Special Areas Management Report

Walrus Islands State Game Sanctuary Annual Management Report 2010

Stephanie K. Sell
Edward W. Weiss

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Alaska Department of Fish and Game **Division of Wildlife Conservation**

Symbols and Abbreviations

The following symbols and abbreviations, and others approved for the Système International d'Unités (SI), are used without definition in the reports by the Division of Wildlife Conservation. All others, including deviations from definitions listed below, are noted in the text at first mention, as well as in the titles or footnotes of tables, and in figure or figure captions.

Weights and measures (metric)

centimeter	cm
deciliter	dL
gram	g
hectare	ha
kilogram	kg
kilometer	km
liter	L
meter	m
milliliter	mL
millimeter	mm

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 (negative log of)	pH
parts per million	ppm
parts per thousand	ppt, ‰
volts	V
watts	W

General

all commonly-accepted abbreviations; e.g., Mr., Mrs., AM, PM, etc.	
all commonly-accepted professional titles; e.g., Dr., Ph.D., R.N., etc.	
Alaska Administrative Code	AAC
Alaska Department of Fish and Game	ADF&G
at	@
compass directions:	
east	E
north	N
south	S
west	W
copyright	©
corporate suffixes:	
Company	Co.
Corporation	Corp.
Incorporated	Inc.
Limited	Ltd.
District of Columbia	D.C.
et alii (and others)	et al.
et cetera (and so forth)	etc.
exempli gratia (for example)	e.g.
Federal Information Code	FIC
id est (that is)	i.e.
latitude or longitude	lat. or long.
monetary symbols (U.S.)	$, ¢
months (tables and figures):	first three letters (Jan,...,Dec)
registered trademark	®
trademark	™
United States (adjective)	U.S.
United States of America (noun)	USA
U.S.C.	United States Code
U.S. state	use two-letter abbreviations (e.g., AK, WA)

Mathematics, statistics

all standard mathematical signs, symbols and abbreviations	
alternate hypothesis	H_A
approximately	~
base of natural logarithm	*e*
catch per unit effort	CPUE
coefficient of variation	CV
common test statistics	(F, t, χ^2, etc.)
confidence interval	CI
correlation coefficient (multiple)	R
correlation coefficient (simple)	r
covariance	cov
degree (angular)	°
degrees of freedom	df
expected value	E
greater than	>
greater than or equal to	≥
harvest per unit effort	HPUE
less than	<
less than or equal to	≤
logarithm (natural)	ln
logarithm (base 10)	log
logarithm (specify base)	$\log_2$, etc.
mean	$\bar{x}$
minute (angular)	'
not significant	NS
null hypothesis	H_O
percent	%
plus or minus	±
population size	N
probability	P
sample size	n
second (angular)	"
standard deviation	σ or s
standard error (of the mean)	$s_{\bar{x}}$
type I error probability	P_a
type II error probability	P_b
variance	σ^2 or s^2

Cover Photo: Male Pacific walrus *(Odobenus rosmarus divergens)* hauled out at base of access stairway, Boat Cove, Round Island, Alaska. Walrus Islands State Game Sanctuary. Photo © 2009 ADF&G, by Stephanie Sell.

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2010

Stephanie K. Sell,
Alaska Department of Fish and Game
Division of Wildlife Conservation
333 Raspberry Road
Anchorage, Alaska 99518

and

Edward W. Weiss,
Alaska Department of Fish and Game
Division of Wildlife Conservation
333 Raspberry Road
Anchorage, Alaska 99518

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Alaska Department of Fish and Game
Division of Wildlife Conservation
333 Raspberry Road
Anchorage, Alaska 99518

The State of Alaska's wildlife refuges, sanctuaries, and critical habitat areas are managed by the Lands and Refuges program of the Division of Wildlife Conservation in the Alaska Department of Fish and Game. Funding for the program and and its publications comes from appropriations made by the Alaska Legislature.

Governor of Alaska : Sean Parnell
ADF&G Commissioner: Cora Campbell
Division of Wildlife Conservation Director: Corey Rossi
Lands and Refuges Program Coordinator: Joe Meehan

It is the mission of the Division of Wildlife Conservation to conserve and enhance Alaska's wildlife and habitats and provide for a wide range of public uses and benefits.

Special Area Management Reports address management activities and goals within specific Refuges, Critical Habitat Areas and Sanctuaries managed by the division. The Special Areas Management Reports are intended for biologists or other technical professionals, as well as to inform the general public about the special areas. Reports are available through the Alaska State Library and through the department's Internet website at www.adfg.alaska.gov.

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Executive Summary

Established in 1960 the Walrus Islands State Game Sanctuary protects one of the largest terrestrial haulout sites in North America for Pacific walrus (*Odobenus rosmarus divergens*). The sanctuary also protects important habitats for several species of seabirds, Steller sea lions (*Eumetopias jubatus*) and other marine and terrestrial birds and mammals. The Alaska Department of Fish and Game (ADF&G) manages the sanctuary primarily to protect these important habitats and wildlife species, and secondarily to provide these resources for public use and enjoyment.

The ADF&G staffs Round Island through the summer months to protect and monitor walruses, other terrestrial and marine wildlife, and to operate a visitor use program. Walrus counts for the 2010 field season were conducted from May 10 to August 11. The maximum count (east and west side beaches combined) was 4,141 on July 2. The maximum east side walrus count of 3,061 occurred on June 19 and the maximum west side count of 1,556 occurred on July 2. The daily mean count from the east side beaches was 819 walrus which represents a 39% increase from the 2009 mean count of 499 and a 29% increase from the mean count of 585 in 2008.

Sanctuary staff monitored populations and productivity of several nesting seabird species and provided these data to the U.S. Fish and Wildlife Service (USFWS) and U.S. Geological Survey (USGS) for use in their statewide seabird monitoring programs. Steller sea lions were also monitored at their Round Island haulout site and data along with brand sightings were provided to the ADF&G Marine Mammal Program for use in their statewide monitoring program.

Nineteen visitors came to Round Island between June 5 and July 19. Three were day-visitors and 16 were campers, which represents a 43% decrease in camper numbers, and a 57% decrease in day-visitors from the 2009 summer season. There was a 61% decrease in visitor use days, and the average length of stay for overnight campers on Round Island was 4.5 days. The current decrease in visitation is attributed to the withdrawal of guided charters to the island following 2008 and equipment and availability problems with the one remaining transport charter during 2010.

There were no documented violations of the three mile restricted zone around the island (Alaska State Regulation – 5AAC 92.066). Due to very foggy conditions most of the season visibility beyond 1 mile for a majority of the summer prevented staff from observing vessels that could have potentially be within the three mile zone on those days.

Introduction

The Walrus Islands State Game Sanctuary was created in 1960 by the Alaska State Legislature. The sanctuary protects a group of seven small islands and their adjacent waters in northern Bristol Bay, approximately 65 miles southwest of Dillingham (Figure 1). The sanctuary was created to protect the last remaining terrestrial haulout for Pacific walruses (*Odobenus rosmarus divergens*) in North America (Alaska Statute 16.20.090). At the time all other haulouts had been abandoned due to anthropogenic disturbances, mostly related to commercial hunting.

Today, the sanctuary continues to provide important habitat for walruses and comprises one of four primary active haulout sites in Bristol Bay. The sanctuary also protects important habitats for many species of seabirds, the endangered western stock of Steller sea lions (*Eumetopias jubatus*), and other marine and terrestrial wildlife species.

The Alaska Department of Fish and Game (ADF&G) manages the sanctuary primarily to protect these habitats and wildlife species, and secondarily to provide for public use and enjoyment of these resources including the opportunity for scientific and educational study, viewing, and photography. Since 1989, all access to Round Island and within a three nautical mile radius of its surrounding waters requires an access permit. In addition, restrictions have been placed on visitor numbers and their activities (Alaska Administrative Code 5 AAC 92.066).

ADF&G provides two technicians to monitor Round Island through the summer months. Staff duties consist primarily of the protection of sanctuary resources; enforcement of sanctuary laws, regulations and policies; monitoring the sanctuary wildlife including walruses, seabirds, Steller sea lions and other species; managing the visitor use and access permit program; and maintaining trails and facilities.

Staffing

ADF&G staff was present on Round Island from May 9 through August 12, 2010. Sanctuary manager Stephanie K. Sell (SKS) and field technician Heidi Isernhagen (HI) arrived on Round Island via Pollux Aviation R44 helicopter on May 9, 2010. The optimal arrival date of May 1 was delayed because of the presence of sea ice in Togiak Bay and delayed helicopter and boat transport availability due to a late herring fishing season. The F/V Kustatan, owned by Charlie Rehter, transported lumber, food and camp supplies from Homer, Alaska to Round Island. On May 9 the Kustatan anchored northeast of the cabin and coordinated with the helicopter pilot, Tony Brucie, to sling 3 brailer bags (1500 lbs) from the boat deck to shore in 18 minutes. This transfer also included one load of lumber and PVC piping for rebuilding railings on the stairs in Boat Cove.

Camp demobilization occurred during the week of August 8, 2010. Difficulties with finding alternate boat transporters resulted in the use of Egli Air Haul's Jet Ranger helicopter (Sam Egli, pilot) to retrieve staff and gear from the island. Staff was pulled from the island 3 days earlier than normal on August 12, 2010 in order to take advantage of Egli's existing work schedule in Dillingham and to avoid a forecasted long-term period of poor weather.

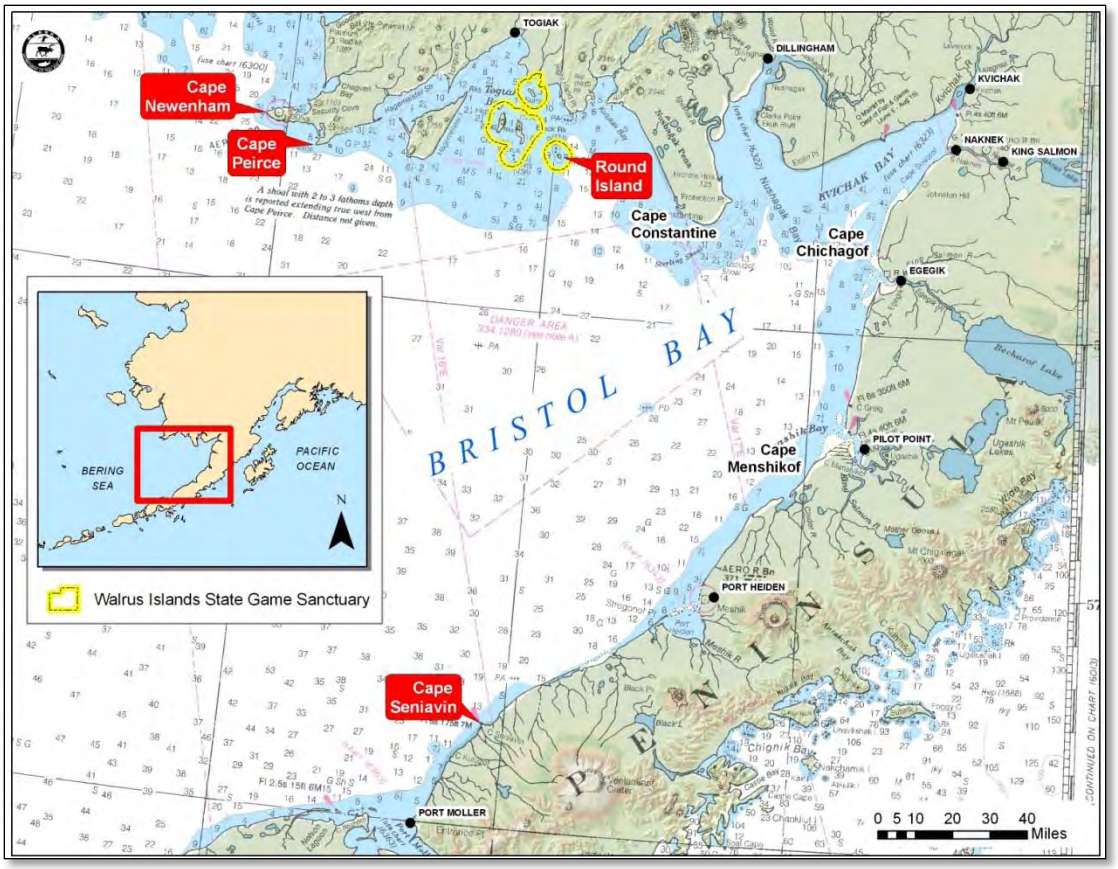

Figure 1. Map of Bristol Bay showing the locations of the Walrus Islands State Game Sanctuary, Round Island, and the four major terrestrial Pacific walrus haulout sites in the United States.

Visitor Program

ACCESS

To protect sanctuary wildlife and other resources, access to Round Island and the waters within three nautical miles of the island has been restricted since 1989. Visitors and transporters must possess authorization from ADF&G in the form of an Access Permit for the day(s) they plan to visit Round Island (Alaska State Regulation – 5AAC 92.066). All vessels approaching the island must contact ADF&G Round Island staff via marine radio channel (MVHF Ch. 7) prior to 9:00 a.m. on the day of their visit and again prior to entering the restricted area. Once in the area they are required to maintain a course through a designated corridor to Boat Cove on the northeast side of the island (Figure 2). Since low-flying aircraft can cause major disturbances at walrus haulouts (Fay 1982), all aircraft access to the island is prohibited unless authorized by ADF&G. ADF&G policy requests that all pilots avoid over flights below 5,000 ft. Above Ground Level (AGL) within three miles of the island. This notice is published by the FAA as a flight advisory on FAA & NOAA charts. Although ADF&G does not have the authority to regulate airspace, pilots who cause a disturbance can be prosecuted by the US Fish & Wildlife Service (USFWS) under the Marine Mammals Protection Act (MMPA) for harassment of walrus. All vessel or plane traffic observed within the restricted area is documented and those without authorization

are hailed through VHF marine radio or by avionics radio and notified of restrictions and advisories. Violations are reported to appropriate authorities for investigation and prosecution.

ACCESS VIOLATIONS

Staff did not document any vessels within the three mile restricted zone during the 2010 season. There was one vessel which appeared to be well within the three mile limit while staff were working on trail maintenance on East Cape (EC), however staff did not have a radio to hail the vessel at that time. When staff contacted the vessel back at the cabin there were difficulties obtaining the necessary information needed to determine the vessels distance from Round Island. However, with assistance from Togiak Pilot the vessel responded that they were at three nautical miles; staff reminded the vessel of Alaska state regulations and the restrictions in the waters three-miles around the island. Many vessels during the herring season were contacted on marine VHF channel 16 to gain confirmation on their distance from Round Island shores. Each responded with being just beyond the three-mile zone. Foggy conditions a majority of the season reduced visibility to less than one mile from the shoreline on many occasions. Staff could not document vessels passing the island during those times, and it was difficult to know whether any vessels came inside the restricted zone.

Historically, staff capabilities to identify and document violations of the 3 nautical mile limit has been limited to visual estimation and subsequent confirmation by the vessel captains of their location if radio contact is made. This technique involves inherent inaccuracies with visually judging distance and the reliance on the vessel operator to accurately represent their location. Consequently, enforcement of the restricted area beyond warnings is difficult. In order to gather and present sound evidence ADF&G purchased a Garmin GMR18HD radar and GPSMAP 740 series chart plotter system midway during the 2010 season. However due to complications with transportation and weather, system components and staff necessary to install the radar system did not make it to the island during 2010. Staff intends to install and test the radar system early in the 2011 season.

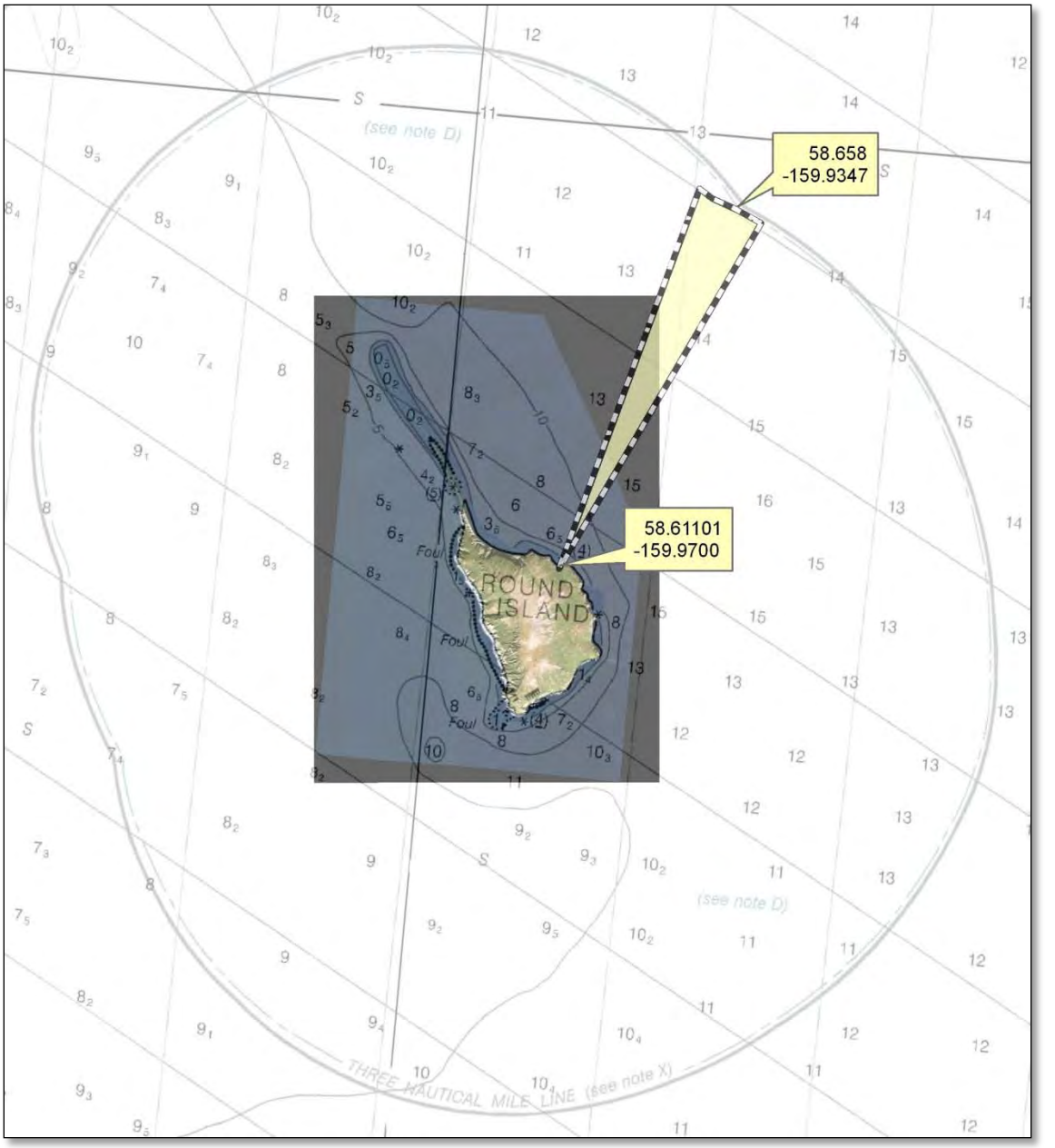

Figure 2. Round Island, Walrus Islands SGS showing 3 NM restricted waters and access corridor.

VISITOR USE

Campers arrive on Round Island after obtaining a permit online or from the ADF&G Dillingham office. Day visitors are issued permits upon arrival on the island after obtaining access authorization from staff through morning VHF radio contact.

One of the primary goals of the sanctuary staff in managing the visitor program is to balance the quality of the experience for the visitors while protecting wildlife and other resources. When

visitors arrive on Round Island, they are given an orientation that includes the regulations of the island, a brief history of the Sanctuary, a safety briefing and a demonstration on how to approach walrus viewpoints without disturbing the animals. All visitors are required to remain on established trails with the exception of going to the summit from East Cape. To avoid disturbance, visitors are not permitted on the beaches except for staff monitored arrivals and departures from Boat Cove or Campground Beach. As part of the safety briefing the precipitous and slippery nature of the trails is stressed and visitors are required to sign an Assumption of Risk form. Visitors are also requested to provide emergency contact information in the case of an accident. Staff duties associated with the visitor program include monitoring the VHF marine radio, authorizing access to sanctuary waters, issuing permits, collecting user fees, reviewing sanctuary rules and safety procedures, answering visitor questions, maintaining campground facilities and collecting visitor use data.

Between June 5 and July 19, a total of 19 visitors came to Round Island in six parties. Of these, three were day-visitors and 16 were overnight campers with permits ranging from 5–10 days. During 2010 none of the parties were guided. Forty three percent of the campers were Alaskans, while the other campers came from British Columbia, Washington, Idaho, California, and Kansas (Table 1). The three day visitors were a family group from Washington that come seasonally into Bristol Bay to commercial fish for sockeye. There was a total of 75 visitor use days and the average length of stay for overnight visitors was 4.5 days.

In 2010, Paul Markoff, owner of Togiak Outfitters and captain of the M/V Lindsey Mary, made 7 trips from Togiak, AK to Round Island transporting visitors between June 5 and July 5, at which time his vessel had mechanical problems and was down for the remainder of the season. Making a single round trip to transport otherwise stranded visitors, David Coupchiak captain of the F/V Christopher Aaren, transported three visitors, staff mail and propane on July 17-18. The F/V Tusk, anchored all day outside Boat Cove (BC) while 3 day visitors came ashore after their fishing season in Naknek.

A decreasing trend in visitation continued in 2010 (Figure 3). Visitation to the island decreased 43% for campers and decreased 57% for day visitors from the 2009 season. This also represents a 60% decrease in visitor use days from 2009 (n=190). Historically, visitation to Round Island has been variable (Figure 3). Fluctuations in visitation are generally attributed to a number of social and economic factors including the availability of transportation to the island, national and international economic conditions, periods of opportunistic day visitation, and national and international publicity. The decrease in visitors during the 2010 season may have been exasperated by the availability and complications associated with the current charter service.

A record number of visitors (303) to Round Island occurred in 1977. However, the inflated visitation that year was due to the approximately 250 day visitors that were ferried to the island from a small cruise ship. In the 1980's and early 90's, many members of the herring fishing fleet visited Round Island opportunistically during breaks in the fishery. Also during this time, there was national and international publicity of the sanctuary through television programs and magazine articles (Rice 2002). In 1987 a record number of 131 campers visited the island and the number of campers to the island remained high during the late 1980's and early 1990's. After the decline of the fishery in Bristol Bay, a drop in visitation was noted. Visitation

generally declined between 1990 (110 campers, 58 day use) and 2004 (19 campers, 55 day use). Between 2005 and 2007, visitation to Round Island rose slightly. The current decrease in visitation is attributed to a guided charter operator's decision to end trips to the island following 2008 and equipment and availability problems associated with the one remaining transport charter during 2010. It is likely that national economic conditions are also contributing to the decrease in visitation.

Table 1. 2010 Round Island Visitor Use Summary.

Origin	Non-guided campers	Guided campers	Non-guided day visitors	Guided day visitors	Guides	Visitor Use Days
United States						
Alaska						
Anchorage	5					15
Fairbanks	2					10
California	2					20
Idaho	1					5
Kansas	3					3
Washington	1		3			8
British Columbia	2					14
Totals per group	16		3			
Total visitors	19	**Total visitor use days**				75

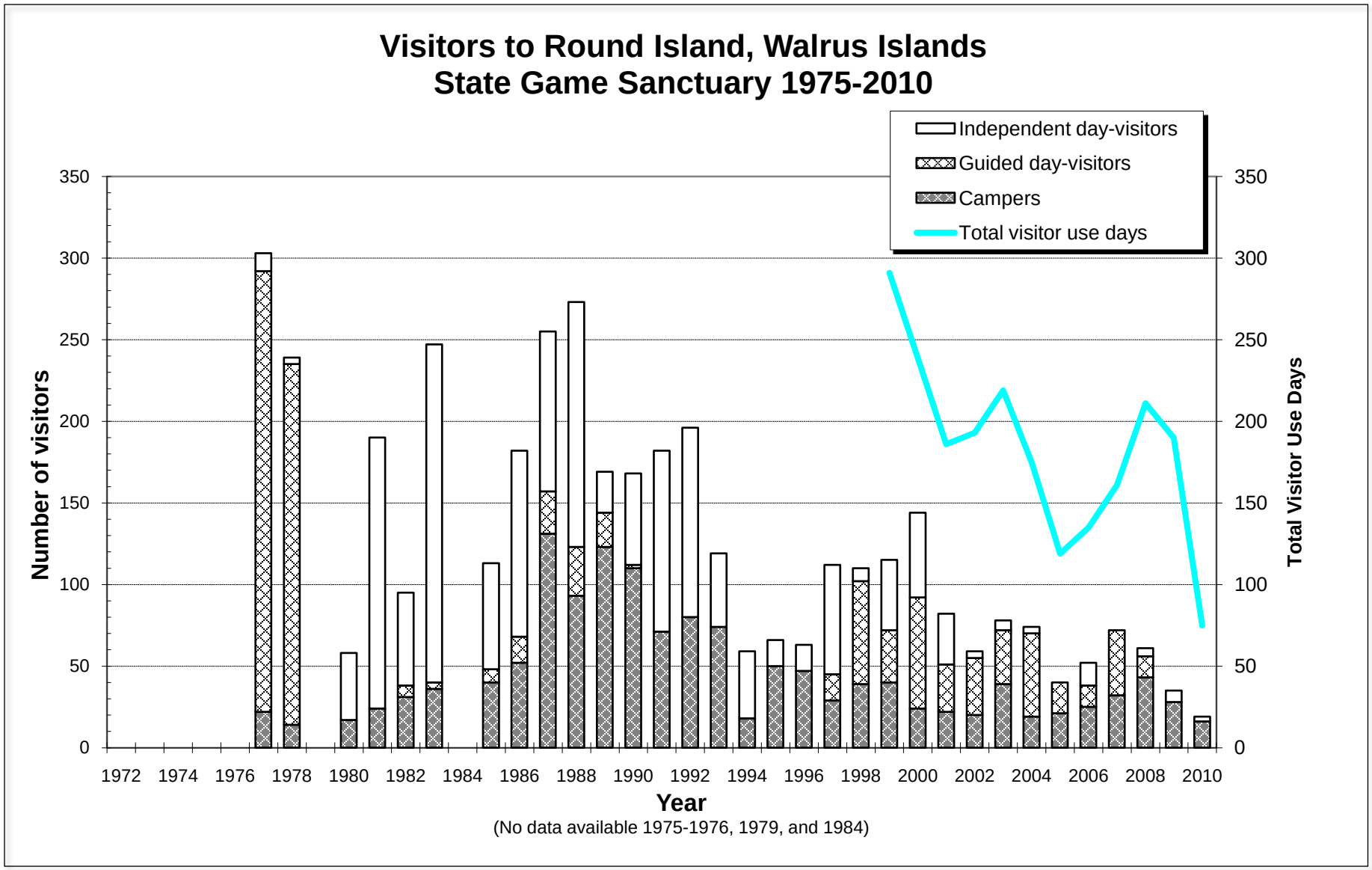

Figure 3. Historic Visitor Use to Round Island, 1977 – 2010.

WALRUS DISTURBANCE

ADF&G staff also monitors and document the response of walruses to both authorized and unauthorized access and other anthropogenic activities around the island. When walruses were in sight of observers, the number of affected animals and the degree of their response, to access or other anthropogenic events, was recorded using three distinct behaviors (head raising, reorienting, and dispersing) as measures of quantifying the levels of disturbance (Salter 1979). Boat activities that had an arrival time and departure time greater than an hour apart were counted and documented as two separate events.

