Special Areas Management Report

Walrus Islands State Game Sanctuary Annual Management Report 2011

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December 2011

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: Two male Pacific walrus *(Odobenus rosmarus divergens)* hauled out with a small walrus calf, First Beach, Round Island, Alaska. Walrus Islands State Game Sanctuary.

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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.

This publication was reviewed and approved for publication by Joe Meehan, Lands and Refuges Program Coordinator, Anchorage, Alaska.

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TABLE OF CONTENTS

List of Figures

List of Tables

List of Appendices

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 2011 field season were conducted from May 5 to August 13. The maximum count (east and west side beaches combined) was 4,245 on July 13. For reference to historical counts which primarily occurred on east side beaches; the maximum walrus count of 3,766 on east side beaches also occurred on July 13th. The daily mean count from the east side beaches was 806 walrus which is lower than the prior five year (2006 - 2010) mean of 853. The daily mean count for all beaches combined was 932.

Steller sea lions were 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. Sea lions were monitored May 6 – August 13 during the 2011 field season. The maximum count was 428 individuals on May 18, and the minimum count of 43 individuals occurred on July 6. The mean number of SSL present on Round Island during the 2011 season was 203, a 75% increase over the 2010 mean of 116, and the 2008 – 2010 mean of 115. Twenty-four brands were documented this season from six different branding locations, 18 of which were re-sights from previous years.

Sanctuary staff also 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. Pelagic cormorants (*Phalacrocorax pelagicus*; PECO), black-legged kittiwakes (*Rissa tridactyla*; BLKI), and common murres (*Uria aalge*; COMU) were monitored at traditional plots on Observation Point (OP), and Second Beach (SB) during the 2011 season. PECOs were monitored from May 23 - August 13 and started nesting later than usual resulting in only 16 nests being part of the productivity on OP and SB. The maximum chick count of 18 occurred between July 21-28 and productivity was 0.50 chicks/nest compared to zero chicks/nest in 2010. BLKI were monitored from May 29 – August 7 and had a maximum chick count of 27 on OP2 and 24 on OP3. Productivity for BLKIs was 0.28 chicks/nest compared to 0.44 chicks/nest in 2010. COMUs were monitored between June 9 and August 7 and consisted of 67 total nests on OP. The maximum chick count was 14 between July 15 – 28, and productivity for COMUs was 0.10 chicks/nest compared to 0.05 chicks/nest in 2010.

Following the withdrawal of guided charters to the island in 2008, and the withdrawal of the one remaining transport charter during 2010 the public was left with an absence of commercial transporters during the 2011 season. As a result only six visitors came to Round Island during the 2011 season. All six visitors were day visiting fishermen from the Nushagak area, which

represents an increase in day-visitors from the 2010 summer season; however, there were no overnight campers during 2012. This resulted in a substantial decrease (92%) in visitor use days from 2010, and a reduction in the average length of stay for all visitors to one day.

A joint effort between the Alaska Sealife Center (ASLC) and USFWS allowed remote cameras to be set up at select walrus haulouts within Bristol Bay, including Round Island, to monitor potential disturbances to walrus. Problems with the camera systems resulted in staff pulling the equipment at the end of the 2011 season. Currently ASLC is looking into the purchase of new systems for deployment in 2012. An additional USFWS camera was set up to monitor walrus numbers and haulout timing at Main Beach through the winter months.

There were three documented violations of the three mile restricted zone around the island (Alaska State Regulation – 5AAC 92.066). Two were minor infractions corrected by staff, and one was an illegal entry that resulted in an investigation and enforcement action by the Alaska State Troopers and USFWS enforcement officers. The installation of a Garmin radar and chart plotter system during June proved effective in increasing staff ability to accurately locate vessels within the restricted waters around Round Island.

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, Alaska (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 5 through August 14, 2011. Sanctuary manager Stephanie K. Sell (SKS) and field technician Heidi Isernhagen (HLI) arrived on Round Island via Pollux Aviation R44 helicopter on May 5, 2011. The optimal arrival date of May 1 was delayed because of the presence of sea ice in Togiak Bay and delayed helicopter and boat availability dictated by the start of the herring fishing season. The F/V Kustatan, owned by Charlie Rehter, transported food and camp supplies from Homer, Alaska to Round Island. On May 5 the Kustatan anchored northeast of the cabin and coordinated with the helicopter pilot, Art Kowalski, to sling three brailer bags (1925 lbs) from the boat deck to shore in 27 minutes.

Alaska Sealife Center (ASLC) personnel, Lori Polasek, and Terril Efird, arrived on Round Island via Pollux R44 helicopter May 5th to install remote camera systems at select walrus haulouts and departed May 8, 2011. On May 12th Pollux aviation also bought out two Alaska State Troopers, to collect evidence and investigate the scene from a poaching incident that occurred a few days prior.

ADF&G Land and Refuge Manager, Ed Weiss, was present on Round Island from June 5- June 17 via Pollux R44 helicopter to resupply staff, assist in installing a radar tower, and conduct other maintenance duties. Egli Air Service was chartered for his departure off the island.

ADF&G seasonal staff member Diane C. Okonek (DCO) and volunteer Gina Robinson relieved SKS and HLI during their break between July 19 and July 31.

David Coupchiak captain of the F/V Christopher Aaron, made two trips from Togiak, AK to Round Island transporting ADF&G staff members and fuel between July 19 and July 31, at which time his vessel had mechanical problems and had to be pulled from the water.

Camp demobilization occurred during the week of August 8, 2011. The F/V Donavan, captained by Sean Carlos, was chartered to transport staff and gear from Round Island back to Togiak at the end of the season. In order to take advantage of boat availability and weather, staffs were pulled from the island on August 14, 2011, one day earlier than normal.

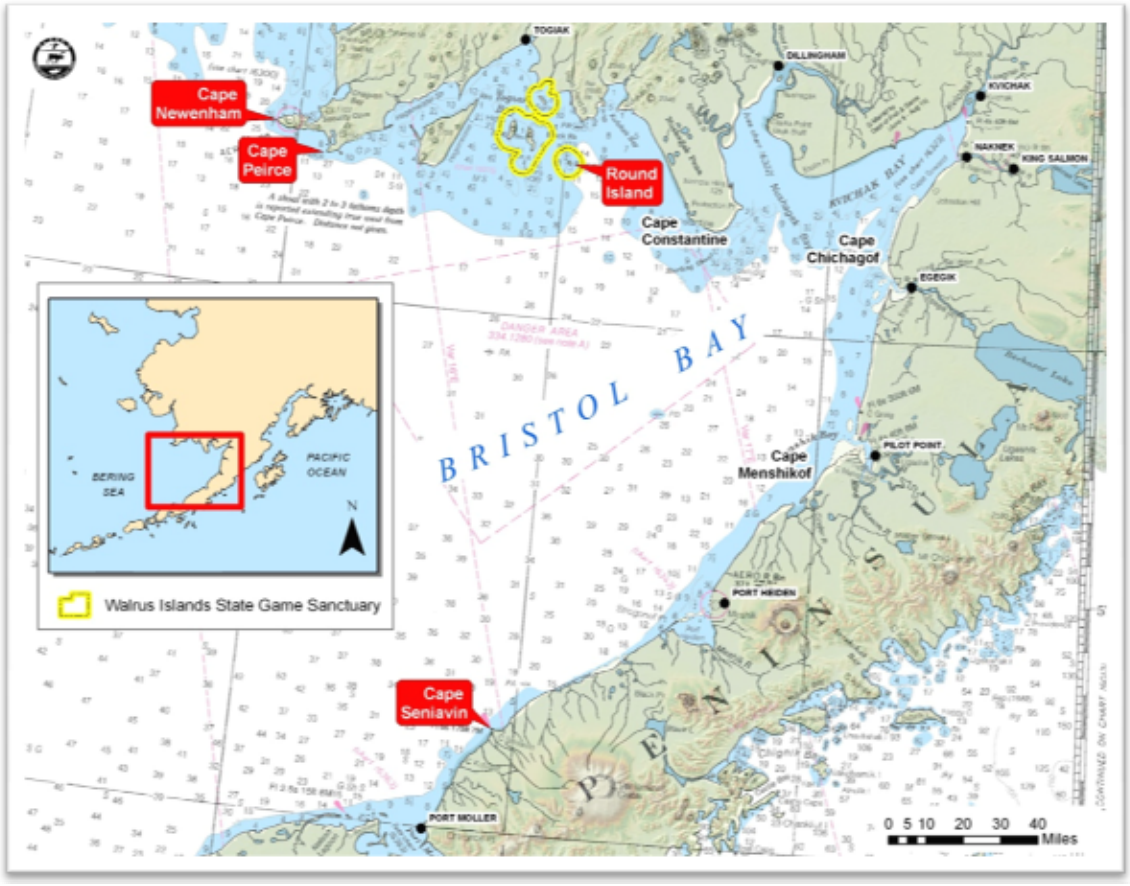

Figure 1. Map of Bristol Bay showing the locations of the Walrus Islands State Game Sanctuary, Round Island, and the four major terrestrial Pacific walrus haulout sites in the United States.

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 (MVHF Ch. 7) prior to 9:00 a.m. on the day of their visit and again prior to entering the restricted 3-mile area. Once in the area they are required to maintain a course through a designated access 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. Notices regarding these access restrictions are published as a flight advisory on Federal Aviation Administration charts and as an advisory on the National Oceanic and Atmospheric Administration (NOAA) nautical 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 documented three vessels within the three mile restricted zone during the 2011 season. Two vessels were noticeably inside the three mile limit and were hailed by staff on marine VHF Ch16. One of the two vessels responded and thought it was a two mile limit but corrected his course after staff informed him of the correct regulations. The other vessel looked to be within the three mile limit but never responded to staff hailing them on Ch16, so the vessel was photo documented, however no walrus were on the beaches at the time so no disturbance occurred during this incursion. Two individuals in a third vessel were seen along the shoreline of Round Island on May 9th, landing on Main Beach and shooting at walrus. Unable to reach them via marine radio; staff monitored and documented the event and relayed information back to the enforcement officials. Many vessels during the herring season were contacted on marine VHF channel 16, prior to the installation of the radar, to gain confirmation on their distance from Round Island shores. Each responded with being just beyond the three-mile 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 when radio contact was 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 has been difficult. The ADF&G purchased Garmin GMR18HD radar and GPSMAP 740 series chart plotter system in 2010, and installed the system in June of the 2011 season. The radar system will be used to give proactive warnings to vessels as they approach the 3 mile limit and to gather and present sound evidence when violations do occur. It is expected that the system will be of great benefit during the herring fishery due to the amount of traffic passing the island at that time.

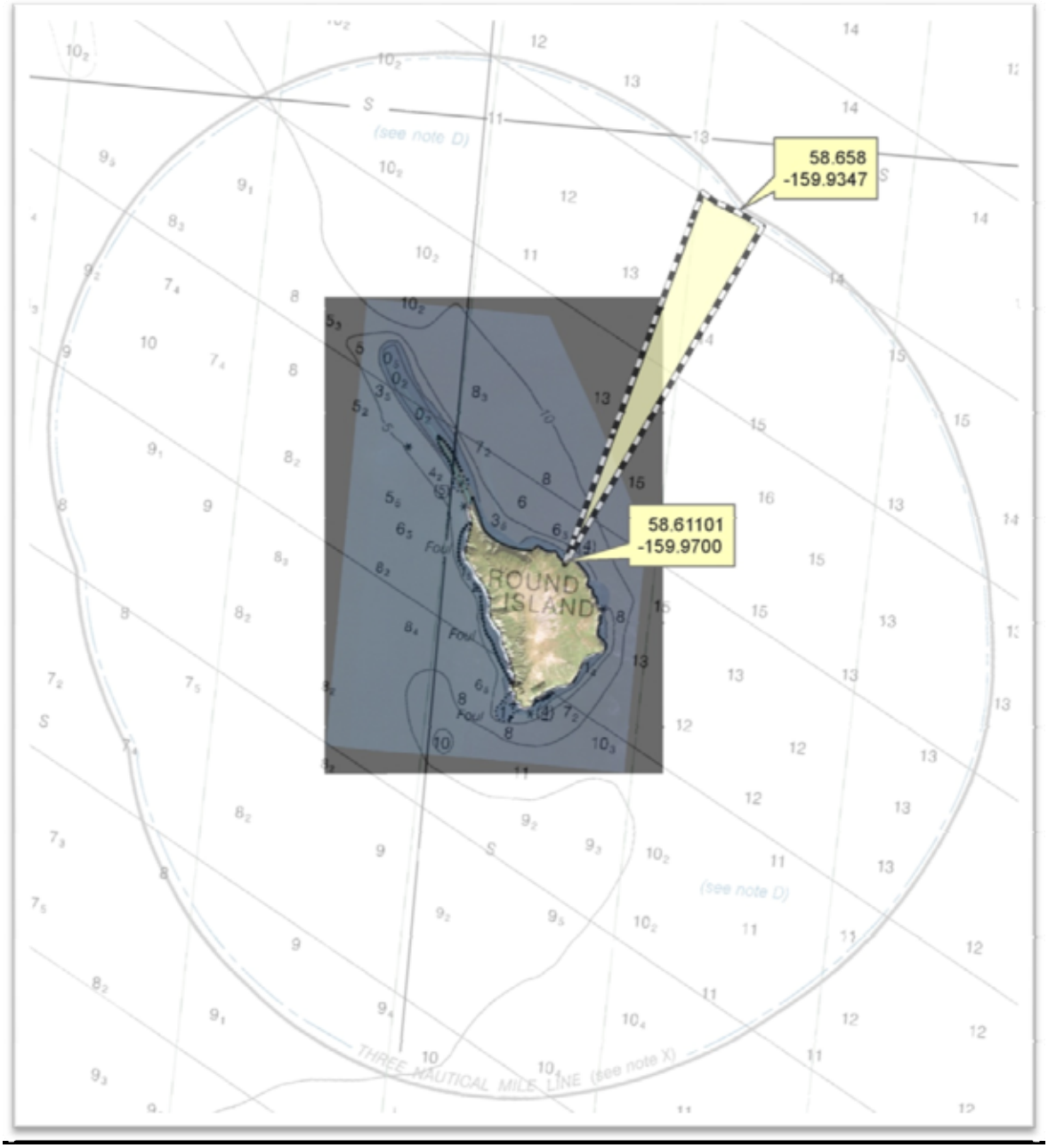

Figure 2. Round Island, Walrus Islands SGS showing 3 NM restricted waters and access corridor.

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 visitation regulations and policies, 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, collecting visitor use data and providing assistance to visitors when needed.

A total of six visitors came to Round Island during 2012. All six were day visiting fishermen coming from the Naknek area taking a break toward the end of their fishing season who visited on July 31. The six were from two separate parties with their own transportation. One was from Alaska, and the rest were from California, Oregon, and Washington. There were no overnight campers during 2012.

Two visitors were aboard the F/V Donavan when chartered to transport staff and gear from Round Island back to Togiak at the end of the season but were not permitted to come ashore due to staff departure from the island, weather and tides.

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 absence of commercial transport to the island during the 2011 season exacerbated a downward trend in visitation. This resulted in a substantial decrease (92%) in visitor use days from 2010 (n=75), and a reduction in the average length of stay for all visitors to one day. Department staff and previous transporter/guide Terry Johnson fielded inquiries from at least 24 groups totaling 48 individuals, regarding visitation to Round Island for the 2011 season.

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, equipment and availability problems associated with the one remaining transport charter

during 2010, and the absence of a commercial transporter during the 2011 season. While the transporter issues hide any effect, it is likely that national economic conditions are also contributing to the decrease in visitation.

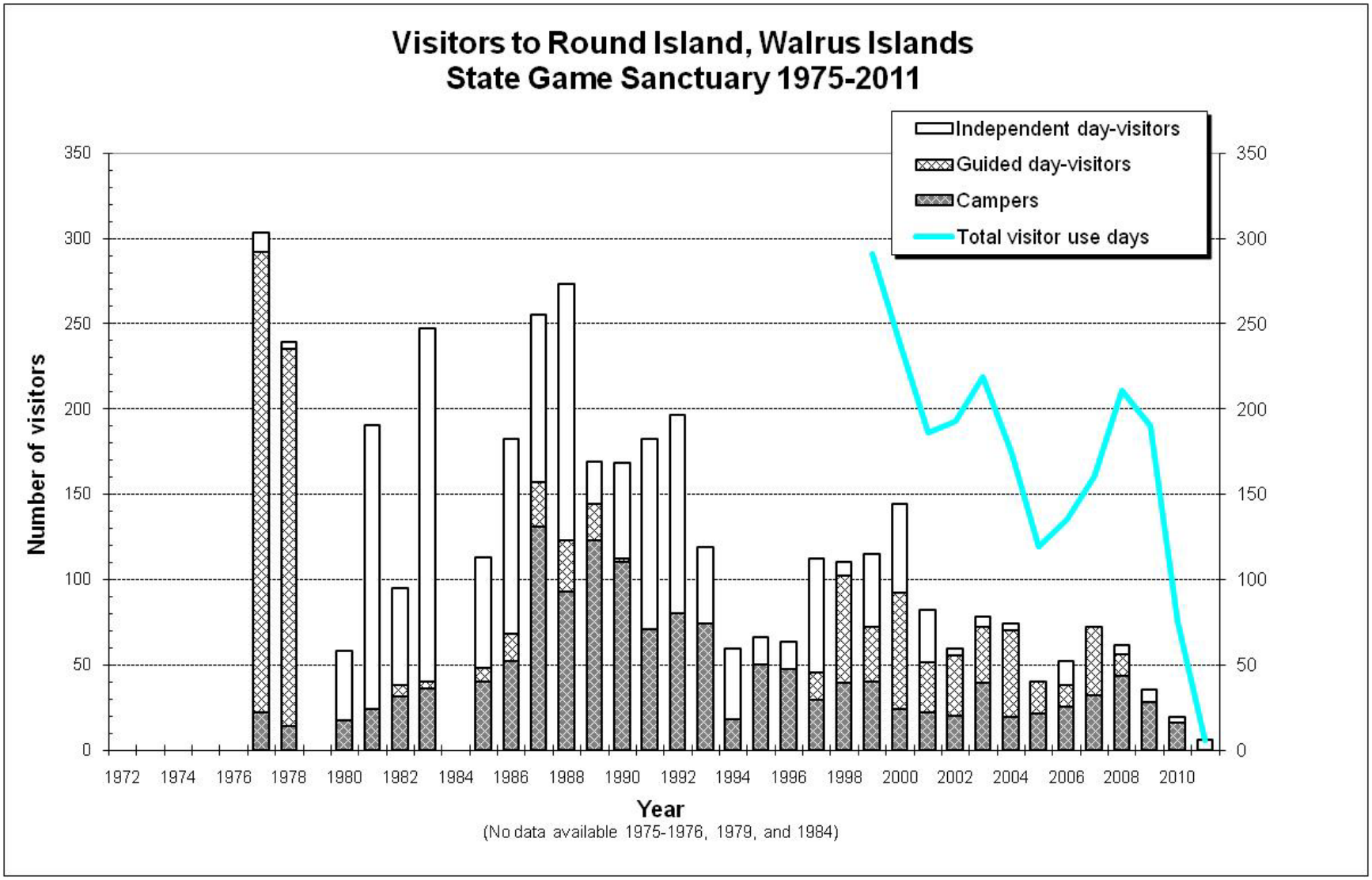

Figure 3. Historic Visitor Use to Round Island, 1977 – 2011.

