	57	40.17	169	57.62	190	5-Oct	09:56	6-Oct	17:44	5.6	5.5	5.6	37.9	33.45
223	57	39.91	170	06.86	201	15-Oct	08:51	16-Oct	18:16	6.3	6.0	6.1	ND	ND
228	57	45.05	168	44.04	181	19-Oct	05:06	20-Oct	11:19	6.8	6.7	6.8	ND	ND
232	57	45.18	169	21.48	189	18-Oct	09:24	19-Oct	16:57	7.0	6.9	7.0	ND	ND
236	57	44.91	169	58.10	348	16-Oct	10:26	18-Oct	20:25	7.1	6.1	6.7	ND	ND
241	57	50.17	168	34.81	186	19-Oct	07:12	20-Oct	14:14	6.7	6.7	6.7	37.7	33.17
244	57	49.90	169	02.65	199	19-Oct	10:32	20-Oct	19:43	6.8	6.6	6.7	ND	ND
246	57	50.06	169	21.87	189	18-Oct	08:43	19-Oct	16:07	6.8	6.5	6.7	35.6	ND
247	57	49.77	169	30.66	190	18-Oct	10:50	19-Oct	18:28	6.9	6.7	6.8	36.1	33.46
248	57	49.78	169	40.39	334	16-Oct	06:34	18-Oct	14:14	6.8	5.9	6.3	38.0	ND
249	57	49.89	169	49.93	341	16-Oct	08:25	18-Oct	17:16	6.8	5.7	6.3	38.2	33.15
255	57	55.17	168	45.14	195	19-Oct	08:27	20-Oct	16:58	6.6	6.4	6.5	38.2	ND
257	57	54.91	169	03.58	185	18-Oct	06:26	19-Oct	13:19	6.7	6.7	6.7	ND	ND
260	57	54.92	169	31.34	329	16-Oct	05:11	18-Oct	12:08	6.7	6.4	6.7	37.6	33.38
N ¹	56	40.82	168	49.73	268	22-Oct	03:38	24-Oct	00:27	5.3	5.1	5.2	ND	ND
N ¹	56	37.20	168	46.04	274	22-Oct	04:50	24-Oct	02:26	5.4	5.2	5.3	ND	ND
N ¹	56	38.50	168	49.91	275	22-Oct	05:13	24-Oct	03:03	5.4	5.2	5.3	ND	ND
N ¹	56	40.94	168	55.72	277	22-Oct	05:49	24-Oct	03:58	5.4	5.1	5.2	52.7	33.84
R ²	57	27.53	169	05.00	8,569	23-Sep	22:26	23-Oct	16:30	7.0	5.3	5.9	ND	ND
R ²	57	17.47	169	20.03	8,569	23-Sep	23:59	23-Oct	18:00	7.4	5.4	6.2	ND	ND

¹N = Niche pot.

²R = Reference survey temperature pot.