During the 2010 season, twenty-one anthropogenic events were documented, with disturbance to walrus resulting from six of these events. Five of these disturbances occurred when boats or staff helicopters approached or departed the island. On these occasions disturbances ranged from reorientations to dispersal of 5 – 20 individuals. Only two of these five events were due to arrival or departure of vessels in BC. However, in 2010 there was a reduction in the number and type of vessels accessing the island. The primary vessel accessing the island during 2010 was a 24 foot vessel with a 4-stroke outboard engine resulting in less engine noise in the entry corridor. On June 11, staff documented hearing a turbo prop aircraft flying by the island at an unknown altitude (thought to be high flying), which caused a disturbance on MB. All individuals (~100-150 walrus) reoriented, and had their heads raised during this event. Staff monitoring seabird plots at Observation Point (OP) during this time failed to locate the aircraft, despite diligent searching attempts, due to the brightness of the sun at that time of day. No reaction from walrus occurred during 13 events, reactions were unknown during one event and no walrus were present on associated beaches during one event.

On May 25 a plane was photo-documented flying over the island (which appeared to be lower than 5000 AGL) and it was unknown if this aircraft caused a disturbance on Main Beach (MB), however staff at First Beach (FB) did not notice a disturbance from the individuals on that particular beach.

Staff also documented 11 natural disturbances (Appendix A). There were three natural disturbances observed on West Main (WM) and BC that appeared to have been caused by raven or black-legged kittiwake fledgling activity. One additional disturbance was caused by a pod of nine or more killer whales (*Orcinus orca*) swimming around the north side of the island within 50ft of shore. Seven other disturbances were from unknown causes; five at MB, one at WM, and one at BC. On one occasion staff was burning trash on a calm day therefore it was suspected that an individual in BC detected the scent of the smoke and caused a "follow the leader" reaction on the beach. During the other six disturbances there were no anthropogenic activities at the time and no cause was observed so the disturbances were assumed to be natural. Staff had been hearing on a local news radio station about frequent earthquake activity along the Aleutian Chain, however no definitive trends were observed after looking at the data sent from the Alaska Earthquake Information Center (AEIC).

Wildlife Monitoring Surveys

WALRUS SURVEYS

Walrus monitoring protocols used in collecting daily walrus observations on Round Island were established jointly by the USGS BRD, USFWS and ADF&G staff in 2002. Nine beaches are counted daily on the East side of the island: Second Prime (SP), Second Beach (SB), First Prime (FP), First Beach (FB), Campground (CG), Boat Cove (BC), Flat Rock (FR), North Boat Cove (NBC), and Main Beach (MB; Figure 4). The West side of the island included West Main beach, which is counted as weather allows. The entirety of West Main South beach (WMS) is only visible from a boat; however portions of the beach are observable from the Dragon's Spine (the narrow ridge line at the northern terminus of the island). No boat counts of WMS were conducted in 2010, but visible portions were checked opportunistically from land on approximately 20 occasions. Weather data (max/min temperature, barometric pressure, wind speed and direction, and cloud cover) was collected at the time of survey using a ™Davis weather station mounted on top of the cabin in 2009.

Walrus counts for the 2010 field season were conducted from May 10 to August 11. All beaches along the east side of Round Island were counted 94 out of the total 94 days (Figure 5 and Appendix B1 & B2). West side beaches were surveyed on 65 out of 94 days (staff could not access WM beach for 21 days until June 1 due to snow conditions). The maximum combined east and west side walrus count was 4,141 on July 2 and represents the high count of 2010 This was a 16% increase from the maximum east side only count of 3,485 in 2009, which did not include WM because of snow on the trail. There were no walruses present on the east side beaches one day of the 94 days counted and no walrus on the west side beaches on 10 days of 65 counts. On WM beach the maximum count of 1,556 occurred on July 2. One boat count (East side beaches only) was done during the 2010 field season; however few walrus were present on that particular day.

The mean count for east side beaches only was 819 which represents a 39% increase from the east side mean count of 499 walruses during 2009 and represents a 1% change from the 5-year average (Figure 6). The mean count for WM beach was 402 which is a 74% increase of 105 walrus from 2009. The 2010 daily mean count for east and west side beaches combined was 1097 walruses.

The annual peak count of walruses at Round Island varies significantly between years (Figure 7) with the highest count estimate documented as 15,000 during a 1978 aerial survey. The lowest annual peak count was 1,746 in 1998 (Raymond 1998). It is unknown how Round Island counts correlate to fluctuations in Pacific walrus populations. Fluctuations in yearly peak counts may be attributed to the movement of walruses between several Bristol Bay haulouts. Historically, major walrus haulout sites within Bristol Bay included: Amak Island, Port Moller, Cape Seniavin (located between Port Moller and Port Heiden), Cape Peirce, Cape Newenham, and two islands within the Walrus Island State Game Sanctuary (Round and Big Twin) (Frost et al. 1982). The southwestern shoreline of Hagemeister Island has also recently emerged as a significant walrus haulout in this region (MacDonald and Winfree 2008). Between feeding bouts, walruses in Bristol Bay repetitively utilize only these few specific sites to rest. During the mid-1900's, with the exception of Round Island, all terrestrial haulouts were abandoned. This abandonment was presumably caused by commercial hunting pressure as well as other disturbances (Fay 1982).

The parameters that define a specific haulout site for walruses versus all available coastal locations within Bristol Bay are not well understood but may be influenced by prey abundance and distribution, walrus densities, physical terrain, or remoteness from disturbances.

The USFWS Togiak National Wildlife Refuge conducted aerial surveys of walrus haulouts at Hagemeister Island, Cape Pierce and Cape Newenham during 2010 (Michael Winfree, pers comm.). Survey results between April and early November 2010 are shown in Appendix C for comparison with Round Island numbers.

WALRUS VARIABILITY COUNTS

Variability counts, to check and calibrate observer variability, were only conducted at the MB count station. The half mile distance and view aspect between the observer and the walrus makes the counting of individual animals difficult. Visual counts were conducted by multiple staff from the set viewpoint at OP and cross referenced with photos taken at the same time; photo counts were conducted later using the program ImageJ.

Variability counts were conducted by both observers on 14 of the 94 count days, with photo variability counts being done on seven of those 14 days. On 13 of the 14 days counted, variability between each observer's combined land and water counts ranged between 0-25%, and 2-20% between observer photo counts. On June 8, one observer largely overestimated, while the other largely underestimated causing variation to increase between 20-27% for that days land and water count compared to its photo count. Variability results are presented in Appendix D.

Differing levels of walrus counting experience increased the variability between counters. SKS had prior counting experience, while HI's first walrus count was at the beginning of May. Variability between SKS and HI visual counts varied as the season progressed, while photo counts had less overall variability.

The density and depth of walrus on MB is more apparent from the section of the Traverse Trail (TT) just up the mountain from OP. It was suggested in 2009 that test counts be conducted from this location to see if a more accurate estimate of the total number of walrus could be attained. During the 2010 season staff conducted a photo count of walrus from OP and from the TT. Variability between observer counts and photo counts was 14% less at the TT site versus the OP site. Walrus were more defined from the TT location and easier to count from that angle. Weather could prove to be a potential downfall of adopting this method into a permanent protocol. Dense fog was present a majority of the season, which obscured the visibility from this location. More test runs should be conducted in the future to ensure this method is effective.

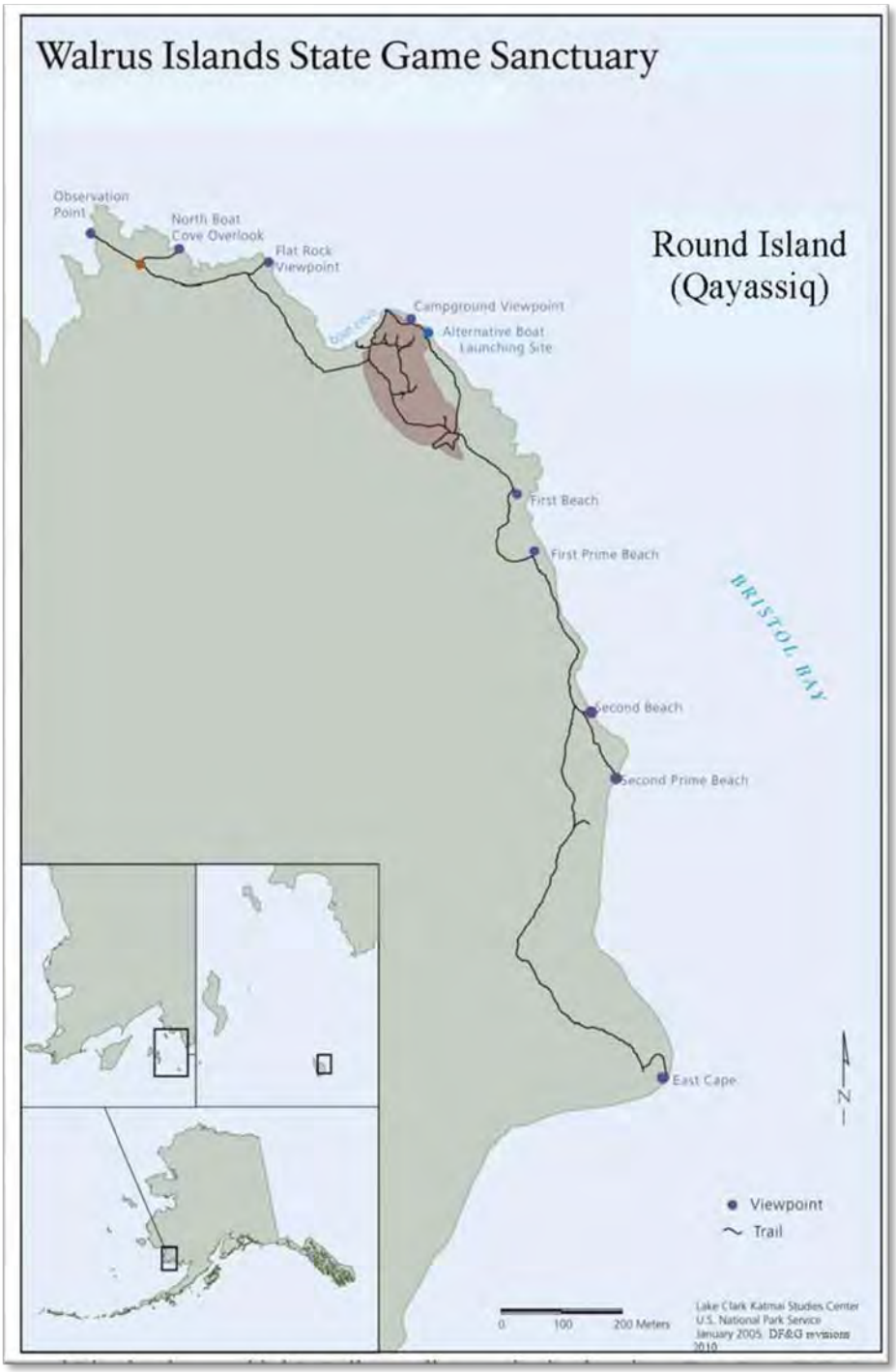

Figure 4. Round Island walrus, seabird & Steller sea lion monitoring locations; East Cape (EC), Second Prime (SP), Second Beach (SB), First Prime (FP), First Beach (FB), Camp Ground (CG), Boat Cove (BC), North Boat Cove (NBC), Observation Point (OP), Main Beach (MB), and West Main Beach (WM).

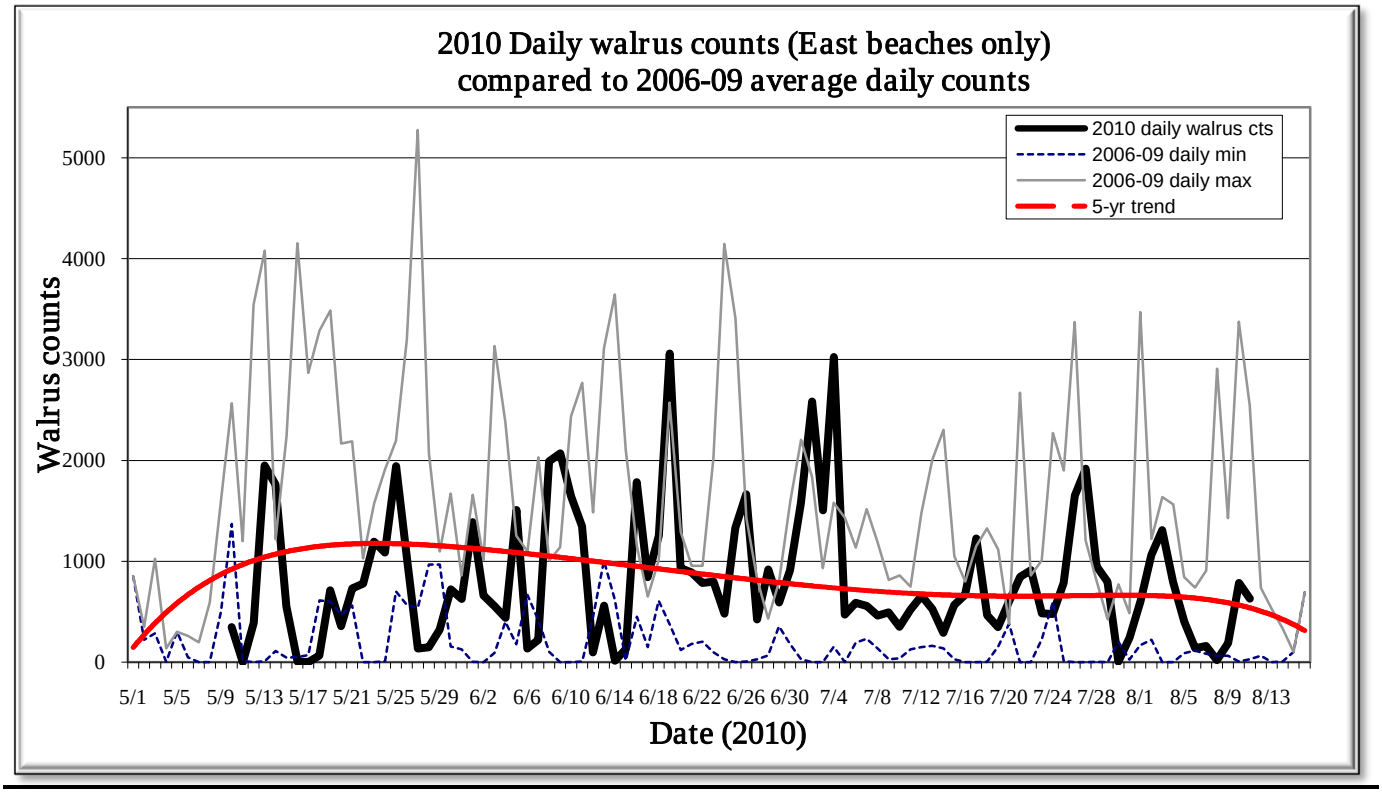

Figure 5. Daily counts of walrus present on Round Island, 2010 season compared to historic data.

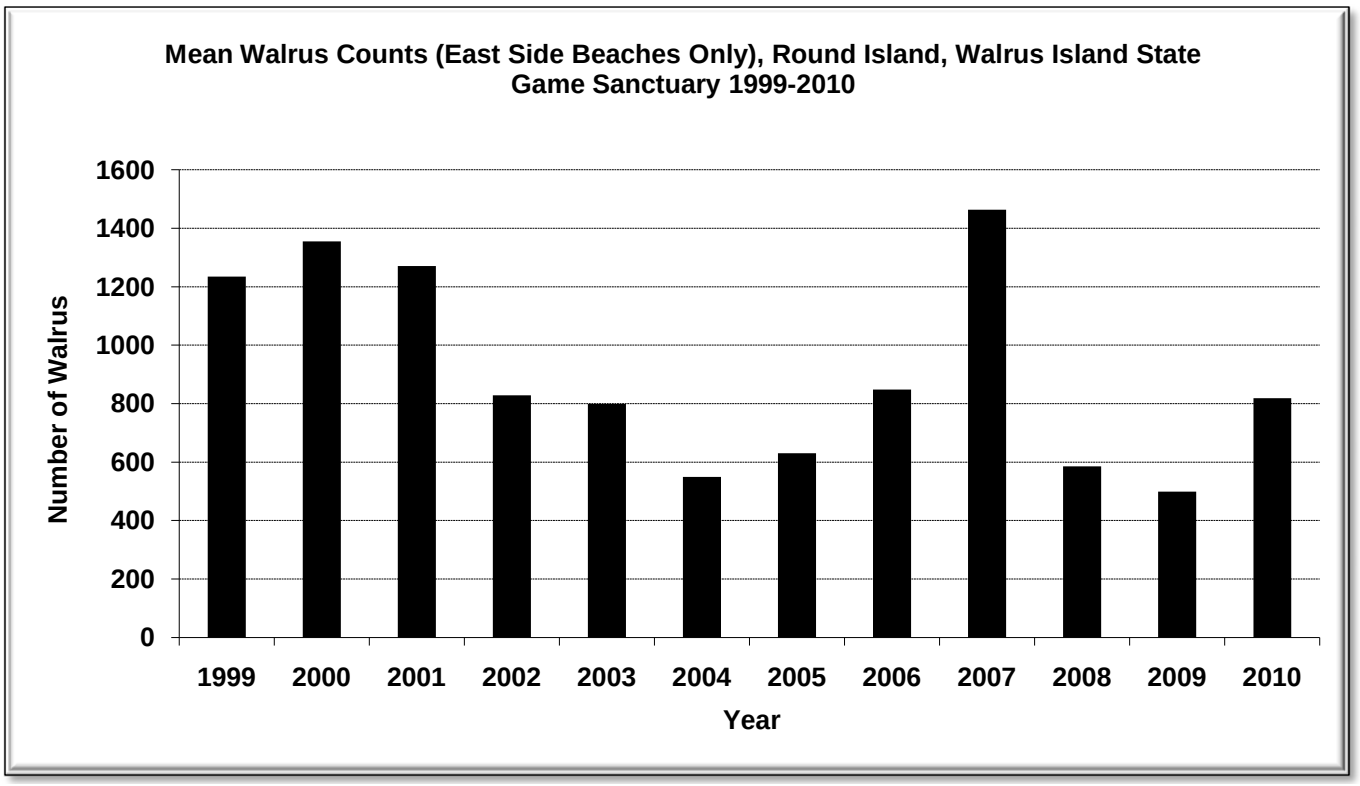

Figure 6. Mean Pacific walrus counts on Round Island 1999 – 2010.

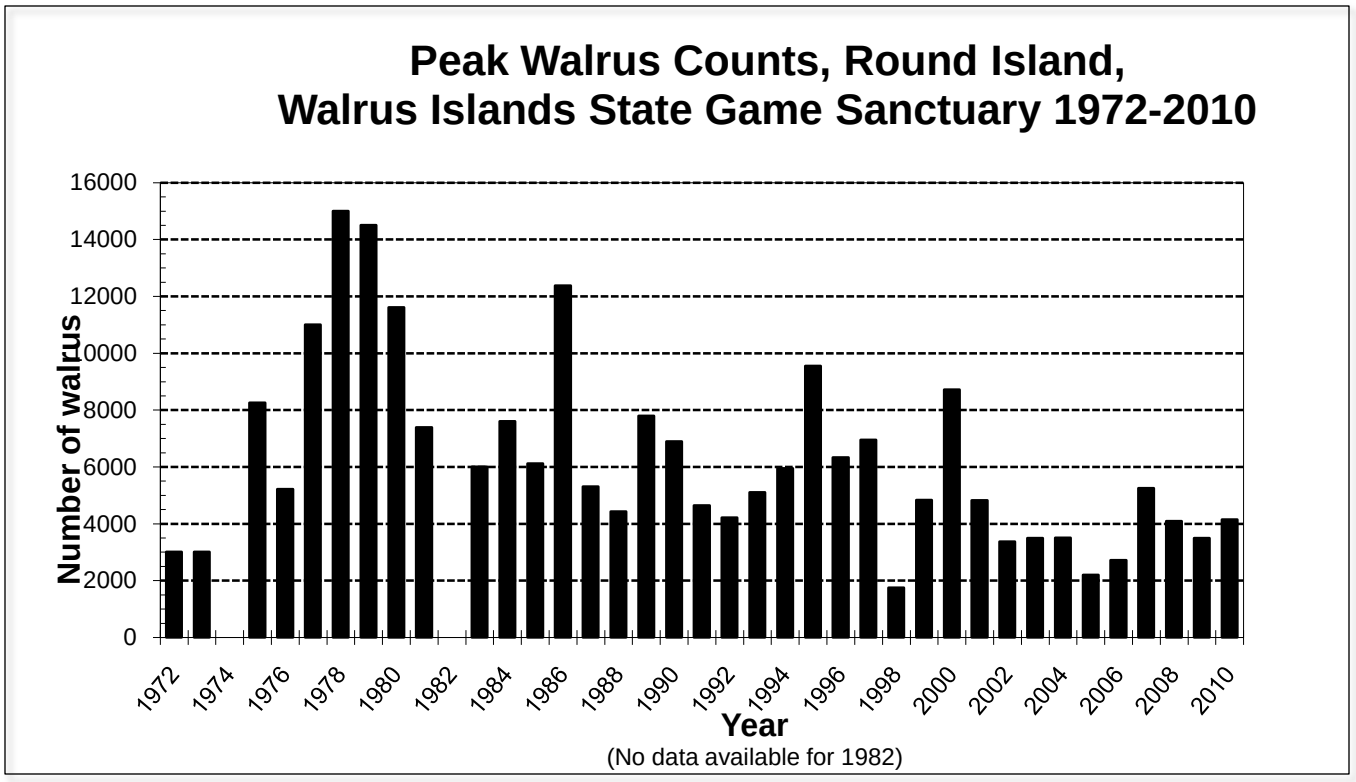

Figure 7. Peak Pacific walrus numbers at Round Island, Alaska; 1972 – 2010.

STELLER SEA LION SURVEYS

Steller sea lion (SSL) typically haul out at East Cape (EC), located on the eastern tip of Round Island. SSL counts are conducted from four viewpoints (V1, V2, V3 and V4) at EC following protocols established by the ADF&G Division of Wildlife Conservation Marine Mammals Program. SSL numbers are recorded, visible brands photographed and injuries, entanglements, suckling behavior, and any unusual conditions are noted.

Eighty-six of 94 possible land counts were conducted from May 10 through August 11, 2010 (Appendix E). The mean number of SSL present on Round Island during the 2010 season was 116. The maximum count of 272 sea lions occurred on May 18 and the minimum count of 30 occurred on June 27. Figure 8 shows the mean number of SSL present on Round Island between 1999 and 2010. A viewpoint change implemented towards the end of 2008 has increased visibility of the whole haul-out, however, inhibits the ability to make comparisons of historical means. Eighteen individual brands were documented in 2010, which originated from four different branding locations. Fifteen brand re-sights originated from Ugamak Island in the Aleutians (A brands), one from Hazy Island in Southeast Alaska (H brand), one from Marmot Island in the Kodiak Archipelago (T brand), and one from Medny Island in Russia (M brand). SSL biologists were particularly excited to receive information about H601 a five year old male born at the Hazy Islands in Southeast Alaska, and M717 a four year old male branded on Medny Island, Russia. H601 was observed at South Marble Island in Glacier Bay in July of 2009, while M717 was re-sighted on Bering Island in 2005 and has since traveled to Round Island. This particular individual has not been seen in Russia since 2005. Six new brands were photo

documented on Round Island during 2010 (A377, A369, A637, A365, H601, M717).

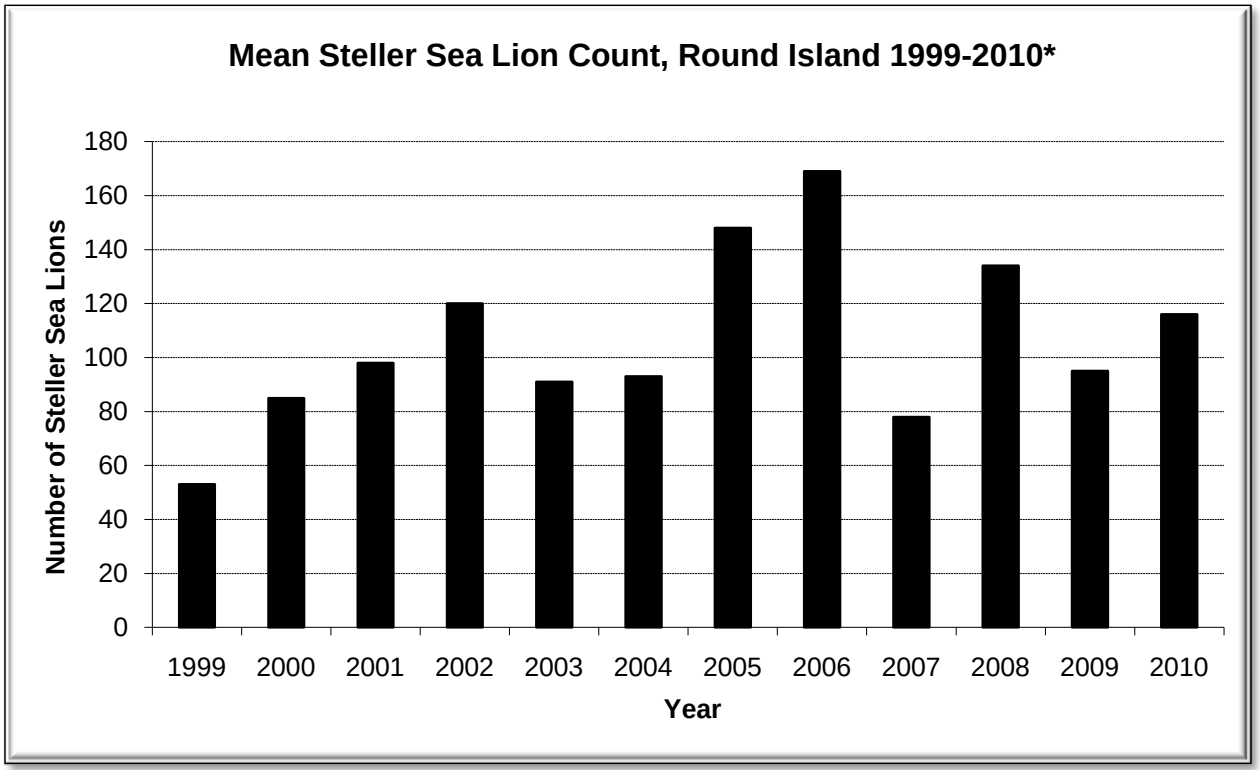

Figure 8. Mean Steller sea lion counts on Round Island 1999-2010. (*Data prior to 2009 may be underrepresented. A new viewpoint established during the 2008 season allows better visibility and more complete counts of the whole haulout.)

SEABIRD MONITORING

Three species of colonial nesting seabirds were monitored throughout the summer at four sites on Round Island. Nesting chronology and nest productivity data were collected for the following species; pelagic cormorants (*Phalacrocorax pelagic*; PECO) at FB, black-legged kittiwakes (*Rissa tridactyla*; BLKI), and common murres (*Uria aalge*; COMU) on Plot 1, 2, 3, and 4 at OP. Population index counts were also conducted from OP on Plots 1 - 5 for PECOs, BLKIs, and COMUs.