WALRUS DISTURBANCE

ADF&G staff also monitors and documents 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 2011 season, 29 anthropogenic events were documented within the 3-mile zone, with disturbance to walrus resulting from eight of these events. All of these disturbances occurred when boats or staff helicopters approached or departed the island. On five of these occasions disturbances ranged from head raises to dispersal of 1 – 14 individuals. Only one of these events was due to arrival or departure of vessels in BC. In 2011 there was a continued reduction in the number and type of vessels accessing the island therefore, we would expect approach/departure disturbance to be minimal.

The most significant disturbance occurred on May 9, when a skiff approached Round Island, landed at Main Beach and two men shot at several walrus killing at least one and disturbing 700 - 800 others. State of Alaska Wildlife Troopers and U.S. Fish and Wildlife Service Law Enforcement officers were contacted about the incident; the case was investigated and is currently awaiting adjudication. The investigation of the May 9th incident required an additional disturbance of ninety to one hundred seventy walrus on May 12, during the landing and take-off of an R44 helicopter near Observation Point.

In addition to the above mentioned events, there were 56 anthropogenic events documented outside the 3-mile limit. Disturbance to walrus resulted from four of these events, due to planes audible at unknown altitudes. No reaction from walrus occurred during 16 events and no walrus were present on associated beaches during four events. Walrus reactions were not observed during the remaining 32 events.

Staff also documented one natural disturbance from a raven fledgling cawing next to an animal on First Beach (FB), which disturbed ~30 animals. There were also nine disturbances that occurred without explanation causing various degrees of disturbances to 60-250 walrus (Appendix A).

Wildlife Monitoring Surveys

WALRUS SURVEYS

Walrus monitoring protocols used in collecting daily walrus observations on Round Island were established jointly by the U.S Geological Survey, Biological Resources Division (USGS BRD), the 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). Surveys of the West side of the island regularly include West Main beach (WM) as trail conditions and weather allow. The remainder of the west side beaches south of West Cape are only observable by boat and done opportunistically as weather allows. No boat counts of west side beaches were conducted in 2011. 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. Failure of the temperature sensor within the Davis unit this year resulted in staff using the thermometer on the southwest side of the cabin between June 18th and August 2nd when a new sensor was installed. Due to this thermometer's exposure to sunlight, high temperatures on non overcast days during this period are likely higher than actual temperatures.

Walrus counts for the 2011 field season were conducted from May 5 to August 13. All beaches along the east side of Round Island were counted 101 out of the total 101 days (Figure 5 and Appendix B1 & B2). West Main beach was surveyed on 81 out of 101 days (staff could not access WM beach for 21 days until May 26 due to snow conditions, however two of those days WM was counted via helicopter). The maximum combined east and west side walrus count was 4,245 on July 13 and represents the high count of 2011. This was a 2.5% increase from the 2010 maximum count of 4,141 on July 2, 2010. At least four walrus were present on the east side beaches everyday of the 101 days counted and walrus were not present on West Main beach 20 days out of 81 days counts were made. On WM beach the maximum count of 920 occurred on May 27. No boat counts were conducted this season, however two counts were done on WM via helicopter on May 5th during approach to the island and on May 12th during an investigation by the Alaska State Troopers (AST).

The mean count for east side beaches was 806 which represents a 1.5% decrease from the east side mean count of 819 walruses during 2010 and is 4% lower than the prior 5-year mean of 842 (Figure 6). The mean count for WM beach was 154 which is a 62% decrease from the WM mean of 402 walrus in 2010. The 2011 daily mean count for east and west side beaches combined was 932 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 or variability in movements of walrus within Bristol Bay and the Bering Sea. 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 conducts annual aerial surveys of walrus haulouts at Hagemeister Island, Cape Pierce and Cape Newenham and remote camera counts of individual beaches at Cape Pierce (Michael Winfree, pers. comm.). Preliminary survey results between January and November 2011 are shown in Appendix C for comparison with Round Island numbers.

OBSERVER VARIABILITY COUNTS

Variability counts, to check and calibrate observer variability during walrus surveys, 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. During variability counts, visual counts are conducted by each staff member at the same time from the same viewpoint at OP and are also cross referenced with photos taken at the same time. Photo counts are then conducted later using ArcView GIS software.

Variability counts were conducted on 9 of the 101 count days throughout the season, with photo variability counts being done on all of those 9 days. Variability during early season counts was higher with one observer overestimating the number of walrus on MB by about 18% and 29%, respectively, on the May 10 and May 12th surveys. As the season progressed variability of observers visual and photo counts decreased, with variability between observer's combined land and water counts ranging between 0 - 9% for visual counts and 0.6 - 6% for photo counts; for the remaining 7 surveys. Variability between observers visual counts and photo counts varied (0.32 – 26.61%) as the season progressed, however in general improved. Variability results are presented in Appendix D.

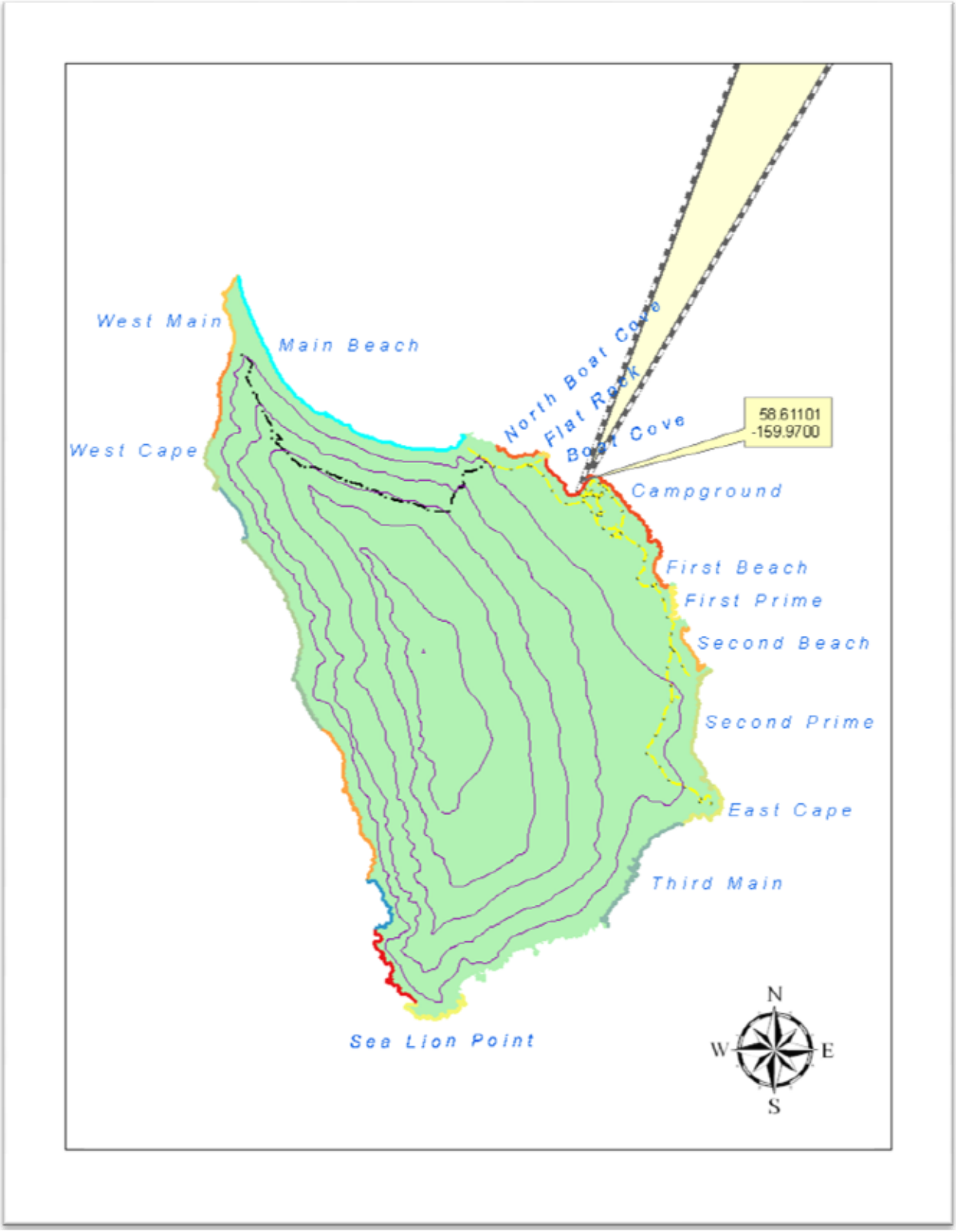

Figure 4. Round Island walrus, seabird & Steller sea lion monitoring locations; East Cape (EC), Second Prime (SP), Second Beach (SB), First Prime (FP), First Beach (FB), Camp Ground (CG), Boat Cove (BC), North Boat Cove (NBC), Observation Point (OP), Main Beach (MB), and West Main Beach (WM).

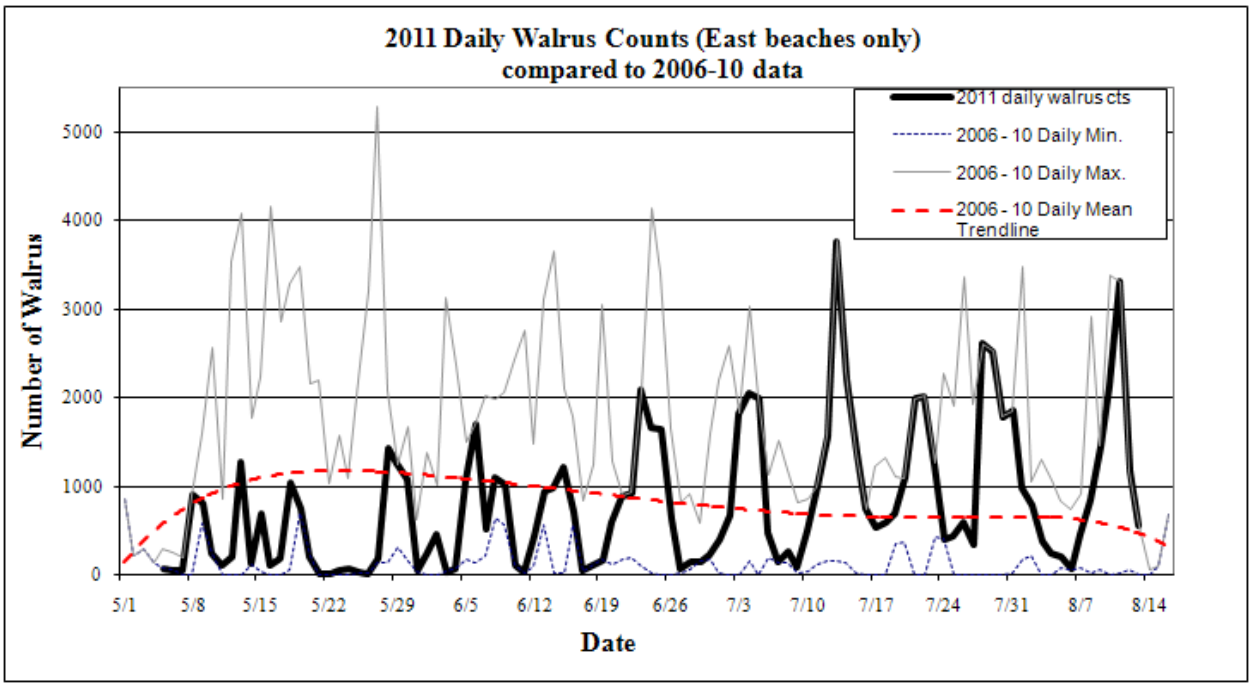

Figure 5. Daily counts of walrus present on Round Island, 2011 season compared to historic data.

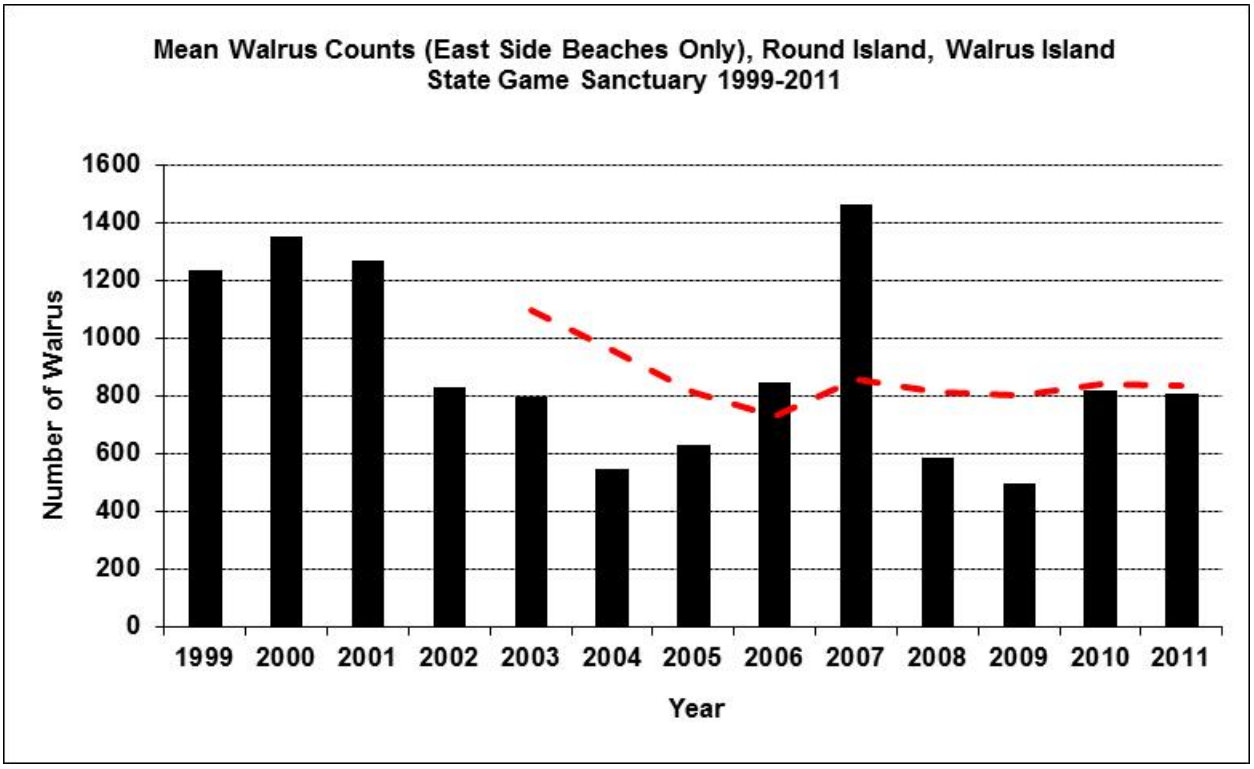

Figure 6. Mean Pacific walrus counts on Round Island 1999 – 2011 with a 5- year trend.

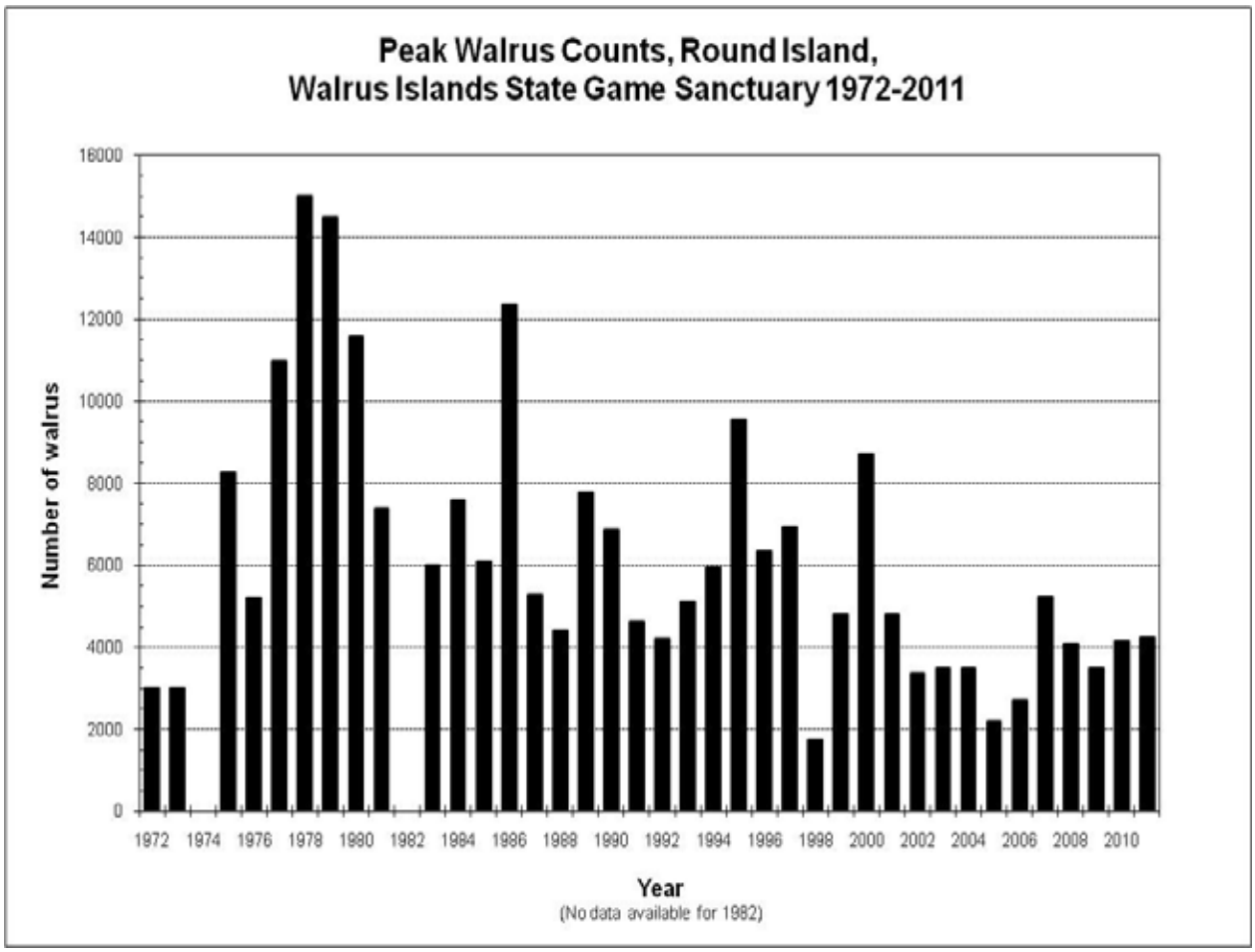

Figure 7. Peak Pacific walrus numbers at Round Island, Alaska; 1972 – 2011.

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.

Ninety-five of 101 possible land counts were conducted from May 6 through August 13, 2011 (Appendix E). The mean number of SSL present on Round Island during the 2011 season was 203, an approximate 75% increase over the 2010 mean of 116, and the 2008 – 2010 mean of 115. The maximum count of 428 sea lions occurred on May 18 and the minimum count of 43 occurred on July 6. Figure 8 shows the daily number of SSL present on Round Island compared to the daily minimums and maximums for recent years, 2007 – 2010. Figure 9 shows the mean number of SSL present on Round Island between 1999 and 2011. A viewpoint change implemented towards the end of 2008 has increased visibility of the whole haul-out, however, inhibits the ability to make direct comparisons of historical means.

Twenty four individual brands were documented in 2011, which originated from six different

branding locations. Eighteen brand re-sights originated from Ugamak Island in the Aleutians (A brands), three from Sugarloaf Island near Kodiak, Alaska (X brand), one from Marmot Island in the Kodiak Archipelago (T brand), one from Medny Island in Russia (M brand), and one from Graves Rock in Southeast Alaska (V brand). SSL biologists were particularly excited to receive information about V16 a nine year old male branded at Graves Rock in Southeast Alaska. This particular male was seen on the Round Island haulout in May, and after correspondence with Lauri Jemison, ADFG sea lion biologist in Juneau, excitement developed when V16 was seen again down near Graves Rock in June and July, which is a very impressive swim along with important SSL data. Many SSLs were observed at the beginning of the season packing onto the beach next to the V1 viewpoint. On several occasions staff had to count the V1 beach from the V3 viewpoint due to lack of visibility of the whole beach, which was obscured by cliffs. Staff also documented an increased number of large adult males hauled out all in close proximity to each other. On one occasion SKS photo documented approximately 34 big bulls on the V1 viewpoint all hauled out on the beach. Six brands new to Round Island were photo documented during 2011 (A114, X305, A69, A712, A688, and A605).

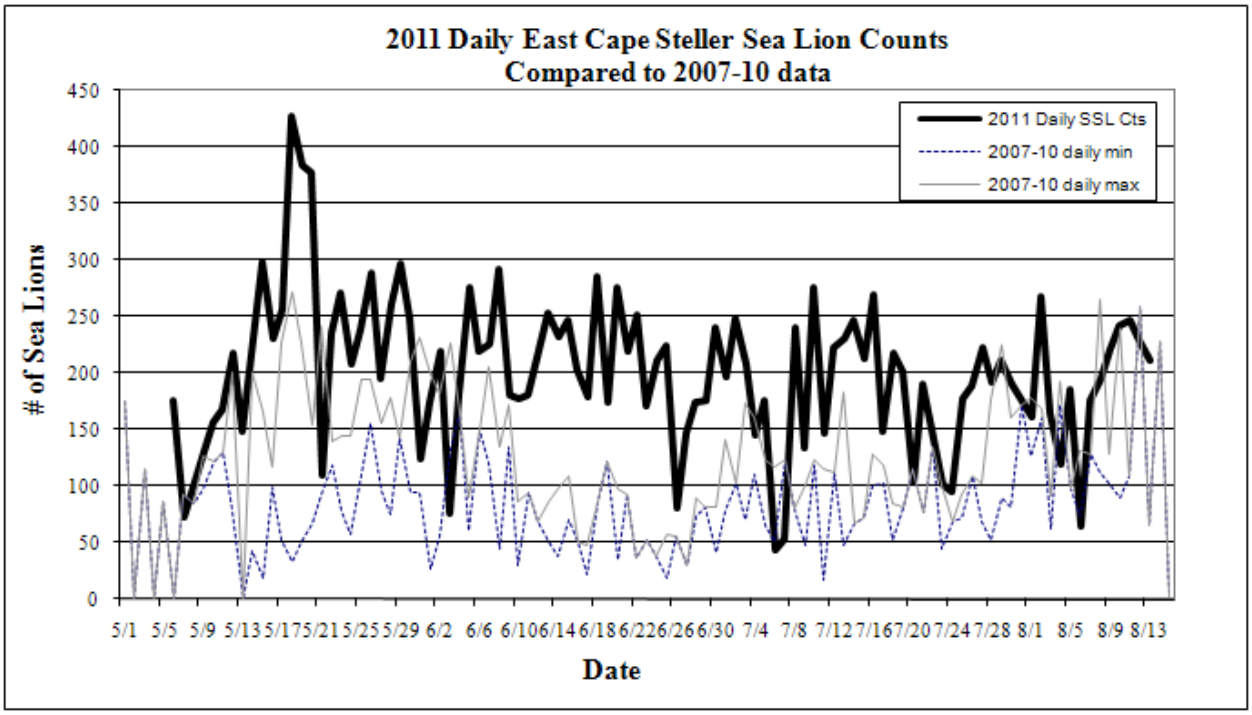

Figure 8. 2011 Daily numbers of Steller sea lions hauled out at East Cape, Round Island; compared to previous 5 years highs and lows. (*Data prior to 2009 may be underrepresented. A new viewpoint established during the 2008 season allows better visibility and more complete counts of the whole haulout.)

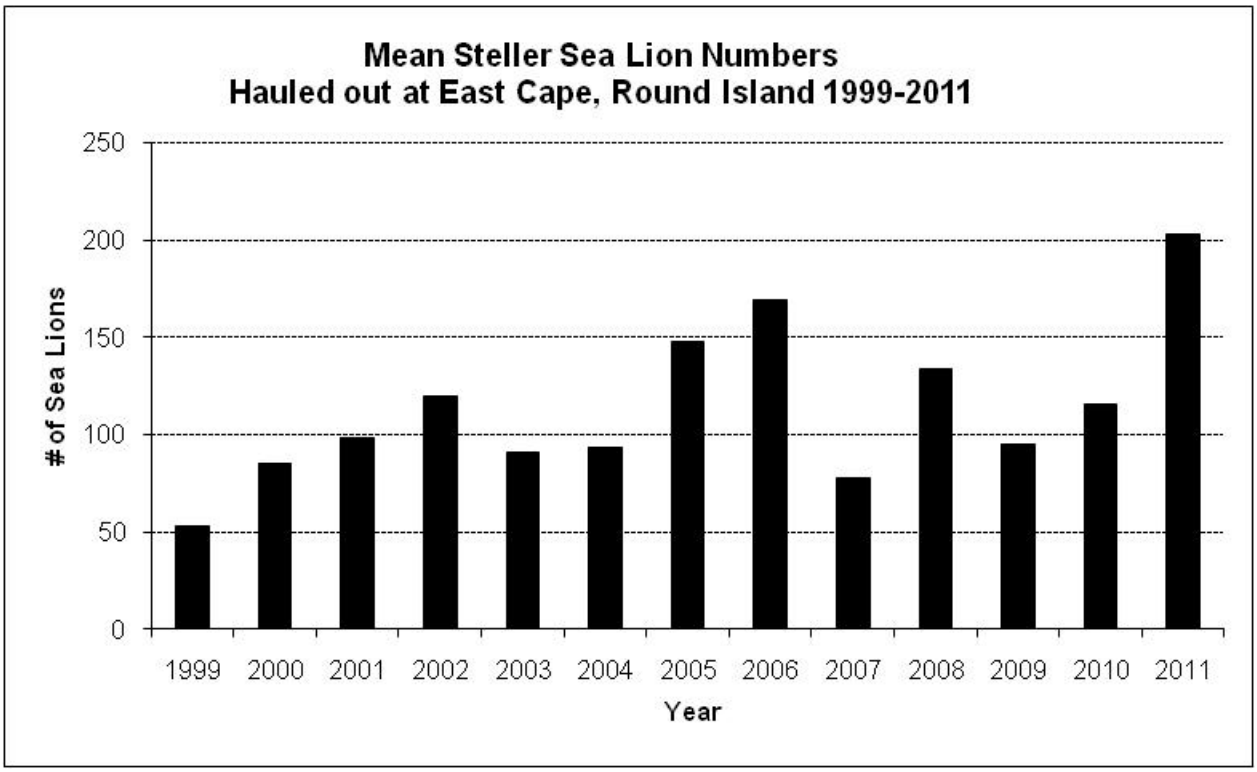

Figure 9. Mean Steller sea lion counts on Round Island 1999-2011. (*Data prior to 2009 may be underrepresented. A new viewpoint established during the 2008 season allows better visibility and more complete counts of the whole haulout.)

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 pelagicus*; PECO) at SB and Observation Point (OP), 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 23 through August 13, 2011. Of the four locations historically monitored (SP, SB, First Beach North (FBN) & First Beach South (FBS)), PECO nesting was only observed at SB and OP during 2011. PECOs nested very late this season and as a result only 16 nests were monitored. A five nest plot was established at OP on Plots 3 & 4, and after PECOs began nesting at SB only 11 nests had eggs within the time frame needed to observe chick fledging before staff departed the island. Due to the nature of how few PECOs were nesting on cliffs seen by staff, selection of visually ideal nests was poor and made observations of eggs and chicks difficult. The first PECO egg was observed on May 23, with the first chick being observed on June 21. Only seven PECOs remained on their nests to hatch chicks between June 21 and 28, resulting in a maximum chick count of 18 during that period. Eight of these chicks survived to fledge by the end of the season, compared to zero that fledged during the 2010 season. High winds and turbulent seas at the beginning of the season

may have been detrimental to some nesting attempts; however staff had difficulty locating any nesting PECOs until the beginning of June. Adults were present on the island at the time of staff arrival, however many remained perched on large boulders along the shoreline instead of establishing nests on the cliffs. Productivity for PECOs in 2011 was 0.50 chicks/nest (Table 1) compared to zero chicks/nest in 2010 and the ten year average of 1.41 chicks/nest (Table 2). Phenology and productivity data are summarized in Tables 1 & 2. 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 7, 2011 on two plots at Observation Point (OP). The first day that eggs were observed was May 29th. Staff located two nests at OP3 on May 29th and two nests at OP2 on June 1 with single eggs in them and initiated plot monitoring. Nests were continually added to the plots as eggs were laid, resulting in 27 nests monitored on OP2 and 26 on OP3. The first chicks were observed at both plots on June 27, 2011, which was three days later than in 2010. The maximum chick counts were 27/plot at OP2 and 24/plot at OP3; seven chicks fledged from OP2 and eight chicks fledged from OP3. Productivity for black-legged kittiwakes in 2011 was 0.28 chicks/nest (Table 1) compared to 0.44 chicks/nest in 2010 and the ten year average of 0.30 chicks/nest (Table 2). Phenology and productivity data are summarized in Tables 1 & 2. Complete productivity observations for BLKI plot(s) are presented in Appendix F2.

COMMON MURRE PRODUCTIVITY MONITORING

COMU productivity monitoring was conducted from June 9 through August 7, 2011 on three separate plots at OP. A total of 67 nest sites were established at OP1 (n=16), OP2 (n=25), and OP4 (n=26). The date of first egg sightings varied throughout the plots with two eggs at OP1, nine eggs at OP2, and seven eggs at OP4 observed on June, 10, 9, and 9 respectively (Appendix D). The first COMU chick was observed on July 15, which was one day later than the 2010 season. A maximum of 14 chicks were seen on all COMU plots combined between July 15-28 however, of the 67 nests monitored only seven chicks survived to fledge (chicks older than 15 days were assumed to have fledged) giving a productivity rate of 0.10 chicks/nest (Table 1) compared to 0.05 chicks/nest in 2010 and the ten year average of 0.21 chicks/nest (Table 2). Phenology and productivity data are summarized in Tables 1 & 2. Complete productivity observations for COMU plot(s) are presented in Appendix F3.

We do not believe that productivity on these OP plots is representative of the PECO, BLKI, or COMU population island wide due to the location of our plots being on the fringe of the colonies and subsequently more vulnerable to predation by fox and ravens. Staff have noticed that there appear to be more chicks observed on the steeper and less accessible cliffs around the island, however, with the number of ravens seen with eggs in their bills it is difficult to speculate on the population success as a whole.

POPULATION COUNTS

Ten population index counts of the five OP plots were conducted for three seabird species between June 15 and July 12 as weather permitted (Appendix G). The focal species included;

BLKI, COMU, and PECO 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. 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 1. 2011 Seabird Phenology and Productivity Summary, Round Island, AK

	PECO	BLKI	COMU
Nests or pairs	16	53	67
Date of 1st Egg(s)	5/23/2011	5/29/2011	6/7/2011
Date of last Egg(s)	6/21/2011	6/11/2010	6/25/2011
Total Eggs laid	45	89	67
Date of 1st Chick(s) hatch	6/21/2011	6/27/2011	7/15/2011
Date of last Chick(s) hatch	7/9/2011	7/7/2011	7/28/2011
Total Chicks hatched	18	51	14
Chicks fledged	8	15	7
Productivity	0.50	0.28	0.10
% Hatching success	40	57	21
% Reproductive success	18	17	10
% Nesting success	6	28	10

Productivity = chicks / nests
Hatching success= % eggs laid that hatch,
Reproductive success= % eggs laid that fledge,
Nesting success= % nests where >/= 1 chick fledges

Table 2. Pelagic cormorant, Black-legged kittiwake and Common murre nest productivity, Round Island, 2011-2000.

	Productivity *(chicks / nests)*										
	2011	**2010**	**2009**	**2008**	**2007**	**2006**	****2003**	**2002**	**2001**	**2000**	**10-yr mean**
PECO	0.5	0	1.62	1.63	2.38	1.73	1	2.9	1.7	0.6	**1.41**
BLKI	0.28	0.44	0	0.42	0.38	0.08	0.48	0.51	0	0.42	**0.30**
COMU	0.1	0.05	0	0.54	0.48	0.48	0.14	0.04	0.02	0.22	**0.21**

** 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, Eskimo Walrus Commission (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 1995 – 1998 and 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 QWC.

One access permit was issued to the hunt captain in Manokotak for the 2011 hunt, however, the required permit information listing crew members was not returned, the permit holders did not 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 no walrus hunting took place at Round Island in 2011.

IVORY COLLECTION

One walrus mortality was seen in BC early in the season containing two large tusks, which were extracted on the first available day when weather permitted and no other walrus were present on the beach. Two other mortalities washed ashore at FB and EC having 2 tusks each. Many pieces of ivory were found on the beach and were collected by staff. Three mortalities were seen on WM throughout the season, one was seen from the helicopter on approach and remained high on the beach all season, however no tusks were observed. Two others washed ashore on WM only one of which appeared to have collectable ivory; however, staff were unable to get to the beach during the 2011 season to collect this. Observed mortalities and ivory collected are summarized in Table 3.

In all, 16 sticks of ivory were recovered from mortalities or beach finds 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 3. Summary of observed walrus mortalities and recovered ivory 2011.

Date	Location	Mortalities Observed	Amount of ivory present (# of tusks)	Beach Cast Ivory	Amount Collected	Comments
5/12	MB	3	1.25		2.25	On MB w AST to investigate poached walrus, one earlier mort w no tusks, head smashed and ivory gone, and one mort after 5/9, a third with one full tusk and 1/4 on R side. Beach find: full= 31 1/2"x 9 1/2"; full= 21 1/2"x 6 1/2"; partial= 9"x 8 1/8"
5/12	WM	1	unk			One walrus seen on the beach from helo during AST investigation, suspect mortality
5/17	FB	0	1		1	Found while beach combing (FB) = 25"x 8 1/4"
5/26	WM	1	unk			Bloated mort on beach, suspect it is the same individual seen from helo on 5/12
6/5	SP	0	2		2 (6/8)	SKS, HI, and EWW hiked down to SP via EC gully and collected 2 tusks below SP viewpoint (9"x 33 3/4"), (9"x 33")
6/19	N of cabin	1	unk			Mort floating by cabin heading W
6/29	N of cabin	1	2			Mort floating by cabin heading W (very bloated)
7/6	FB	1	2	2 (7/8)		2 full (25 3/4"x 7 1/2"), (25 3/4"x 7 1/2")
7/24	WM	1	none			A new mort washed in during a storm. 5/26 mort and this one on WM. No tusks visible.
8/1	EC	1	2	2 (8/10)		Mort seen on the beach east of SSL V1; 2 full (34" x 9.5", 29" x 9.5")
8/4	N of cabin	1	unk			Mort floating north of the cabin
8/5	WM	1	1			Very decomposed walrus mort on the beach, skull, tusk, and nose plate exposed
8/10	EC		3.25		3.25	Beach find on EC beach after harvesting tusks from walrus mort; 3 full (26.5" x 10, 26" x 10", 25" x 8") and 1 partial (12.75" x 8")

DAILY OBSERVATIONS

During the monitoring season ADF&G staff also record general and unusual observations, which include, but are not limited to, wildlife and blooming plant sightings, the presence of beach cast-marine mammals, and general environmental conditions. Daily observations for the 2011 season are summarized in Appendix H.

MARINE MAMMALS

Throughout the early part of the season staff noticed several grey whales (*Eschrichtius robustus*) passing the island 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.

No orcas (*Orcinus orca*) were seen in the waters adjacent to the island this season, however 11+ humpback whales (*Megaptera novaeangliae*) spent a little over a week swimming, diving, caudal peduncle slapping, and breaching around the north and northeast sides of the island. It should be noted that on calm days when the seas are flat, tail slapping and breaching sound very similar to a gunshot. Fluke photos were taken from shore with a 400mm lens and sent to John Moran, research fisheries biologist at the National Oceanic and Atmospheric Administration (NOAA) Lena Lab in Juneau, AK for later identification.

Two spotted seals (*Phoca larga*) were observed on the island this year. On June 14th a pup with remnants of lanugo was seen hauled out on a rock in CG while an adult spotted seal was seen on August 10 hauled out on the beach at EC while staff were harvesting ivory from a mortality.

A young ringed seal (*Phoca hispida*) was seen on three separate occasions swimming and hauled out in BC.

TERRESTRIAL MAMMALS

Conservative estimates of 10-13 noticeably different red fox (*Vulpes vulpes*) were identified along the trail system during 2011. Two fox kits known to be born this season were seen playing and tunneling in the grass tussocks around the sea lion viewpoints at EC. An adult had excavated a new den between V1 and V3 and utilized an old den marked with a stake at the base of the stairs between the V1 and V2 sea lion viewpoints. Kits from last year were seen on several occasions around the cabin and following staff around during walrus counts.

A large number of rodents and tunnels were seen all over the island this season. Diane Okonek, former sanctuary manager, relieved staff for a break and stated that she had never seen this many rodents on the island during her tenure from 2003-2009. Many were identified as tundra voles (*Microtus oeconomus*), and dusky shrews (*Sorex monticolus*), while a couple were generally identified as lemmings. Fox were seen with many voles in their mouths on several occasions and during the end of the season many voles and shrews were documented dead on the trails around the island. SKS brought out small live traps after her break to attempt to capture and identify what was on the island, however due to time constraints with closing down camp no traps were deployed.