PELAGIC CORMORANT PRODUCTIVITY MONITORING

PECO productivity monitoring was conducted from May 11 through July 7, 2010. Of the four locations historically monitored (SP, SB, First Beach North (FBN) & First Beach South (FBS)), PECO nesting was only observed at FBS during 2010. As a result, a 17 nest plot was established at FBS. The number of nests monitored was further reduced by a limited number of individuals nesting within sight of observers. The first PECO egg was observed on May 11, with the first chick being observed on June 14. Only one PECO remained on their nest to hatch chicks by June 20, resulting in a maximum chick count of three on that day. These chicks were lost by July 5th resulting in no PECOs fledging. The other PECOs on the plot abandoned their nests early in the

season and prior to hatching chicks for unknown reasons. High winds and turbulent seas at the beginning of the season may have been detrimental to some nests; however staff noticed adults leaving nests with eggs on multiple occasions. In addition, a common raven (*Corvus corax*) nest was established on the cliffs on SB, therefore it is also possible nests were preyed upon, however evidence of predation was not readily observed. Productivity for PECOs in 2010 was zero chicks/nest (Table 2) compared to 1.62 chicks/nest in 2009 and the ten year average of 1.45 chicks/nest (Table 3). Phenology and productivity data are summarized in Tables 2 & 3. Complete productivity observations for PECO plot(s) are presented in Appendix F1.

BLACK-LEGGED KITTIWAKE PRODUCTIVITY MONITORING

BLKI productivity monitoring was conducted from May 29 through August 8, 2010 on two plots at Observation Point (OP). The first day that eggs were observed was May 29th. Staff located 4 nests at OP2 and 10 nests at OP3 with single eggs in them and initiated plot monitoring. Nests were continually added to the plots as eggs were laid, resulting in 25 nests monitored on OP2 and 25 on OP3. The first chicks were observed at OP2 on June 24 and at OP3 on June 23, 2010, which was 9 days and 6 days earlier than in 2009 respectively. The maximum chick counts were 26/plot at OP2 and 27/plot at OP3, while 12 chicks fledged from OP2 and 10 chicks fledged from OP3. Productivity for black-legged kittiwakes in 2010 was 0.44 chicks/nest (Table 2) compared to zero chicks/nest in 2009 and the ten year average of 0.27 chicks/nest (Table 3). Phenology and productivity data are summarized in Tables 2 & 3. Complete productivity observations for BLKI plot(s) are presented in Appendix F2.

COMMON MURRE PRODUCTIVITY MONITORING

COMU productivity monitoring was conducted from June 10 through August 10, 2010 on three separate plots at OP. A total of 59 nest sites were established at OP1 (n=16), OP2 (n=18), and OP4 (n=25). The date of first egg sightings varied throughout the plots with 10 eggs at OP1, six eggs at OP2, and 16 eggs at OP4 observed on June, 18, 10, and 15 respectively (Table 4; Appendix D). The first COMU chick was observed on July 14, which was five days earlier than the 2009 season. A maximum of 13 chicks were seen on all COMU plots combined between July 18-27 however, of the 59 nests monitored only three chicks survived to fledge (chicks older than 15 days were assumed to have fledged) giving a productivity rate of 0.05 chicks/nest (Table 2) compared to zero chicks/nest in 2009 and the ten year average of 0.20 chicks/nest (Table 3). Phenology and productivity data are summarized in Tables 2 & 3. Complete productivity observations for COMU plot(s) are presented in Appendix F3.

We do not believe that productivity on these plots mentioned above was representative of the PECO, BLKI, or COMU population island wide since many chicks were observed on the steeper and less accessible cliffs. It should be noted that all COMUs monitored on OP2 lost eggs or their chicks by July 25.

POPULATION COUNTS

Ten population index counts of the five OP plots were conducted for three seabird species between June 25 and July 23 as weather permitted (Appendix G). The focal species included; BLKI, and COMU and all population index counts began after the observation of the first

COMU egg. All population index counts for OP3 were conducted from the OP4 viewpoint instead of the main OP viewpoint due to a more complete view of all birds and nests on that plot. There were difficulties this season with population index counts due to the nervous nature of the birds on the top half of OP5 flushing from the cliff consistently during counts resulting in count days being delayed.

The seabird population and productivity monitoring data were given to USFWS migratory bird management and USGS for inclusion in their statewide seabird-monitoring program.

Table 2. 2010 Seabird Phenology and Productivity Summary, Round Island, AK

	PECO	BLKI	COMU
Nests or pairs	17	50	59
Date of 1st Egg(s)	5/11/2010	5/29/2010	6/10/2010
Date of last Egg(s)	5/23/2010	6/7/2010	7/3/2010
Total Eggs laid	47	86	59
Date of 1st Chick(s) hatch	6/14/2010	6/23/2010	7/14/2010
Date of last Chick(s) hatch	6/20/2010	7/11/2010	8/2/2010
Total Chicks hatched	3	53	12
Chicks fledged	0	22	3
Productivity	0.00	0.44	0.05
% Hatching success	6	62	20
% Reproductive success	0	26	5
% Nesting success	0	44	5

productivity = chicks / nests
hatching success= % eggs laid that hatch,
reproductive success= % eggs laid that fledge,
nesting success= % nests where >/= 1 chick fledges

Table 3. Nest productivity of Pelagic cormorant, Black-legged kittiwake and Common murre on Round Island, 2010-1999.

	Productivity *(chicks / nests)*										
	2010	**2009**	**2008**	**2007**	**2006**	****2003**	**2002**	**2001**	**2000**	**1999**	**10-yr mean**
PECO	0	1.62	1.63	2.38	1.73	1	2.9	1.7	0.6	0.98	**1.45**
BLKI	0.44	0	0.42	0.38	0.08	0.48	0.51	0	0.42	0	**0.27**
COMU	0.05	0	0.54	0.48	0.48	0.14	0.04	0.02	0.22	0.06	**0.20**

** Data not available for 2004 and 2005

Other observations/Projects/Activities

SUBSISTENCE HUNT

Historically, the Pacific walrus has thrived in the Bering and Chukchi seas (Fay1982). In the 17th century there was an increased demand for walrus ivory, oil, and hides, which corresponded to the arrival of the Europeans. Walruses were hunted extensively until the end of the 19th century when only a fraction of the population remained (Fay 1957).

Round (Qayassiq) Island was a traditional walrus hunting ground for Alaskan Natives and in the early 1990's hunters, mainly from the village of Togiak, petitioned the Alaska Board of Game (BOG) for access to the island for subsistence hunting. This resulted in the formation of the Qayassiq Walrus Commission (QWC) in 1995, which helped to reestablish the Round Island subsistence hunt. The BOG agreed to allow island access between October 1 and 31 for the hunt. The harvest limit was set at ten (including struck and lost animals) by the Cooperative Agreement (ADF&G, EWC, QWC, and USFWS). Since this time the dates and harvest numbers have changed and in 2003, the BOG extended the dates which are now set from September 10 through October 20 with a limit of 20 walrus. (Subsistence Walrus Hunting on Round Island, Bristol Bay, Alaska Cooperative Agreement). The fall hunt has been inconsistently monitored by USFWS & ADF&G staff over the years. State and Federal agencies monitored the hunt from 2003-2006 but at the present time no agency monitor is required. Currently agencies rely on self monitoring and reporting by hunt captains and the Qayassiq Walrus Commission (QWC).

Three access permits were issued for the 2010 hunt to hunt captains in Togiak, Manokotak and Twin Hills. None of the permit holders notified ADF&G that they would be hunting at Round Island and none filed post hunt reports indicating they had hunted at Round Island. At the time of publication confirmation was not available; however, it is believed that walrus hunting took place outside the sanctuary at Hagemeister Island rather than on Round Island in 2010.

IVORY COLLECTION

One walrus mortality was seen on SB early in the season containing one large tusk, which was extracted on the first available day when no other walrus were present on the beach. Eight mortalities on MB were seen from OP on several occasions throughout the season, and two trips via ADF&G inflatable boat were made to MB to harvest ivory. On July 8 staff inspected four of these mortalities and found one individual without a head and another which had its tusks sawed cleanly off at the base of the skull, and its baculum taken. The mortality with tusks and baculum removed was present on MB when staff first arrived on May 10, however it is not clear how this walrus died and whether ivory harvest occurred on the island or somewhere else and then it washed ashore. Half a tusk was harvested from one of the 2 other individuals that did not appear to be unnatural mortalities. Staff had to abandon progress on the other tusk due to tides and a safety call on our return to BC. During the second trip on July 31 staff completed harvest of the full tusk from this walrus, half a tusk from another mortality near these individuals, and one tusk from an individual that staff had photographed alive 27 days earlier with half its face sheared off to the bone. Three of the eight walrus on MB were inaccessible due to their close proximity to other walrus hauled out on the spit on MB.

In all, eight sticks of ivory were recovered from mortalities and transferred to Jim Woolington, ADF&G Area Wildlife Biologist in Dillingham for tagging by USFWS. The walrus ivory collected from Round Island will be donated to the Eskimo Walrus Commission, for the annual ivory auction to local area Natives during the Beaver Roundup Festival.

Table 4. Summary of observed walrus mortalities and recovered ivory.

Date	Location	Mortalities Observed	Amount of ivory present (# of tusks)	Beach Cast Ivory	Amount Collected	Comments
5/11	MB	1	0	---	0	could not retrieve boat not inflated, high seas, July 8 - motored to MB found that individual with tusks sawed off and baculum taken
5/18	MB	1	2	---	0	2 lg tusks on one mort, boat not inflated, floated away before tusks could be harvested
5/27	SB	1	1	---	1	head and hind quarters heavily bruised but no obvious sign of death. Full tusk: 30.5" long x 8.75" circumference.
5/28	MB	2	0.5	---	0.5	1 individual - headless. Broke tusk: 15.5" long x 7 7/8" circumference.
6/9	NBC	---	---	1	1	Full tusk: 27" long x 7" circumference. (beach find)
6/9	CG	---	---	1	1	Broke tusk: 19" long x 8 1/4" circumference. (beach find)
6/21	floater	1	unk	---	0	walrus floats by cabin
6/22	SP	1	1+	---	0	walrus floated away before ivory could be harvested
7/3	MB	1	1.5	---	1.5	Attempted to extract other tusk but losing tide and had to return to camp; returned to MB 7/31 & harvested other tusk. Full tusk: 31" long x 8 3/4" circumference. Broke tusk: 15" long x 9" circumference.
7/10	MB	1	unk	---	0	been in water for awhile, close to main haul-out area, may not be able to retrieve tusks
7/12	MB	1	1	---	1	Same ind seen alive 7/4 w 1/2 face sheared off. Tusk collected 7/31. Full tusk: 27" long x 8 7/8" circumference.
7/22	BC	---	---	0.25	0.25	Broke tusk: 8"long x 7.5" circumference. (beach find)
7/23	MB	1	1+	---	0	Too close to walrus staying on MB cannot retrieve tusk

DAILY OBSERVATIONS

During the monitoring season ADF&G staff also record general and unusual observations, which include, but are not limited to, first wildlife and blooming plant sightings, the presence of beach cast-marine mammals, and general environmental conditions. Daily observations for the 2010 season are summarized in Appendix H.

MARINE MAMMALS

Throughout the season staff noticed several grey whales passing the island early in the season on their general migration north. On one occasion staff observed a dead grey whale floating NE of

the cabin just beyond the three mile limit.

On July 17 a pod of 9+ orcas (*Orcinus orca*) swam to Round Island and approached within 50ft of the shoreline from CG to MB and back to the east side of the island. The walrus hauled out on CG did not seem to notice the whales' presence or proximity to the shore (on video); however there were disturbances on MB with many individuals on shore raising their heads, and many individuals rafting up in the water. Staff documented the walrus-orca interactions during this event via photos and video. Due to arrival of visitors, staff were unable to follow the orcas to the east and it is unknown what interactions occurred around the sea lions on EC.

On July 12, 2010 a harbor seal (*Phoca vitulina*) was also seen surfacing and swimming next to shore in the CG area.

TERRESTRIAL MAMMALS

An ermine (*Mustela erminea*) was observed three times at BC during the 2009 season. This species had never been documented on Round Island before, however the ermine was not observed during the 2010 season.

Conservative estimates of 10 noticeably different fox were identified along the trail system during 2010. In addition, at least seven fox kits were seen playing and tunneling in the grass tussocks around EC. An adult had excavated the old den marked with a stake at the base of the stairs between the V1 and V2 sea lion viewpoints, which acted as a "safe haven" for kits in the area. On several occasions staff observed many fox kits chasing each other along the trails and also using the dens at the top of the hill along the old staff trail. In addition, on two separate occasion's staff saw at least one fox kit on the back side of the spine at WM, and one fox kit on the main trail, which came up and chewed on SKS's boot before moving down towards the viewpoint.

INVERTEBRATES

In the past, invertebrate specimens were collected, preserved and sent to Dr. Dereck Sikes, Curator of Insect, Assistant Professor of Entomology, University of Alaska Museum, and Kenelm W. Philip, Senior Research Associate, Institute of Arctic Biology, University of Alaska, Fairbanks. However, no invertebrates were collected this season due to a late hiring date of staff, which prevented necessary contacts with Dr. Dereck Sikes, and Kenelm Philips. Staff did notice several beetle species, including the carrion beetles with mites that have been collected in the past, but did not document observing any moth of the species A*rctia opulenta*, which has been thought to be a new color phase of moth.

WEATHER

Weather data is gathered on a Daily basis connected with walrus monitoring surveys. Intended for use in correlating walrus numbers to environmental conditions such as tides, storms, wind and wave state; this data also serves to provide a summary of daily weather conditions on Round Island. The addition of a Davis weather station in 2009 and data logger in 2010 will enable more enhanced capture of weather data enabling hourly reporting. A summary of minimum & maximum temperatures, precipitation and cloud cover for the period 2008 – 2010 is provided in Table 5 below. Daily weather data for 2010 is presented in Appendix I.

Table 5. Weather summary, Round Island, Alaska

	2010	2009	2008
Monthly avg temp (max/min)			
May	48 / 37	54 / 39	49 / 34
June	52 / 43	52 / 43	54 / 40
July	52 / 45	57 / 50	57 / 43
Aug	51 / 47	57 / 53	69 / 48
# days precip	28	15	18
# days <25% overcast	9	21	15
# days >50% overcast	73	55	64

Facilities Management

Round Island staff perform a number of maintenance, repair or construction projects annually in support of the Round Island facility and visitor safety. This work often includes such things as building and camp maintenance and trail improvements.

Staff continued making improvements to the Round Island trail system in 2010. One hundred twenty-two feet of Geoblock were added to the trail system, along the archaeological site in CG, and on the trail towards EC. Geoblock panels are a series of interlocking, high-strength, recycled plastic material, designed to reduce erosion. They provide load support by dispersing the weight over a larger area while allowing for the growth of vegetation through the panels. The panels also aid walkers when the trail is slippery. All non-synthetic boardwalks are now covered with wire meshing to add traction as a safety precaution for staff and visitors. In addition, all trails that were covered with old chicken wire were replaced or covered with this new hardware cloth.

A new Davis weather station data logger was installed to collect incremental data in-season and through the winter. The weather station and datalogger enhance collection of basic weather data (temperature min/max, precipitation, wind speed & direction, barometric pressure, cloud cover) for Round Island. In addition to being correlated to Round Island monitoring data, weather data will be provided to the Alaska Climatological Data Center and National Weather Service for their use. There were some minor issues with the new Davis weather station recording outside temperature during the summer of 2010; however this issue has since been resolved.

Materials to rebuild the stair railings in BC were brought to the island but the project was not completed due to an unexpected influx of walrus in BC most of the season. This project has also been delayed until the 2011 season.

As noted in the access section above, ADF&G purchased a Garmin GMR18HD radar and GPSMAP 740 series chart plotter system during the 2010 season. However, the system was not implemented during 2010 because other system components and staff necessary to install the system were unable to reach the island due to complications with transportation and weather. Staff intends to install and test the radar system early in the 2011 season.

A digital camera was purchased for mounting at WM in order to provide daily photo counts of

WM and increase capabilities to get full island counts of walrus at Round Island. As with the radar system components the camera was not deployed in 2010 due to transportation and weather issues. This camera monitoring of WM will be implemented in 2011.

Recommendations

- Update the visitor permit to include the Hazardous Conditions Disclaimer, emergency notification contact information, and visitor phone number and email.
- Update the web site
- Update the bird list
- Replace the boat launch system.
- Send written notification of the Round Island access regulations to all processors, and air services in the area.
- Install and implement camera at West Main Beach for photo counts when staff cannot get to WM for a count.
- Install and implement radar monitoring system for monitoring of 3 NM restricted area.
- Prioritize trail work on the hill leading to Observation Point, and trail down to East Cape.
- Purchase a recording device to document walrus chiming, and to record VHF conversations with vessels within the three-mile limit.

Acknowledgements

Thanks are extended to Heidi Isernhagen, Round Island field technician, for all her hard work through the 2010 season. Thanks to Eunice Dyasuk and Jim Woolington in the Dillingham ADF&G office for their continued support during the Round Island field season. Thanks go to Paul Leidberg and Pete Abraham of the USFWS for welcoming staff at the bunkhouse in Togiak. A special thanks to Diane & Brian Okonek for continued guidance through the 2010 season.

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APPENDICES

APPENDIX A

Appendix A. Walrus response to anthropogenic activities and other disturbance events, Round Island, Alaska, 2010.

Date 2010	Start time	End time	Dist. Type A/V	Closest approach to walrus	# Walruses and beach ID	# Walruses affected and reaction	Boat name/Comments
5/9	1730	1745	A	1/4 mile	unk FB, 1FR	~8-10FB DS; 1FR DS	Pollux - Steph arrives on RI (thick fog could not see beaches)
5/9	1837	1847	A	unk	7 FB	ND	Pollux - Heidi arrives on RI, sling bag of lumber from CG
5/9	2002	2020	A/V	unk	7 FB	ND	Kustatan arrives on RI, heli sling 4 loads gear to RI, both leave.
5/25	1426	1428	A	unk	150 FB	ND, unk	Aircraft flew over the west side of the island appeared to be slightly lower than 5000 AGL, however there were no reaction to walrus on FB; it is unknown how walrus reacted on MB.
6/5	1300	1312	A/V	150m	19 FR	ND	LM-5 campers on RI
6/5	1316	1327	A/V	150m	19 FR	ND	Lund w/ propane and mail unloaded in BC
6/8	949	957	A/V	150m	16 FR	ND	LM-5 campers off island
6/8	1634	1635			55 WM	15DS, 40RO	Natural disturbance, unknown cause-possible one ind spooked group- Photo
6/11	814	822	A/V	150m	10FR	ND	LM-2 campers on RI
6/11	~1100	~1103	A	unk	~100-150 MB	~100-150 RO/HR	Duel turbo prop? (Not jet), possibly high flying, plane was never in view of staff, however we both tried to see it.
6/18	850	909	A/V	75m	1 CG, ~85 BC, 10FR	ND	LM- 2 campers off RI. Used Alt. stairs, zodiac offload (2 trips); ~60-80 walrus rafting in H2O approaching LM
6/18	1219	1223	V?	unk	~150 BC	21DS, 30HR	Natural disturbance, unknown cause-possible one/few exaggerated when raven flew over BC silently.
6/19	1032	1035		N/A?	~50-60 BC	~50-58 DS	Unknown cause- suspect one/few exaggerated when caught whiff of burning garbage?
6/20	1033	1042	A/V	150m	13FR	ND	LM- 4 campers on RI
6/21	1634	1637	A	unk	366WM	30DS, 50RO	Natural disturbance, raven cawing on side of cliff
6/21	1742	1744	unk	unk	713MB	60DS, 100RO	Natural disturbance, unknown cause
6/22	1452	1457	unk	unk	~660MB	~35DS, ~20RO	Natural disturbance, unknown cause
6/25	858	920	A/V	75m	5CG, 8BC	5DS CG	LM- 2 campers on, 4 campers off RI; 3 trips w zodiac, walrus in BC were high on rocks so used alt. stairs

APPENDIX A

Date 2010	Start time	End time	Dist. Type A/V	Closest approach to walrus	# Walruses and beach ID	# Walruses affected and reaction	Boat name/Comments
7/5	1028	1040	A/V	150m	18BC	ND	LM- 2 campers off RI. Used Alt. stairs, zodiac offload (2 trips)
7/17	1050	1150	V	16m	450MB	250HR	Natural disturbance- Pod of 9+ orcas swimming along shore into MB area
7/17	1200	1219	A/V	150m	15FR, 10CG	12DS FR, 6DS CG	M/V Christopher Aaren (CA) 32' troller 150 2-stroke motor, 1st time to RI, came at low tide, difficulties approaching and departing BC because no skiff/zodiac. 3 campers on RI.
7/18	1402	1412	A/V	150m	12FR, 2CG	ND	M/V CA shuttled propane to RI in Lund, and 3 campers off island.
7/19	850	2120	A/V	150m	10FR	ND	F/V Tusk shuttled 3 day visitors to & from RI in BC where anchored all day.
7/19	1030	1033	A/V	150m	10FR	ND	F/V Tusk first trip to shore in skiff, captain stayed on Tusk w skiff tied to vessel.
7/19	1900	1905	A/V	150m	0FR		Tusk picked up visitors and ferried back to vessel.
7/19	1430	1435	unk	unk	210MB	70DS, 60RO, 20HR	Natural disturbance seen from TT, unk cause.
7/20	1443	1445	unk	unk	410MB	~35DS	Natural disturbance seen from TT, unk cause.
7/22	1636	1640	unk	unk	610MB	~30DS	Natural disturbance, unk cause.
7/31	1000	1001	smell	500m	200MB	~50RO, ~20DS	Suspect walrus smelled exhaust from motor while approaching shore to harvest tusks
8/1	1543	1545	unk	unk	590WM	~50RO	Natural disturbance on WM, unk cause; possible BLKI fledgling.
8/12	1147	1150	A/V	500m	8 FR,13 BC,~123FB	unk	Egli Air Haul- helo arrives on island to pick up gear and staff
8/12	1215	1219	A/V	500m	8FR,13BC,123FB	6RO,2DS(FR), ND FB	Egli Air Haul- helo departs island with staff and gear
Beach ID; MB-Main Beach, FR-Flat Rock, BC-Boat Cove, CG-Camp Ground, FB-First Beach, WM-West Main.							
Reaction of Walrus; DS-Dispersal, RO-Reorient, HR-Head Raise, ND-No Disturbance.							
A- audio, V- visual, unk- unknown, LM- F/V Lindsey Mary							

APPENDIX B1

Appendix B1. 2010 Daily Pacific walrus count summary, Round Island, Alaska

Date	East Side Total	West Side Total	Total # walrus
5/10	349	no count	349
5/11	0	no count	0
5/12	389	no count	389
5/13	1949	no count	1949
5/14	1762	no count	1762
5/15	553	no count	553
5/16	7	no count	7
5/17	2	no count	2
5/18	67	no count	67
5/19	712	no count	712
5/20	358	no count	358
5/21	731	no count	731
5/22	779	no count	779
5/23	1195	no count	1195
5/24	1087	no count	1087
5/25	1943	no count	1943
5/26	1026	no count	1026
5/27	137	no count	137
5/28	148	no count	148
5/29	324	no count	324
5/30	724	no count	724
5/31	628	no count	628
6/1	1389	1546	2935
6/2	661	692	1353
6/3	559	310	869
6/4	441	613	1054
6/5	1508	no count	1508
6/6	137	319	456
6/7	222	470	692
6/8	1992	776	2768
6/9	2069	1245	3314
6/10	1642	1055	2697
6/11	1346	743	2089
6/12	99	25	124
6/13	561	55	616
6/14	14	1	15
6/15	129	6	135
6/16	1784	no count	1784
6/17	843	153	996
6/18	1255	415	1670
6/19	3061	924	3985
6/20	933	574	1507
6/21	892	402	1294
6/22	786	280	1066
6/23	800	319	1119
6/24	483	no count	483
6/25	1333	356	1689
6/26	1663	627	2290
6/27	423	no count	423
6/28	919	210	1129

Date	East Side Total	West Side Total	Total # walrus
6/29	594	311	905
6/30	912	247	1159
7/1	1578	819	2397
7/2	2585	1556	4141
7/3	1506	804	2310
7/4	3024	632	3656
7/5	472	265	737
7/6	590	16	606
7/7	557	3	560
7/8	464	no count	464
7/9	494	819	1313
7/10	350	858	1208
7/11	518	276	794
7/12	658	428	1086
7/13	526	363	889
7/14	290	0	290
7/15	567	0	567
7/16	670	34	704
7/17	1227	305	1532
7/18	467	490	957
7/19	349	199	548
7/20	598	390	988
7/21	845	281	1126
7/22	913	36	949
7/23	485	0	485
7/24	477	0	477
7/25	787	0	787
7/26	1652	117	1769
7/27	1,919	401	2320
7/28	951	378	1329
7/29	798	197	995
7/30	7	no count	7
7/31	245	340	585
8/1	603	597	1200
8/2	1061	480	1541
8/3	1309	1474	2783
8/4	797	665	1462
8/5	402	256	658
8/6	139	0	139
8/7	162	0	162
8/8	23	no count	23
8/9	191	0	191
8/10	786	0	786
8/11	631	0	631