BIRDS

Naturally triggered rock slides occurred frequently near bird plots at OP during the 2011 season. On a couple occasions staff watched large rocks tumble down the cliffs through Plots 2, 3, & 4, fortunately missing birds but causing many adults to flush. Staff also documented a few birds that abandoned nests most likely due to rock slides as rocks would be seen in empty nests where adults had been nesting previously.

Not as many horned (*Fratercula corniculata*, HOPU) or tufted puffins (*Fratercula cirrhata*, TUPU) were seen on what, staff call, "puffin rock" at CG beach this season. Instead many of both species were seen on the cliffs at FB and SB using the remnants of PECO nests from past seasons.

Short-eared owls (*Asio flammeus*, SEOW) were observed regularly in May again this year. SEOW feathers were collected opportunistically during the 2011 season to help with a migration ecology study conducted by Travis Boom with the ADFG, Fairbanks. One of three feathers sent in for genetic analysis was confirmed as belonging to a SEOW. The other two appeared to be from a rough-legged hawk (*Buteo lagopus*, RLHA), which had been seen on multiple occasions around EC. Staff will continue to collect feathers opportunistically for Travis in future seasons to assist in his monitoring project.

Towards the end of the season staff saw many COMU chicks, and some adult BLKIs tangled up in thin reed like algae that washes up on the beaches around BC and CG area. Staff noticed this during the 2010 season as well and will continue to monitor that occurrence in the future.

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 (UAF). Butterfly and moth specimens were collected opportunistically to assist in Ken Phillips study to identify moth and butterflies species in Alaska.

Eight moths collected by SKS and Diane Okonek (DCO) in 2009 were previously identified as *Arctia opulenta* and *Pararctia parthenos*. Additional specimens were acquired during 2011; SKS collected six butterflies, seven moths and part of a fuzzy caterpillar. All butterflies collected were of the species *Pieris marginalis*, three moths were *A. opulenta*, one moth was an undetermined *Noctuid* species, two moths were an undetermined *Geometrid* species, and the caterpillar was a cast larval skin, which was probably an early instar of an Arctiid.

Mr. Philips added that he now has a collection of 10 *A. opulenta* from Round Island, which is the largest series of this species in the Alaska Lepidoptera Survey (ALS) collection from any site in Alaska (Figure 9). He continued to say that Round Island represents an expansion of the known distributions of *A. opulenta*, and *P. parthenos* which are not presently recognized by Ferguson et al. 2000. Mr. Philips would like staff to continue collecting additional specimens of *A. opulenta* due to the vast individual variation, in order to better characterize the population as a whole.

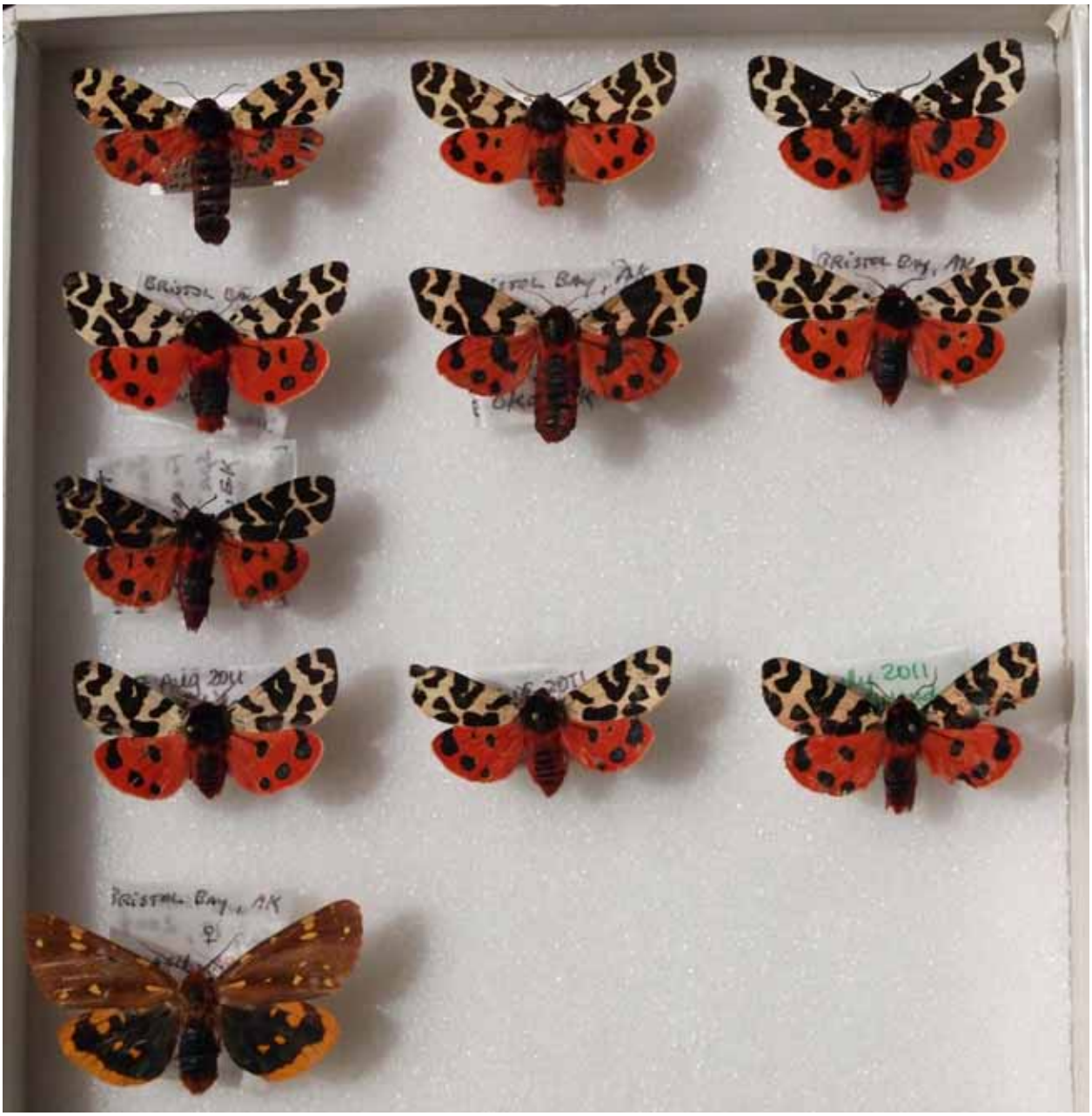

Figure 10: Series of *Arctia opulenta,* and *Pararctia parthenos* collected on Round Island 2009 (first 3 rows & *P. parthenos*), and 2011 (fourth row).

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. A Davis weather station (2009) and data logger (2010) enhance collection of basic weather data (temperature min/max, precipitation, wind speed & direction, barometric pressure, cloud cover) for Round Island and will enable more enhanced capture of weather data allowing hourly reporting. A summary of minimum & maximum temperatures, precipitation and cloud cover for the period 2008 – 2011 is provided in Table 4 below. Daily weather data for 2011 is

presented in Appendix I.

Continuing malfunctions with the outside temperature sensor on the Davis weather station starting June 18th necessitated replacement of the temperature sensor, this occurred August 2nd. Between June 18th and August 2nd staff used the high/low thermometer on the back (SW) side of the cabin until a new sensor could be purchased and brought to the island. The thermometer had lost the protective outer covering at some point prior to 2009; therefore it is assumed that the recorded temperatures during this period might not be accurate, particularly on sunny days, due to direct sunlight on the bulb at some points in the day. The data logger installed in the Davis consol in 2010 to collect incremental data in-season and through the winter was working well during the 2011 season and all that data will be archived into the Round Island database.

Table 4. Weather summary, Round Island, Alaska.

	2011	2010	2009	2008
Monthly avg temp (max/min)				
May	46/39	48 / 37	54 / 39	49 / 34
June	47/42*	52 / 43	52 / 43	54 / 40
July	53/42*	52 / 45	57 / 50	57 / 43
Aug	52/46	51 / 47	57 / 53	69 / 48
# days precip	37	28	15	18
# days <25% overcast	9	9	21	15
# days >50% overcast	78	73	55	64

* Indicates 6-13 days of data were not recorded.

OTHER PORTIONS OF WISGS

During deployment flights to Round Island on May 5, 2011, helicopter flight paths along the North side of High and Crooked Islands, over Black Rock and along the South side of Summit Island allowed staff to visually inspect these portions of the WISGS to determine if walrus were hauling out on the beaches. No walrus were observed on any of the beaches seen from the helicopter. There were however, many tenders and processors anchored around Summit Island.

Facilities Management

Round Island staffs 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 2011. One hundred eight feet of Geoblock were added to the trail system, along the trail towards NBC, OP, and 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. A small section of boardwalk was established with treated lumber along a consistently muddy section just before the first viewpoint at FB. 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 new hardware cloth this year.

Materials to rebuild the stair railings in BC were brought to the island in 2010 and these repairs were implemented during the 2011 season. Walrus continued to haul out at the base of the stairs this season often leaning against the lower portion of the stairway, which snapped the bottom post twice. A back up material or railing design will need to be implemented for the 2012 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. The system was installed June, 2011and tested during the remainder of the 2011 season. The radome is mounted atop a triangular framed communications tower anchored to a flat rock base placed on the hill on the SW side of the cabin. The tower is further stabilized by guy wires. The tower anchors are hinged to allow the tower to be raised or lowered for radome installation and removal. Aerial wiring connects the radar dome to the chart plotter inside the cabin. The installation of this system will assist staff in accurately documenting incursions within the 3-mile restricted waters around Round Island.

Alaska Sealife Center (ASLC) researchers Lori Polasek, and Terril Efird arrived on island May 5th to install a remote camera system at a couple walrus viewpoints in a collaborative effort between ASLC, USFWS, and ADF&G to monitor walrus disturbances at various haulouts. One system was installed at FB during their stay. Due to the amount of snow along the Traverse Trail to WM, Round Island staff installed the second system at WM in June. Consistent problems occurred with the ASLC cameras throughout the season resulting in staff pulling all cameras at the end of the season in favor of replacement with new Reconyx systems during the 2012 season.

In August, Round Island staff also installed and set up a remote a Reconyx camera for the USFWS over looking MB. The camera was set up to collect still images to gather data on numbers and timing of walrus hauling out at MB during the period when staff are not present on the island, August – May. Initial sample photos were sent back to Mike Winfree and Stacey Lowe, USFWS, for analysis. The OP site may prove to be an unsuitable location for camera placement due to its distance from the main haulout and the inability to count walrus from the photos taken. Staff suspect the camera location will need to be reconsidered and moved during the 2012 season.

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 to include automated permitting and visitor comment apps.

- 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 remote cameras at West side beaches for photo counts when staff cannot monitor regularly.
- Conduct trail stabilization work on the hill leading to Observation Point, and trail down to East Cape.
- Excavate the archaeologically approved outhouse hole and move staff outhouse.
- Replace stovepipe chimney for oil stove on staff cabin.

Acknowledgements

Thanks are extended to Heidi Isernhagen, Round Island field technician, for all her hard work through the 2011 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 Okonek and Gina Robinson for relieving staff for a break off the island in July. Thanks are also extended to the Alaska State Wildlife Troopers and USFWS Enforcement Officers for their immediate response and diligent efforts during the illegal access and walrus poaching investigation.

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APPENDICES

APPENDIX A

Appendix A. Walrus response to anthropogenic activities and disturbance events, Round Island, Alaska, 2011.

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
5/5/2011	17:08	17:11	Helicopter	A/V	No	1mi	900	WM	50	0	50				Pollux- 2 RI staff (SKS and HI) to island. ~70 walrus observed from helo at WM, and MB on approach to island. Pilot kept distance and no walrus were disturbed. One walrus in water at FB but no walrus on other near beaches. Disturbance type = Authorized helicopter. Distance = 1.5mi. Response = None.
5/5/2011	17:08	17:11	Helicopter	A/V	No	1mi	900	MB	75	0	75				Pollux- 2 RI staff (SKS and HI) to island. ~70 walrus observed from helo at WM, and MB on approach to island. Pilot kept distance and no walrus were disturbed. One walrus in water at FB but no walrus on other near beaches. Disturbance type = Authorized helicopter. Distance = 1.5mi. Response = None.
5/5/2011	17:08	18:15	Boat	A/V	No	1mi	0	MB	75	0	75				M/V Kustatan (authorized vessel) called from 3mi on helo approach and motored to 1/2mi from cabin shore and anchored to wait for heli sling operation, then called from 3mi after departure.
5/5/2011	17:30	17:57	Helicopter	A/V	No	1mi	200	MB	75	0	75				Heli sling 3 brailer bags from Kustatan to RI. No walrus on near beaches, no walrus appeared to be disturbed on MB.
5/5/2011	19:24	19:33	Helicopter	A/V	No	1mi	900	MB	75	0	75				Pollux- 2 Sealife center staffs (Lori Polasek, and Terril Efird) arrive on island for remote camera set up. No obvious disturbance at MB. Disturbance type = Authorized visit by helo. Distance = 1mi . Response = None
5/8/2011	15:27	15:34	Helicopter	A/V	No	3/4mi	500	FR	11	4	7		3	1	One DS and 3 RO as helo approaches cabin to retrieve Sealife Center staff; 7 plus the 3 RO remain on FR. No obvious disturbance at MB. Disturbance type = Authorized visit by helo. Distance = 3/4mi. Response = 3RO/1DS from FR.

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
5/8/2011	15:27	15:34	Helicopter	A/V	No	3/4mi	500	MB	840	0	840				One DS and 3 RO as helo approaches cabin to retrieve Sealife Center staff; 7 plus the 3 RO remain on FR. No obvious disturbance at MB. Disturbance type = Authorized visit by helo. Distance = 3/4mi. Response = 3RO/1DS from FR.
5/8/2011	15:56	16:00	Helicopter	A/V	No	3/4mi	500	FR	9	8	1			8	Helo with 2 Sealife Center staff power up and leave 3mi, 8DS from FR, while one on FR remained undisturbed. No apparent disturbance to walrus on MB. Disturbance type = Authorized helicopter. Distance = 3/4mi . Response = 9DS FR.
5/8/2011	15:56	16:00	Helicopter	A/V	No	3/4mi	500	MB	840	0	840				Helo with 2 Sealife Center staff power up and leave 3mi, 8DS from FR, while one on FR remained undisturbed. No apparent disturbance to walrus on MB. Disturbance type = Authorized helicopter. Distance = 3/4mi . Response = 9DS FR.
5/9/2011	15:51	17:15	Boat/people	A/V/Physical	Yes	0m	0	MB	700-800	400-500	0	700-800	400-500	300-400	See disturbance / violation report for additional detail.
5/10/2011	15:31	15:35	Plane	A/V	No	660m	2000	MB	220	UNK					USFWS survey in a fixed winged plane related to violation. Authorized plane. No apparent disturbance to walrus at MB. Wind was blowing so audio was muted.
5/12/2011	15:30	15:40	Helicopter	A/V	No	1mi	500	MB	170	unk					AST arrival to collect evidence and interview staff about May 9event. No walrus appeared to be disturbed on MB.
5/12/2011	16:39	16:55	Helicopter	A/V	No	1/2mi	0	MB	170	170		170	170	50	See log for more detail.
5/12/2011	17:26	18:54	4 People	A/V	No	6.6m	0	MB	120	0	120				No disturbance of walrus on MB.
5/12/2011	17:26	18:54	Boat	A	No	8mi		MB	120	0	120				Large boats well outside 8 mi very loud and echoing in coves at MB
5/12/2011	19:10	19:30	Helicopter	A/V	No	1/2mi	0	MB	120	90	30	90	50	0	See log for more detail.
5/14/2011	21:17		Boat	A/V	No	3mi				unk					Vessel around the 3mi heading E
5/15/2011	18:00		Boat	A/V	No	3mi				unk					Vessel around the 3mi heading W

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
5/15/2011	21:06		Boat	A/V	No	3mi				unk					Vessel from (5/14) around the 3mi heading E
5/16/2011	16:21	16:38	Boat	A/V	Yes	2.6mi				unk					M/V Island Mist inside the 3mi (see Protection Issue write up). Unknown disturbance to walrus on MB
5/16/2011			Boat	A/V	No	3mi				unk					Heading W-E
5/16/2011			Boat	A/V	No	8mi				unk					Heading W-E
5/16/2011			Boat	A/V	No	12mi				unk					3 vessels 200ft+ to the E of the island are very audible on shore
5/17/2011	15:11		Boat	A/V	No	3mi		FB	0	0					Vessel outside the 3mi, audible from FB, heading W, no walrus on beach
5/17/2011	15:11		Plane	V	No		5000			unk					Very audible from land, unk disturbance to walrus
5/17/2011	15:26		Boat	A/V	No	5mi				unk					Vessel around 5mi heading E
5/17/2011	16:40		Boat	A/V	No	3mi				unk					Vessel around 3mi heading E
5/17/2011	17:25		Boat	A/V	No	3mi				unk					Vessel around 3mi heading E
5/17/2011	17:40		Boat	A/V	No	3.5mi				unk					Vessel around 3.5mi heading W
5/17/2011	18:00		Boat	A/V	No	3mi				unk					Vessel around 3mi heading E
5/17/2011	18:52	19:06	Boat	A/V	Yes	2-2.5				0					M/V Randi Lynn suspected to be inside the 3mi, did not respond to hail on Ch16 documented grey hull, white wheelhouse, #11418? Audible but no apparent disturbance to walrus on MB
5/17/2011	20:00		Boat	A/V	No	12mi		SB	3	0	3				2 vessels (200ft+) audible hum on FP and FB while beach combing no disturbance to 3 walrus on SB
5/18/2011	18:24		Boat	A/V	Yes	2.5mi				0					M/V MCM?, MGM?, M&M? Suspected to be inside the 3mi, no response to hail on Ch16 documented rust bottom, blue hull, white wheelhouse, small blue # on lower front port of wheelhouse. White horizontal stripe on bow heading W. No disturbance to walrus on MB.
5/18/2011	8:54		Tug	A/V	No	3mi				unk					Tug and barge heading E no apparent dist on FB or SB
5/18/2011	13:06		Plane	A	No		5000			unk					High flying jet over island
5/18/2011	15:43		Boat	A/V	No	3mi				unk					Vessel heading W, hum heard from cabin

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
5/18/2011	16:17		Boat	A/V	No	3mi				unk					M/V Queenhorn? Pushing the 3mi heading E
5/18/2011	17:01		Plane	A	No		5000	MB		0					High flying jet over island
5/19/2011	18:07		Plane	A	Unk			MB	726	0	726				Plane of unknown altitude VERY loud flying past island through rain cloud. Staff could not see its location.
5/19/2011	12:18		Plane	A	No		5000			unk					High flying jet over island
5/19/2011	13:55		Plane	A	No		5000			unk					High flying jet over island
5/19/2011			Boat	A	No	12mi		SB	0	0					Processors and tender >12mi from island but hum heard at SB
5/21/2011	12:26		Boat	A/V	No	3.6mi			0	0					M/V Berin a 396ft vessel was hailed to confirm distance from shore. Took photos to reference large vessels at the 3mi in the future. Heading W to Anchor Point.
5/26/2011	9:42		Boat	A/V	No	3mi				unk					Vessel heading E, hum audible
5/26/2011	10:04		Boat	A/V	No	5mi		MB	16	0	16				Audible at MB,
5/26/2011	18:26	18:27	Plane	A	No		5000			unk					Loud plane over cabin, no visual
5/28/2011	2:42		Boat	A/V	No	5mi				unk					Large processor heading W in front of cabin, loud hum audible for 15+ min
5/28/2011	15:22		Boat	A/V	No	10-12mi				unk					Tug and barge heading W hum audible from BC
5/30/2011	9:46		Boat	A/V	No	10mi				0					Faint hum audible on MB, no noticeable disturbance
6/2/2011	18:31		Boat	A/V	No	3.5mi			0	0					~396ft vessel passed the island heading W, no walrus on near beaches
6/4/2011	12:12		Plane	A	No	high flying				0					High flying jet over island, audible, not many walrus on island
6/4/2011	14:27		Plane	A	Unk	Unk		MB	70	12	58		12		12 walrus in H20 flinched w audible plane, and moved a couple feet and stopped
6/5/2011	18:48	18:54	Helicopter	A/V	No	600ft	500	FR	14	8	6	8			Pollux helo w EWW and Larry Larrivee to RI.
6/5/2011	18:48	18:54	Helicopter	A/V	No	600ft	500	MB	990	0					Pollux helo w EWW and Larry Larrivee to RI.
6/5/2011	18:48	18:54	Helicopter	A/V	No	600ft	500	FB	11	11			11	11	Pollux helo w EWW and Larry Larrivee to RI.
6/5/2011	19:39	19:43	Helicopter	A/V	No	1/4mi	500	FR	14	14		14	4	3	Pollux helo w Larry Larrivee leave island after cup of tea.
6/5/2011	19:39	19:43	Helicopter	A/V	No	1/4mi	500	MB	990	0					Pollux helo w Larry Larrivee leave island after cup of tea.

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
6/5/2011	19:39	19:43	Helicopter	A/V	No	1/4mi	500	FB	11	2		2	9		Pollux helo w Larry Larrivee leave island after cup of tea.
6/6/2011	15:36	15:37	Unk	A	Unk	Unk		MB	1322	0					Noise heard at MB similar to plane or helo but aircraft never seen. Sound has been heard several times by staff and not sure where it's coming from.
6/7/2011	17:12		Plane	A	No		5000			unk					High flying jet over EC, unk disturbance to walrus, no disturbance to SSL.
6/12/2011	16:52	16:54	Unk	Unk	Unk			WM	500	60		250	250	60	Unk cause for disturbance on WM. Staff setting up ASLC remote cameras and pounding rebar for guide wires- disturbance was a couple minutes after drive of stake but might be cause?
6/14/2011	10:36	10:37	Plane	A	Unk	Unk		SB	15	3		3			Staff heard loud plane at unk altitude (in fog) fly over island, SKS observed 3 HR at SB with disturbance to some cliff nesting seabirds, HI was in fog in TT and unk disturbance to walrus on MB and WM.
6/15/2011	16:43	20:30	Helicopter	A	No	15mi		FR	10	0					Staff heard Pollux helo in Kulukak Bay slinging supplies for GCI tower, audible from BC to EC
6/15/2011	16:43	20:30	Helicopter	A	No	15mi		SB	98	0					Staff heard Pollux helo in Kulukak Bay slinging supplies for GCI tower, audible from BC to EC
6/17/2011	16:42	15:07	Helicopter	A/V	No	1/2mi	500	MB	398	0					Egli Air Service came to pick up EWW and take back to DLG. No DS to walrus on MB, no walrus on near beaches.
6/18/2011	12:19		Plane	A	No		5000			unk					High flying jet (loud) unk disturbance to walrus on beaches.
6/18/2011	15:30		Plane	A	Unk					unk					Plane of unknown altitude. Staff could not see its location.
6/18/2011	18:40		Boat	A/V	No	4.5mi				unk					Very large processor/tanker (600ft+) vessel passes north of island. Audible from cabin.
6/22/2011	15:30	15:34	Plane	A	Unk	unk		MB	671	60	611	45		15	Plane of unknown altitude heard from TT, disturbance on MB at 15:32 unsure if plane was the cause of the disturbance as it was audible but not particularly loud from the trail.
6/24/2011	11:42		Boat	A/V	No	8mi				unk					Push barge seen from EC, audible but no noticeable disturbance to SSL on EC haulout

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
6/24/2011	12:29		Plane	A	Unk	Unk				0					Plane of unknown altitude heard from TT, no noticeable disturbance on MB.
6/25/2011	16:12		Unk					MB	1220	Unk					Staff heard disturbance occur on MB while on WM, unk cause
6/25/2011	16:43		Unk					WM	346	150-200					Natural disturbance on WM while staff present, unk cause however many BLKI flushed from spine during the same time (earthquake?)- total disturbed should be present on WM ASLC cams- Around the same time staff on EC saw an unusual circular water pattern
6/25/2011	17:26		Plane	A	No	high flying				unk					High flying jet flies over the island
6/25/2011	20:52		Plane	A	No	high flying				unk					High flying jet flies over the island
7/1/2011	14:08	14:10	Plane	A	Unk		5000			unk					Large plane (cargo plane/C-130) fly over cabin - photos available, unk disturbance to walrus on beaches
7/2/2011	8:13	10:13	Boat	A/V	No	5mi				unk					Large vessel (600+ft) audible from cabin, heading W. At 9:38 vessel was heading E, confirmed w staff that vessel turned around, then turned around again (heading W) in front of Kulukak Bay.
7/4/2011	11:13		Plane	A/V	No	high flying		MB	1228	0	1228				High flying jet flies over the island
7/4/2011	11:13		Plane	A/V	No	high flying		WM	226	0	226				High flying jet flies over the island
7/4/2011	11:41	11:44	Plane	A	No	unk		MB	1228	0	1228				Plane heard, fog over mainland (seems to amplify noise), no apparent DS to walrus on MB
7/4/2011	14:54	16:29	Boat	A/V	No	4.5mi		MB	1228	0	1228				600+ ft vessel passing island from the W heading E, audible from shore, no apparent disturbance to walrus on MB and FR
7/4/2011	14:54	16:29	Boat	A/V	No	4.5mi		FR	12	0	12				600+ ft vessel passing island from the W heading E, audible from shore, no apparent disturbance to walrus on MB and FR
7/4/2011	14:54	16:29	Boat	A/V	No	5mi		MB	1228	0	1228				Tug and barge passing island from the W heading E, audible from shore, no apparent disturbance to walrus on MB, and FR

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
7/4/2011	14:54	16:29	Boat	A/V	No	5mi		FR	12	0	12				Tug and barge passing island from the W heading E, audible from shore, no apparent disturbance to walrus on MB, and FR
7/5/2011	17:35		Plane	A	No	high flying		FB	218	0	218				High flying jet over island, no noticeable disturbance to walrus on FB
7/11/2011	16:46		Plane	A	No	unk		FB	111	0	111				Plane heard but not seen, no apparent DS to walrus on FB
7/15/2011	11:18	11:22	Plane	A	Unk	unk		FR		2		2			Turbo prop fly over island unk altitude not seen through clouds audible from NBC, 2 HR walrus on FR, many walrus swimming W from beyond CG unk if plane caused DS on E side beaches
7/15/2011	12:06	12:08	Plane	A	No	high flying		FR		0					High flying jet flies over the island no apparent DS to walrus on FR
7/19/2011	11:15	12:15	Boat	A/V	No	500m		FR		10				10	DCO & GR arrived to replace staff for 2 wks. All walrus on FR dispersed after the anchor had been dropped for a few minutes.
7/31/2011	9:00	9:45	Boat	A/V	No	400m		FR	5	0	5				F/V Dreamboat inside the 3mi for day visit, dropped anchor at the alternate site, ~40 walrus posse up around the boat (9:30a) preventing them from getting to shore.
7/31/2011	9:00	9:45	Boat	A/V	No	400m		BC	95	0	95				F/V Dreamboat inside the 3mi for day visit, dropped anchor at the alternate site, ~40 walrus posse up around the boat (9:30a) preventing them from getting to shore.
7/31/2011	9:00	9:45	Boat	A/V	No	400m		FB	170	0	170				F/V Dreamboat inside the 3mi for day visit, dropped anchor at the alternate site, ~40 walrus posse up around the boat (9:30a) preventing them from getting to shore.
7/31/2011	10:25	10:55	Boat	A/V	No	400m		FR	5	0	5				F/V Christopher Aaron enters the 3mi with RI staff SKS and HI, anchor was dropped outside of CG area and there was no apparent disturbance to walrus, except walrus possed around the F/V Dreamboat, during the shuttle of staff and gear to shore.

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
7/31/2011	10:25	10:55	Boat	A/V	No	400m		BC	95	0	95				F/V Christopher Aaron enters the 3mi with RI staff SKS and HI, anchor was dropped outside of CG area and there was no apparent disturbance to walrus, except walrus possed around the F/V Dreamboat, during the shuttle of staff and gear to shore.
7/31/2011	10:25	10:55	Boat	A/V	No	400m		FB	170	0	170				F/V Christopher Aaron enters the 3mi with RI staff SKS and HI, anchor was dropped outside of CG area and there was no apparent disturbance to walrus, except walrus possed around the F/V Dreamboat, during the shuttle of staff and gear to shore.
7/31/2011	11:08	11:15	Boat	A/V	No	400m		FR	5	0	5				DCO and GR off island after relieving staff during a break off island. F/V Christopher Aaron motored up and pulled anchor without any apparent disturbance to walrus on FR or BC.
7/31/2011	11:08	11:15	Boat	A/V	No	400m		BC	95	0	95				DCO and GR off island after relieving staff during a break off island. F/V Christopher Aaron motored up and pulled anchor without any apparent disturbance to walrus on FR or BC.
7/31/2011	12:15	12:19	Boat	V	No	100 ft		FR	5	0	5				Two visitors via two trips from the F/V Dreamboat row to shore in small dingy come to shore for day visit.
7/31/2011	12:15	12:19	Boat	V	No	100 ft		BC	95	0	95				Two visitors via two trips from the F/V Dreamboat row to shore in small dingy come to shore for day visit.
7/31/2011	12:45	13:34	Boat	A/V	No	400m		FR	7	0	7				F/V Shodan enters the 3-mile, and anchors next to the F/V Dreamboat at the alternate staircase in CG. Three crew members from the Shodan were shuttled to shore via Dreamboat's dingy in three separate trips. After both boats were tied together the captain of the Dreamboat also came shore with no apparent disturbance to walrus.

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
7/31/2011	12:45	13:34	Boat	A/V	No	400m		BC	69	0	69				F/V Shodan enters the 3-mile, and anchors next to the F/V Dreamboat at the alternate staircase in CG. Three crew members from the Shodan were shuttled to shore via Dreamboat's dingy in three separate trips. After both boats were tied together the captain of the Dreamboat also came shore with no apparent disturbance to walrus.
7/31/2011	16:20	16:32	Boat	V	No	400m		FR	7	0	7				Five crew members are shuttled in five trips back to respective vessels via dingy.
	16:20	16:32	Boat	V	No	400m		BC	69	0	69				Five crew members are shuttled in five trips back to respective vessels via dingy.
7/31/2011	16:54	17:00	Boat	A/V	No	400m		FR	7	0	7				F/V Shodan motors up and pulls anchor, then heads North away from island with no disturbance to walrus in BC or FR.
7/31/2011	16:54	17:00	Boat	A/V	No	400m		BC	69	0	69				F/V Shodan motors up and pulls anchor, then heads North away from island with no disturbance to walrus in BC or FR.
7/31/2011	17:35	17:37	Boat	V	No	400m		FR	7	0	7				Captain of the Dreamboat gets shuttled back to vessel via dingy.
7/31/2011	17:35	17:37	Boat	V	No	400m		BC	69	0	69				Captain of the Dreamboat gets shuttled back to vessel via dingy.
7/31/2011	17:41	17:49	Boat	A/V	No	400m		FR	7	0	7				Dreamboat powers up and pulls anchor before departing the island. One walrus slowly dispersed from BC.
7/31/2011	17:41	17:49	Boat	A/V	No	400m		BC	69	1	68			1	Dreamboat powers up and pulls anchor before departing the island. One walrus slowly dispersed from BC.
8/2/2011	10:46	10:48	Plane	A	No	high flying				unk					High flying jet over the island by EC.
8/7/2011			Raven	A/V	No	couple feet		FB		30		30			Disturbance on FB raven fledgling cawing on rock startled walrus causing ~30 individuals to head raise.
8/7/2011	17:08	17:11	Unk					MB	220	220			220	170	Natural disturbance on MB from unknown cause. Photo and video available.
8/8/2011	14:30	14:35	Unk					MB	422	89	131		7	82	Disturbance on MB from an unknown cause caused walrus to reorient and disperse from the beach.

APPENDIX A

Date	Start time	End time	Source	Dist. Type A/V	Viol of BMPs / Regs	Closest approach to walrus / island	Est. Alt (ft)	Beach ID	# Walrus on beach	Walrus Disturbed	ND	HR	RO	DS	Narrative / Comments
8/8/2011	15:57		Unk					FB		45					Unknown cause, ~45 walrus were seen in the water on approach and 5 of the 10 located on the E beach of FB were in the process of dispersing on approach.
8/9/2011	15:50	15:55	Unk					MB	740	150				150	Disturbance on MB, SKS was in the fog coming back from WM along the TT during the event but could hear walrus dispersing. SKS has a photo of the before and after event.
8/11/2011	16:45	16:48	Unk					BC	240	100				100	~100 walrus disperse from BC, staff heard boat approximately 10+mi away but audible from the TT; suspect it could have been an amplified sound in the cove, but cannot confirm as the cause.
8/14/2011	8:34	10:00	Boat	A/V	No	3/4mi		MB	120	0	120				F/V Donavan came to get SKS and HI off island at the end of the season, 2 skiff loads of gear were brought back to the boat. No apparent disturbance to walrus on MB.

APPENDIX B1

Appendix B1. 2011 Pacific walrus daily count summary, Round Island, Alaska

Date	East Side Total	West Side Total	Total # walrus
5/5	75	50	125
5/6	60	no count	60
5/7	43	no count	43
5/8	903	no count	903
5/9	750-850	no count	750-850
5/10	238	no count	238
5/11	109	no count	109
5/12	206	1	207
5/13	1269	no count	1269
5/14	131	no count	131
5/15	654	no count	684
5/16	118	no count	118
5/17	183	no count	183
5/18	1040	no count	1040
5/19	754	no count	754
5/20	215	no count	215
5/21	4	no count	4
5/22	4	no count	4
5/23	55	no count	55
5/24	65	no count	65
5/25	32	no count	32
5/26	16	246	262
5/27	183	920	1103
5/28	1437	728	2165
5/29	1250	379	1629
5/30	1073	307	1380
5/31	52	148	200
6/1	227	24	251
6/2	458	5	463
6/3	36	81	117
6/4	72	8	80
6/5	1053	0	1053
6/6	1700	542	2242
6/7	528	913	1441
6/8	1101	453	1554
6/9	1021	452	1473
6/10	111	275	386
6/11	24	243	267
6/12	446	501	947
6/13	941	433	1374
6/14	991	323	1314
6/15	1215	218	1433
6/16	720	658	1378
6/17	46	438	484
6/18	118	318	436
6/19	174	139	313
6/20	590	58	648
6/21	880	27	907
6/22	932	4	936
6/23	2082	6	2088
6/24	1669	227	1896
6/25	1646	353	1999
6/26	630	365	995

APPENDIX B1

Date	East Side Total	West Side Total	Total # walrus
6/27	78	83	161
6/28	157	0	157
6/29	154	0	154
6/30	222	0	222
7/1	399	0	399
7/2	676	5	681
7/3	1826	0	1826
7/4	2059	237	2296
7/5	2002	158	2160
7/6	487	12	499
7/7	140	0	140
7/8	271	4	275
7/9	86	3	89
7/10	490	4	494
7/11	996	0	996
7/12	1569	2	1571
7/13	3766	479	4245
7/14	2198	229	2427
7/15	1374	253	1627
7/16	746	127	873
7/17	547	65	612
7/18	599	6	605
7/19	695	0	695
7/20	1092	22	1114
7/21	1991	88	2079
7/22	2018	130	2148
7/23	1259	105	1364
7/24	405	1	406
7/25	450	0	450
7/26	594	0	594
7/27	343	no count	343
7/28	2609	43	2652
7/29	2527	147	2674
7/30	1782	155	1937
7/31	1851	117	1968
8/1	978	55	1033
8/2	793	34	827
8/3	373	0	373
8/4	242	0	242
8/5	208	0	208
8/6	70	0	70
8/7	468	0	468
8/8	843	0	843
8/9	1453	0	1453
8/10	2132	0	2132
8/11	3306	81	3387
8/12	1171	26	1197
8/13	552	0	552