APPENDIX B2

Appendix B2. Detailed Pacific walrus count data, 2010 Round Island, Alaska

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
5/10	1641	SKS	MB							330	19	310	9	300	11	G	no walrus on near beaches, high surf
5/11	900	SKS	SP	918	921	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	SB	923	927	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	FP	929	930	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	FB	934	939	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	CG	945	948	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	BC	949	1001	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	FR	1002	1003	S	4	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	NBC	1010	1011	S	3	3	C	0	0	0	0	0	0	E	
5/11	900	SKS	MB	1012	1017	S	3	3	C	0	0	0	0	0	0	G	poss. Mort MB, weather event PM before-high waves
5/11	900	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/12	1700	SKS	SP	1655	1656	S	fog	1	C	0	0	0	0	0	0	E	
5/12	1700	SKS	SB	1659	1703	S	fog	1	C	0	0	0	0	0	0	E	
5/12	1700	SKS	FP	1705	1706	S	fog	1	C	0	0	0	0	0	0	E	
5/12	1700	SKS	FB	1708	1714	S	fog	1	C	6	1	6	1	6	1	E	
5/12	1700	SKS	CG	1724	1727	S	fog	1	C	0	0	0	0	0	0	E	
5/12	1700	SKS	BC	1727	1736	S	fog	1	C	0	0	0	0	0	0	E	
5/12	1700	SKS	FR	1737	1738	S	fog	1	C	0	0	0	0	0	0	E	
5/12	1700	SKS	NBC	1745	1746	S	fog	0	C	0	0	0	0	0	0	E	
5/12	1700	SKS	MB	1749	1800	S	fog	0	C	341	41	361	42	300	39	G	
5/12	1700	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/13	1400	SKS	SP	1411	1413	S	2	1	C	0	0	0	0	0	0	E	
5/13	1400	SKS	SB	1416	1420	S	2	1	C	1	0	1	0	1	0	E	
5/13	1400	SKS	FP	1421	1422	S	2	1	C	0	0	0	0	0	0	E	
5/13	1400	SKS	FB	1425	1439	S	2	1	C	67	1	67	1	70	1	E	
5/13	1400	SKS	CG	1447	1450	S	2	1	C	0	0	0	0	0	0	E	
5/13	1400	SKS	BC	1450	1500	S	2	1	C	1	0	1	0	1	0	E	
5/13	1400	SKS	FR	1501	1502	S	2	1	C	17	1	17	1	17	1	E	
5/13	1400	SKS	NBC	1508	1509	S	2	1	C	0	0	0	0	0	0	E	
5/13	1400	SKS	MB	1511	1540	S	2	1	C	1742	119	1742	126	1762	106	G	Heidi MB= 1758/130, 1848/111, 2278/118; photo ct SKS-2400, HI= 2210
5/13	1400	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/14	1400	SKS	SP	1416	1417	S	2	1	C	0	0	0	0	0	0	E	
5/14	1400	SKS	SB	1418	1425	S	2	1	C	46	5	47	5	46	5	E	
5/14	1400	SKS	FP	1427	1428	S	3	1	C	0	0	0	0	0	0	E	
5/14	1400	SKS	FB	1431	1443	S	3	1	C	77	8	74	5	78	7	E	
5/14	1400	SKS	CG	1452	1455	S	3	2	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
5/14	1400	SKS	BC	1455	1504	S	3	2	C	0	0	0	0	0	0	E	
5/14	1400	SKS	FR	1504	1505	S	4	1	C	9	1	9	1	9	1	E	
5/14	1400	SKS	NBC	1511	1512	S	4	1	C	0	0	0	0	0	0	E	
5/14	1400	SKS	MB	1515	1535	S	4	1	C	1529	87	1569	91	1489	83	G	Heidi MB= 1207/88, 1087/81, 1047/79
5/14	1400	SKS	WM	NC	NC	S	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/15	900	SKS	SP	914	915	S	fog	1	P	0	0	0	0	0	0	F	
5/15	900	SKS	SB	918	920	S	fog	1	C	5	0	5	0	5	0	G	
5/15	900	SKS	FP	925	926	S	fog	1	C	0	4	0	4	0	4	E	
5/15	900	SKS	FB	929	936	S	fog	1	C	20	15	19	15	19	13	G	
5/15	900	SKS	CG	943	946	S	fog	1	C	0	1	0	1	0	1	E	
5/15	900	SKS	BC	948	956	S	fog	1	C	0	0	0	0	0	0	E	
5/15	900	SKS	FR	956	958	S	fog	1	C	5	5	5	5	5	5	E	
5/15	900	SKS	NBC	1005	1006	S	fog	1	C	0	4	0	4	0	4	E	
5/15	900	SKS	MB	1009	1024	S	fog	1	C	407	82	467	84	397	69	G	Heidi MB= 382/74, 392/62, 452/62; 1mort on MB
5/15	900	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/16	1400	SKS	SP	1411	1412	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	SB	1415	1418	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	FP	1419	1420	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	FB	1422	1425	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	CG	1431	1434	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	BC	1434	1444	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	FR	1444	1445	S	4	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	NBC	1451	1452	S	3	3	C	0	0	0	0	0	0	E	
5/16	1400	SKS	MB	1453	1458	S	3	3	C	7	0	7	0	7	0	G	Big storm PM before, high surf on beaches, Mort still on MB
5/16	1400	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/17	1400	SKS/HI	SP	1406	1407	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	SB	1409	1412	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	FP	1413	1414	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	FB	1416	1421	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	CG	1427	1430	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	BC	1430	1440	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	FR	1440	1441	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	NBC	1447	1448	S	5	3	C	0	0	0	0	0	0	E	
5/17	1400	SKS/HI	MB	1449	1452	S	5	3	C	0	2	0	2	0	2	E	2 morts. On land
5/17	1400	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/18	1700	SKS	SP	1705	1706	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	SB	1709	1712	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	FP	1714	1715	S	1	1	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
5/18	1700	SKS	FB	1717	1722	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	CG	1732	1735	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	BC	1735	1743	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	FR	1743	1744	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	NBC	1748	1749	S	1	1	C	0	0	0	0	0	0	E	
5/18	1700	SKS	MB	1752	1758	S	1	1	C	24	43	24	34	23	39	G	2 morts - 2 large tusks on one, can't get to beach because boat not set up
5/18	1700	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/19	900	SKS/HI	SP	915	918	S	2	1	C	0	3	0	3	0	3	E	
5/19	900	SKS/HI	SB	920	925	S	2	1	C	0	0	0	0	0	0	E	
5/19	900	SKS/HI	FP	926	927	S	2	1	C	0	0	0	0	0	0	E	
5/19	900	SKS/HI	FB	929	939	S	2	1	C	14	18	13	12	14	13	E	
5/19	900	SKS/HI	CG	945	948	S	3	1	C	0	2	0	2	0	2	E	
5/19	900	SKS/HI	BC	948	955	S	3	1	C	0	0	0	0	0	0	E	
5/19	900	SKS/HI	FR	955	957	S	3	1	C	7	21	7	20	7	21	E	
5/19	900	SKS/HI	NBC	1006	1007	S	3	2	C	0	4	0	4	0	4	E	
5/19	900	SKS/HI	MB	1009	1032	S	3	1	C	433	210	413	196	383	171	G	Heidi's count MB - 472/168, 412/156, 472/159
5/19	900	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	made 3/4 over gulleys, but still too much snow
5/20	1400	HI	SP	1408	1410	S	4	2	C	0	1	0	1	0	1	E	
5/20	1400	HI	SB	1412	1415	S	4	2	C	0	0	0	0	0	0	E	
5/20	1400	HI	FP	1417	1418	S	4	2	C	0	3	0	3	0	3	E	
5/20	1400	HI	FB	1419	1425	S	4	2	C	9	6	9	6	9	6	E	
5/20	1400	HI	CG	1432	1436	S	3	2	C	0	4	0	4	0	4	E	
5/20	1400	HI	BC	1436	1444	S	3	2	C	0	1	0	1	0	1	E	
5/20	1400	HI	FR	1444	1445	S	3	2	C	0	2	0	2	0	2	E	
5/20	1400	HI	NBC	1451	1452	S	3	2	C	0	2	0	2	0	2	E	
5/20	1400	HI	MB	1454	1511	S	2	2	C	308	22	331	21	279	22	G	
5/20	1400	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/21	900	SKS	SP	910	911	S	2	1	C	0	0	0	0	0	0	E	
5/21	900	SKS	SB	914	918	S	2	1	C	0	8	0	8	0	8	E	
5/21	900	SKS	FP	920	921	S	1	2	C	0	0	0	0	0	0	E	
5/21	900	SKS	FB	922	929	S	1	1	C	21	23	34	19	21	20	E	
5/21	900	SKS	CG	939	943	S	2	1	C	0	6	0	6	0	6	E	
5/21	900	SKS	BC	943	950	S	2	1	C	0	1	0	1	0	1	E	
5/21	900	SKS	FR	950	952	S	2	1	C	11	9	11	8	11	9	E	
5/21	900	SKS	NBC	957	958	S	2	1	C	0	3	0	3	0	3	E	
5/21	900	SKS	MB	1000	1025	S	2	1	C	486	163	436	149	536	179	G	Heidi's MB counts - 462/151, 447/160, 438/178
5/21	900	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/22	900	SKS	SP	911	912	S	3	2	C	1	0	1	0	1	0	E	
5/22	900	SKS	SB	915	919	S	3	1	C	23	2	23	2	23	2	E	
5/22	900	SKS	FP	921	922	S	2	2	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
5/22	900	SKS	FB	923	931	S	2	2	C	41	16	41	16	42	17	E	
5/22	900	SKS	CG	939	944	S	2	1	C	0	14	0	14	0	14	E	
5/22	900	SKS	BC	944	951	S	2	1	C	1	4	1	4	1	4	E	
5/22	900	SKS	FR	951	954	S	2	1	C	11	44	11	42	11	40	E	
5/22	900	SKS	NBC	1001	1002	S	2	1	C	2	2	2	2	2	2	E	
5/22	900	SKS	MB	1004	1025	S	2	1	C	469	149	452	149	479	170	G	
5/22	900	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/23	1400	SKS/HI	SP	1358	1359	S	2	1	C	0	0	0	0	0	0	E	
5/23	1400	SKS/HI	SB	1401	1407	S	2	1	C	26	2	27	2	26	2	E	
5/23	1400	SKS/HI	FP	1409	1410	S	2	1	C	0	0	0	0	0	0	E	
5/23	1400	SKS/HI	FB	1412	1426	S	2	1	C	80	14	73	12	83	13	E	
5/23	1400	SKS/HI	CG	1434	1437	S	2	1	C	0	0	0	0	0	0	E	
5/23	1400	SKS/HI	BC	1437	1444	S	2	1	C	0	0	0	0	0	0	E	
5/23	1400	SKS/HI	FR	1444	1446	S	2	1	C	7	3	7	3	7	3	E	
5/23	1400	SKS/HI	NBC	1451	1452	S	2	0	C	1	0	1	0	1	0	E	
5/23	1400	SKS/HI	MB	1454	1517	S	2	1	C	993	69	983	70	1093	68	G	Heidi's MB counts - 1004/54, 844/50, 824/56
5/23	1400	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/24	1400	HI	SP	1405	1406	S	2	1	C	0	1	0	1	0	1	E	
5/24	1400	HI	SB	1409	1417	S	3	1	C	70	30	61	31	59	28	E	
5/24	1400	HI	FP	1419	1420	S	3	1	C	0	1	0	1	0	1	E	
5/24	1400	HI	FB	1422	1433	S	3	1	C	108	34	107	29	104	32	E	
5/24	1400	HI	CG	1439	1441	S	2	1	C	0	8	0	8	0	8	E	
5/24	1400	HI	BC	1441	1449	S	2	1	C	0	2	0	2	0	2	E	
5/24	1400	HI	FR	1449	1450	S	2	1	C	0	19	0	17	0	24	E	
5/24	1400	HI	NBC	1455	1456	S	2	1	C	0	2	0	2	0	2	E	
5/24	1400	HI	MB	1459	1519	S	2	1	C	740	72	760	69	770	60	G	
5/24	1400	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/25	1700	SKS	SP	1655	1656	S	4	1	C	0	0	0	0	0	0	E	
5/25	1700	SKS	SB	1658	1712	S	4	0	C	111	5	107	5	113	5	E	
5/25	1700	SKS	FP	1714	1715	S	4	0	C	0	3	0	3	0	3	E	
5/25	1700	SKS	FB	1716	1731	S	4	0	C	169	4	175	4	169	4	E	
5/25	1700	SKS	CG	1736	1738	S	4	1	C	0	0	0	0	0	0	E	
5/25	1700	SKS	BC	1738	1744	S	4	1	C	0	0	0	0	0	0	E	
5/25	1700	SKS	FR	1744	1745	S	4	1	C	8	0	8	0	8	0	E	
5/25	1700	SKS	NBC	1749	1750	S	4	0	C	0	0	0	0	0	0	E	
5/25	1700	SKS	MB	1751	1804	S	4	0	C	1605	38	1635	34	1535	37	F	bino shake
5/25	1700	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/26	900	SKS/HI	SP	910	912	S	3	2	C	0	0	0	0	0	0	E	
5/26	900	SKS/HI	SB	914	920	S	4	2	C	34	0	34	0	33	0	E	
5/26	900	SKS/HI	FP	924	925	S	4	3	C	0	1	0	1	0	1	E	
5/26	900	SKS/HI	FB	927	936	S	4	3	C	59	5	60	5	57	5	E	
5/26	900	SKS/HI	CG	944	947	S	4	3	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
5/26	900	SKS/HI	BC	947	956	S	4	2	C	0	0	0	0	0	0	E	
5/26	900	SKS/HI	FR	956	957	S	4	3	C	7	0	7	0	7	0	E	
5/26	900	SKS/HI	NBC	1003	1004	S	4	3	C	0	0	0	0	0	0	E	
5/26	900	SKS/HI	MB	1006	1025	S	4	2	C	904	16	934	12	813	10	G	Heidi MB= 610/15, 600/14, 580/10 photo ct: SKS= 889, HI=869
5/26	900	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/27	1400	HI	SP	1405	1406	S	6	3	C	0	0	0	0	0	0	E	
5/27	1400	HI	SB	1410	1415	S	6	3	C	0	0	0	0	0	0	E	mortality high on beach, extracted 1 tusk
5/27	1400	HI	FP	1417	1418	S	6	3	C	0	0	0	0	0	0	E	
5/27	1400	HI	FB	1419	1423	S	6	2	C	0	0	0	0	0	0	E	
5/27	1400	HI	CG	1430	1432	S	5	2	C	0	0	0	0	0	0	E	
5/27	1400	HI	BC	1432	1439	S	5	1	C	0	0	0	0	0	0	E	
5/27	1400	HI	FR	1439	1440	S	5	2	C	0	0	0	0	0	0	E	
5/27	1400	HI	NBC	1444	1445	S	4	1	C	0	0	0	0	0	0	E	
5/27	1400	HI	MB	1447	1456	S	4	1	C	125	12	125	14	120	10	G	
5/27	1400	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/28	1400	SKS	SP	1355	1356	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	SB	1358	1401	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	FP	1402	1403	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	FB	1405	1407	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	CG	1413	1415	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	BC	1415	1422	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	FR	1422	1423	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	NBC	1429	1430	S	3	3	C	0	0	0	0	0	0	E	
5/28	1400	SKS	MB	1431	1441	S	3	3	C	136	12	130	15	149	12	G	2-3 ,morts on MB
5/28	1400	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/29	900	HI	SP	905	907	S	2	2	C	0	0	0	0	0	0	E	
5/29	900	HI	SB	910	913	S	2	1	C	0	0	0	0	0	0	E	
5/29	900	HI	FP	915	916	S	2	1	C	0	0	0	0	0	0	E	
5/29	900	HI	FB	918	922	S	2	1	C	0	0	0	0	0	0	E	
5/29	900	HI	CG	929	932	S	2	2	C	0	0	0	0	0	0	E	
5/29	900	HI	BC	932	939	S	2	1	C	0	0	0	0	0	0	E	
5/29	900	HI	FR	939	940	S	2	2	C	7	3	7	3	7	3	E	
5/29	900	HI	NBC	944	945	S	2	1	C	0	2	0	2	0	2	E	SSL on rocks
5/29	900	HI	MB	948	1000	S	2	1	C	280	32	280	26	260	20	G	
5/29	900	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/30	1400	SKS	SP	1358	1359	S	2	2	C	0	0	0	0	0	0	E	
5/30	1400	SKS	SB	1401	1404	S	2	2	C	1	1	1	1	1	1	E	
5/30	1400	SKS	FP	1408	1409	S	2	2	C	0	0	0	0	0	0	E	
5/30	1400	SKS	FB	1410	1414	S	2	2	C	29	0	29	0	29	0	E	
5/30	1400	SKS	CG	1422	1425	S	2	2	C	0	0	0	0	0	0	E	
5/30	1400	SKS	BC	1426	1434	S	2	2	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
5/30	1400	SKS	FR	1435	1436	S	2	2	C	5	0	5	0	5	0	E	SSL on FR w 5 walrus photo
5/30	1400	SKS	NBC	1443	1444	S	2	1	C	0	0	0	0	0	0	E	
5/30	1400	SKS	MB	1448	1500	S	2	1	C	669	19	635	19	681	21	G	
5/30	1400	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/31	900	HI	SP	903	904	S	1	1	C	0	0	0	0	0	0	E	
5/31	900	HI	SB	906	910	S	1	0	C	0	6	0	6	0	6	E	
5/31	900	HI	FP	911	912	S	1	1	C	0	0	0	0	0	0	E	
5/31	900	HI	FB	914	922	S	1	1	C	51	31	47	25	49	27	E	
5/31	900	HI	CG	927	931	S	1	1	C	0	6	0	6	0	6	E	
5/31	900	HI	BC	931	938	S	1	0	C	0	5	0	5	0	5	E	
5/31	900	HI	FR	938	940	S	1	1	C	16	12	16	11	16	11	E	
5/31	900	HI	NBC	945	946	S	1	0	C	0	0	0	0	0	0	E	
5/31	900	HI	MB	949	1002	S	1	0	C	370	131	360	129	390	105	G	
5/31	900	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
6/1	1400	SKS	SP	1546	1547	S	2	2	C	1	0	1	0	1	0	E	
6/1	1400	SKS	SB	1539	1543	S	2	2	C	24	0	24	0	24	0	E	
6/1	1400	SKS	FP	1537	1538	S	2	1	C	0	0	0	0	0	0	E	
6/1	1400	SKS	FB	1523	1535	S	2	2	C	170	0	170	0	167	0	E	
6/1	1400	SKS	CG	1513	1515	S	2	1	C	5	0	5	0	5	0	E	
6/1	1400	SKS	BC	1507	1513	S	2	2	C	0	0	0	0	0	0	E	
6/1	1400	SKS	FR	1505	1507	S	2	2	C	20	0	20	0	20	0	E	
6/1	1400	SKS	NBC	1502	1503	S	2	1	C	0	0	0	0	0	0	E	
6/1	1400	SKS	MB	1439	1455	S	2	1	C	1134	35	1084	40	1224	29	G	
6/1	1400	SKS	WM	1339	1354	S	2	1	C	1490	56	1430	52	1438	56	G	
6/2	900	SKS/HI	SP	914	915	S	2	2	C	0	1	0	1	0	1	E	
6/2	900	SKS/HI	SB	917	922	S	2	2	C	0	11	0	11	0	11	E	
6/2	900	SKS/HI	FP	923	924	S	2	1	C	0	0	0	0	0	0	E	
6/2	900	SKS/HI	FB	926	934	S	2	1	C	65	25	65	21	65	22	E	
6/2	900	SKS/HI	CG	934	936	S	2	1	C	2	4	2	4	2	4	E	
6/2	900	SKS/HI	BC	946	954	S	2	1	C	1	0	1	0	1	0	E	
6/2	900	SKS/HI	FR	954	956	S	2	2	C	8	13	8	12	8	12	E	
6/2	900	SKS/HI	NBC	1002	1003	S	2	2	C	0	2	0	2	0	2	E	
6/2	900	SKS/HI	MB	1005	1019	S	2	1	C	400	129	420	133	400	122	G	HI var ct MB= 530/128, 530/99, 450/121
6/2	900	SKS/HI	WM	1116	1126	S	2	2	C	630	62	530	65	583	54	G	HI var ct WM= 633/58, 640/58, 574/55; photo ct SKS=694; HI=696
6/3	1400	HI	SP	1412	1413	S	2	1	C	0	0	0	0	0	0	E	
6/3	1400	HI	SB	1416	1420	S	2	1	C	0	0	0	0	0	0	E	
6/3	1400	HI	FP	1422	1423	S	2	1	C	0	0	0	0	0	0	E	
6/3	1400	HI	FB	1425	1433	S	2	1	C	50	2	50	2	49	2	E	
6/3	1400	HI	CG	1440	1443	S	2	2	C	0	0	0	0	0	0	E	
6/3	1400	HI	BC	1443	1450	S	2	2	C	0	0	0	0	0	0	E	
6/3	1400	HI	FR	1450	1451	S	2	2	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/3	1400	HI	NBC	1456	1457	S	2	1	C	0	0	0	0	0	0	E	
6/3	1400	HI	MB	1501	1517	S	2	1	C	480	27	520	21	410	31	G	
6/3	1400	HI	WM	1607	1618	S	2	2	C	295	15	292	7	298	13	G	
6/4	1400	HI	SP	1422	1423	S	2	1	C	0	0	0	0	0	0	E	
6/4	1400	HI	SB	1416	1419	S	2	1	C	0	1	0	1	0	1	E	
6/4	1400	HI	FP	1410	1411	S	2	1	C	0	0	0	0	0	0	E	
6/4	1400	HI	FB	1403	1408	S	2	1	C	1	1	1	1	1	1	E	
6/4	1400	HI	CG	1437	1440	S	2	2	C	0	0	0	0	0	0	E	
6/4	1400	HI	BC	1440	1447	S	2	2	C	0	0	0	0	0	0	E	
6/4	1400	HI	FR	1447	1448	S	2	2	C	5	1	5	1	5	1	E	
6/4	1400	SKS	NBC	1448	1449	S	2	1	C	0	0	0	0	0	0	E	
6/4	1400	SKS	MB	1451	1501	S	2	1	C	400	32	380	25	440	28	G	
6/4	1400	SKS	WM	1351	1409	S	2	1	C	560	53	620	50	510	49	G	
6/5	1700	HI	SP	1725	1726	S	5	3	C	0	0	0	0	0	0	E	
6/5	1700	HI	SB	1718	1723	S	5	3	C	1	0	1	0	1	0	E	
6/5	1700	HI	FP	1715	1716	S	5	3	C	0	0	0	0	0	0	E	
6/5	1700	HI	FB	1708	1713	S	5	3	C	16	0	16	0	16	0	E	
6/5	1700	SKS	CG	1707	1709	S	5	3	C	0	0	0	0	0	0	E	
6/5	1700	SKS	BC	1709	1715	S	5	3	C	0	0	0	0	0	0	E	
6/5	1700	SKS	FR	1715	1717	S	5	3	C	13	0	13	0	13	0	E	
6/5	1700	SKS	NBC	1721	1722	S	5	3	C	0	0	0	0	0	0	E	
6/5	1700	SKS	MB	1724	1743	S	5	3	C	1456	22	1346	19	1416	16	G	
6/5	1700	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	Too windy
6/6	1700	HI	SP	1654	1655	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	HI	SB	1657	1659	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	HI	FP	1701	1702	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	HI	FB	1704	1708	S	3	2	C	1	0	1	0	1	0	E	
6/6	1700	HI	CG	1715	1718	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	HI	BC	1718	1725	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	HI	FR	1725	1726	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	SKS	NBC	1728	1729	S	3	2	C	0	0	0	0	0	0	E	
6/6	1700	SKS	MB	1731	1738	S	3	2	C	130	6	130	8	126	4	G	
6/6	1700	SKS	WM	1639	1646	S	2	0	C	260	59	250	63	274	58	G	
6/7	1400	SKS	SP	1419	1420	S	2	2	C	0	0	0	0	0	0	E	
6/7	1400	SKS	SB	1414	1416	S	2	2	C	1	0	1	0	1	0	E	
6/7	1400	SKS	FP	1411	1412	S	2	2	C	0	0	0	0	0	0	E	
6/7	1400	SKS	FB	1405	1409	S	2	2	C	0	0	0	0	0	0	E	
6/7	1400	SKS	CG	1358	1359	S	2	2	C	0	0	0	0	0	0	E	
6/7	1400	SKS	BC	1356	1357	S	2	1	C	0	0	0	0	0	0	E	
6/7	1400	HI	FR	1359	1400	S	2	2	C	0	1	0	1	0	1	E	
6/7	1400	HI	NBC	1406	1407	S	2	1	C	0	0	0	0	0	0	E	
6/7	1400	HI	MB	1408	1415	S	2	1	C	200	20	190	22	230	14	G	
6/7	1400	HI	WM	1515	1532	S	2	0	C	440	30	410	29	490	30	G	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/8	1700	HI	SP	1652	1653	S	1	1	C	0	0	0	0	0	0	E	
6/8	1700	HI	SB	1656	1659	S	1	0	C	0	0	0	0	0	0	E	
6/8	1700	HI	FP	1701	1702	S	1	0	C	0	0	0	0	0	0	E	
6/8	1700	HI	FB	1704	1712	S	1	0	C	11	3	11	3	11	3	E	
6/8	1700	HI	CG	1724	1728	S	1	0	C	2	0	2	0	2	0	E	
6/8	1700	HI	BC	1728	1736	S	1	0	C	0	0	0	0	0	0	E	
6/8	1700	HI	FR	1736	1737	S	1	0	C	5	1	5	1	5	1	E	
6/8	1700	HI	NBC	1744	1745	S	1	0	C	0	1	0	1	0	1	E	
6/8	1700	SKS	MB	1746	1818	S	1	0	C	1958	11	1938	11	2298	13	G	HI var ct(MB)= 1152/15, 1190/12, 1053/15 (1450, 1560 uncons.) photo ct SKS= 1549, HI=1450
6/8	1700	SKS	WM	1650	1712	S	1	0	C	699	77	744	83	674	76	G	
6/9	1400	SKS	SP	1523	1524	S	3	1	C	0	1	0	1	0	1	E	
6/9	1400	SKS	SB	1518	1521	S	3	0	C	0	0	0	0	0	0	E	
6/9	1400	SKS	FP	1516	1517	S	2	0	C	1	0	1	0	1	0	E	
6/9	1400	SKS	FB	1502	1513	S	2	0	C	127	2	116	2	129	2	E	
6/9	1400	SKS	CG	1453	1455	S	2	1	C	0	1	0	1	0	1	E	
6/9	1400	SKS	BC	1447	1452	S	2	1	C	0	0	0	0	0	0	E	
6/9	1400	SKS	FR	1443	1447	S	2	0	C	28	4	28	4	27	3	E	
6/9	1400	SKS	NBC	1437	1438	S	2	0	C	0	0	0	0	0	0	E	
6/9	1400	SKS	MB	1409	1431	S	2	0	C	1810	95	1710	92	1880	97	G	HI var ct (MB)= 2000/103, 1950/117, 2260/107
6/9	1400	HI	WM	1513	1546	S	2	0	C	1220	25	1140	27	1290	22	G	
6/10	1700	HI	SP	1655	1656	S	FOG	1	P	0	0	0	0	0	0	E	
6/10	1700	HI	SB	1658	1700	S	FOG	0	C	3	0	3	0	3	0	E	
6/10	1700	HI	FP	1702	1703	S	FOG	0	C	0	0	0	0	0	0	E	
6/10	1700	HI	FB	1705	1719	S	FOG	0	C	134	2	126	1	125	3	E	
6/10	1700	HI	CG	1727	1729	S	FOG	0	C	1	0	1	0	1	0	E	
6/10	1700	HI	BC	1729	1737	S	FOG	0	C	2	1	2	1	2	1	E	
6/10	1700	HI	FR	1737	1738	S	FOG	0	C	13	0	13	0	13	0	E	
6/10	1700	SKS	NBC	1746	1747	S	FOG	0	C	0	1	0	1	0	1	E	
6/10	1700	SKS	MB	FOG	FOG	S	FOG	FOG	O	1382	103					G	SKS est. ~1400-1500 before starting TT, took photo with 35mm lens for personal pleasure, will use photo to ct est. # on MB due to thick fog during ct time.
6/10	1700	SKS	WM	1623	1645	S	FOG	2	C	980	75	1000	76	860	66	G	photo ct SKS= 1067; HI=1067
6/11	1400	SKS	SP	1358	1359	S	1	1	C	0	0	0	0	0	0	E	
6/11	1400	SKS	SB	1402	1405	S	1	1	C	14	0	14	0	14	0	E	
6/11	1400	SKS	FP	1407	1408	S	1	1	C	0	0	0	0	0	0	E	
6/11	1400	SKS	FB	1409	1422	S	1	1	C	106	5	109	5	106	5	E	
6/11	1400	SKS	CG	1434	1437	S	2	2	C	0	0	0	0	0	0	E	
6/11	1400	SKS	BC	1437	1442	S	2	1	C	0	0	0	0	0	0	E	
6/11	1400	SKS	FR	1443	1446	S	2	1	C	9	4	9	4	9	4	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/11	1400	SKS	NBC	1451	1452	S	2	1	C	0	0	0	0	0	0	E	
6/11	1400	SKS	MB	1500	1526	S	2	1	C	1145	63	1235	53	1295	59	G	HI var ct (MB)= 975/60, 975/54, 935/58; photo ct. SKS=1192, HI=1026; SSL on rocks with all the walrus
6/11	1400	HI	WM	1412	1442	S	2	1	C	688	55	681	53	727	61	G	
6/12	900	HI	SP	922	923	S	2	1	C	0	0	0	0	0	0	E	
6/12	900	HI	SB	915	918	S	3	1	C	2	1	2	1	2	1	E	
6/12	900	HI	FP	912	913	S	3	1	C	0	0	0	0	0	0	E	
6/12	900	HI	FB	901	910	S	3	2	C	33	16	32	10	33	12	E	
6/12	900	SKS	CG	902	904	S	4	3	C	0	0	0	0	0	0	E	
6/12	900	SKS	BC	904	910	S	4	2	C	0	0	0	0	0	0	E	
6/12	900	SKS	FR	910	911	S	4	3	C	0	0	0	0	0	0	E	
6/12	900	SKS	NBC	915	916	S	4	3	C	0	0	0	0	0	0	E	
6/12	900	SKS	MB	917	923	S	4	3	C	46	1	46	1	46	1	G	
6/12	900	SKS	WM	1002	1004	S	4	3	C	20	5	19	5	20	5	G	
6/13	1700	SKS	SP	1721	1722	S	4	3	C	0	0	0	0	0	0	E	
6/13	1700	SKS	SB	1716	1718	S	4	3	C	0	0	0	0	0	0	E	
6/13	1700	SKS	FP	1714	1715	S	4	3	C	0	0	0	0	0	0	E	
6/13	1700	SKS	FB	1700	1711	S	4	3	C	89	1	89	1	90	1	E	
6/13	1700	HI	CG	1702	1705	S	4	2	C	0	0	0	0	0	0	E	
6/13	1700	HI	BC	1705	1715	S	4	1	C	3	0	3	0	3	0	E	
6/13	1700	HI	FR	1715	1716	S	4	2	C	0	0	0	0	0	0	E	
6/13	1700	HI	NBC	1720	1721	S	3	1	C	0	0	0	0	0	0	E	
6/13	1700	HI	MB	1723	1731	S	2	1	C	460	8	400	8	480	6	G	
6/13	1700	HI	WM	1808	1811	S	3	1	C	52	3	53	3	51	3	G	
6/14	1400	HI	SP	1412	1413	S	fog	3	C	0	0	0	0	0	0	E	
6/14	1400	HI	SB	1416	1422	S	fog	3	C	1	0	1	0	1	0	E	
6/14	1400	HI	FP	1424	1425	S	fog	3	C	0	0	0	0	0	0	E	
6/14	1400	HI	FB	1428	1431	S	fog	3	C	0	0	0	0	0	0	E	
6/14	1400	SKS	CG	1404	1406	S	fog	3	C	0	0	0	0	0	0	E	
6/14	1400	SKS	BC	1406	1412	S	fog	3	C	0	0	0	0	0	0	E	
6/14	1400	SKS	FR	1412	1413	S	fog	3	C	0	0	0	0	0	0	E	
6/14	1400	SKS	NBC	1417	1418	S	fog	2	C	0	0	0	0	0	0	E	
6/14	1400	SKS	MB	1421	1422	S	fog	2	C	9	4	9	4	9	4	E	
6/14	1400	SKS	WM	1501	1502	S	fog	3	C	0	1	0	1	0	1	E	
6/15	900	SKS	SP	905	907	S	3	3	C	0	0	0	0	0	0	E	
6/15	900	SKS	SB	909	912	S	3	3	C	0	0	0	0	0	0	E	
6/15	900	SKS	FP	913	914	S	3	3	C	0	0	0	0	0	0	E	
6/15	900	SKS	FB	915	919	S	3	3	C	4	0	4	0	4	0	E	
6/15	900	HI	CG	908	910	S	3	2	C	0	0	0	0	0	0	E	
6/15	900	HI	BC	910	919	S	3	1	C	0	3	0	3	0	3	E	
6/15	900	HI	FR	919	920	S	3	2	C	2	5	2	5	2	5	E	
6/15	900	HI	NBC	927	928	S	3	1	C	0	1	0	1	0	1	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/15	900	HI	MB	930	935	S	3	1	C	90	24	90	17	100	23	G	
6/15	900	HI	WM	1020	1021	S	3	3	C	0	6	0	6	0	6	G	
6/16	1400	HI	SP	1424	1425	S	3	3	C	0	0	0	0	0	0	E	
6/16	1400	HI	SB	1418	1420	S	3	2	C	0	0	0	0	0	0	E	
6/16	1400	HI	FP	1415	1416	S	3	2	C	0	0	0	0	0	0	E	
6/16	1400	HI	FB	1403	1411	S	3	2	C	62	6	61	6	60	6	E	
6/16	1400	SKS	CG	1409	1412	S	3	2	C	1	4	1	4	1	4	E	
6/16	1400	SKS	BC	1412	1426	S	3	1	C	52	9	50	9	48	9	E	
6/16	1400	SKS	FR	1426	1427	S	3	2	C	8	2	8	2	8	2	E	
6/16	1400	SKS	NBC	1432	1433	S	fog	2	C	0	1	0	1	0	1	E	
6/16	1400	SKS	MB	1434	1444	S	fog	2	C	1580	59	1360	70	1670	51	G	
6/16	1400	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	G	too windy/ slippery
6/17	900	SKS/HI	SP	918	919	S	3	3	C	0	0	0	0	0	0	E	
6/17	900	SKS/HI	SB	923	927	S	3	3	C	0	5	0	5	0	5	E	
6/17	900	SKS/HI	FP	928	929	S	3	3	C	0	0	0	0	0	0	E	
6/17	900	SKS/HI	FB	931	941	S	3	3	C	41	18	40	17	41	21	E	
6/17	900	SKS/HI	CG	949	952	S	3	2	C	0	9	0	9	0	9	E	
6/17	900	SKS/HI	BC	952	1008	S	3	1	C	29	29	31	31	29	28	E	
6/17	900	SKS/HI	FR	1008	1010	S	3	1	C	4	30	4	24	4	28	E	
6/17	900	SKS/HI	NBC	1015	1016	S	3	1	C	0	7	0	7	0	7	E	
6/17	900	SKS/HI	MB	1018	1040	S	3	1	C	556	115	508	97	507	100	G	Var ct MB (HI)= 751/93, 621/82, 631/90; photo ct SKS= 711, HI= 683
6/17	900	SKS	WM	1120	1127	S	3	3	C	135	18	120	11	127	14	G	
6/18	900	SKS	SP	955	956	S	2	2	C	2	2	2	2	2	2	E	
6/18	900	SKS	SB	950	953	S	2	2	C	0	3	0	3	0	3	E	
6/18	900	SKS	FP	948	949	S	2	2	C	0	3	0	3	0	3	E	
6/18	900	SKS	FB	936	946	S	2	2	C	84	60	84	56	83	48	E	
6/18	900	SKS	CG	930	932	S	2	2	C	1	12	1	12	1	12	E	
6/18	900	SKS	BC	920	930	S	2	1	C	78	47	77	42	77	42	E	
6/18	900	HI	FR	929	931	S	2	1	C	10	48	10	54	10	44	E	
6/18	900	HI	NBC	937	938	S	2	1	C	0	8	0	6	0	7	E	
6/18	900	HI	MB	943	1000	S	2	1	C	664	233	634	194	704	293	G	While at OP doing bird prod SKS est. ~1700-2000+ on MB during L tide vs. ct at 900 H tide
6/18	900	HI	WM	1045	1055	S	2	2	C	340	75	337	74	380	73	G	
6/19	1400	HI	SP	1459	1500	S	2	1	C	1	0	1	0	1	0	E	
6/19	1400	HI	SB	1444	1456	S	2	1	C	134	3	118	3	144	3	E	
6/19	1400	HI	FP	1440	1441	S	2	1	C	0	0	0	0	0	0	E	
6/19	1400	HI	FB	1418	1437	S	2	1	C	285	2	280	2	268	7	E	
6/19	1400	HI	CG	1404	1412	S	2	1	C	6	0	6	0	6	0	E	
6/19	1400	SKS	BC	1404	1411	S	2	1	C	1	3	1	3	1	3	E	Disturbance earlier in the day ~50-60 DS out of BC
6/19	1400	SKS	FR	1411	1413	S	2	1	C	20	5	20	5	20	5	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/19	1400	SKS	NBC	1420	1421	S	2	1	C	0	0	0	0	0	0	E	
6/19	1400	SKS	MB	1424	1448	S	2	0	C	2552	49	2492	44	2612	42	G	
6/19	1400	SKS	WM	1529	1548	S	2	2	C	890	34	1000	38	780	32	G	
6/20	900	SKS	SP	907	908	S	2	3	C	0	3	0	3	0	3	E	
6/20	900	SKS	SB	910	919	S	2	3	C	128	48	117	40	119	46	E	
6/20	900	SKS	FP	920	921	S	2	3	C	0	3	0	3	0	3	E	
6/20	900	SKS	FB	922	931	S	2	3	C	103	72	105	69	101	72	E	
6/20	900	SKS	CG	945	947	S	3	3	C	0	13	0	13	0	13	E	
6/20	900	SKS	BC	948	957	S	3	3	C	0	19	0	19	0	19	E	
6/20	900	SKS	FR	957	959	S	3	3	C	13	22	13	20	13	19	E	
6/20	900	HI	NBC	1003	1004	S	2	2	C	0	12	0	12	0	12	E	
6/20	900	HI	MB	1006	1016	S	2	2	C	464	33	434	31	424	31	G	
6/20	900	HI	WM	917	932	S	2	1	C	512	62	496	51	513	58	G	
6/21	1400	HI	SP	1440	1441	S	2	1	C	0	0	0	0	0	0	E	
6/21	1400	HI	SB	1428	1436	S	2	1	C	53	1	50	1	54	1	E	
6/21	1400	HI	FP	1426	1427	S	2	1	C	0	0	0	0	0	0	E	
6/21	1400	HI	FB	1409	1424	S	2	1	C	83	2	84	4	89	2	E	
6/21	1400	SKS	CG	1407	1410	S	2	2	C	1	0	1	0	1	0	E	
6/21	1400	SKS	BC	1410	1417	S	2	1	C	0	0	0	0	0	0	E	
6/21	1400	SKS	FR	1417	1418	S	2	2	C	10	0	10	0	10	0	E	
6/21	1400	SKS	NBC	1423	1424	S	2	1	C	0	0	0	0	0	0	E	
6/21	1400	SKS	MB	1426	1440	S	2	1	C	713	29	759	29	689	32	G	
6/21	1400	SKS	WM	1517	1532	S	3	1	C	366	36	375	37	355	28	G	
6/22	1700	SKS	SP	1701	1703	S	2	2	C	3	3	3	3	3	3	E	1 near beach- mort?
6/22	1700	SKS	SB	1706	1709	S	2	2	C	17	0	17	0	17	0	E	
6/22	1700	SKS	FP	1710	1711	S	2	2	C	0	0	0	0	0	0	E	
6/22	1700	SKS	FB	1713	1719	S	2	2	C	86	3	84	3	86	3	E	
6/22	1700	SKS	CG	1725	1727	S	2	2	C	0	0	0	0	0	0	E	
6/22	1700	SKS	BC	1727	1733	S	2	1	C	0	0	0	0	0	0	E	
6/22	1700	SKS	FR	1733	1734	S	2	1	C	12	0	12	0	12	0	E	
6/22	1700	SKS	NBC	1739	1740	S	2	1	C	0	0	0	0	0	0	E	
6/22	1700	SKS	MB	1743	1751	S	2	1	C	650	12	580	9	680	10	G	
6/22	1700	HI	WM	1656	1705	S	1	1	C	266	14	261	14	307	19	G	
6/23	1400	HI	SP	1401	1402	S	2	1	C	0	0	0	0	0	0	E	
6/23	1400	HI	SB	1404	1409	S	2	1	C	13	0	12	0	13	0	E	
6/23	1400	HI	FP	1411	1412	S	2	1	C	0	0	0	0	0	0	E	
6/23	1400	HI	FB	1414	1427	S	2	1	C	101	0	106	0	101	0	E	
6/23	1400	SKS	CG	1406	1408	S	2	1	C	0	1	0	1	0	1	E	