APPENDIX B2

Appendix B2. Detailed Pacific walrus count data, 2011 Round Island, Alaska

Date	Sched 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
5/5		SKS/HI	SP			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	SB			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	FP			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	FB			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	CG			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	BC			O			C	0	0	0	0	0	0	E	Mortality in BC
5/5		SKS/HI	FR			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	NBC			O			C	0	0	0	0	0	0	E	
5/5		SKS/HI	MB			O			C	55	20					G	
5/5		SKS/HI	WM			O/H			C	~50							Estimate from helo on arrival to island
5/6		SKS/HI	SP			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	SB			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	FP			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	FB			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	CG			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	BC			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	FR			O			C	0	0	0	0	0	0	E	
5/6		SKS/HI	NBC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/6		SKS	MB	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	~60 seen on MB point from Cabin view point
5/6		SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/7	9:00	SKS	SP	9:30	9:31	S	4	3	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	SB	9:34	9:37	S	3	3	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	FP	9:39	9:40	S	3	2	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	FB	9:42	9:47	S	3	3	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	CG	9:55	9:58	S	4	3	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	BC	9:58	10:06	S	3	2	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	FR	10:06	10:07	S	3	3	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	NBC	10:14	10:15	S	3	3	C	0	0	0	0	0	0	E	
5/7	9:00	SKS	MB	10:18	10:26	S	3	2	C	34	9	35	7	33	9	G	
5/7	9:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/8	14:00	HI	SP	14:13	14:14	S	2	1	C	0	0	0	0	0	0	E	
5/8	14:00	HI	SB	14:17	14:24	S	2	1	C	27	0	27	0	27	0	E	
5/8	14:00	HI	FP	14:26	14:27	S	2	1	C	0	0	0	0	0	0	E	
5/8	14:00	HI	FB	14:28	14:32	S	2	1	C	0	1	0	1	0	1	E	
5/8	14:00	HI	CG	14:37	14:40	S	2	1	C	0	0	0	0	0	0	E	
5/8	14:00	HI	BC	14:41	14:48	S	2	1	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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
5/8	14:00	HI	FR	14:49	14:50	S	2	1	C	11	0	11	0	11	0	E	
5/8	14:00	HI	NBC	14:55	14:56	S	2	1	C	0	0	0	0	0	0	E	
5/8	14:00	HI	MB	14:58	15:21	S	2	1	C	840	24	760	19	670	32	G	
5/8	14:00	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/9	17:00	SKS	SP			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	SB			O	1	1	C	~50						E	estimate of walrus on beach on way to SSL count around noon
5/9	17:00	SKS	FP			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	FB			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	CG			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	BC			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	FR			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	NBC			O	1	1	C	0	0	0	0	0	0	E	
5/9	17:00	SKS	MB			O	1	1	C	~700-800						G	Count estimated due to poaching event on MB during scheduled ct time, documented disturbance
5/9	17:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/10	9:00	SKS/HI	SP	9:27	9:30	S	4	1	C	0	0	0	0	0	0	E	
5/10	9:00	SKS/HI	SB	9:33	9:36	S	4	2	C	0	5	0	5	0	5	E	
5/10	9:00	SKS/HI	FP	9:38	9:39	S	4	2	C	0	0	0	0	0	0	E	
5/10	9:00	SKS/HI	FB	9:42	9:47	S	4	2	C	1	0	1	0	1	0	E	
5/10	9:00	SKS/HI	CG	9:53	9:56	S	4	3	C	0	1	0	1	0	1	E	
5/10	9:00	SKS/HI	BC	9:56	10:07	S	4	2	C	0	2	0	2	0	2	E	
5/10	9:00	SKS/HI	FR	10:07	10:08	S	4	3	C	0	1	0	1	0	1	E	
5/10	9:00	SKS/HI	NBC	10:23	10:24	S	5	3	C	0	0	0	0	0	0	E	
5/10	9:00	HI	MB	10:26	10:40	S	5	3	C	220	8	230	11	200	5	G	
5/10	9:00	SKS	MB	10:26	10:40	V	5	3	C	155	5	145	7	135	5	G	var ct (MB) 5/10 10:26
5/10	9:00	HI	MB	10:38		P	5	3	C	218							
5/10	9:00	SKS	MB	10:38		P	5	3	C	218							
5/10	9:00	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NO COUNT DUE TO SNOW ON TRAVERSE TRAIL
5/11	14:00	SKS	SP	14:02	14:04	S	4	2	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	SB	14:07	14:10	S	4	2	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	FP	14:12	14:13	S	4	2	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	FB	14:15	14:19	S	4	2	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	CG	14:28	14:31	S	4	3	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	BC	14:31	14:39	S	4	3	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	FR	14:39	14:40	S	4	3	C	0	0	0	0	0	0	E	
5/11	14:00	SKS	NBC	14:46	14:47	S	4	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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
5/11	14:00	SKS	MB	14:50	15:00	S	4	3	C	106	3	106	3	116	3	G	
5/11	14:00	SKS	MB	14:55		P	4	3	C	114							
5/11	14:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/12	9:00	SKS/HI	SP	9:25	9:27	S	1	1	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	SB	9:30	9:34	S	1	2	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	FP	9:36	9:37	S	1	1	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	FB	9:40	9:45	S	1	1	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	CG	9:51	9:55	S	1	1	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	BC	9:56	10:03	S	1	1	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	FR	10:04	10:05	S	1	1	C	0	0	0	0	0	0	E	
5/12	9:00	SKS/HI	NBC	10:13	10:14	S	1	1	C	0	2	0	2	0	2	E	
5/12	9:00	SKS	MB	10:16	10:27	S	1	1	C	170	34	200	31	170	27	G	
5/12	9:00	HI	MB	10:16	10:27	V	1	1	C	210	38	220	37	200	39	G	var ct (MB) 5/12 10:16
5/12	9:00	SKS	MB	10:31		P	1	1	C	231							
5/12	9:00	HI	MB	10:31		P	1	1	C	245							
5/12	9:00	SKS	WM	16:39	16:40	O/H	1	1	C	1	0	1	0	1	0	E	SKS scanned the S. side of island from helo and there was one (possible mortality) on WM and no other beaches.
5/13	9:00	SKS/HI	SP	9:13	9:14	S	1	1	C	0	0	0	0	0	0	E	
5/13	9:00	SKS/HI	SB	9:17	9:21	S	1	1	C	0	0	0	0	0	0	E	
5/13	9:00	SKS/HI	FP	9:23	9:24	S	1	1	C	0	2	0	2	0	2	E	
5/13	9:00	SKS/HI	FB	9:26	9:35	S	1	1	C	0	5	0	5	0	5	E	
5/13	9:00	SKS/HI	CG	9:41	9:44	S	1	1	C	0	8	0	8	0	8	E	
5/13	9:00	SKS/HI	BC	9:44	9:51	S	1	1	C	0	2	0	2	0	2	E	
5/13	9:00	SKS/HI	FR	9:52	9:53	S	1	1	C	0	4	0	4	0	4	E	
5/13	9:00	SKS/HI	NBC	9:59	10:00	S	1	1	C	0	6	0	6	0	6	E	
5/13	9:00	SKS	MB	10:03	10:23	S	1	1	C	1090	152	1050	131	1090	146	G	
5/13	9:00	HI	MB	10:03	10:23	V	1	1	C	960	182	1060	188	930	202	G	var ct (MB) 5/13 10:03
5/13	9:00	SKS	MB	10:25		P	1	1	C	1167							
5/13	9:00	HI	MB	10:25		P	1	1	C	1113							
5/13	9:00	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	Hiked to first gully on TT, lots of deep snow still.
5/14	14:00	HI/SKS	SP	15:15	15:16	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	SB	15:06	15:11	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	FP	15:04	15:05	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	FB	14:56	15:01	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	CG	14:06	14:09	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	BC	14:09	14:17	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	FR	14:17	14:18	S	6	3	C	0	0	0	0	0	0	E	
5/14	14:00	HI/SKS	NBC	14:23	14:24	S	6	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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	14:00	SKS	MB	14:25	14:35	S	6	3	C	130	1	135	1	120	1	G	Big storm, gale winds, and 10ft seas, walrus tucked into nooks in cliffs.
5/14	14:00	HI/SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/15	17:00	SKS/HI	SP	16:36	16:37	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS/HI	SB	16:39	16:42	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS/HI	FP	16:44	16:45	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS/HI	FB	16:47	16:51	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS/HI	CG	16:59	17:01	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS/HI	BC	17:01	17:13	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS/HI	FR	17:13	17:14	S	5	3	C	1	1	1	1	1	1	E	
5/15	17:00	SKS/HI	NBC	17:19	17:20	S	5	3	C	0	0	0	0	0	0	E	
5/15	17:00	SKS	MB	17:27	17:39	S	5	3	C	650	2	680	2	730	2	G	
5/15	17:00	HI	MB	17:27	17:39	V	5	3	C	600	1	550	1	540	1	G	var ct (MB) 5/15 17:27
5/15	17:00	SKS	MB	17:56		P	5	3	C	540							
5/15	17:00	HI	MB	17:56		P	5	3	C	533							
5/15	17:00	SKS/HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/16	9:00	SKS	SP	9:19	9:20	S	3	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	SB	9:23	9:27	S	3	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	FP	9:28	9:29	S	3	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	FB	9:31	9:35	S	3	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	CG	9:40	9:42	S	4	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	BC	9:42	9:49	S	4	2	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	FR	9:49	9:53	S	4	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	NBC	10:02	10:03	S	4	3	C	0	0	0	0	0	0	E	
5/16	9:00	SKS	MB	10:05	10:12	S	4	3	C	117	1	117	1	117	1	G	
5/16	9:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/17	9:00	HI	SP	9:18	9:19	S	3	2	C	0	0	0	0	0	0	E	
5/17	9:00	HI	SB	9:23	9:26	S	3	3	C	2	0	2	0	2	0	E	
5/17	9:00	HI	FP	9:28	9:29	S	3	3	C	0	1	0	1	0	1	E	
5/17	9:00	HI	FB	9:33	9:37	S	3	2	C	0	0	0	0	0	0	E	
5/17	9:00	HI	CG	9:44	9:50	S	3	3	C	0	0	0	0	0	0	E	
5/17	9:00	HI	BC	9:50	9:59	S	3	2	C	0	0	0	0	0	0	E	
5/17	9:00	HI	FR	10:00	10:01	S	3	2	C	0	0	0	0	0	0	E	
5/17	9:00	HI	NBC	10:07	10:08	S	3	2	C	0	0	0	0	0	0	E	
5/17	9:00	HI	MB	10:12	10:20	S	3	1	C	180	0	180	0	200	0	G	
5/17	9:00	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/18	17:00	SKS	SP	18:04	18:05	S	3	2	C	0	0	0	0	0	0	E	
5/18	17:00	SKS	SB	17:57	18:00	S	3	2	C	0	0	0	0	0	0	E	
5/18	17:00	SKS	FP	17:55	17:56	S	3	2	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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	17:00	SKS	FB	17:47	17:51	S	3	2	C	10	0	10	0	10	0	E	
5/18	17:00	SKS	CG	17:40	17:42	S	2	2	C	0	0	0	0	0	0	E	
5/18	17:00	SKS	BC	17:33	17:40	S	2	2	C	1	0	1	0	1	0	E	
5/18	17:00	SKS	FR	17:24	17:25	S	2	2	C	3	0	3	0	3	0	E	
5/18	17:00	SKS	NBC	17:14	17:15	S	2	2	C	0	0	0	0	0	0	E	
5/18	17:00	SKS	MB	16:54	17:10	S	2	1	C	1015	11	1060	11	1070	11	G	
5/18	17:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/19	17:00	HI	SP	17:03	17:04	S	2	1	C	0	0	0	0	0	0	E	
5/19	17:00	HI	SB	17:08	17:10	S	2	1	C	0	0	0	0	0	0	E	
5/19	17:00	HI	FP	17:12	17:13	S	2	2	C	0	0	0	0	0	0	E	
5/19	17:00	HI	FB	17:15	17:24	S	2	2	C	28	0	28	0	28	0	E	
5/19	17:00	HI	CG	17:29	17:32	S	2	1	C	0	0	0	0	0	0	E	
5/19	17:00	HI	BC	17:32	17:40	S	2	1	C	0	0	0	0	0	0	E	
5/19	17:00	HI	FR	17:40	17:41	S	2	2	C	0	0	0	0	0	0	E	
5/19	17:00	HI	NBC	17:47	17:48	S	2	1	C	0	0	0	0	0	0	E	
5/19	17:00	HI	MB	17:50	18:11	S	2	1	C	720	6	650	4	730	5	G	
5/19	17:00	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/20	14:00	SKS	SP	14:08	14:09	S	5	3	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	SB	14:11	14:14	S	5	3	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	FP	14:15	14:16	S	5	3	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	FB	14:18	14:22	S	5	3	C	1	0	1	0	1	0	E	
5/20	14:00	SKS	CG	14:28	14:31	S	5	2	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	BC	14:31	14:38	S	5	2	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	FR	14:38	14:39	S	5	3	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	NBC	14:51	14:52	S	5	2	C	0	0	0	0	0	0	E	
5/20	14:00	SKS	MB	14:55	15:04	S	5	3	C	210	4	220	4	180	4	G	
5/20	14:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/21	9:00	HI	SP	9:17	9:19	S	3	2	C	0	0	0	0	0	0	E	
5/21	9:00	HI	SB	9:22	9:26	S	3	2	C	0	0	0	0	0	0	E	
5/21	9:00	HI	FP	9:28	9:29	S	3	2	C	0	0	0	0	0	0	E	
5/21	9:00	HI	FB	9:30	9:34	S	3	2	C	0	0	0	0	0	0	E	
5/21	9:00	HI	CG	9:40	9:43	S	3	2-3	C	0	0	0	0	0	0	E	
5/21	9:00	HI	BC	9:43	9:53	S	3	2	C	0	0	0	0	0	0	E	
5/21	9:00	HI	FR	9:53	9:54	S	3	2	C	0	0	0	0	0	0	E	
5/21	9:00	HI	NBC	9:59	10:00	S	3	2	C	0	3	0	3	0	3	E	
5/21	9:00	HI	MB	10:02	10:05	S	3	1-2	C	0	1	0	1	0	1	E	
5/21	9:00	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/22	9:00	SKS	SP	9:18	9:20	S	4	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	SB	9:22	9:26	S	4	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	FP	9:27	9:28	S	4	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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	9:00	SKS	FB	9:30	9:35	S	4	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	CG	9:42	9:44	S	4	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	BC	9:44	9:53	S	4	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	FR	9:53	9:54	S	3	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	NBC	10:00	10:01	S	3	3	C	0	0	0	0	0	0	E	
5/22	9:00	SKS	MB	10:03	10:09	S	3	3	C	2	2	2	2	2	2	E	
5/22	9:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/23	17:00	HI	SP	17:11	17:13	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	SB	17:15	17:17	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	FP	17:19	17:20	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	FB	17:21	17:25	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	CG	17:32	17:34	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	BC	17:34	17:42	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	FR	17:42	17:43	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	NBC	17:49	17:50	S	FOG	2	C	0	0	0	0	0	0	E	
5/23	17:00	HI	MB	17:54	18:00	S	FOG	1	P	55	0	65	0	50	0	F	fog on MB
5/23	17:00	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/24	14:00	SKS	SP	14:06	14:07	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	SB	14:09	14:13	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	FP	14:15	14:16	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	FB	14:17	14:28	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	CG	14:33	14:35	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	BC	14:35	14:41	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	FR	14:41	14:42	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	NBC	14:47	14:48	S	5-6	3	C	0	0	0	0	0	0	E	
5/24	14:00	SKS	MB	14:49	14:55	S	5-6	3	C	62	3	62	3	62	3	G	
5/24	14:00	SKS	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/25	9:00	HI	SP	9:18	9:20	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	SB	9:26	9:29	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	FP	9:31	9:32	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	FB	9:34	9:39	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	CG	9:44	9:47	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	BC	9:47	9:59	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	FR	9:59	10:00	S	6	3	C	0	1	0	1	0	1	E	
5/25	9:00	HI	NBC	10:04	10:05	S	6	3	C	0	0	0	0	0	0	E	
5/25	9:00	HI	MB	10:07	10:12	S	6	3	C	31	0	30	0	28	0	F	Bino shake, tide was high and big waves, relatively little beach space
5/25	9:00	HI	WM	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	NC	
5/26	9:00	SKS	SP	9:24	9:25	S	3	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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	9:00	SKS	SB	9:30	9:33	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	FP	9:35	9:36	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	FB	9:37	9:40	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	CG	9:47	9:51	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	BC	9:51	9:57	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	FR	9:57	9:58	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	NBC	10:02	10:03	S	3	3	C	0	0	0	0	0	0	E	
5/26	9:00	SKS	MB	10:04	10:08	S	3	3	C	16	0	15	0	14	0	G	
5/26	9:00	SKS	WM	11:01	11:10	S	2	2	C	240	6	241	6	235	6	G	
5/27	9:00	SKS	SP	9:33	9:35	S	2	1	C	1	0	1	0	1	0	E	
5/27	9:00	SKS	SB	9:23	9:26	S	2	1	C	0	0	0	0	0	0	E	
5/27	9:00	SKS	FP	9:20	9:21	S	2	2	C	0	0	0	0	0	0	E	
5/27	9:00	SKS	FB	9:15	9:18	S	2	2	C	0	0	0	0	0	0	E	
5/27	9:00	HI	CG	9:05	9:09	S	2	1	C	0	0	0	0	0	0	E	
5/27	9:00	HI	BC	9:09	9:19	S	2	1	C	0	0	0	0	0	0	E	
5/27	9:00	HI	FR	9:19	9:20	S	2	1	C	1	1	1	1	1	1	E	
5/27	9:00	HI	NBC	9:31	9:32	S	2	1	C	0	0	0	0	0	0	E	
5/27	9:00	HI	MB	9:37	9:46	S	2	1	C	140	40	140	39	130	38	G	
5/27	9:00	HI	WM	10:38	11:07	S	2	1	C	870	50	790	50	840	52	G	
5/27	9:00	HI	WM			P	2	1	C	823							photo ct (HI)= 823 w/o water, photo not on file
5/28	14:00	HI	SP	14:30	14:31	S	2	1	C	0	0	0	0	0	0	E	
5/28	14:00	HI	SB	14:23	14:27	S	2	1	C	1	0	1	0	1	0	E	
5/28	14:00	HI	FP	14:21	14:22	S	2	1	C	0	0	0	0	0	0	E	
5/28	14:00	HI	FB	14:14	14:19	S	2	1	C	6	0	6	0	6	0	E	
5/28	14:00	SKS	CG	15:21	15:25	S	2	1	C	0	1	0	1	0	1	E	
5/28	14:00	SKS	BC	15:15	15:21	S	2	1	C	0	0	0	0	0	0	E	
5/28	14:00	SKS	FR	15:13	15:14	S	2	1	C	26	2	26	2	26	2	E	
5/28	14:00	SKS	NBC	15:09	15:10	S	2	1	C	0	0	0	0	0	0	E	
5/28	14:00	SKS	MB	14:48	15:03	S	2	1	C	1312	89	1292	85	1352	77	G	
5/28	14:00	SKS	WM	13:44	14:09	S	2	1	C	640	88	580	85	640	75	G	
5/29	14:00	SKS	SP	14:00	14:01	S	3	1	C	0	2	0	2	0	2	E	
5/29	14:00	SKS	SB	14:04	14:08	S	3	1	C	2	0	2	0	2	0	E	
5/29	14:00	SKS	FP	14:11	14:12	S	3	1	C	0	3	0	3	0	3	E	
5/29	14:00	SKS	FB	14:13	14:25	S	3	0	C	73	7	75	7	73	7	E	
5/29	14:00	HI	CG	14:08	14:12	S	3	1	C	0	2	0	2	0	2	E	
5/29	14:00	HI	BC	14:12	14:19	S	3	1	C	0	0	0	0	0	0	E	
5/29	14:00	HI	FR	14:19	14:20	S	3	1	C	14	1	14	1	14	1	E	
5/29	14:00	HI	NBC	14:32	14:33	S	3	1	C	0	0	0	0	0	0	E	
5/29	14:00	HI	MB	14:35	15:12	S	3	1	C	1090	56	970	56	950	63	G	