6/23	1400	SKS	BC	1408	1414	S	2	1	C	1	0	1	0	1	0	E	
6/23	1400	SKS	FR	1415	1416	S	2	1	C	8	1	8	1	8	1	E	
6/23	1400	SKS	NBC	1421	1422	S	2	1	C	0	0	0	0	0	0	E	
6/23	1400	SKS	MB	1424	1441	S	2	1	C	630	45	640	44	620	46	G	
6/23	1400	SKS	WM	1516	1526	S	1	1	C	307	12	307	12	323	12	G	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/24	900	SKS	SP	907	909	S	fog	1	P	0	0	0	0	0	0	E	
6/24	900	SKS	SB	916	919	S	fog	1	C	4	0	4	0	4	0	E	
6/24	900	SKS	FP	921	922	S	fog	1	C	0	0	0	0	0	0	E	
6/24	900	SKS	FB	923	930	S	fog	1	C	38	4	35	4	37	4	E	
6/24	900	HI	CG	902	904	S	fog	1	C	0	0	0	0	0	0	E	
6/24	900	HI	BC	904	911	S	fog	1	C	0	0	0	0	0	0	E	
6/24	900	HI	FR	911	912	S	fog	1	C	10	0	10	0	10	0	E	
6/24	900	HI	NBC	917	918	S	fog	1	C	1	1	1	1	1	1	E	
6/24	900	HI	MB	1521	1526	O	1	1	P	400	25	380	25	410	27	G	could not see walrus on the beach due to the fog; SKS ctd opportunistically later in the day when fog lifted
6/24	900	HI	WM	1010	1020	S	fog	1	O	NC	NC	NC	NC	NC	NC	G	could not see walrus on the beach due to the fog
6/25	1400	HI	SP	1400	1401	S	fog	1	C	0	0	0	0	0	0	E	
6/25	1400	HI	SB	1404	1407	S	1	0	C	0	0	0	0	0	0	E	
6/25	1400	HI	FP	1409	1410	S	1	0	C	0	0	0	0	0	0	E	
6/25	1400	HI	FB	1412	1425	S	1	0	C	127	7	114	3	121	7	E	
6/25	1400	HI	CG	1432	1435	S	1	0	C	0	0	0	0	0	0	E	
6/25	1400	HI	BC	1435	1451	S	1	0	C	7	0	7	0	7	0	E	
6/25	1400	HI	FR	1451	1452	S	1	0	C	18	2	18	2	18	2	E	
6/25	1400	SKS	NBC	1434	1435	S	1	0	C	0	0	0	0	0	0	E	
6/25	1400	SKS	MB	1421	1432	S	1	1	C	1130	42	950	38	1130	40	G	
6/25	1400	SKS	WM	1508	1518	S	2	2	C	330	26	334	25	322	23	G	
6/26	900	SKS	SP	948	951	S	4	2	C	0	11	0	11	0	11	E	
6/26	900	SKS	SB	942	946	S	4	2	C	2	2	2	2	2	2	E	
6/26	900	SKS	FP	939	940	S	4	2	C	22	3	22	3	22	3	E	
6/26	900	SKS	FB	922	936	S	4	2	C	210	55	206	50	224	52	E	
6/26	900	HI	CG	907	910	S	4	3	C	1	7	1	7	1	7	E	
6/26	900	HI	BC	910	918	S	4	2	C	2	4	2	4	2	4	E	
6/26	900	HI	FR	918	919	S	4	3	C	7	16	7	12	7	11	E	
6/26	900	HI	NBC	926	927	S	4	3	C	0	3	0	3	0	3	E	
6/26	900	HI	MB	931	949	S	4	2	C	1241	77	961	51	971	64	F	bino shake
6/26	900	HI	WM	1029	1040	S	4	3	C	610	17	540	16	640	17	G	
6/27	900	HI	SP	932	933	S	3	2	C	0	11	0	6	0	8	E	
6/27	900	HI	SB	923	929	S	3	2	C	9	33	9	29	9	31	E	
6/27	900	HI	FP	920	921	S	4	2	C	18	8	18	8	18	8	E	
6/27	900	HI	FB	909	917	S	4	2	C	54	36	54	35	57	32	E	
6/27	900	SKS	CG	905	908	S	5	3	C	0	2	0	2	0	2	E	
6/27	900	SKS	BC	908	913	S	5	3	C	0	0	0	0	0	0	E	
6/27	900	SKS	FR	913	914	S	5	3	C	0	8	0	8	0	8	E	
6/27	900	SKS	NBC	919	920	S	5	3	C	0	0	0	0	0	0	E	
6/27	900	SKS	MB	921	929	S	5	3	C	235	9	235	11	215	8	F	bino shake
6/27	900	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	G	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
6/28	1400	HI	SP	1433	1434	S	FOG	1	O	0	0	0	0	0	0	F	
6/28	1400	HI	SB	1420	1429	S	FOG	1	P	49	0	49	0	50	0	G	
6/28	1400	HI	FP	1417	1418	S	FOG	1	C	14	0	14	0	14	0	E	
6/28	1400	HI	FB	1400	1411	S	FOG	1	C	134	0	130	0	132	0	E	
6/28	1400	SKS	CG	1416	1418	S	FOG	1	C	0	0	0	0	0	0	E	
6/28	1400	SKS	BC	1418	1424	S	FOG	1	C	0	0	0	0	0	0	E	
6/28	1400	SKS	FR	1424	1425	S	FOG	1	C	5	0	5	0	5	0	E	
6/28	1400	SKS	NBC	1429	1430	S	FOG	0	C	0	0	0	0	0	0	E	
6/28	1400	SKS	MB	1432	1444	S	FOG	0	C	700	17	650	17	770	20	G	
6/28	1400	SKS	WM	1519	1526	S	FOG	2	P	210	0	222	0	208	0	G	
6/29	1400	SKS	SP	1440	1441	S	2	1	C	0	0	0	0	0	0	E	mort gone, no ivory collected
6/29	1400	SKS	SB	1434	1438	S	2	1	C	2	0	2	0	2	0	E	
6/29	1400	SKS	FP	1432	1433	S	2	1	C	5	0	5	0	5	0	E	
6/29	1400	SKS	FB	1420	1430	S	2	1	C	108	1	112	1	106	1	E	
6/29	1400	HI	CG	1408	1411	S	2	1	C	1	0	1	0	1	0	E	
6/29	1400	HI	BC	1411	1418	S	2	1	C	0	0	0	0	0	0	E	
6/29	1400	HI	FR	1418	1419	S	2	1	C	7	2	7	2	7	2	E	
6/29	1400	HI	NBC	1425	1426	S	2	1	C	0	0	0	0	0	0	E	
6/29	1400	HI	MB	1431	1441	S	2	1	C	460	8	510	8	520	6	G	
6/29	1400	HI	WM	1534	1545	S	2	2	C	309	2	284	2	336	2	G	
6/30	1400	HI	SP	1434	1435	S	2	1	C	0	1	0	1	0	1	E	
6/30	1400	HI	SB	1426	1429	S	2	1	C	1	0	1	0	1	0	E	
6/30	1400	HI	FP	1423	1424	S	2	1	C	0	0	0	0	0	0	E	
6/30	1400	HI	FB	1405	1418	S	2	1	C	141	4	139	4	145	4	E	
6/30	1400	SKS	CG	1404	1407	S	2	2	C	0	0	0	0	0	0	E	
6/30	1400	SKS	BC	1407	1414	S	2	2	C	0	1	0	1	0	1	E	
6/30	1400	SKS	FR	1415	1416	S	2	2	C	15	1	15	1	15	1	E	
6/30	1400	SKS	NBC	1424	1425	S	2	2	C	0	1	0	1	0	1	E	
6/30	1400	SKS	MB	1427	1444	S	2	1	C	730	17	650	17	830	18	G	
6/30	1400	SKS	WM	1523	1533	S	2	2	C	245	2	239	2	249	2	G	
7/1	1700	SKS	SP	1701	1702	S	3	3	C	0	0	0	0	0	0	E	started counts early (on all beaches) due to opening in thick fog present most of day
7/1	1700	SKS	SB	1653	1656	S	3	2	C	0	0	0	0	0	0	E	
7/1	1700	SKS	FP	1650	1651	S	3	2	C	0	0	0	0	0	0	E	
7/1	1700	SKS	FB	1636	1647	S	3	2	C	166	2	163	2	172	2	E	
7/1	1700	HI	CG	1631	1635	S	3	1	C	3	1	3	1	3	1	E	
7/1	1700	HI	BC	1635	1702	S	3	1	C	182	7	171	7	172	7	E	
7/1	1700	HI	FR	1702	1703	S	3	1	C	15	1	15	1	15	1	E	
7/1	1700	HI	NBC	1709	1710	S	FOG	0	C	0	1	0	1	0	1	E	
7/1	1700	HI	MB	1712	1723	S	FOG	0	P	1175	25	1075	24	1125	30	G	
7/1	1700	HI	WM	1805	1821	S	FOG	1	P	811	8	910	7	880	9	G	
7/2	1400	HI	SP	1441	1442	S	FOG	2	P	1	0	1	0	1	0	G	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/2	1400	HI	SB	1428	1437	S	FOG	2	P	52	5	52	4	53	4	G	
7/2	1400	HI	FP	1425	1426	S	FOG	2	C	0	0	0	0	0	0	E	
7/2	1400	HI	FB	1408	1422	S	FOG	2	P	229	9	247	8	228	11	G	
7/2	1400	SKS	CG	1408	1410	S	FOG	2	C	4	0	4	0	4	0	E	
7/2	1400	SKS	BC	1410	1429	S	FOG	1	C	214	12	209	10	210	11	E	
7/2	1400	SKS	FR	1429	1431	S	FOG	1	C	11	1	11	1	11	1	E	
7/2	1400	SKS	NBC	1441	1442	S	FOG	1	C	0	0	0	0	0	0	E	
7/2	1400	SKS	MB	1444	1508	S	FOG	1	P	2030	17	1630	24	1760	17	F	waited for fog to lift, 70 individuals below viewpoint at OP, photo of MB (taken after 1700) suspected more than earlier count; Photo ct SKS=2145
7/2	1400	SKS	WM	1557	1608	S	FOG	1	C	1550	6	1540	7	1500	6	G	
7/3	900	SKS	SP	950	952	S	1	1	C	0	2	0	2	0	2	E	
7/3	900	SKS	SB	937	944	S	2	0	C	73	60	73	44	74	57	E	
7/3	900	SKS	FP	934	935	S	2	0	C	0	0	0	0	0	0	E	
7/3	900	SKS	FB	917	930	S	2	1	C	141	97	130	84	143	88	E	
7/3	900	HI	CG	911	916	S	2	0	C	2	18	2	18	2	18	E	
7/3	900	HI	BC	916	938	S	2	0	C	133	57	129	50	140	47	E	
7/3	900	HI	FR	939	940	S	2	0	C	11	38	11	37	11	37	E	
7/3	900	HI	NBC	948	949	S	1	0	C	0	21	0	10	0	11	E	
7/3	900	HI	MB	953	1007	S	1	0	C	680	173	680	122	740	180	G	opportunistic count at low tide (SKS 1502-1515) - 1842/23, 1933/24, 1725/23
7/3	900	HI	WM	1050	1114	S	2	1	C	695	109	675	98	765	106	G	includes 25 on SWM (beach under birds); VERY young walrus (calf-1yo) on beach w adults- looks like tusks have not penetrated yet
7/4	1400	HI	SP	1445	1446	S	1	0	C	0	1	0	1	0	1	E	
7/4	1400	HI	SB	1424	1438	S	1	0	C	185	2	172	2	189	2	E	
7/4	1400	HI	FP	1421	1422	S	1	0	C	0	0	0	0	0	0	E	
7/4	1400	HI	FB	1404	1417	S	1	0	C	166	4	156	2	176	4	E	
7/4	1400	SKS	CG	1414	1418	S	1	2	C	16	4	16	4	16	4	E	walrus with left side of muzzle sheared off & and hanging
7/4	1400	SKS	BC	1418	1434	S	1	1	C	145	2	143	2	146	2	E	
7/4	1400	SKS	FR	1435	1436	S	1	1	C	14	2	14	2	14	2	E	
7/4	1400	SKS	NBC	1443	1444	S	1	1	C	0	0	0	0	0	0	E	
7/4	1400	SKS	MB	1445	1504	S	1	1	C	2409	74	2459	74	2129	74	G	tally whacker sticking? 2129 might be error from equipment- realized sticking at WM
7/4	1400	SKS	WM	1544	1604	S	1	2	C	616	16	640	16	603	16	G	Ct includes 34 inds on SWM
7/5	1400	SKS	SP	1426	1427	S	2	1	C	0	0	0	0	0	0	E	
7/5	1400	SKS	SB	1419	1423	S	2	1	C	17	0	17	0	17	0	E	
7/5	1400	SKS	FP	1416	1417	S	2	1	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/5	1400	SKS	FB	1409	1414	S	2	1	C	19	4	19	4	19	4	E	
7/5	1400	HI	CG	1406	1411	S	2	2	C	0	2	0	2	0	2	E	
7/5	1400	HI	BC	1411	1420	S	2	1	C	3	0	3	0	3	0	E	
7/5	1400	HI	FR	1420	1421	S	1	2	C	5	3	5	3	5	3	E	
7/5	1400	HI	NBC	1427	1428	S	1	1	C	0	0	0	0	0	0	E	
7/5	1400	HI	MB	1432	1442	S	1	1	C	391	28	421	32	371	21	G	
7/5	1400	HI	WM	1524	1535	S	fog	1	C	243	22	239	22	265	31	G	
7/6	1700	HI	SP	1708	1709	S	1	1	C	0	0	0	0	0	0	E	
7/6	1700	HI	SB	1712	1716	S	1	0	C	8	0	7	0	8	0	E	
7/6	1700	HI	FP	1718	1719	S	1	1	C	0	0	0	0	0	0	E	
7/6	1700	HI	FB	1721	1731	S	1	0	C	68	0	72	0	69	0	E	
7/6	1700	SKS	CG	1701	1703	S	1	1	C	0	0	0	0	0	0	E	
7/6	1700	SKS	BC	1703	1717	S	1	1	C	0	0	0	0	0	0	E	
7/6	1700	SKS	FR	1717	1718	S	1	1	C	0	0	0	0	0	0	E	
7/6	1700	SKS	NBC	1727	1728	S	1	0	C	0	0	0	0	0	0	E	
7/6	1700	SKS	MB	1729	1739	S	1	0	C	490	24	480	25	500	23	G	
7/6	1700	SKS	WM	1817	1819	S	1	2	C	7	9	7	9	7	9	G	
7/7	1700	SKS	SP	1708	1709	S	1	0	C	2	0	2	0	2	0	E	
7/7	1700	SKS	SB	1711	1716	S	1	0	C	0	0	0	0	0	0	E	
7/7	1700	SKS	FP	1718	1719	S	1	0	C	0	0	0	0	0	0	E	
7/7	1700	SKS	FB	1720	1728	S	1	1	C	74	1	74	1	74	1	E	
7/7	1700	HI	CG	1655	1658	S	1	0	C	0	0	0	0	0	0	E	
7/7	1700	HI	BC	1658	1707	S	1	0	C	0	0	0	0	0	0	E	
7/7	1700	HI	FR	1707	1708	S	1	0	C	0	0	0	0	0	0	E	
7/7	1700	HI	NBC	1713	1714	S	1	0	C	0	1	0	1	0	1	E	
7/7	1700	HI	MB	1718	1729	S	1	0	C	460	19	490	16	410	20	G	
7/7	1700	HI	WM	1813	1814	S	1	1	C	0	3	0	3	0	3	G	
7/8	900	HI	SP	959	1000	B	1	0	C	0	0	0	0	0	0	E	
7/8	900	HI	SB	958	959	B	1	0	C	3	0	3	0	3	0	E	
7/8	900	HI	FP	954	955	B	1	0	C	0	1	0	1	0	1	E	
7/8	900	HI	FB	951	952	B	1	0	C	67	0	37	0	53	0	P	
7/8	900	HI	CG	945	946	B	1	0	C	0	0	0	0	0	0	E	
7/8	900	HI	BC	941	942	B	1	0	C	0	0	0	0	0	0	E	
7/8	900	HI	FR	942	943	B	1	0	C	11	0	11	0	11	0	G	
7/8	900	HI	NBC	1013	1014	B	1	0	C	0	0	0	0	0	0	E	
7/8	900	HI	MB	1018	1019	B	1	0	C	380	2	340	2	330	2	P	
7/8	900	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
7/9	900	HI	SP	939	940	S	4	3	C	0	0	0	0	0	0	E	
7/9	900	HI	SB	932	936	S	5	3	C	0	0	0	0	0	0	E	
7/9	900	HI	FP	929	930	S	5	3	C	0	0	0	0	0	0	E	
7/9	900	HI	FB	918	926	S	5	3	C	55	4	55	4	54	4	E	
7/9	900	SKS	CG	923	925	S	5	3	C	0	0	0	0	0	0	E	
7/9	900	SKS	BC	925	935	S	5	2	C	41	2	41	2	40	2	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/9	900	SKS	FR	935	936	S	4	3	C	4	0	4	0	4	0	E	
7/9	900	SKS	NBC	943	944	S	4	3	C	0	1	0	1	0	1	E	
7/9	900	SKS	MB	946	952	S	4	3	C	381	6	401	6	371	6	G	
7/9	900	SKS	WM	1033	1048	S	4	1	P	790	29	800	28	720	29	G	
7/10	1700	SKS	SP	1658	1659	S	2	1	C	0	0	0	0	0	0	E	
7/10	1700	SKS	SB	1701	1706	S	2	1	C	0	0	0	0	0	0	E	
7/10	1700	SKS	FP	1707	1708	S	2	1	C	0	0	0	0	0	0	E	
7/10	1700	SKS	FB	1710	1716	S	2	1	C	55	1	54	1	56	1	E	
7/10	1700	HI	CG	1705	1708	S	3	1	C	0	0	0	0	0	0	E	
7/10	1700	HI	BC	1708	1715	S	3	1	C	0	0	0	0	0	0	E	
7/10	1700	HI	FR	1715	1716	S	3	1	C	7	0	7	0	7	0	E	
7/10	1700	HI	NBC	1721	1722	S	3	1	C	0	0	0	0	0	0	E	
7/10	1700	HI	MB	1724	1731	S	3	0	C	280	7	200	7	240	6	G	
7/10	1700	HI	WM	1814	1831	S	3	2	C	847	11		11		9	G	photo ct (2 cts for land= 628, 860)
7/11	1400	HI	SP	1444	1445	S	3	1	C	0	0	0	0	0	0	E	
7/11	1400	HI	SB	1435	1439	S	3	0	C	1	0	1	0	1	0	E	
7/11	1400	HI	FP	1432	1433	S	3	0	C	0	0	0	0	0	0	E	
7/11	1400	HI	FB	1414	1429	S	3	1	C	114	0	116	0	103	0	E	
7/11	1400	SKS	CG	1413	1415	S	3	1	C	0	0	0	0	0	0	E	
7/11	1400	SKS	BC	1415	1421	S	3	1	C	0	0	0	0	0	0	E	
7/11	1400	SKS	FR	1421	1422	S	3	1	C	6	0	6	0	6	0	E	
7/11	1400	SKS	NBC	1427	1428	S	3	1	C	0	0	0	0	0	0	E	
7/11	1400	SKS	MB	1429	1438	S	3	1	C	375	22	425	21	355	23	G	
7/11	1400	SKS	WM	1518	1528	S	3	3	C	276	0	280	0	273	0	G	
7/12	1400	SKS	SP	1423	1424	S	2	1	C	0	0	0	0	0	0	E	
7/12	1400	SKS	SB	1416	1420	S	2	1	C	0	0	0	0	0	0	E	
7/12	1400	SKS	FP	1414	1415	S	2	1	C	0	0	0	0	0	0	E	
7/12	1400	SKS	FB	1400	1412	S	2	1	C	102	2	102	2	103	2	E	
7/12	1400	HI	CG	1401	1404	S	2	0	C	0	1	0	1	0	10	E	
7/12	1400	HI	BC	1404	1415	S	2	0	C	0	0	0	0	0	0	E	
7/12	1400	HI	FR	1415	1416	S	2	0	C	16	0	16	0	16	0	E	
7/12	1400	HI	NBC	1424	1425	S	1	0	C	0	0	0	0	0	0	E	
7/12	1400	HI	MB	1428	1437	S	1	0	C	520	17	610	18	500	14	G	mort on MB 1+ harvestable tusk
7/12	1400	HI	WM	1523	1532	S	1	2	C	425	3	430	3	520	3	G	
7/13	900	HI	SP	938	939	S	1	0	C	0	0	0	0	0	0	E	
7/13	900	HI	SB	931	934	S	1	0	C	4	5	4	5	4	3	E	
7/13	900	HI	FP	926	927	S	1	0	C	1	2	1	2	1	2	E	
7/13	900	HI	FB	910	921	S	1	0	C	66	36	66	33	65	27	E	
7/13	900	SKS	CG	910	914	S	1	1	C	0	3	0	3	0	3	E	
7/13	900	SKS	BC	914	922	S	1	1	C	0	2	0	2	0	2	E	
7/13	900	SKS	FR	922	927	S	1	1	C	5	7	5	7	5	7	E	
7/13	900	SKS	NBC	932	933	S	1	1	C	0	2	0	2	0	2	E	
7/13	900	SKS	MB	934	944	S	1	1	C	354	39	344	38	354	34	G	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/13	900	SKS	WM	1026	1038	S	1	2	C	346	17	338	14	368	18	G	
7/14	1400	SKS	SP	1427	1428	S	4	1	C	0	0	0	0	0	0	E	
7/14	1400	SKS	SB	1422	1424	S	4	1	C	0	0	0	0	0	0	E	
7/14	1400	SKS	FP	1419	1420	S	4	1	C	0	0	0	0	0	0	E	
7/14	1400	SKS	FB	1405	1411	S	4	1	C	44	2	42	2	44	2	E	
7/14	1400	HI	CG	1406	1408	S	4	1	C	0	0	0	0	0	0	E	
7/14	1400	HI	BC	1408	1415	S	4	1	C	0	0	0	0	0	0	E	
7/14	1400	HI	FR	1415	1416	S	4	2	C	0	0	0	0	0	0	E	
7/14	1400	HI	NBC	1421	1422	S	fog	1	C	0	0	0	0	0	0	E	
7/14	1400	HI	MB	1424	1436	S	fog	1	P	240	4	220	4	210	4	F	Fog in & out with bino shake
7/14	1400	HI	WM	1515	1516	S	fog	3	C	0	0	0	0	0	0	G	
7/15	1400	HI	SP	1436	1437	S	2	1	C	6	0	6	0	6	0	E	
7/15	1400	HI	SB	1431	1434	S	2	0	C	0	0	0	0	0	0	E	
7/15	1400	HI	FP	1429	1430	S	2	0	C	0	0	0	0	0	0	E	
7/15	1400	HI	FB	1411	1425	S	2	0	C	78	7	77	7	79	7	E	
7/15	1400	SKS	CG	1411	1414	S	2	1	C	0	1	0	1	0	1	E	
7/15	1400	SKS	BC	1414	1420	S	2	1	C	0	0	0	0	0	0	E	
7/15	1400	SKS	FR	1420	1421	S	2	1	C	0	0	0	0	0	0	E	
7/15	1400	SKS	NBC	1424	1425	S	2	1	C	0	1	0	1	0	1	E	
7/15	1400	SKS	MB	1427	1435	S	2	1	C	450	24	420	22	470	24	G	
7/15	1400	SKS	WM	1510	1511	S	2	2	C	0	0	0	0	0	0	G	
7/16	1700	SKS	SP	1702	1703	S	2	1	C	0	0	0	0	0	0	E	
7/16	1700	SKS	SB	1706	1709	S	2	1	C	0	0	0	0	0	0	E	
7/16	1700	SKS	FP	1711	1712	S	2	1	C	0	0	0	0	0	0	E	
7/16	1700	SKS	FB	1715	1725	S	2	1	C	133	0	129	0	130	0	E	
7/16	1700	HI	CG	1706	1711	S	2	1	C	10	0	10	0	10	0	E	
7/16	1700	HI	BC	1711	1718	S	2	0	C	1	0	1	0	1	0	E	
7/16	1700	HI	FR	1718	1720	S	2	0	C	22	2	22	2	22	2	E	
7/16	1700	HI	NBC	1730	1731	S	2	0	C	0	2	0	2	0	2	E	
7/16	1700	HI	MB	1733	1741	S	2	0	C	470	30	410	30	450	39	G	
7/16	1700	HI	WM	1824	1827	S	fog	2	C	23	11	23	9	23	9	G	
7/17	1400	HI	SP	1424	1425	S	2	0	C	0	0	0	0	0	0	E	
7/17	1400	HI	SB	1419	1421	S	2	0	C	8	2	8	2	8	2	E	
7/17	1400	HI	FP	1416	1417	S	2	0	C	0	0	0	0	0	0	E	
7/17	1400	HI	FB	1403	1414	S	2	0	C	175	15	169	13	174	14	E	
7/17	1400	SKS	CG	1409	1411	S	2	1	C	4	0	4	0	4	0	E	
7/17	1400	SKS	BC	1411	1418	S	2	0	C	0	0	0	0	0	0	E	
7/17	1400	SKS	FR	1418	1419	S	2	0	C	4	0	4	0	4	0	E	
7/17	1400	SKS	NBC	1423	1424	S	2	0	C	0	0	0	0	0	0	E	
7/17	1400	SKS	MB	1426	1439	S	2	0	C	981	38	931	38	1051	37	G	Pod of 7+ orcas swim along shore of CG into MB area then East 1050-1150am
7/17	1400	SKS	WM	1518	1528	S	0	1	C	272	33	273	28	320	26	G	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/18	1700	SKS	SP	1711	1712	S	fog	2	C	0	0	0	0	0	0	E	
7/18	1700	SKS	SB	1715	1717	S	fog	2	C	0	0	0	0	0	0	E	
7/18	1700	SKS	FP	1723	1724	S	fog	2	C	0	0	0	0	0	0	E	
7/18	1700	SKS	FB	1726	1738	S	fog	2	C	140	2	141	2	138	2	E	
7/18	1700	HI	CG	1702	1704	S	fog	1	C	0	0	0	0	0	0	E	
7/18	1700	HI	BC	1704	1711	S	fog	1	C	0	0	0	0	0	0	E	
7/18	1700	HI	FR	1711	1712	S	fog	0	C	7	0	7	0	7	0	E	
7/18	1700	HI	NBC	1716	1717	S	fog	0	C	0	0	0	0	0	0	E	
7/18	1700	HI	MB	1721	1728	S	fog	0	P	310	8	310	8	310	7	F	fog on MB
7/18	1700	HI	WM	1802	1812	S	fog	2	C	480	10	490	6	510	7	E	
7/19	900	HI	SP	927	928	S	fog	2	C	0	0	0	0	0	0	E	
7/19	900	HI	SB	922	925	S	fog	1	C	0	0	0	0	0	0	E	
7/19	900	HI	FP	920	921	S	fog	2	C	0	0	0	0	0	0	E	
7/19	900	HI	FB	910	916	S	fog	2	C	78	13	77	13	79	14	E	
7/19	900	SKS	CG	908	909	S	3	1	C	0	0	0	0	0	0	E	
7/19	900	SKS	BC	909	915	S	3	1	C	0	0	0	0	0	0	E	
7/19	900	SKS	FR	915	916	S	3	1	C	10	13	10	13	10	13	E	
7/19	900	SKS	NBC	920	921	S	fog	1	C	0	0	0	0	0	0	E	
7/19	900	SKS	MB	923	927	S	fog	1	C	210	25	210	16	200	22	G	
7/19	900	SKS	WM	1522	1527	S	fog	3	P	190	9	158	9	172	9	G	fog in out, lifted enough to get one good ct.
7/20	1400	SKS	SP	1435	1436	S	3	1	C	0	1	0	1	0	1	E	
7/20	1400	SKS	SB	1429	1432	S	4	1	C	0	0	0	0	0	0	E	
7/20	1400	SKS	FP	1427	1428	S	4	1	C	0	0	0	0	0	0	E	
7/20	1400	SKS	FB	1412	1422	S	4	1	C	127	12	125	12	130	12	E	
7/20	1400	SKS	CG	1405	1407	S	4	2	C	0	3	0	3	0	3	E	
7/20	1400	SKS	BC	1404	1405	S	4	2	C	0	1	0	1	0	1	E	
7/20	1400	HI	FR	1356	1357	S	4	2	C	11	1	11	1	11	1	E	
7/20	1400	HI	NBC	1403	1404	S	4	2	C	0	2	0	2	0	2	E	
7/20	1400	HI	MB	1406	1412	S	4	1	C	410	30	360	30	430	28	G	
7/20	1400	HI	WM	1456	1503	S	4	3	C	380	10	425	6	390	7	G	
7/21	900	HI	SP	932	933	S	3/fog	2	C	0	0	0	0	0	0	E	
7/21	900	HI	SB	926	929	S	3/fog	1	C	0	1	0	1	0	1	E	
7/21	900	HI	FP	923	924	S	3	1	C	0	0	0	0	0	0	E	
7/21	900	HI	FB	909	920	S	3	1	C	188	12	184	13	193	10	E	
7/21	900	SKS	CG	915	918	S	2	1	C	0	3	0	3	0	3	E	
7/21	900	SKS	BC	918	924	S	2	1	C	0	0	0	0	0	0	E	
7/21	900	SKS	FR	924	926	S	2	1	C	16	4	16	4	16	4	E	
7/21	900	SKS	NBC	931	932	S	2	1	C	0	0	0	0	0	0	E	
7/21	900	SKS	MB	934	943	S	2	1	C	580	41	590	41	580	39	G	
7/21	900	SKS	WM	1023	1028	S	2	3	C	273	8	273	8	279	8	G	
7/22	1400	SKS	SP	1433	1434	S	4	1	C	0	0	0	0	0	0	E	
7/22	1400	SKS	SB	1428	1431	S	4	1	C	1	3	1	3	1	3	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/22	1400	SKS	FP	1426	1427	S	4	2	C	0	1	0	1	0	1	E	
7/22	1400	SKS	FB	1407	1424	S	4	1	C	198	30	191	29	184	29	E	
7/22	1400	HI	CG	1407	1409	S	4	3	C	0	1	0	1	0	1	E	
7/22	1400	HI	BC	1409	1416	S	4	2	C	0	2	0	2	0	2	E	
7/22	1400	HI	FR	1416	1417	S	4	2	C	7	3	7	3	7	3	E	
7/22	1400	HI	NBC	1423	1424	S	4	2	C	0	1	0	1	0	1	E	
7/22	1400	HI	MB	1426	1438	S	4	1	C	610	56	570	60	620	55	G	
7/22	1400	HI	WM	1523	1526	S	2	3	C	1	35	1	32	1	35	G	Inds in H20 were rafted up on approach, probably nat disturbance before ct.
7/23	1400	HI	SP	1426	1427	S	4/fog	2	C	0	0	0	0	0	0	E	
7/23	1400	HI	SB	1420	1423	S	4/fog	1	C	1	1	1	1	1	1	E	
7/23	1400	HI	FP	1414	1415	S	3/fog	1	C	0	0	0	0	0	0	E	
7/23	1400	HI	FB	1402	1412	S	3	2	C	183	15	183	13	187	15	E	
7/23	1400	SKS	CG	1405	1408	S	4	2	C	0	0	0	0	0	0	E	
7/23	1400	SKS	BC	1408	1414	S	4	1	C	0	0	0	0	0	0	E	
7/23	1400	SKS	FR	1414	1416	S	4	2	C	4	4	4	4	4	4	E	
7/23	1400	SKS	NBC	1421	1422	S	4	2	C	0	2	0	2	0	2	E	
7/23	1400	SKS	MB	1427	1434	S	fog	1	C	251	24	251	25	251	24	G	new mort on MB- unk amount of harvestable tusks
7/23	1400	SKS	WM	1511	1512	S	fog	3	C	0	0	0	0	0	0	G	
7/24	900	SKS	SP	942	943	S	2	3	C	0	0	0	0	0	0	E	
7/24	900	SKS	SB	934	937	S	2	1	C	0	2	0	2	0	2	E	
7/24	900	SKS	FP	932	933	S	2	1	C	0	0	0	0	0	0	E	
7/24	900	SKS	FB	913	929	S	2	1	C	171	30	173	25	166	29	E	
7/24	900	HI	CG	907	910	S	2	1	C	0	0	0	0	0	0	E	
7/24	900	HI	BC	910	920	S	2	1	C	2	0	2	0	2	0	E	
7/24	900	HI	FR	920	923	S	2	1	C	15	12	15	8	15	10	E	
7/24	900	HI	NBC	928	929	S	2	1	C	0	1	0	1	0	1	E	
7/24	900	HI	MB	932	939	S	2	1	C	220	24	200	20	200	23	G	
7/24	900	HI	WM	1025	1026	S	2	2	C	0	0	0	0	0	0	G	
7/25	1700	HI	SP	1718	1719	S	fog	2	C	0	0	0	0	0	0	E	
7/25	1700	HI	SB	1712	1714	S	fog	1	C	1	0	1	0	1	0	E	
7/25	1700	HI	FP	1709	1710	S	fog	1	C	0	0	0	0	0	0	E	
7/25	1700	HI	FB	1658	1706	S	fog	2	C	123	1	121	1	123	1	E	
7/25	1700	SKS	CG	1735	1737	S	3	1	C	0	0	0	0	0	0	E	
7/25	1700	SKS	BC	1717	1735	S	3	1	C	164	7	159	7	166	7	E	
7/25	1700	SKS	FR	1715	1717	S	3	1	C	8	0	8	0	8	0	E	
7/25	1700	SKS	NBC	1711	1712	S	fog	1	C	0	0	0	0	0	0	E	
7/25	1700	SKS	MB	1701	1709	S	fog	1	C	452	31	412	30	442	26	G	
7/25	1700	SKS	WM	1603	1604	S	fog	3	C	0	0	0	0	0	0	E	
7/26	1700	SKS	SP	1704	1705	S	3	1	C	2	0	2	0	2	0	E	
7/26	1700	SKS	SB	1707	1710	S	2	1	C	3	0	3	0	3	0	E	
7/26	1700	SKS	FP	1712	1714	S	2	1	C	29	0	29	0	28	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/26	1700	SKS	FB	1725	1740	S	2	1	C	232	2	231	2	231	2	E	
7/26	1700	HI	CG	1755	1759	S	2	1	C	22	2	22	2	21	2	E	
7/26	1700	HI	BC	1728	1755	S	2	1	C	285	2	280	2	284	2	E	
7/26	1700	HI	FR	1725	1727	S	2	1	C	29	1	29	1	29	1	E	
7/26	1700	HI	NBC	1720	1721	S	2	1	C	0	0	0	0	0	0	E	
7/26	1700	HI	MB	1701	1716	S	2	0	C	1020	23	930	21	1030	21	G	
7/26	1700	HI	WM	1605	1611	S	2	2	C	116	1	113	1	117	1	G	
7/27	900	HI	SP	935	937	S	2	1	C	1	8	1	7	1	6	E	
7/27	900	HI	SB	929	932	S	2	0	C	9	3	9	3	9	3	E	
7/27	900	HI	FP	924	927	S	2	0	C	41	8	40	8	42	8	E	
7/27	900	HI	FB	907	921	S	2	0	C	226	44	226	42	234	43	E	
7/27	900	SKS	CG	910	913	S	2	1	C	10	33	10	33	10	33	E	
7/27	900	SKS	BC	913	932	S	2	0	C	216	38	216	38	218	46	E	
7/27	900	SKS	FR	932	935	S	2	1	C	24	29	23	25	24	26	E	
7/27	900	SKS	NBC	941	942	S	2	0	C	0	0	0	0	0	0	E	
7/27	900	SKS	MB	948	959	S	2	1	C	1150	79	980	79	1110	76	G	
7/27	900	SKS	WM	1035	1047	S	fog	2	C	381	20	364	17	387	20	G	
7/28	900	SKS	SP	939	941	S	fog	3	C	0	5	0	5	0	5	E	
7/28	900	SKS	SB	932	936	S	fog	2	C	1	7	1	7	1	7	E	
7/28	900	SKS	FP	928	930	S	fog	1	C	30	13	30	10	30	13	E	
7/28	900	SKS	FB	915	926	S	fog	1	C	110	86	109	79	108	81	E	
7/28	900	HI	CG	909	913	S	fog	1	C	8	41	8	44	8	47	E	
7/28	900	HI	BC	913	935	S	fog	0	C	146	53	143	53	144	50	E	
7/28	900	HI	FR	935	936	S	fog	1	C	12	37	12	22	12	36	E	
7/28	900	HI	NBC	942	943	S	fog	1	C	4	11	4	10	4	8	E	
7/28	900	HI	MB	948	959	S	fog	1	P	340	47	310	35	320	51	G	fog on MB
7/28	900	HI	WM	1048	1055	S	fog	2	C	350	28	340	23	340	26	G	
7/29	1400	HI	SP	1430	1431	S	fog	2	C	0	0	0	0	0	0	E	
7/29	1400	HI	SB	1423	1427	S	fog	1	C	0	1	0	1	0	1	E	
7/29	1400	HI	FP	1419	1420	S	fog	2	C	20	1	20	1	20	1	E	
7/29	1400	HI	FB	1409	1415	S	fog	2	C	60	3	60	3	61	3	E	
7/29	1400	SKS	CG	1402	1405	S	fog	1	C	4	0	4	0	4	0	E	
7/29	1400	SKS	BC	1405	1425	S	fog	1	C	224	27	225	27	219	28	E	
7/29	1400	SKS	FR	1425	1428	S	2	1	C	7	14	7	13	7	13	E	
7/29	1400	SKS	NBC	1432	1433	S	2	1	C	0	0	0	0	0	0	E	
7/29	1400	SKS	MB	1436	1444	S	fog	1	C	398	39	418	32	388	37	G	
7/29	1400	SKS	WM	1522	1531	S	2	3	C	188	9	185	2	193	5	G	
7/30	1400	HI	SP	1400	1401	S	fog	3	C	0	0	0	0	0	0	E	Heavy rain previous 2 days, large waves crashing against beaches
7/30	1400	HI	SB	1403	1406	S	fog	3	C	0	1	0	1	0	1	E	
7/30	1400	HI	FP	1407	1408	S	fog	3	C	1	0	1	0	1	0	E	
7/30	1400	HI	FB	1410	1414	S	fog	3	C	0	0	0	0	0	0	E	
7/30	1400	HI	CG	1424	1427	S	fog	3	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
7/30	1400	HI	BC	1427	1436	S	fog	3	C	4	1	4	1	4	1	E	~60 inds earlier that day, slowly moved off beach up until walrus ct.
7/30	1400	HI	FR	1436	1437	S	fog	3	C	0	0	0	0	0	0	E	
7/30	1400	HI	NBC	1444	1445	S	fog	3	C	0	0	0	0	0	0	E	
7/30	1400	HI	MB	1446	1521	S	fog	3	O							G	fog never lifted to see if individuals on MB, ~150 seen during birds at OP
7/30	1400	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
7/31	1700	HI	SP	1704	1705	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	SB	1708	1710	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	FP	1712	1713	S	2	1	C	1	1	1	1	1	1	E	
7/31	1700	HI	FB	1715	1718	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	CG	1724	1727	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	BC	1727	1733	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	FR	1733	1734	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	NBC	1738	1739	S	2	1	C	0	0	0	0	0	0	E	
7/31	1700	HI	MB	1741	1746	S	2	1	C	220	23	200	24	220	18	G	SKS est. ~600 walrus on MB from TT all walrus were on the spit
7/31	1700	SKS	WM	1745	1756	S	2	1	C	316	24	318	20	314	19	G	
8/1	1400	SKS	SP	1400	1402	S	2	2	C	0	3	0	3	0	3	E	
8/1	1400	SKS	SB	1405	1408	S	2	2	C	0	0	0	0	0	0	E	
8/1	1400	SKS	FP	1410	1411	S	2	2	C	1	0	1	0	1	0	E	
8/1	1400	SKS	FB	1413	1417	S	2	2	C	0	0	0	0	0	0	E	
8/1	1400	HI	CG	1404	1706	S	2	2	C	0	1	0	1	0	1	E	
8/1	1400	HI	BC	1406	1415	S	2	1	C	1	0	1	0	1	0	E	
8/1	1400	HI	FR	1415	1416	S	2	2	C	8	0	8	0	8	0	E	
8/1	1400	HI	NBC	1422	1423	S	2	1	C	0	1	0	1	0	1	E	
8/1	1400	HI	MB	1426	1433	S	2	1	C	580	8	620	8	570	7	G	
8/1	1400	HI	WM	1524	1541	S	2	1	C	590	7	600	6	590	8	G	
8/2	1400	HI	SP	1424	1425	S	2	1	C	6	1	6	1	6	1	E	
8/2	1400	HI	SB	1418	1421	S	2	1	C	0	0	0	0	0	0	E	
8/2	1400	HI	FP	1415	1416	S	2	1	C	1	0	1	0	1	0	E	
8/2	1400	HI	FB	1405	1412	S	2	1	C	47	9	46	9	46	9	E	
8/2	1400	SKS	CG	1404	1408	S	2	2	C	15	1	15	1	15	1	E	
8/2	1400	SKS	BC	1408	1415	S	2	1	C	0	0	0	0	0	0	E	
8/2	1400	SKS	FR	1415	1417	S	2	2	C	53	2	53	2	54	2	E	
8/2	1400	SKS	NBC	1437	1738	S	2	1	C	0	0	0	0	0	0	E	
8/2	1400	SKS	MB	1451	1509	S	2	1	C	920	6	920	5	1110	5	G	var ct (MB) HI:1050/5, 890/4, 1030/5; photo ct (OP): SKS= 867, HI= 722; photo ct (TT) SKS=1067,HI= 1007
8/2	1400	SKS	WM	1554	1617	S	2	1	C	415	65	419	68	410	64	G	
8/3	1400	SKS	SP	1406	1407	S	fog	3	C	0	0	0	0	0	0	E	
8/3	1400	SKS	SB	1409	1412	S	fog	3	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
8/3	1400	SKS	FP	1413	1414	S	fog	3	C	1	0	1	0	1	0	E	
8/3	1400	SKS	FB	1415	1427	S	fog	3	C	182	0	181	0	182	0	E	
8/3	1400	HI	CG	1402	1406	S	fog	2	C	18	0	17	0	18	0	E	
8/3	1400	HI	BC	1406	1416	S	fog	2	C	16	0	14	0	16	0	E	
8/3	1400	HI	FR	1416	1418	S	fog	2	C	28	1	27	1	27	1	E	
8/3	1400	HI	NBC	1424	1425	S	fog	2	C	0	0	0	0	0	0	E	
8/3	1400	SKS	MB	1443	1451	S	fog	2	C	1061	2	1081	2	1221	2	G	vat ct (MB) HI: 931/3, 771/3, 921/3; photo ct: SKS=1001, HI= 920
8/3	1400	HI	WM	1539	1600	S	fog	1	C	1468	6	1328	4	1448	7	G	
8/4	1700	HI	SP	1700	1701	S	fog	1	P	1	0	1	0	1	0	E	
8/4	1700	HI	SB	1703	1706	S	fog	0	C	2	0	2	0	2	0	E	
8/4	1700	HI	FP	1708	1709	S	fog	0	C	1	0	1	0	1	0	E	
8/4	1700	HI	FB	1711	1721	S	fog	0	P	116	1	114	1	116	1	E	
8/4	1700	HI	CG	1757	1759	S	4	1	C	0	0	0	0	0	0	E	
8/4	1700	HI	BC	1759	1803	S	4	1	C	0	0	0	0	0	0	E	
8/4	1700	SKS	FR	1810	1811	S	4	2	C	10	1	10	1	10	1	E	
8/4	1700	SKS	NBC	1806	1807	S	fog	2	C	0	0	0	0	0	0	E	
8/4	1700	SKS	MB	1746	1805	S	fog	2	O/P	650	15	640	11	640	14	P	Fog in and out; mostly obscured on MB suspect more walrus than counted
8/4	1700	SKS	WM	1650	1707	S	fog	3	P	665	0	650	0	688	0	F	fog in and out
8/5	900	SKS	SP	930	931	S	2	1	C	0	0	0	0	0	0	E	
8/5	900	SKS	SB	925	927	S	2	1	C	0	0	0	0	0	0	E	
8/5	900	SKS	FP	923	924	S	2	1	C	1	0	1	0	1	0	E	
8/5	900	SKS	FB	915	920	S	3	1	C	31	32	30	30	31	31	E	
8/5	900	HI	CG	910	912	S	2	1	C	0	1	0	1	0	1	E	
8/5	900	HI	BC	912	919	S	2	1	C	1	0	1	0	1	0	E	
8/5	900	HI	FR	919	920	S	2	1	C	6	14	6	11	6	13	E	
8/5	900	HI	NBC	926	927	S	2	1	C	0	0	0	0	0	0	E	
8/5	900	HI	MB	930	935	S	2	1	P	310	6	300	8	310	5	F	Fog in and out on MB
8/5	900	HI	WM	1017	1024	S	2	2	C	250	6	240	5	250	6	G	
8/6	1400	HI	SP	1430	1431	S	fog	1	C	0	2	0	2	0	2	E	
8/6	1400	HI	SB	1416	1426	S	fog	1	C	0	2	0	2	0	2	E	
8/6	1400	HI	FP	1413	1414	S	fog	1	C	1	0	1	0	1	0	E	
8/6	1400	HI	FB	1403	1410	S	fog	1	C	26	1	26	1	26	1	E	
8/6	1400	SKS	CG	1401	1404	S	4	2	C	0	0	0	0	0	0	E	
8/6	1400	SKS	BC	1404	1409	S	4	2	C	0	0	0	0	0	0	E	
8/6	1400	SKS	FR	1409	1410	S	fog	2	C	3	0	3	0	3	0	E	
8/6	1400	SKS	NBC	1415	1416	S	fog	2	C	0	0	0	0	0	0	E	
8/6	1400	SKS	MB	1417	1421	S	fog	2	C	100	4	100	4	90	4	G	
8/6	1400	SKS	WM	1459	1500	S	fog	3	C	0	0	0	0	0	0	G	
8/7	1700	SKS	SP	1720	1721	S	2	1	C	0	0	0	0	0	0	E	
8/7	1700	SKS	SB	1715	1717	S	2	0	C	0	0	0	0	0	0	E	

Date	Random Time	OBS	BCH	Start Time	End Time	Method	BSS	Bch Cond	Vis	Land count #1	Water count #1	Land count #2	Water count #2	Land count #3	Water count #3	Count Quality	COMMENTS
8/7	1700	SKS	FP	1713	1714	S	2	1	C	1	0	1	0	1	0	E	
8/7	1700	SKS	FB	1707	1711	S	2	1	C	0	0	0	0	0	0	E	
8/7	1700	HI	CG	1705	1708	S	2	1	C	0	0	0	0	0	0	E	
8/7	1700	HI	BC	1708	1716	S	2	0	C	0	0	0	0	0	0	E	
8/7	1700	HI	FR	1716	1717	S	2	1	C	0	0	0	0	0	0	E	
8/7	1700	HI	NBC	1725	1726	S	2	1	C	0	0	0	0	0	0	E	
8/7	1700	HI	MB	1729	1737	S	2	1	C	160	1	140	1	140	1	G	
8/7	1700	HI	WM	1828	1829	S	2	2	C	0	0	0	0	0	0	G	
8/8	900	HI	SP	925	926	S	fog	3	C	0	0	0	0	0	0	E	
8/8	900	HI	SB	919	921	S	fog	3	C	0	0	0	0	0	0	E	
8/8	900	HI	FP	916	917	S	fog	3	C	0	0	0	0	0	0	E	
8/8	900	HI	FB	909	913	S	fog	3	C	0	0	0	0	0	0	E	
8/8	900	SKS	CG	906	908	S	fog	3	C	0	0	0	0	0	0	E	
8/8	900	SKS	BC	908	914	S	fog	3	C	0	0	0	0	0	0	E	
8/8	900	SKS	FR	914	916	S	fog	3	C	1	4	1	4	1	4	E	
8/8	900	SKS	NBC	921	922	S	fog	3	C	0	1	0	1	0	1	E	
8/8	900	SKS	MB	924	926	S	fog	3	P	14	3	14	3	14	3	G	
8/8	900	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
8/9	1400	SKS	SP	1414	1415	S	5	3	C	0	0	0	0	0	0	E	
8/9	1400	SKS	SB	1418	1421	S	5	3	C	0	0	0	0	0	0	E	
8/9	1400	SKS	FP	1423	1424	S	fog	2	C	0	0	0	0	0	0	E	
8/9	1400	SKS	FB	1425	1430	S	fog	2	C	0	0	0	0	0	0	E	
8/9	1400	HI	CG	1412	1414	S	4	2	C	0	0	0	0	0	0	E	
8/9	1400	HI	BC	1414	1423	S	4	1	C	1	0	1	0	1	0	E	
8/9	1400	HI	FR	1423	1425	S	4	2	C	25	14	25	13	25	13	E	
8/9	1400	HI	NBC	1432	1433	S	fog	2	C	0	3	0	3	0	3	E	
8/9	1400	HI	MB	1439	1444	S	fog	1	C	132	16	112	15	152	16	G	
8/9	1400	HI	WM	1531	1532	S	fog	3	C	0	0	0	0	0	0	G	
8/10	1700	HI	SP	1712	1713	S	fog	2	C	0	0	0	0	0	0	E	
8/10	1700	HI	SB	1707	1710	S	fog	1	C	0	0	0	0	0	0	E	
8/10	1700	HI	FP	1705	1706	S	fog	1	C	0	0	0	0	0	0	E	
8/10	1700	HI	FB	1659	1704	S	fog	1	C	6	10	6	8	6	10	E	
8/10	1700	SKS	CG	1704	1706	S	fog	2	C	0	14	0	14	0	14	E	
8/10	1700	SKS	BC	1706	1713	S	fog	2	C	0	8	0	8	0	8	E	
8/10	1700	SKS	FR	1713	1715	S	fog	2	C	22	28	22	25	22	25	E	1 yo calf on FR w other walrus
8/10	1700	SKS	NBC	1720	1721	S	fog	1	C	0	16	0	16	0	16	E	
8/10	1700	SKS	MB	1724	1732	S	fog	1	P	620	62	620	60	680	62	G	
8/10	1700	SKS	WM	1808	1810	S	fog	3	P	0	0	0	0	0	0	G	
8/11	900	SKS	SP	915	916	S	fog	2	C	0	0	0	0	0	0	E	
8/11	900	SKS	SB	910	912	S	fog	1	C	0	0	0	0	0	0	E	
8/11	900	SKS	FP	908	909	S	fog	1	C	0	0	0	0	0	0	E	
8/11	900	SKS	FB	900	906	S	fog	2	C	42	10	41	10	42	10	E	
8/11	900	HI	CG	902	905	S	fog	1	C	0	8	0	8	0	8	E	