APPENDIX B2

Date	Sched 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
5/29	14:00	SKS	MB	14:35	15:12	V	3	1	C	1170	63	1180	68	1120	61	G	var ct (MB) 5/29 14:35 bino shake
5/29	14:00	HI	MB	15:04		P	3	1	C	1205							
5/29	14:00	SKS	MB	15:04		P	3	1	C	1281							
5/29	14:00	HI	WM	16:05	16:27	S	3	2	C	375	4	371	4	395	4	G	
5/30	9:00	HI	SP	9:31	9:32	S	1	0	C	0	0	0	0	0	0	E	
5/30	9:00	HI	SB	9:23	9:25	S	2	0	C	2	0	2	0	2	0	E	
5/30	9:00	HI	FP	9:19	9:20	S	2	0	C	0	0	0	0	0	0	E	
5/30	9:00	HI	FB	9:05	9:13	S	2	1	C	51	2	51	2	51	2	E	
5/30	9:00	SKS	CG	9:07	9:10	S	2	1	C	0	0	0	0	0	0	E	
5/30	9:00	SKS	BC	9:10	9:18	S	2	1	C	0	0	0	0	0	0	E	
5/30	9:00	SKS	FR	9:18	9:19	S	2	1	C	8	0	8	0	8	0	E	
5/30	9:00	SKS	NBC	9:26	9:27	S	2	1	C	0	0	0	0	0	0	E	
5/30	9:00	SKS	MB	9:29	9:46	S	2	1	C	981	29	951	30	961	28	G	
5/30	9:00	SKS	WM	10:39	10:48	S	2	2	C	300	7	285	7	315	7	G	
5/31	14:00	HI	SP	14:10	14:13	S	5/fog	3	C	0	0	0	0	0	0	E	
5/31	14:00	HI	SB	14:16	14:20	S	6/fog	3	C	0	0	0	0	0	0	E	
5/31	14:00	HI	FP	14:22	14:23	S	6/fog	3	C	0	0	0	0	0	0	E	
5/31	14:00	HI	FB	14:25	14:27	S	6/fog	3	C	0	0	0	0	0	0	E	
5/31	14:00	HI	CG	14:36	14:38	S	6/fog	3	C	0	0	0	0	0	0	E	
5/31	14:00	HI	BC	14:38	14:46	S	6/fog	2	C	0	0	0	0	0	0	E	
5/31	14:00	HI	FR	14:46	14:47	S	6/fog	2	C	0	0	0	0	0	0	E	
5/31	14:00	HI	NBC	14:51	14:52	S	6/fog	2	C	0	0	0	0	0	0	E	
5/31	14:00	HI	MB	14:53	14:56	S	fog	1	C	52	0	47	0	51	0	G	
5/31	14:00	HI	WM	15:40	15:47	S	3	1	C	147	1	146	1	149	1	G	
6/1	9:00	HI	SP	9:19	9:20	S	2	2	C	0	0	0	0	0	0	E	
6/1	9:00	HI	SB	9:11	9:14	S	2	1	C	0	0	0	0	0	0	E	
6/1	9:00	HI	FP	9:09	9:10	S	2	1	C	0	0	0	0	0	0	E	
6/1	9:00	HI	FB	9:02	9:06	S	2	1	C	0	0	0	0	0	0	E	
6/1	9:00	SKS	CG	9:04	9:08	S	2	1	C	0	1	0	1	0	1	E	
6/1	9:00	SKS	BC	9:08	9:16	S	2	1	C	0	0	0	0	0	0	E	
6/1	9:00	SKS	FR	9:16	9:17	S	2	1	C	0	0	0	0	0	0	E	
6/1	9:00	SKS	NBC	9:21	9:22	S	2	1	C	0	0	0	0	0	0	E	
6/1	9:00	SKS	MB	9:24	9:33	S	2	1	C	215	11	215	10	255	11	G	
6/1	9:00	SKS	WM	10:16	10:20	S	2	3	C	24	0	24	0	24	0	G	
6/2	14:00	SKS	SP	14:25	14:26	S	4	3	C	0	0	0	0	0	0	E	
6/2	14:00	SKS	SB	14:16	14:18	S	4	3	C	0	0	0	0	0	0	E	
6/2	14:00	SKS	FP	14:13	14:14	S	4	3	C	0	0	0	0	0	0	E	
6/2	14:00	SKS	FB	14:07	14:11	S	4	3	C	0	0	0	0	0	0	E	
6/2	14:00	HI	CG	14:58	15:01	S	4	2	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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
6/2	14:00	HI	BC	14:51	14:58	S	4	1	C	0	0	0	0	0	0	E	
6/2	14:00	HI	FR	14:50	14:51	S	4	2	C	0	0	0	0	0	0	E	
6/2	14:00	HI	NBC	14:46	14:47	S	4	1	C	0	0	0	0	0	0	E	
6/2	14:00	HI	MB	14:27	14:39	S	3	1	C	445	13	486	12	394	14	G	
6/2	14:00	HI	WM	13:44	13:46	S	3	2	C	0	5	0	5	0	5	G	
6/3	17:00	HI	SP	17:00	17:01	S	5	3	C	0	0	0	0	0	0	E	
6/3	17:00	HI	SB	17:03	17:06	S	5	2	C	0	0	0	0	0	0	E	
6/3	17:00	HI	FP	17:08	17:09	S	5	2	C	0	0	0	0	0	0	E	
6/3	17:00	HI	FB	17:10	17:14	S	5	2	C	0	0	0	0	0	0	E	
6/3	17:00	SKS	CG	18:09	18:11	S	5	3	C	0	0	0	0	0	0	E	
6/3	17:00	SKS	BC	18:03	18:09	S	5	2	C	0	0	0	0	0	0	E	
6/3	17:00	SKS	FR	18:02	18:03	S	5	2	C	0	0	0	0	0	0	E	
6/3	17:00	SKS	NBC	17:59	18:00	S	5	2	C	0	0	0	0	0	0	E	
6/3	17:00	SKS	MB	17:49	17:54	S	5	3	C	34	2	34	2	34	2	G	
6/3	17:00	SKS	WM	17:03	17:11	S	5	3	C	75	6	75	6	75	6	G	
6/4	9:00	SKS	SP	9:27	9:28	S	3	2	C	0	0	0	0	0	0	E	
6/4	9:00	SKS	SB	9:21	9:25	S	3	2	C	0	0	0	0	0	0	E	
6/4	9:00	SKS	FP	9:18	9:19	S	3	3	C	0	0	0	0	0	0	E	
6/4	9:00	SKS	FB	9:12	9:17	S	2	3	C	0	0	0	0	0	0	E	
6/4	9:00	HI	CG	9:08	9:12	S	3	1	C	0	0	0	0	0	0	E	
6/4	9:00	HI	BC	9:12	9:22	S	2	1	C	0	0	0	0	0	0	E	
6/4	9:00	HI	FR	9:22	9:24	S	2	1	C	0	2	0	2	0	2	E	
6/4	9:00	HI	NBC	9:32	9:33	S	2	1	C	0	0	0	0	0	0	E	
6/4	9:00	HI	MB	9:35	9:42	S	FOG	1	C	64	6	76	6	64	5	G	
6/4	9:00	HI	WM	10:34	10:36	S	FOG	2	C	8	0	8	0	8	0	E	
6/5	14:00	HI	SP	14:22	14:23	S	2	1	C	0	0	0	0	0	0	E	
6/5	14:00	HI	SB	14:14	14:18	S	2	1	C	0	0	0	0	0	0	E	
6/5	14:00	HI	FP	14:12	14:13	S	2	1	C	0	0	0	0	0	0	E	
6/5	14:00	HI	FB	14:03	14:08	S	fog	1	C	11	1	11	1	11	1	E	
6/5	14:00	SKS	CG	15:41	15:43	S	2	1	C	0	0	0	0	0	0	E	
6/5	14:00	SKS	BC	15:34	15:41	S	2	1	C	0	0	0	0	0	0	E	
6/5	14:00	SKS	FR	15:33	15:34	S	2	1	C	14	1	14	1	14	1	E	
6/5	14:00	SKS	NBC	15:30	15:31	S	2	1	C	0	0	0	0	0	0	E	
6/5	14:00	SKS	MB	15:11	15:28	S	2	1	C	990	36	970	36	1000	39	G	
6/5	14:00	SKS	WM	14:29	14:30	S	2	3	C	0	0	0	0	0	0	E	
6/6	14:00	SKS	SP	14:31	14:33	S	5	3	C	0	0	0	0	0	0	E	
6/6	14:00	SKS	SB	14:22	14:29	S	5	3	C	32	0	32	0	32	0	E	
6/6	14:00	SKS	FP	14:19	14:20	S	5	3	C	0	0	0	0	0	0	E	
6/6	14:00	SKS	FB	14:05	14:15	S	5	3	C	98	0	94	0	100	0	E	
6/6	14:00	HI	CG	14:05	14:08	S	5	3	C	0	2	0	2	0	2	E	

APPENDIX B2

Date	Sched 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
6/6	14:00	HI	BC	14:09	14:25	S	5	2	C	113	1	113	1	111	1	E	
6/6	14:00	HI	FR	14:25	14:26	S	5	2	C	9	1	9	1	9	1	E	
6/6	14:00	HI	NBC	14:31	14:32	S	FOG	2	C	0	1	0	1	0	1	E	
6/6	14:00	HI	MB	14:34	14:50	S	FOG	1	C	1439	4	1261	4	1359	4	G	
6/6	14:00	HI	WM	15:52	16:01	S	FOG	2	C	534	8	537	8	562	8	G	
6/7	14:00	HI	SP	14:28	14:29	S	3	3	C	0	0	0	0	0	0	E	
6/7	14:00	HI	SB	14:20	14:24	S	3	2	C	2	0	2	0	2	0	E	
6/7	14:00	HI	FP	14:16	14:17	S	3	3	C	0	0	0	0	0	0	E	
6/7	14:00	HI	FB	14:10	14:14	S	FOG	3	C	0	2	0	2	0	2	E	
6/7	14:00	SKS	CG	14:12	14:15	S	FOG	3	C	0	0	0	0	0	0	E	
6/7	14:00	SKS	BC	14:15	14:27	S	FOG	2	C	8	0	8	0	8	0	E	
6/7	14:00	SKS	FR	14:27	14:31	S	FOG	3	C	0	0	0	0	0	0	E	
6/7	14:00	SKS	NBC	14:37	14:38	S	FOG	3	C	0	2	0	2	0	2	E	
6/7	14:00	SKS	MB	14:44	15:06	S	FOG	2	C	514	0	474	0	524	0	G	
6/7	14:00	SKS	WM	16:21	16:56	S	2	1	C	897	16	920	14	836	14	G	
6/8	17:00	SKS	SP	18:42	18:43	S	3	1	C	0	0	0	0	0	0	E	
6/8	17:00	SKS	SB	18:36	18:38	S	3	1	C	9	0	9	0	9	0	E	
6/8	17:00	SKS	FP	18:34	18:35	S	3	0	C	0	0	0	0	0	0	E	
6/8	17:00	SKS	FB	18:29	18:32	S	3	1	C	0	0	0	0	0	0	E	
6/8	17:00	SKS	CG	18:19	18:22	S	3	1	C	0	0	0	0	0	0	E	
6/8	17:00	SKS	BC	18:11	18:18	S	3	0	C	0	0	0	0	0	0	E	
6/8	17:00	SKS	FR	18:09	18:10	S	3	1	C	10	1	10	1	10	1	E	
6/8	17:00	SKS	NBC	18:01	18:02	S	3	0	C	0	0	0	0	0	0	E	
6/8	17:00	SKS	MB	17:25	17:45	S	3	1	C	1050	31	926	28	996	26	G	
6/8	17:00	HI	MB	17:25	17:45	V	3	1	C	1013	47	909	39	1012	45	G	var ct (MB) 6/8 17:25
6/8	17:00	SKS	MB	17:47		P	3	1	C	1092							
6/8	17:00	HI	MB	17:47		P	3	1	C	1051							
6/8	17:00	HI	WM	17:00	17:16	S	2	2	C	433	20	414	14	442	17	G	
6/9	17:00	HI	SP	17:21	17:22	S	2	1	C	2	1	2	1	2	1	E	
6/9	17:00	HI	SB	17:10	17:14	S	2	1	C	24	0	24	0	24	0	E	
6/9	17:00	HI	FP	17:07	17:08	S	2	1	C	0	0	0	0	0	0	E	
6/9	17:00	HI	FB	16:56	17:03	S	2	1	C	23	0	23	0	23	0	E	
6/9	17:00	SKS	CG	18:11	18:14	S	2	1	C	0	0	0	0	0	0	E	
6/9	17:00	SKS	BC	18:04	18:11	S	2	1	C	1	0	1	0	1	0	E	
6/9	17:00	SKS	FR	18:02	18:04	S	2	1	C	11	0	11	0	11	0	E	
6/9	17:00	SKS	NBC	17:58	17:59	S	2	0	C	0	0	0	0	0	0	E	
6/9	17:00	SKS	MB	17:43	17:55	S	2	0	C	950	9	920	9	990	9	G	
6/9	17:00	SKS	WM	16:44	17:02	S	1	1	C	439	13	419	10	445	11	G	
6/10	14:00	SKS	SP	14:26	14:27	S	6	3	C	0	0	0	0	0	0	E	
6/10	14:00	SKS	SB	14:17	14:20	S	6	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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
6/10	14:00	SKS	FP	14:14	14:15	S	6	3	C	0	0	0	0	0	0	E	
6/10	14:00	SKS	FB	14:06	14:10	S	6	3	C	0	0	0	0	0	0	E	
6/10	14:00	HI	CG	14:05	14:08	S	5	3	C	0	0	0	0	0	0	E	
6/10	14:00	HI	BC	14:08	14:15	S	5	2	C	0	0	0	0	0	0	E	
6/10	14:00	HI	FR	14:15	14:16	S	5	2	C	0	1	0	1	0	1	E	
6/10	14:00	HI	NBC	14:21	14:22	S	5	2	C	0	0	0	0	0	0	E	
6/10	14:00	HI	MB	14:24	14:32	S	5	2	C	110	0	126	0	108	0	G	
6/10	14:00	HI	WM	15:21	15:34	S	FOG	1	C	266	9	249	7	277	9	G	
6/11	14:00	HI	SP	14:25	14:26	S	3	3	C	0	0	0	0	0	0	E	
6/11	14:00	HI	SB	14:15	14:21	S	4	3	C	0	0	0	0	0	0	E	
6/11	14:00	HI	FP	14:13	14:14	S	5	3	C	0	0	0	0	0	0	E	
6/11	14:00	HI	FB	14:06	14:11	S	5	3	C	0	0	0	0	0	0	E	
6/11	14:00	SKS	CG	14:08	14:10	S	5	3	C	0	0	0	0	0	0	E	
6/11	14:00	SKS	BC	14:10	14:17	S	5	3	C	0	0	0	0	0	0	E	
6/11	14:00	SKS	FR	14:17	14:18	S	5	3	C	2	0	2	0	2	0	E	
6/11	14:00	SKS	NBC	14:23	14:24	S	5	3	C	0	0	0	0	0	0	E	
6/11	14:00	SKS	MB	14:26	14:29	S	4	3	C	22	0	22	0	22	0	G	
6/11	14:00	SKS	WM	15:21	15:37	S	2	1	C	226	17	225	15	208	14	G	
6/12	17:00	HI	SP	18:52	18:53	S	1	1	C	0	0	0	0	0	0	E	
6/12	17:00	HI	SB	18:45	18:50	S	1	1	C	0	0	0	0	0	0	E	
6/12	17:00	HI	FP	18:43	18:44	S	1	1	C	0	0	0	0	0	0	E	
6/12	17:00	HI	FB	18:37	18:40	S	1	0	C	0	0	0	0	0	0	E	
6/12	17:00	HI	CG	18:20	18:22	S	1	0	C	0	1	0	1	0	1	E	
6/12	17:00	HI	BC	18:13	18:20	S	1	0	C	0	0	0	0	0	0	E	
6/12	17:00	HI	FR	18:12	18:13	S	1	0	C	3	0	3	0	3	0	E	
6/12	17:00	HI	NBC	18:08	18:09	S	1	0	C	0	0	0	0	0	0	E	
6/12	17:00	HI	MB	17:57	18:05	S	1	0	C	436	6	447	5	400	7	G	
6/12	17:00	HI	WM	16:57	17:17	S	2	0	C	441	60	430	102	437	59	G	Unk walrus disturbance right before count 60+ DS to H20; Staff set up remote camera for ASLC
6/13	9:00	HI	SP	9:31	9:32	S	2	0	C	0	0	0	0	0	0	E	
6/13	9:00	HI	SB	9:24	9:28	S	2	0	C	1	0	1	0	1	0	E	
6/13	9:00	HI	FP	9:22	9:23	S	2	0	C	0	0	0	0	0	0	E	
6/13	9:00	HI	FB	9:12	9:19	S	FOG	0	C	52	1	51	1	52	1	E	
6/13	9:00	SKS	CG	9:18	9:21	S	3	1	C	0	0	0	0	0	0	E	
6/13	9:00	SKS	BC	9:21	9:28	S	3	2	C	1	0	1	0	1	0	E	
6/13	9:00	SKS	FR	9:28	9:30	S	3	2	C	12	7	12	7	12	6	E	
6/13	9:00	SKS	NBC	9:36	9:37	S	FOG	1	C	0	0	0	0	0	0	E	
6/13	9:00	SKS	MB	9:38	9:53	S	FOG	1	P/C	840	27	840	27	790	25	G	