Date	**Random Time**	**OBS**	**BCH**	**Start Time**	**End Time**	**Method**	**BSS**	**Bch Cond**	**Vis**	**Land count #1**	**Water count #1**	**Land count #2**	**Water count #2**	**Land count #3**	**Water count #3**	**Count Quality**	**COMMENTS**
8/11	900	HI	BC	905	922	S	fog	1	C	71	12	64	9	73	12	E	
8/11	900	HI	FR	922	925	S	3	1	C	19	17	19	13	19	15	E	
8/11	900	HI	NBC	930	931	S	fog	1	C	0	1	0	1	0	1	E	
8/11	900	HI	MB	935	942	S	fog	1	P	422	29	412	25	402	30	G	
8/11	900	HI	WM	1032	1033	S	fog	3	C	0	0	0	0	0	0	G	
Walrus count observers: *SKS: Stephanie K. Sell; HI: Heidi Isernhagen*																	

APPENDIX C

Appendix C. USFWS Togiak NWR Bristol Bay Pacific Walrus Survey data

DATE	Survey Type	Cape Peirce	Cape Newenham	Hagemeister Island
8-Apr-10	Aerial	0	0	0
4-May-10	Aerial	0	0	0
21-Apr-10	Aerial	0	0	0
19-Aug-10	Aerial	--	--	6
23-Sep-10	Aerial	--	--	264
23-Sep-10	Ground	552	--	--
29-Sep-10	Ground	349	--	--
30-Sep-10	Ground	253	--	--
1-Oct-10	Ground	809	--	--
2-Oct-10	Ground	993	--	--
3-Oct-10	Ground	1578	--	--
4-Oct-10	Ground	1603	--	--
5-Oct-10	Ground	1091	--	--
6-Oct-10	Ground	755	--	--
7-Oct-10	Ground	559	--	--
8-Oct-10	Ground	437	--	--
9-Oct-10	Ground	193	--	--
10-Oct-10	Ground	218	--	--
11-Oct-10	Ground	157	--	--
12-Oct-10	Ground	1	--	--
13-Oct-10	Ground	129	--	--
14-Oct-10	Ground	534	--	--
15-Oct-10	Ground	1242	--	--
16-Oct-10	Ground	7	--	--
17-Oct-10	Ground	77	--	--
18-Oct-10	Ground	69	--	--
19-Oct-10	Ground	359	--	--
20-Oct-10	Ground	685	--	--
21-Oct-10	Ground	627	--	--
22-Oct-10	Ground	972	--	--
23-Oct-10	Ground	1027	--	--
24-Oct-10	Ground	649	--	--
25-Oct-10	Aerial	--	--	2500
25-Oct-10	Ground	701	--	--
26-Oct-10	Ground	95	--	--
27-Oct-10	Ground	12	--	--
28-Oct-10	Ground	0	--	--
29-Oct-10	Ground	0	--	--
30-Oct-10	Ground	30	--	--
31-Oct-10	Ground	199	--	--
1-Nov-10	Ground	257	--	--
2-Nov-10	Ground	503	--	--
3-Nov-10	Ground	875	--	--
3-Nov-10	Aerial	--	--	157
4-Nov-10	Ground	677	--	--
5-Nov-10	Ground	742	--	--
6-Nov-10	Ground	114	--	--
7-Nov-10	Ground	77	--	--
8-Nov-10	Ground	266	--	--

APPENDIX D

Appendix D. Summary of variability tests between observers during 2010 walrus monitoring counts.

	Total visual (V) counts				Photo (P) counts				Variability between individual V&P counts	
Date	**SKS**	**HI**	**Variability (%)**		**SKS**	**HI**	**Variability (%)**		**SKS**	**HI**
5/13	1861	1888	1.43		2400	2210	8.60		22.46	14.57
5/14	1616	1295	24.79		n/a	n/a	n/a		n/a	n/a
5/15	489	456	7.24		n/a	n/a	n/a		n/a	n/a
5/19	643	640	0.47		n/a	n/a	n/a		n/a	n/a
5/21	649	613	5.87		n/a	n/a	n/a		n/a	n/a
5/23	1062	1058	0.38		n/a	n/a	n/a		n/a	n/a
5/26	920	625	47.20		889	869	2.30		3.49	28.08
6/2	529	658	19.60		n/a	n/a	n/a		n/a	n/a
6/8	1969	1167	68.72		1549	1450	6.83		27.11	19.52
6/9	1905	2103	9.42		n/a	n/a	n/a		n/a	n/a
6/11	1208	1035	16.71		1192	1026	16.18		1.34	0.88
6/17	671	844	20.50		711	683	4.10		5.63	23.57
8/2	926	1055	12.23		867	722	20.08		6.81	46.12
8/3	1063	934	13.81		1001	920	8.80		6.19	1.52
Walrus count observers: *SKS: Stephanie K. Sell; HI: Heidi Isernhagen*										

APPENDIX E

Appendix E. Steller sea lion daily count summary for 2010, Round Island, Alaska

Date	Start/Stop Time	View 1 land/ water	View 2 land/ water	View 3 land/ water	View 4 land/ water	Total Land	Total Water	Total Count	Brand	Photo	% Certain	Comments
5/10	1310-1340	83/26	1/0	27/2	1/2	112	30	142	A415	Y	100	
5/11	1511-1541	82/1	0/0	14/2	0/31	96	34	130	A253	Y	100	entanglement w photo
									A430	Y	100	
									A377	Y	100	
5/12	1551-1619	131/2	24/4	29/0	10/0	194	6	200	A253	y	100	suckling behavior w photo
									A369	y	100	
									A332	y	100	
5/14	1332-1356	110/12	15/0	34/4	25/1	184	17	201	none			entanglement w photo
5/15	1332-1426	81/7	13/1	24/0	24/15	142	23	165	A332	y	100	suckling behavior w photo
									A230	y	100	growth on ind w photo
									A372	y	100	
									A291	y	100	
5/16	1331-1347	67/5	1/0	31/10	0/3	99	18	117	A291	Y	70	entanglement w photo, suckling behavior-no photo
5/17	1327-1346	168/6	12/0	33/0	3/4	216	10	226	A291	Y	100	
									A332	Y	100	
5/18	1350-1429	130/16	20/0	33/2	33/38	216	56	272	A369	Y	100	
									A253	Y	100	
									T237	Y	100	
									A378	Y	100	
5/19	1427-1503	114/8	20/0	41/0	29/15	204	23	227	A291	Y	100	
									A332	Y	100	
									A420	Y	100	
5/20	1322-1345	115/1	9/0	23/1	5/0	152	2	154	A377	Y	100	
5/21	1251-1320	133/18	12/0	29/6	19/24	193	48	241	A332	Y	100	
									A378	Y	100	
									A291	Y	100	
									T237	Y	100	
5/22	941-1005	102/6	11/3	17/1	0/0	130	10	140	none			
5/23	1114-1130	104/0	15/3	21/2	0/0	140	5	145	A420	Y	99	
5/24	NC											
5/25	1148-1208	131/5	12/3	26/7	3/7	172	22	194	A377	Y	100	
									A369	Y	100	
									A253	Y	100	
5/26	1403-1427	129/5	10/0	23/0	6/0	168	5	173	T237	Y	90	partial photo
5/27	1325-1341	108/2	11/1	20/5	0/9	139	17	156	none			
5/28	1031-1059	143/1	4/0	21/0	5/3	173	4	177	A415	Y	100	
									A291	Y	100	
									A369	Y	90	
5/29	NC											
5/30	1308-1333	127/24	20/0	26/0	9/5	182	29	211	A369	Y	100	
									A372	Y	100	
5/31	1251-1339	146/20	2/0	28/2	22/12	198	34	232	A378	Y	100	SSL at V4 missing part of hind flipper, favoring it.
									A377	Y	100	
									A420	Y	100	
6/1	1323-1350	85/27	9/0	26/0	30/22	150	49	199	A369	Y	100	
									A415	Y	100	
									A378	Y	100	

APPENDIX E

Date	Start/Stop Time	View 1 land/ water	View 2 land/ water	View 3 land/ water	View 4 land/ water	Total Land	Total Water	Total Count	Brand	Photo	% Certain	Comments
6/2	1556-1613	84/23	13/0	23/4	34/1	154	28	182	A196	Y	100	
									A369	Y	100	
6/3	1038-1105	98/10	1/0	18/0	1/5	118	15	133	A415	Y	100	
6/4	1032-1057	125/12	0/0	14/6	0/8	139	26	165	A365	Y	100	
6/5	NC											
6/6	1321-1342	119/10	0/0	18/0	2/0	139	10	149	A365	Y	100	
									T237	Y	100	
6/7	1443-1511	86/31	6/0	31/0	38/24	151	55	206	T237	Y	100	
6/8	1542-1559	4/2	31/5	29/1	49/13	113	21	134	none			
6/9	1006-1036	83/7	27/3	28/1	20/2	158	13	171	none			
6/10	1513-1526	31/0	17/0	26/0	13/0	87	0	87	none			
6/11	NC											
6/12	943-955	33/0	20/0	15/0	0/0	68	0	68	none			
6/13	1738-1747	2/0	10/0	31/0	6/2	49	2	51	none			
6/14	1337-1346	0/0	21/0	17/0	0/0	38	0	38	none			
6/15	1348-1359	0/0	38/1	31/0	0/0	69	1	70	none			
6/16	1444-1458	2/0	17/0	30/1	0/0	49	1	50	A434	Y	100	
6/17	1145-1155	4/1	23/0	20/0	0/0	47	1	48	none			
6/18	1116-1144	21/1	30/0	31/0	0/3	82	4	86	none			
6/19	1531-1544	0/0	36/1	36/0	40/9	112	10	122	none			
6/20	1429-1444	1/0	21/0	25/0	31/17	78	17	95	A637	Y	100	
6/21	1500-1511	1/0	15/0	22/0	49/6	87	6	93	A637	Y	100	
6/22	1416-1428	0/0	18/0	12/0	7/0	37	0	37	none			
6/23	1305-1318	0/0	18/5	22/0	4/4	44	9	53	none			
6/24	NC											
6/25	1323-1334	0/0	13/3	21/0	14/6	48	9	57	none			
6/26	1044-1059	0/1	15/0	20/4	15/0	50	5	55	A637	Y	100	
6/27	1056-1105	0/0	17/0	9/1	1/2	27	3	30	none			
6/28	1527-1539	0/0	33/0	30/3	7/0	70	3	73	none			
6/29	1500-1517	0/0	28/3	28/0	22/0	78	3	81	A434	Y	100	
6/30	1455-1506	0/0	35/3	22/0	21/0	78	3	81	none			
7/1	1731-1751	1/0	34/0	31/0	10/3	76	3	79	A434	Y	100	
7/2	1500-1515	0/0	42/0	27/1	24/9	93	10	103	A434	Y	100	
7/3	1007-1020	11/6	32/3	16/0	0/2	59	11	70	A434	Y	100	
7/4	1509-1526	0/2	31/0	35/3	35/5	101	10	111	none			
7/5	1449-1500	0/0	18/0	26/0	18/3	62	3	65	A434	N	100	
7/6	1620-1637	0/0	22/1	39/0	37/6	98	7	105	A637	Y	100	
7/7	1547-1642	1/1	16/2	31/4	64/5	112	12	124	A637	Y	90	partial photo
									H601	Y	100	WOW!!
7/8	NC											
7/9	959-1016	2/2	27/0	16/0	0/0	45	2	47	none			
7/10	1428-1443	1/4	44/1	43/2	19/10	107	17	124	A434	N	100	
									A637	N	100	
7/11	1505-1528	48/0	24/0	34/0	5/5	111	5	116	none			
7/12	1443-1503	26/0	34/4	31/2	10/5	101	11	112	none			
7/13	1002-1022	0/4	21/4	25/0	15/7	61	15	76	M717	Y	100	
									A637	Y	100	
7/14	1447-1518	2/0	13/6	24/2	10/10	49	18	67	none			
7/15	1454-1509	2/0	11/0	32/0	27/0	72	0	72	none			
7/16	1623-1641	0/0	11/1	37/0	48/3	96	4	100	none			
7/17	1439-1459	0/0	12/0	40/0	51/0	103	0	103	A637	Y	100	
7/18	1757-1816	0/0	13/0	31/0	38/2	82	2	84	none			
7/19	1527-1610	0/0	0/0	47/0	31/3	78	3	81	A637	N	100	
7/20	1453-1511	39/0	16/0	18/1	37/5	110	6	116	M717	Y	100	
									A637	Y	100	
7/21	952-1006	43/0	1/0	33/0	0/0	77	0	77	none			

APPENDIX E

Date	Start/Stop Time	View 1 land/ water	View 2 land/ water	View 3 land/ water	View 4 land/ water	Total Land	Total Water	Total Count	Brand	Photo	% Certain	Comments
7/22	1451-1513	0/8	23/0	41/2	54/6	118	16	134	M717	Y	100	
									A637	Y	100	
7/23	1448-1502	0/0	8/0	36/0	1/0	45	0	45	none			
7/24	1003-1020	18/1	10/0	34/0	2/3	64	4	68	none			
7/25	1328-1351	0/2	26/0	35/3	1/4	62	9	71	M717	N	100	
7/26	1616-1630	0/0	46/0	46/1	10/6	102	7	109	none			
7/27	956-1015	5/4	31/3	43/0	11/5	90	12	102	none			
7/28	959-1011	5/0	14/0	27/0	6/0	52	0	52	none			
7/29	1453-1507	0/2	20/0	43/0	17/8	80	10	90	none			
7/30	1406-1422	0/1	25/0	41/1	10/4	76	6	82	none			
7/31	NC											
8/1	1313-1337	0/0	31/0	52/3	32/6	115	9	126	A434	Y	100	
8/2	1611-1632	0/0	19/1	39/3	87/11	145	15	160	A637	Y	100	
8/3	1530-1548	0/0	21/0	54/0	16/0	91	0	91	none			
8/4	1606-1628	0/0	27/0	43/0	99/3	169	3	172	none			
8/5	953-1009	0/0	19/4	45/3	12/15	76	22	98	none			
8/6	1451-1508	0/0	24/0	47/0	3/0	74	0	74	A637	N	90	
8/7	1736-1806	0/0	42/0	56/0	30/0	128	0	128	A637	Y	100	
8/8	944-1000	0/2	0/0	26/3	0/81	26	86	112	none			
8/9	1321-1337	1/1	53/0	43/0	0/4	97	5	102	none			
8/10	1456-1511	0/5	47/0	35/2	0/0	82	7	89	none			
8/11	932-945	0/0	62/0	46/0	1/0	109	0	109	none			

APPENDIX F1

Appendix F1. 2010 Pelagic Cormorant Productivity First Beach (FB) South

Nest #	5/11	5/13	5/17	5/18	5/19	5/20	5/21	5/22	5/23	5/24	5/25	5/28	5/29	6/1	6/4	6/7	6/10	6/14	6/17	6/20	6/23	6/26	6/29	7/2	7/5	7/7
1	e1	e2	e2	IP	e2	B	N	B	N	N	N	N	N	N	N	N	N	N	N	N	B	N	B	N	N	N
2		e1	e2+	e3	e3+	e2+	e3+	IP	e4	e5	e4+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
3			e1	e2	e2+	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N	N	N	N	N	N
4			e1	e1	e2	e2	e3	e3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
5			e3	e3+	e4	IP	e4	e3+	e4	e5	IP	e4+	e5	e4	e5	e4+	e5	c1e 2+	c1+ e3	c3+	c3+	c3+	c3	c2+	c1 cde ad	N
6			e1	IP	e2	e1	IP	e1	e3	e3	e3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
7			e1	IP	e1+	IP	e3	IP	e4	e3+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
8				e1	e2	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
9				e1	e1	IP	e2	e2+	e2+	e3	e3+	e3	N	N	N	N	N	N	N	N	N	N	N	N	N	N
10				e1+	e1	e1	e1+	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
11					e1	P	e2	e2	B	N	N	N	N	N	N	N	N	N	N	N	N	N	B	N	N	N
12					e1	e1	e2	e2	e2+	IP	e3	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
13					e1	e1	e1+	IP	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
14						e1	e1	e1	e2	e2	e2+	e4	e4	e3	e4	e3+	e2+	IP	e3	N	N	N	N	N	N	N
15							e1	e1	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
16							e1	e1	e2	e2	e3	e2+	e4	e4	e4	e4	e4	IP	N	N	B	N	N	N	N	N
17									e1	e1	e2	e3	e3+	e3	e2+	IP	e3	e2+	N	N	N	N	N	N	N	N

N=empty nest and is used when the egg or chick that was in the nest has been lost and the adult was not present.

B= Bird, Adult bird occupying a site, with no egg or chick present. Used when observer is sure the bird has no egg or chick.

P= Bird, present and don't know if egg or chick present (this is recommended by Byrd and Dragoo but not found in the above report).

e= Egg, Egg present, with no adult. If the egg is obviously damaged, record it as Eded (dead egg).

c= Chick, Chick present. C3 (three chicks) C3+ (three chicks plus possibly more).

F= Chick fledged (chick left the nest, survival unknown)

BP= Brooding posture

IP= Incubating posture

APPENDIX F2

Appendix F2. 2010 BLKI Productivity Plot 2 - Observation Point

Nest #	5/29	5/30	5/31	6/2	6/4	6/7	6/11	6/15	6/18	6/21	6/24	6/28	6/30	7/3	7/6	7/9	7/12	7/15	7/18	7/21	7/24	7/27	7/30	8/2	8/5	8/8
1	e1	IP	IP	B	B	B	B	e1	e1	IP	e1	e1	IP	e1+	IP	IP	e1	e1	IP	N	B	N	B			
2	e1	B	B	P	e1	e1	e1	e1	e1	e1	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	N	N			
3	e1	IP	IP	IP	e1+	e1+	e1	e1	e1	e1	c1	c1	c1	P	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
4	e1	e1	e1+	e2	e2	e2	e2	e2	e2	e2	e2	c2	c2	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
5		e1	e1	IP	e2	e2	IP	e1+	e2	e2	IP	c2	c2	c2	c2	c1+	c1	N	N	N	B	N	N			
6		e1	deleted																							
7		e1	e1	e1	e2	e2	e2	e2	IP	e1+	IP	c2	c2	c1+	c1+	c1+	c1	c1	c1	c1	c1	c1	c1	f1		
8		e1	e1+	IP	e2	IP	IP	IP	e1+	e2	e1+	c2	c1+	c2	c1+	c1	c1	c1	c1	c1	c1	c1	c1	f1		
9		e2	e2	e2	e2	e2	e2	e2	IP	e2	c1e 1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
10		e1	IP	e1	e2	e2	e1	IP	e1	e1	e1	IP	e1	B	B	B	B	B	B	B	B	B	B			
11		e1	e1	IP	e1+	e1+	e2	e2	IP	e1	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c dead			
12			e1	IP	e2	IP	e2+	e2	e1+	e2	e2	e1c 1	c1+	c1	c1	c1	c1	c1	B	B	B	B	B			
13			e1	B	P	B	B	B	B	P	e1	e1	e1	IP	IP	B	B	B	B	N	N	N	N			
14			e1	IP	IP	e2	IP	IP	IP	e1+	e2	e1c 1	e1c 1	e1c 1	e1c 1	BP	c1	c1	c1	c1	N	N	N			
15			e1	IP	e1+	e2	e1+	e1	e1	e1	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
16				e1	e2	e2	e2	e2	e2	e2	IP	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
17				e1+	e1	IP	e2	e2	e1+	e2	e1	e1	e1	e1	e1	e dead	N	N	N	N	B	N	N			
18				e1	e2	e1	e1	e1	e2	e1	e1	e1	e1	c1	c1	c1	c1	c1	c1	B	N	N	N			
19					e1	e2	e2	e2	e2	e2	e2	e2	c1+	c1+	BP	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
20					e2	e2	e2	e2	IP	e2	e2	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c dead			
21					e2	IP	IP	e2	IP	e2	e2	e2	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
22					e1	IP	e2	e1+	e1+	IP	IP	e2	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
23						e2	e2	e2	e2	e2	e1+	e2	c2	c1	BP	c1	c1	c1	c dead							
24						e1	e2	IP	IP	e2	e1+	N	B	N	B	N	N	N	N	N	N	N	N			
25						e2	e2	IP	e2	IP	e1+	e1+	e2	c1e 1	BP	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1
26						e1+	e1+	IP	IP	e2	e2	e2	c1+	c2	c1+	BP	c1	c1	c1	c1	c1	c1	c1	c1	f1	

APPENDIX F2

2010 BLKI Productivity Plot 3 - Observation Point

Nest #	5/29	5/30	5/31	6/2	6/4	6/7	6/11	6/15	6/18	6/21	6/24	6/28	6/30	7/3	7/6	7/9	7/12	7/15	7/18	7/21	7/24	7/27	7/30	8/2	8/5	8/8
1	e1	e1	IP	B	B	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N	N			
2	e1	e2	e2	IP	e2	e2	e2	e1+	e2	e2	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
3	e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	c1	c1	c1	c1	c1	BP	c1	c1	c1	c1	P	c dead				
4	e1	B	B	B	B	B	e1	e1	e1	e1	e1	e1	e1	e1	IP	IP	c1	c1	N	B	N	N	B			
5	e1	e1	e2	IP	e2	e2	IP	e2	e1+	IP	B	deleted														
6	e1	e1	e1	IP	e2	e2	e2	e2	e2	IP	e2	c2	c1+	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
7	e1	e1	e1	e2	e2	e2	e2	IP	IP	e2	IP	c2	c2	c1+	c1+	c1+	c1	c1	c1	c1	c1	c1	f1			
8	e1	e1	e1	e1	e1+	e1	e1	e1	e1	e1	e1	c1	c1	c1	c1	c1	c1	c1	c1	B	B	N	N			
9	e1	IP	e1	e2	e2	IP	e1+	e2	IP	e1+	IP	IP	c1+	c1+	c1	BP	c1	c1	c1	c1	c1	c1	c1	c1	f1	
10	e1	B	B	B	B	B	e1	IP	e2	e1+	e2	e2	e1+	e2	c1+	c1+	c1	c1	BP	c1	N	N	N			
11		e1	e1	IP	IP	e2	e2	e2	e1+	IP	e2	c2	c1+	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		
12		e2	e2	IP	e2	e2	e2	e1+	e2	e2	e1c 1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c dead				
13		e1	e1	IP	e2	e2	e2	e1+	IP	e2	deleted															
14			e1	e1	IP	e1	e1+	e1+	e1+	e1	e1+	e1	e1	IP	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c dead
15			e1	IP	IP	e2	IP	e2	e2	IP	IP	e1c 1	c2	c1+	BP	c1	c1	c1	c1	c1	c1	c1	f1			
16			e2	IP	IP	e1+	e2	IP	e2	IP	e1+	c1	c1+	c1+	c1	c1	c1	c1	c1	c1	c1	c1	f1			
17			e1	B	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N	N	N			
18				e1	B	B	B	B	e1	e1	e1	e1	IP	e1	IP	e1	e1	B	B	B	B	N	B			
19				e1	IP	e2	e2	IP	e2	IP	e2	IP	e1c 1	c1+	BP	c1+	c1	c1	c1	c1	c1	c1	c1	c1	f1	
20				e1	IP	IP	e1	e1	e1	e1	IP	IP	c1	c1	c1	c1	N	B	N	N	N	N	N			
21				e1	e1+	e2	e2	e2	B	B	B	B	B	B	B	N	N	N	B	N	B	N	N			
22				e1	e2	e2	e2	e2	e2	IP	e2	e1c 1	c2	c1	c1	c1	c1	c1	c1	c1	c1	c1	c dead			
23				e2	e2	e2	e1+	e2	IP	e2	e2	c1+	c1+	c1+	c1	BP	BP	c1	c1	c1	c1	c1	c dead			
24				e1	e1	e1	IP	IP	e1	e1	IP	e1	c1	c1	c1	c1	c1	c1	c1	c1	c dead					
25				e1	e1	e1	IP	IP	e1+	e2	e2	e2	e1c 1	c2	c2	c1+	c1	c1	N	N	B	N	N			

APPENDIX F2

26				e1	e2	e2	e2	e2	e2	e2	e2	c1+	e1c 1	c1	c1	c1	c1	c1	c1	c1	c1	c dead					
27					e1	e1	e1	e1	e1	e1	e1	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1		

N=empty nest and is used when the egg or chick that was in the nest has been lost and the adult was not present.

B= Bird, Adult bird occupying a site, with no egg or chick present. Used when observer is sure the bird has no egg or chick.

P= Bird, present and don't know if egg or chick present (this is recommended by Byrd and Dragoo but not found in the above report).

e= Egg, Egg present, with no adult. If the egg is obviously damaged, record it as Eded (dead egg).

c= Chick, Chick present. C3 (three chicks) C3+ (three chicks plus possibly more).

F= Chick fledged (chick left the nest, survival unknown)

BP= Brooding posture

IP= Incubating posture

APPENDIX F3

Appendix F3. 2010 COMU Productivity Plot 1 - Observation Point																		
Nest #	**6/18**	**6/21**	**6/24**	**6/28**	**6/30**	**7/3**	**7/6**	**7/9**	**7/12**	**7/15**	**7/18**	**7/21**	**7/24**	**7/27**	**7/30**	**8/2**	**8/5**	**8/8**
1	e1	e1	IP	e1	e1	e1	e1	IP	IP	IP	e1	e1	e1	c1	B	B	B	B
2	e1	B	B	B	B	B	B	B	B	B	B	B	e1	B	B	B	B	B
3	e1	e1	e1	e1	B	B	B	B	B	B	B	N	B	B	B	B	B	B
4	e1	e1	e1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B
5	e1	IP	e1	e1	e1	e1	e1	e1	e1	e1	e1	B	B	B	B	B	B	B
6	e1	e1	e1	e1	e1	e1	IP	IP	e1	IP	e1	B	B	B	B	B	B	B
7	e1	N	N	B	B	B	N	N	N	N	N	N	N	N	N	N	N	N
8	e1	e1	e1	IP	e1	B	B	B	B	B	B	B	B	B	B	B	B	B
9	e1	e1	e1	B	B	B	B	B	B	e1	e1	e1	e1	e1	e1	e1	e1	B
10	e1	IP	IP	e1	e1	IP	IP	IP	B	B	B	B	e1	e1	e1	e1	e1	IP
11		e1	e1	e1	IP	IP	IP	IP	B	B	B	B	B	B	B	B	B	B
12			e1	e1	e1	e1	e1	N	N	B	N	N	N	N	N	N	N	N
13			e1	IP	e1	e1	IP	e1	e1	IP	e1	c1	c1	c1	c1	B	B	B
14			e1	e1	e1	e1	e1	B	B	B	B	B	B	N	B	B	B	B
15						e1	e1	IP	e1	e1	e1	e1	e1	e1	e1	e1	c1	c1
16						e1	IP	IP	B	B	B	B	B	B	B	B	B	B
2010 COMU Productivity Plot 2 - Observation Point																		
Nest #	**6/10**	**6/11**	**6/15**	**6/18**	**6/21**	**6/24**	**6/28**	**6/30**	**7/3**	**7/6**	**7/9**	**7/12**	**7/15**	**7/18**	**7/21**	**7/24**	**7/27**	
1	e1	e1	IP	e1	IP	e1	e1	e1	e1	B	N	B	B	B	B	N	B	
2	e1	e1	e1	e1	B	N	B	B	B	B	N	B	N	N	N	N	N	
3	e1	e1	B	B	B	N	N	N	N	N	N	N	N	N	N	N	N	
4	e1	e1	B	B	B	B	B	N	P	B	N	B	B	N	N	N	N	
5	e1	e1	B	B	B	N	e1	P	B	B	N	N	B	B	B	N	B	
6	e1	e1	B	B	B	N	B	B	B	B	N	N	B	B	B	N	B	
7		e1	B	B	B	B	B	B	B	B	B	B	B	B	B	B	B	
8		e1	B	B	B	B	B	B	B	B	B	e1	B	B	B	B	B	
9			e1	e1	e1	e1	e1	e1	e1	e1	IP	IP	e1	c1	BP	c1	B	
10			e1	N	N	N	B	N	e1	B	N	B	N	N	B	N	N	
11			e1	B	B	B	B	B	N	N	N	N	B	B	B	N	B	
12			e1	B	N	N	B	N	B	B	N	N	N	N	N	N	N	
13				e1	e1	B	B	B	B	B	N	B	B	B	B	N	B	
14				e1	e1	B	B	B	B	B	B	e1	e1	e1	B	B	B	
15				e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	e1	B	N	B	
16				e1	e1	B	N	N	N	N	N	N	N	N	B	N	B	
17				e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	e1	e1	B	B	
18				e1	e1	IP	e1	e1	e1	B	N	B	B	B	N	N	B	

APPENDIX F3

2010 COMU Productivity Plot 4 - Observation Point																		
Nest #	**6/15**	**6/18**	**6/21**	**6/24**	**6/28**	**6/30**	**7/3**	**7/6**	**7/9**	**7/12**	**7/15**	**7/18**	**7/21**	**7/24**	**7/27**	**7/30**	**8/2**	**8/5**
1	e1	IP	e1	e1	IP	IP	IP	e1	e1	B	N	B	B	B	B	B	B	
2	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	c1	B	B	B	B	B	
3	e1	e1	e1	IP	e1	e1	B	B	N	N	B	B	B	B	B	B	B	
4	e1	B	B	B	B	B	e1	e1	IP	B	N	B	B	B	B	B	B	
5	e1	e1	IP	e1	P	e1	B	B	P	B	B	B	B	B	B	B	B	
6	e1	B	B	B	P	P	B	P	P	e1	IP	B	B	N	B	B	B	
7	e1	e1	e1	e1	e1	P	e1	e1	N	B	B	B	B	B	B	B	B	
8	e1	e1	e1	B	B	B	B	B	B	B	B	N	B	B	B	B	B	
9	e1	e1	e1	e1	e1	e1	e1	IP	IP	e1	IP	e1	c1	c1	B	B	B	
10	e1	e1	IP	IP	e1	e1	e1	e1	IP	e1	c1	B	B	B	B	B	B	
11	e1	e1	e1	e1	e1	e1	B	B	B	B	B	B	B	B	B	B	B	
12	e1	e1	P	B	B	B	B	P	IP	e1	B	B	B	B	B	B	B	
13	e1	IP	e1	e1	IP	e1	e1	IP	IP	e1	e1	c1	N	B	B	N	N	
14	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	N	B	B	B	B	
15	e1	IP	e1	IP	IP	IP	IP	e1	e1	IP	B	B	B	N	B	B	B	
16	e1	e dead	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N	
17		e1	IP	IP	P	B	B	B	B	B	N	B	N	B	N	B	B	
18		e1	B	B	B	N	N	e1	IP	e1	P	B	B	B	B	B	B	
19		e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	e1	B	B	N	B	B	
20		e1	e1	e1	e1	B	B	B	N	B	B	B	N	B	B	B	B	
21		e1	e1	e1	e1	IP	e1	IP	IP	e1	e1	c1	c1	c1	c1	c1	f1	
22		e1	e1	e1	e1	e1	e1	IP	IP	e1	e1	IP	e1	c1	c1	c1	c1	BP
23		e1	e1	IP	e1	e1	e1	B	B	B	N	N	N	N	N	B	B	
24		e1	e1	e1	e1	e1	e1	e1	IP	IP	IP	e1	e1	B	B	B	B	
25		e1	e1	e1	e1	IP	e1	IP	IP	e1	e1	c1	c1	c1	c1	BP	f1	
N=empty nest and is used when the egg or chick that was in the nest has been lost and the adult was not present.																		
B= Bird, Adult bird occupying a site, with no egg or chick present. Used when observer is sure the bird has no egg or chick.																		
P= Bird, present and don't know if egg or chick present (this is recommended by Byrd and Dragoo but not found in the above report).																		
E= Egg, Egg present, with no adult. If the egg is obviously damaged, record it as E_{ded} (dead egg).																		
C= Chick, Chick present. C^{3} (three chicks) C^{3+} (three chicks plus possibly more).																		
F= Chick fledged (chick left the nest, survival unknown)																		
BP= Brooding posture																		
IP= Incubating posture																		

APPENDIX G

Appendix G. 2010 Population Count - Plot 1 - Observation Point										
Date	**Count #**	**Start Time**	**Finish Time**	**# BLKI**	**# BLKI Nests**	**# COMU**	**# PECO Nests**	**#PECO**	**# HOPU**	**# TUPU**
6/25	1	1326	1329	23	19	112	0	0	0	0
6/25	2	1329	1332	23	19	112	0	0	0	0
6/28	1	1051	1054	23	17	121	0	0	0	0
6/28	2	1054	1057	23	18	126	0	0	0	0
7/4	1	1151	1153	25	18	111	0	0	0	0
7/4	2	1153	1156	25	18	113	0	0	0	0
7/7	1	1312	1315	24	17	105	0	0	0	0
7/7	2	1315	1318	24	17	107	0	0	0	0
7/10	1	1341	1343	19	16	98	0	0	0	0
7/10	2	1343	1345	19	15	100	0	0	0	0
7/13	1	1121	1124	17	18	91	0	0	0	0
7/13	2	1124	1127	17	19	90	0	0	0	0
7/16	1	1337	1340	16	17	103	0	0	0	0
7/16	2	1340	1342	16	17	104	0	0	0	0
7/20	1	1251	1253	10	18	86	0	0	0	0
7/20	2	1254	1256	10	18	86	0	0	0	0
7/21	1	1112	1115	8	20	104	0	0	0	0
7/21	2	1115	1117	8	20	107	0	0	0	0
7/23	1	1035	1038	6	16	82	0	0	0	0
7/23	2	1038	1041	6	19	80	0	0	0	0
2010 Population Count - Plot 2 - Observation Point										
Date	**Count #**	**Start Time**	**Finish Time**	**# BLKI**	**# BLKI Nests**	**# COMU**	**# PECO Nests**	**#PECO**	**# HOPU**	**# TUPU**
6/25	1	1333	1338	90	70	178	0	0	0	0
6/25	2	1339	1344	88	69	179	0	0	0	0
6/28	1	1027	1032	90	66	194	0	0	0	0
6/28	2	1032	1037	91	66	217	0	0	0	0
7/4	1	1156	1203	93	66	170	0	0	0	0
7/4	2	1203	1208	97	65	170	0	0	0	0
7/7	1	1319	1323	85	67	195	0	0	0	0
7/7	2	1324	1328	86	66	189	0	0	0	0
7/10	1	1426	1432	79	68	146	0	0	0	0
7/10	2	1432	1439	80	64	150	0	0	0	0
7/13	1	1128	1130	58	66	144	0	0	0	0
7/13	2	1131	1333	57	66	146	0	0	0	0
7/16	1	1343	1348	52	66	186	0	0	0	0
7/16	2	1348	1353	55	63	197	0	0	0	0
7/20	1	1243	1245	35	63	114	0	0	0	0
7/20	2	1246	1248	35	62	120	0	0	0	0
7/21	1	1118	1122	14	62	145	0	0	0	0
7/21	2	1122	1125	14	61	154	0	0	0	0
7/23	1	1041	1045	12	61	76	0	0	0	0
7/23	2	1045	1050	11	60	75	0	0	0	0

APPENDIX G

2010 Population Count - Plot 3 - Observation Point										
Date	**Count #**	**Start Time**	**Finish Time**	**# BLKI**	**# BLKI Nests**	**# COMU**	**# PECO Nests**	**#PECO**	**# HOPU**	**# TUPU**
6/25	1	1354	1358	100	88	84	0	0	0	0
6/25	2	1358	1402	104	87	84	0	0	0	0
6/28	1	1119	1124	111	85	107	0	0	0	0
6/28	2	1124	1129	112	85	115	0	0	0	0
7/4	1	1141	1145	100	74	109	0	0	0	0
7/4	2	1145	1149	100	75	106	0	0	0	0
7/7	1	1338	1343	94	79	98	0	0	0	0
7/7	2	1344	1349	91	80	98	0	0	0	0
7/10	1	1415	1419	81	79	52	0	0	0	0
7/10	2	1419	1423	83	80	49	0	0	0	0
7/13	1	1145	1155	72	77	66	0	0	0	0
7/13	2	1155	1205	71	79	66	0	0	0	0
7/16	1	1425	1429	42	73	27	0	0	0	0
7/16	2	1429	1433	42	73	31	0	0	0	0
7/20	1	1308	1310	24	78	32	0	0	0	0
7/20	2	1311	1313	23	74	31	0	0	0	0
7/21	1	1134	1136	14	77	70	0	0	0	0
7/21	2	1137	1139	14	75	71	0	0	0	0
7/23	1	1120	1126	7	72	22	0	0	0	0
7/23	2	1126	1132	6	73	22	0	0	0	0
2010 Population Count - Plot 4 - Observation Point										
Date	**Count #**	**Start Time**	**Finish Time**	**# BLKI**	**# BLKI Nests**	**# COMU**	**# PECO Nests**	**#PECO**	**# HOPU**	**# TUPU**
6/25	1	1403	1410	108	87	558	0	0	0	0
6/25	2	1411	1418	110	87	582	0	0	0	0
6/28	1	1100	1109	126	81	674	0	0	0	0
6/28	2	1109	1119	126	81	720	0	0	0	0
7/4	1	1123	1131	112	79	690	0	0	0	0
7/4	2	1131	1140	111	82	661	0	0	0	0
7/7	1	1350	1359	108	83	677	0	0	0	0
7/7	2	1359	1408	107	82	705	0	0	0	0
7/10	1	1356	1404	83	79	533	0	0	0	0
7/10	2	1404	1413	79	81	525	0	0	0	0
7/13	1	1152	1158	63	86	618	0	0	0	0
7/13	2	1159	1205	65	86	603	0	0	0	0
7/16	1	1408	1416	46	79	495	0	0	0	0
7/16	2	1416	1424	47	81	469	0	0	0	0
7/20	1	1314	1319	21	78	543	0	0	0	0
7/20	2	1320	1325	20	80	539	0	0	0	0
7/21	1	1140	1146	14	83	640	0	0	0	0
7/21	2	1146	1153	12	84	638	0	0	0	0
7/23	1	1102	1111	9	82	516	0	0	0	0
7/23	2	1111	1119	8	82	517	0	0	0	0

APPENDIX G

2010 Population Count - Plot 5 - Observation Point										
Date	**Count #**	**Start Time**	**Finish Time**	**# BLKI**	**# BLKI Nests**	**# COMU**	**# PECO Nests**	**#PECO**	**# HOPU**	**# TUPU**
6/25	1	1345	1349	20	18	234	0	0	0	0
6/25	2	1349	1353	20	16	214	0	0	0	0
6/28	1	1039	1045	20	11	197	0	0	0	0
6/28	2	1045	1048	20	16	193	0	0	0	0
7/4	1	1112	1116	18	15	188	0	0	0	0
7/4	2	1116	1119	20	12	208	0	0	0	0
7/7	1	1330	1332	19	18	172	0	0	0	0
7/7	2	1333	1335	19	18	174	0	0	0	0
7/10	1	1347	1350	11	14	154	0	0	0	0
7/10	2	1350	1354	14	14	140	0	0	0	0
7/13	1	1135	1139	17	17	214	0	0	0	0
7/13	2	1139	1143	16	17	210	0	0	0	0
7/16	1	1355	1358	12	21	245	0	0	0	0
7/16	2	1358	1401	12	21	263	0	0	0	0
7/20	1	1301	1303	4	14	191	0	0	0	0
7/20	2	1303	1306	4	13	194	0	0	0	0
7/21	1	1127	1129	2	17	209	0	0	0	0
7/21	2	1130	1132	2	17	227	0	0	0	0
7/23	1	1051	1056	2	19	171	0	0	0	0
7/23	2	1056	1059	2	20	180	0	0	0	0

APPENDIX H

Appendix H. Round Island Daily Observations - 2010

Date	Comments
5/9/10	COMU, BLKI, TUPU, PECO, HADU, CORA, PIGU. 2 FOX. Arrive on RI via Pollux heli, 2 trips from Togiak SKS w gear, then HI w rest of gear. Kustatan arrived on RI, and heli off-loaded gear.
5/10/10	TUPU, glaucus gull, GCSP, AMPI, KIEI (3male, 2female),GCRF (EC), DEJU, PECOs S plot) look like laying eggs soon, raven nest at SB. willows.
5/11/10	PAAU, SASP, HOGR, WATA, least sandpiper. club moss- EC. Tundra vole.
5/12/10	Green-winged Teal, bufflehead, lapland longspur, 2 female N. shovelers?? HOPU, lots of COMUs on H2O. grey whale.
5/13/10	1st sunny hot day, put up cook tent, photo ct- MB.
5/14/10	Hiked to first gully on traverse- too much snow.
5/15/10	BAEA. Pulled grass from around anemometer, emptied water catch in weather station, Big storm. .
5/16/10	Wooly lousewort- FB. Changed propane to partly used bottle from CG.
5/17/10	Peregrine Falcon. Wooly Bear.
5/18/10	TRSW, SEOW, NOHA, 2 SACR. 1st dead vole on trail near 1st viewpoint on FB. Summited RI.
5/19/10	WCSP, CRAU.
5/21/10	Walrus w flesh sheared off most left side of face (FB).
5/24/10	Walrus w lg wound/gash on left hind flipper, not using it at all (FB).
5/25/10	HETH, warbler- sps unk; PECO #12 has e3, left eggs unattended at nest, returned w/o laying on eggs, left again, bird back eggs unincubated >15min bird still just standing next to nest. Walrus w suspected red paint? (not blood) on face & in nose area- does not seem to wash off in H20 (FB-photo). Took photos of plane flying over W-side (MB area) close to/below? 5000AGL no reaction from walrus at FB, unk reaction from MB.
5/27/10	Marsh violet. Mort on SB, extracted 1 tusk, heavy bruising on left hind quarters and head, no obvious evidence of death, dead >/= 2 days.
5/28/10	Wilson's warbler, 1st BLKI egg @ OP.
5/29/10	Narcissus flowered anemone. Got H20 hooked up from spring to cabin.
5/30/10	BAEA jumped out from under lg boulders and flew away on trail to V4 SSL. Alpine bearberry (EC), frigid coltsfoot (OP), yellow anemone (thickets by FB), garden sorrel (FB).
5/31/10	Blackish oxytrope, Kamchatka rockcress Stairs 1/2 up.
6/1/10	3male & 3 female KIEI on H2O in front of cabin. rosewort (SP), pixie eyes primrose (TT), cloudberry/salmonberry (FB). 1st WM ct =1500+ (L&W). Stairs finished.
6/2/10	. Cranberry (CG), fiddlehead fern (TT). >/= 3 fox on island.
6/3/10	Few-flowered corydalis (EC), mouse-eared chickweed. Grey whale or Lg SSL breaching in waves, grey whale w/in 50m of shore. M/V Denock poss. w/in 3mi of EC.
6/4/10	Jacob's ladder (FB), cuckoo flower (along all trails), short-stalk sedge (behind cabin).
6/5/10	Purplecress (FR spring), stream violet (FR spring) 1st campers on RI (5), boat put together.
6/6/10	4 CORA chicks (SB). AK violet (FB), dwarf dogwood (FB), Alp Lily (EC).
6/7/10	1st COMU eggs on OP2 & OP4. Brooks saxifrage (FR spring), rock jasmine (FRS), forget-me-not (EC), lupine (FP), N. water carpet (EC).
6/8/10	. Spring beauty (FRS). Natural disturbance (WM) - unk cause.
6/9/10	Chocolate lily (EC), starflower (EC), nagoon berry (EC), labrador tea (EC), hairy arctic milk vetch (FRS).
6/10/10	cinquefoil (CG), pink plume (TT)MB fogged in for ct.
6/11/10	SSL hauled out on rock w ~1100+ walrus on MB. Possible high flying? Turbo prop? Caused DS ~100-150 RO/HR on MB. Staff never saw the plane when looking.
6/12/10	Bog rosemary (FB).
6/13/10	Langsdorf Lousewort (T1), Wild geranium (EC).
6/14/10	1st PECO chick (FBS) #5.
6/18/10	Green-winged Teal flew out of spring by FB. Alpine milk vetch (EC), Alaska poppy (FRS). Natural disturbance (BC) suspect low flying raven 21DS, 30HR ~150total on beach.
6/19/10	Dusky shrew; Disturbance (BC) suspect one/few caught whiff of burning garbage ~50-60DS.
6/21/10	Yellow wagtail (FBS), snow bunting (female, EC), red polls - all seen by camper (birder). Natural disturbance (WM)- raven cawing from cliffs- 30DS, 50RO; Natural disturbance (MB) unk cause -60DS, ~100RO; Walrus mort floats by cabin to the W.
6/22/10	Capitate valerian. dead grey whale floats by cabin >3mi, Nat dist (MB) unk cause ~35DS, ~20RO.
6/23/10	16+ redpolls in one flock (EC).

APPENDIX H

Date	Comments
6/24/10	1st BLKI chicks (OP). Whirled lousewort (FB).
6/25/10	Dandelion (TT).
6/28/10	Yellow oxytrope (all over).
6/29/10	Arctic dock (visitor's spring). mort gone from SP, small grey whale heading west to MB, mort floating east of cabin. .
6/30/10	mt avens (FR spring), Lessing's arnica (FR spring).
7/1/10	Yarrow (NBC), arctic daisy (FB), wild iris (FB), arctic wormwood (EC).
7/2/10	Northern goldenrod (FR spring).
7/3/10	Ross avens (FP).
7/4/10	Mort floating in H20 (SB) w 2 lg tusks; Walrus w L side of muzzle sheared off to bone (CG).
7/7/10	3 CORA chicks fledge (SB); Last PECO lost chicks and abandoned nest. H601 SSL at EC!! (Hazy Islands, SE Alaska). Put motor on boat.
7/8/10	4 morts on MB, 2 were poached (1 headless, 1 w tusks sawed off and bacculum taken); walrus mort floats by cabin heading west- looks to have been in the H20 awhile. Took boat out on H20 for first time of season- motored to MB.
7/9/10	Mountain harebell (TT), dwarf fireweed (FRS), spotted saxifrage (WM), Spiderplant???, Mountain sorrel (TT).
7/10/10	Monkshood (EC), Lesser wintergreen (FB), Northern bedstraw. Mort from July 8th washed up on MB.
7/11/10	Sitka burnet (FB), yellow raddle (FB), marsh five-finger (FB), common wormwood (NBC).
7/12/10	Alpine bistort (SB). harbor seal (CG). .
7/13/10	Snipe (CG). Arctic sandwort (summit). M717 SSL. Hiked summit.
7/14/10	Red-breasted merganser (BC).
7/15/10	1st COMU chicks (OP4). Yellow bog saxifrage (FRS).
7/17/10	7+ pod orcas N side of island 50ft offshore CG-MB then East (1 lg male, 5+ female, 1 juvenile).
7/18/10	Grass of parnassis (FRS).
7/19/10	Common wormwood (NBC). Red fox kits (EC). .
7/24/10	PEFA (SP). 7+ kits (EC).
7/26/10	F/V Dream Boat tried to day visit RI, 287 walrus in BC, 24 CG- had to turn away due to too many walrus.
7/27/10	1st BLKI fledgling seen on H20 (OP)F/V Dream Boat attempted to visit RI again, however still too many walrus (254 walrus in BC, 43 CG).
7/28/10	Many songbird fledglings seen on trails0.91 inches rain.
7/29/10	2.19 inches rain.
7/30/10	5+ Western sandpipers (EC), 1st BLKI chicks fledge from OP plots0.86 inches rain. .
7/31/10	Took boat to MB and harvested 2 1/2 tusks from 3 morts; one was individual seen July 4th with face 1/2 sheared off.
8/1/10	BAEA flies away from V1 w dead bird.
8/2/10	2 adult fox & 1 kit seen near start of switchback at top of Dragon Spine.
8/7/10	Many BLKI fledglings flying around WM. Many (6+) fox kits running around EC.
8/10/10	Walrus calf (1 yo- no tusks protruding from gums yet) on FR w 21 other walrus; fox kit on TT down to WM viewpoint.
8/11/10	1st day of sun in a long time.
8/12/10	Staff leave RI via Egli Air helicopter.