APPENDIX B2

Date	Sched 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
6/13	9:00	SKS	WM	10:36	10:48	S	3	3	C	422	11	408	11	489	11	G	ASLC seem to be working correctly
6/14	9:00	SKS	SP	10:22	10:23	S	2	1	C	0	0	0	0	0	0	E	
6/14	9:00	SKS	SB	10:15	10:20	S	2	1	C	15	1	15	1	15	1	E	
6/14	9:00	SKS	FP	10:13	10:14	S	2	1	C	0	0	0	0	0	0	E	
6/14	9:00	SKS	FB	9:57	10:11	S	2	1	C	96	1	96	1	96	1	E	
6/14	9:00	HI	CG	9:27	9:32	S	1	0	C	0	1	0	1	0	1	E	
6/14	9:00	HI	BC	9:32	9:40	S	1	1	C	0	0	0	0	0	0	E	
6/14	9:00	HI	FR	9:40	9:41	S	1	0	C	6	0	6	0	6	0	E	
6/14	9:00	HI	NBC	9:47	9:48	S	1	0	C	0	1	0	1	0	1	E	
6/14	9:00	HI	MB	9:50	10:07	S	1	0	C	844	26	731	21	753	31	G	
6/14	9:00	HI	WM	10:57	11:13	S	1	1	C	313	10	318	10	288	10	G	ASLC camera not taking minute photos
6/15	17:00	HI	SP	17:01	17:02	S	2	1	C	0	0	0	0	0	0	E	
6/15	17:00	HI	SB	17:04	17:08	S	1	0	C	27	0	27	0	27	0	E	
6/15	17:00	HI	FP	17:11	17:12	S	1	1	C	0	0	0	0	0	0	E	
6/15	17:00	HI	FB	17:13	17:27	S	1	0	C	98	3	99	3	94	3	E	
6/15	17:00	HI	CG	17:35	17:39	S	2	1	C	0	0	0	0	0	0	E	
6/15	17:00	HI	BC	17:39	17:46	S	2	0	C	1	1	1	1	1	1	E	
6/15	17:00	HI	FR	17:46	17:47	S	2	0	C	10	0	10	0	10	0	E	
6/15	17:00	HI	NBC	17:54	17:55	S	2	0	C	0	0	0	0	0	0	E	
6/15	17:00	HI	MB	17:57	18:19	S	2	0	C	1067	8	1004	9	1036	7	G	
6/15	17:00	SKS	WM	17:49	17:58	S	2	1	C	215	3	216	3	212	3	G	SKS troubleshooting ASLC remote camera
6/16	9:00	SKS	SP	9:50	9:51	S	5	3	C	0	2	0	2	0	2	E	
6/16	9:00	SKS	SB	9:34	9:38	S	5	3	C	30	3	30	3	30	3	E	
6/16	9:00	SKS	FP	9:27	9:28	S	5	3	C	5	0	5	0	5	0	E	
6/16	9:00	SKS	FB	9:10	9:19	S	4	3	C	55	0	53	0	55	0	E	
6/16	9:00	HI	CG	9:08	9:11	S	5	3	C	0	3	0	3	0	3	E	
6/16	9:00	HI	BC	9:11	9:18	S	5	2	C	1	0	1	0	1	0	E	
6/16	9:00	HI	FR	9:18	9:19	S	5	2	C	12	4	11	3	11	4	E	
6/16	9:00	HI	NBC	9:31	9:32	S	5	3	C	0	0	0	0	0	0	E	
6/16	9:00	HI	MB	9:36	9:48	S	5	2	C	597	8	596	9	544	7	G	
6/16	9:00	HI	WM	10:32	10:55	S	4	1	C	616	42	649	41	587	37	G	
6/17	9:00	HI	SP	9:27	9:28	S	3	3	C	0	0	0	0	0	0	E	
6/17	9:00	HI	SB	9:21	9:25	S	3	3	C	0	0	0	0	0	0	E	
6/17	9:00	HI	FP	9:18	9:19	S	4	3	C	0	0	0	0	0	0	E	
6/17	9:00	HI	FB	9:09	9:15	S	4	3	C	0	0	0	0	0	0	E	
6/17	9:00	SKS	CG	9:17	9:20	S	5	3	C	0	0	0	0	0	0	E	
6/17	9:00	SKS	BC	9:20	9:26	S	5	3	C	0	0	0	0	0	0	E	
6/17	9:00	SKS	FR	9:26	9:27	S	5	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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
6/17	9:00	SKS	NBC	9:31	9:32	S	5	3	C	0	0	0	0	0	0	E	
6/17	9:00	SKS	MB	9:33	9:38	S	5	3	C	45	1	48	1	43	1	G	
6/17	9:00	SKS	WM	10:16	10:30	S	4	1	C	398	40	398	35	391	36	G	
6/18	9:00	SKS	SP	9:38	9:40	S	2	2	C	0	0	0	0	0	0	E	
6/18	9:00	SKS	SB	9:25	9:28	S	2	2	C	0	0	0	0	0	0	E	
6/18	9:00	SKS	FP	9:21	9:22	S	2	2	C	0	0	0	0	0	0	E	
6/18	9:00	SKS	FB	9:12	9:18	S	2	2	C	0	0	0	0	0	0	E	
6/18	9:00	HI	CG	9:14	9:17	S	2	2	C	0	0	0	0	0	0	E	
6/18	9:00	HI	BC	9:17	9:24	S	2	1	C	0	0	0	0	0	0	E	
6/18	9:00	HI	FR	9:24	9:27	S	2	1	C	7	1	7	1	7	1	E	
6/18	9:00	HI	NBC	9:32	9:33	S	2	1	C	0	0	0	0	0	0	E	
6/18	9:00	HI	MB	9:35	9:41	S	2	1	C	95	15	101	9	93	11	G	
6/18	9:00	HI	WM	10:27	10:39	S	1	1	C	289	29	297	29	285	27	G	
6/19	9:00	HI	SP	9:26	9:27	S	1	0	C	0	0	0	0	0	0	E	
6/19	9:00	HI	SB	9:16	9:20	S	1	0	C	0	1	0	1	0	1	E	
6/19	9:00	HI	FP	9:12	9:13	S	1	0	C	0	1	0	1	0	1	E	
6/19	9:00	HI	FB	9:05	9:10	S	1	0	C	0	5	0	5	0	5	E	
6/19	9:00	SKS	CG	8:53	8:55	S	1	1	C	0	4	0	4	0	4	E	
6/19	9:00	SKS	BC	8:55	9:00	S	1	1	C	0	0	0	0	0	0	E	
6/19	9:00	SKS	FR	9:00	9:02	S	1	1	C	8	6	8	6	8	6	E	
6/19	9:00	SKS	NBC	9:05	9:06	S	1	1	C	0	0	0	0	0	0	E	
6/19	9:00	SKS	MB	9:07	9:12	S	1	1	C	126	23	136	17	126	22	G	
6/19	9:00	SKS	WM	9:52	9:59	S	fog	1	C	123	16	122	14	133	16	G	
6/20	17:00	SKS	SP	17:06	17:07	S	3	1	C	0	0	0	0	0	0	E	
6/20	17:00	SKS	SB	17:10	17:16	S	3	1	C	47	5	46	5	47	5	E	
6/20	17:00	SKS	FP	17:18	17:19	S	3	0	C	1	0	1	0	1	0	E	
6/20	17:00	SKS	FB	17:21	17:36	S	3	1	C	86	3	83	3	86	3	E	
6/20	17:00	HI	CG	17:40	17:42	S	3	1	C	0	0	0	0	0	0	E	
6/20	17:00	HI	BC	17:28	17:40	S	3	1	C	0	1	0	1	0	1	E	
6/20	17:00	HI	FR	17:27	17:28	S	3	1	C	6	1	6	1	6	1	E	
6/20	17:00	HI	NBC	17:22	17:23	S	3	1	C	0	0	0	0	0	0	E	
6/20	17:00	HI	MB	17:03	17:19	S	3	1	C	424	16	452	16	415	13	G	
6/20	17:00	HI	WM	16:10	16:13	S	3	2	C	55	3	54	3	55	3	G	
6/21	14:00	HI	SP	14:37	14:38	S	3	0	C	0	1	0	1	0	1	E	
6/21	14:00	HI	SB	14:24	14:34	S	3	0	C	83	2	82	2	85	2	E	
6/21	14:00	HI	FP	14:21	14:22	S	3	0	C	1	1	1	1	1	1	E	
6/21	14:00	HI	FB	14:05	14:16	S	2	1	C	104	2	102	2	104	2	E	
6/21	14:00	SKS	CG	14:07	14:09	S	3	2	C	0	0	0	0	0	0	E	
6/21	14:00	SKS	BC	14:09	14:16	S	3	2	C	0	0	0	0	0	0	E	
6/21	14:00	SKS	FR	14:16	14:18	S	3	1	C	4	1	4	1	4	1	E	

APPENDIX B2

Date	Sched 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
6/21	14:00	SKS	NBC	14:23	14:24	S	3	2	C	0	0	0	0	0	0	E	
6/21	14:00	SKS	MB	14:25	14:40	S	3	1	C	675	6	675	5	653	7	G	bino shake
6/21	14:00	SKS	WM	15:17	15:20	S	4	3	C	27	0	27	0	28	0	G	
6/22	17:00	SKS	SP	16:58	16:59	S	3	1	C	0	0	0	0	0	0	E	
6/22	17:00	SKS	SB	17:02	17:13	S	3	0	C	115	0	116	0	114	0	E	
6/22	17:00	SKS	FP	17:14	17:15	S	3	0	C	0	0	0	0	0	0	E	
6/22	17:00	SKS	FB	17:17	17:32	S	3	1	C	123	6	123	6	127	6	E	
6/22	17:00	HI	CG	17:35	17:38	S	3	1	C	0	9	0	9	0	9	E	
6/22	17:00	HI	BC	17:27	17:35	S	3	1	C	0	0	0	0	0	0	E	
6/22	17:00	HI	FR	17:26	17:27	S	3	0	C	8	0	8	0	8	0	E	
6/22	17:00	HI	NBC	17:20	17:21	S	3	1	C	0	0	0	0	0	0	E	
6/22	17:00	HI	MB	17:02	17:18	S	3	1	C	654	17	692	17	611	17	G	
6/22	17:00	HI	WM	16:12	16:13	S	3	2	C	4	0	4	0	4	0	E	
6/23	17:00	HI	SP	17:00	17:01	S	3	1	C	0	0	0	0	0	0	E	
6/23	17:00	HI	SB	17:04	17:14	S	3	1	C	173	0	171	0	176	0	E	
6/23	17:00	HI	FP	17:18	17:19	S	3	1	C	5	0	5	0	5	0	E	
6/23	17:00	HI	FB	17:22	17:39	S	3	1	C	181	1	172	1	179	1	E	
6/23	17:00	SKS	CG	17:52	17:55	S	2	2	C	2	0	2	0	2	0	E	
6/23	17:00	SKS	BC	17:46	17:52	S	2	2	C	2	0	2	0	2	0	E	
6/23	17:00	SKS	FR	17:43	17:46	S	2	2	C	23	4	23	4	23	4	E	
6/23	17:00	SKS	NBC	17:39	17:40	S	2	1	C	0	1	0	1	0	1	E	
6/23	17:00	SKS	MB	17:19	17:34	S	2	1	C	1683	7	1603	7	1623	7	G	
6/23	17:00	SKS	WM	16:32	16:34	S	2	1	C	3	3	3	3	3	3	E	
6/24	9:00	SKS	SP	9:58	10:00	S	3	2	C	0	1	0	1	0	1	E	
6/24	9:00	SKS	SB	9:36	9:50	S	3	2	C	137	24	137	20	139	22	E	
6/24	9:00	SKS	FP	9:32	9:34	S	3	2	C	9	5	9	4	9	4	E	
6/24	9:00	SKS	FB	9:06	9:21	S	2	2	C	144	32	144	32	136	30	E	
6/24	9:00	HI	CG	9:06	9:10	S	2	1	C	0	16	0	16	0	16	E	
6/24	9:00	HI	BC	9:10	9:20	S	2	1	C	0	5	0	5	0	5	E	
6/24	9:00	HI	FR	9:21	9:24	S	2	1	C	23	19	23	16	23	18	E	
6/24	9:00	HI	NBC	9:32	9:34	S	2	1	C	0	10	0	8	0	9	E	
6/24	9:00	HI	MB	9:38	10:09	S	2	1	C	1126	118	947	104	1274	108	G	
6/24	9:00	HI	WM	10:52	11:00	S	2	1	C	134	93	134	81	133	77	G	
6/25	14:00	HI	SP	14:00	14:01	S	2	1	C	0	2	0	2	0	2	E	
6/25	14:00	HI	SB	14:03	14:15	S	2	0	C	159	16	146	15	158	14	E	
6/25	14:00	HI	FP	14:17	14:18	S	2	1	C	10	2	10	2	10	2	E	
6/25	14:00	HI	FB	14:20	14:31	S	2	1	C	156	8	139	7	152	7	E	
6/25	14:00	SKS	CG	14:14	14:19	S	2	1	C	2	1	2	1	2	1	E	
6/25	14:00	SKS	BC	14:19	14:28	S	2	0	C	1	0	1	0	1	0	E	
6/25	14:00	SKS	FR	14:28	14:34	S	2	0	C	23	7	23	7	23	7	E	

APPENDIX B2

Date	Sched 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
6/25	14:00	SKS	NBC	14:39	14:40	S	2	0	C	0	0	0	0	0	0	E	
6/25	14:00	SKS	MB	14:49	15:15	S	2	0	C	1220	39	1330	42	1160	39	G	
6/25	14:00	HI	MB	14:49	15:15	V	2	0	C	1161	36	1300	34	1154	30	G	var ct (MB): 6/25 14:49
6/25	14:00	SKS	MB	14:41		P	2	0	C	1349							
6/25	14:00	HI	MB	14:41		P	2	0	C	1341							
6/25	14:00	SKS	WM	15:58	16:13	S	2	1	C	347	6	318	6	360	5	G	
6/26	14:00	SKS	SP	13:58	13:59	S	5	3	C	0	1	0	1	0	1	E	
6/26	14:00	SKS	SB	14:01	14:05	S	5	3	C	32	1	32	1	32	1	E	
6/26	14:00	SKS	FP	14:06	14:07	S	5	3	C	0	0	0	0	0	0	E	
6/26	14:00	SKS	FB	14:09	14:14	S	5	3	C	29	1	28	1	29	1	E	
6/26	14:00	HI	CG	14:00	14:02	S	5	3	C	0	0	0	0	0	0	E	
6/26	14:00	HI	BC	14:02	14:09	S	5	2	C	0	0	0	0	0	0	E	
6/26	14:00	HI	FR	14:09	14:10	S	5	3	C	4	1	4	1	4	1	E	
6/26	14:00	HI	NBC	14:15	14:16	S	5	2	C	0	0	0	0	0	0	E	
6/26	14:00	HI	MB	14:18	14:33	S	5	2	C	559	2	597	2	558	2	G	
6/26	14:00	HI	WM	15:21	15:31	S	5	2	C	359	6	358	6	374	6	G	
6/27	9:00	HI	SP	9:43	9:44	S	fog	3	C	0	0	0	0	0	0	E	
6/27	9:00	HI	SB	9:37	9:39	S	fog	2	C	0	0	0	0	0	0	E	
6/27	9:00	HI	FP	9:34	9:35	S	fog	2	C	0	0	0	0	0	0	E	
6/27	9:00	HI	FB	9:26	9:30	S	fog	2	C	0	0	0	0	0	0	E	
6/27	9:00	SKS	CG	9:30	9:33	S	fog	2	C	0	0	0	0	0	0	E	
6/27	9:00	SKS	BC	9:33	9:40	S	fog	1	C	3	0	3	0	3	0	E	
6/27	9:00	SKS	FR	9:40	9:41	S	fog	2	C	0	1	0	1	0	1	E	
6/27	9:00	SKS	NBC	9:45	9:46	S	fog	2	C	0	0	0	0	0	0	E	
6/27	9:00	SKS	MB	9:47	9:54	S	fog	1	P	68	6	77	6	66	6	F	
6/27	9:00	SKS	WM	10:27	10:31	S	fog	3	C	83	0	84	0	80	0	G	
6/28	17:00	SKS	SP	16:56	16:57	S	4	2	C	0	0	0	0	0	0	E	
6/28	17:00	SKS	SB	17:03	17:07	S	4	3	C	0	0	0	0	0	0	E	
6/28	17:00	SKS	FP	17:08	17:09	S	4	3	C	0	0	0	0	0	0	E	
6/28	17:00	SKS	FB	17:11	17:14	S	4	2	C	0	0	0	0	0	0	E	
6/28	17:00	HI	CG	17:30	17:32	S	3	2	C	0	0	0	0	0	0	E	
6/28	17:00	HI	BC	17:17	17:30	S	3	2	C	0	0	0	0	0	0	E	
6/28	17:00	HI	FR	17:16	17:17	S	3	2	C	0	0	0	0	0	0	E	
6/28	17:00	HI	NBC	17:10	17:11	S	3	2	C	0	0	0	0	0	0	E	
6/28	17:00	HI	MB	17:01	17:08	S	3	1	C	155	2	145	2	163	2	G	
6/28	17:00	HI	WM	16:15	16:16	S	4	3	C	0	0	0	0	0	0	E	
6/29	17:00	HI	SP	17:00	17:01	S	5	2	C	0	0	0	0	0	0	E	
6/29	17:00	HI	SB	17:03	17:07	S	5	1	C	0	0	0	0	0	0	E	
6/29	17:00	HI	FP	17:10	17:11	S	5	1	C	0	0	0	0	0	0	E	
6/29	17:00	HI	FB	17:12	17:16	S	5	1	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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
6/29	17:00	SKS	CG	17:13	17:15	S	5	2	C	0	0	0	0	0	0	E	
6/29	17:00	SKS	BC	17:07	17:13	S	5	2	C	0	0	0	0	0	0	E	
6/29	17:00	SKS	FR	17:06	17:07	S	5	2	C	0	0	0	0	0	0	E	
6/29	17:00	SKS	NBC	17:02	17:03	S	5	2	C	0	0	0	0	0	0	E	
6/29	17:00	SKS	MB	16:53	17:00	S	5	2	C	144	10	154	10	144	9	G	
6/29	17:00	SKS	WM	15:39	15:40	S	5	3	C	0	0	0	0	0	0	E	
6/30	9:00	SKS	SP	9:25	9:26	S	3	1	C	0	0	0	0	0	0	E	
6/30	9:00	SKS	SB	9:28	9:31	S	3	1	C	1	0	1	0	1	0	E	
6/30	9:00	SKS	FP	9:33	9:34	S	3	2	C	0	0	0	0	0	0	E	
6/30	9:00	SKS	FB	9:35	9:39	S	4	2	C	10	1	10	1	10	1	E	
6/30	9:00	SKS	CG	9:46	9:48	S	4	3	C	0	0	0	0	0	0	E	
6/30	9:00	SKS	BC	9:48	9:55	S	4	3	C	0	0	0	0	0	0	E	
6/30	9:00	SKS	FR	9:55	9:56	S	5	3	C	0	0	0	0	0	0	E	
6/30	9:00	HI	NBC	10:09	10:10	S	4	2	C	0	0	0	0	0	0	E	
6/30	9:00	HI	MB	10:15	10:23	S	4	2	C	201	9	186	6	215	8	G	
6/30	9:00	HI	WM	9:33	9:34	S	4	3	C	0	0	0	0	0	0	E	
7/1	14:00	HI	SP	14:31	14:32	S	5	1	C	0	0	0	0	0	0	E	
7/1	14:00	HI	SB	14:22	14:26	S	5	1	C	0	1	0	1	0	1	E	
7/1	14:00	HI	FP	14:19	14:20	S	5	1	C	0	0	0	0	0	0	E	
7/1	14:00	HI	FB	14:08	14:15	S	5	1	C	93	4	89	3	93	3	E	
7/1	14:00	SKS	CG	14:15	14:17	S	5	2	C	0	0	0	0	0	0	E	
7/1	14:00	SKS	BC	14:17	14:23	S	5	2	C	0	0	0	0	0	0	E	
7/1	14:00	SKS	FR	14:23	14:24	S	5	2	C	2	1	2	1	2	1	E	
7/1	14:00	SKS	NBC	14:29	14:30	S	5	2	C	0	0	0	0	0	0	E	
7/1	14:00	SKS	MB	14:32	14:41	S	5	1	C	240	58	240	55	270	54	G	
7/1	14:00	SKS	WM	15:15	15:16	S	5	3	C	0	0	0	0	0	0	E	
7/2	9:00	SKS	SP	9:51	9:52	S	2	1	C	0	0	0	0	0	0	E	
7/2	9:00	SKS	SB	9:42	9:47	S	2	1	C	38	4	38	4	38	4	E	
7/2	9:00	SKS	FP	9:39	9:40	S	2	1	C	0	1	0	1	0	1	E	
7/2	9:00	SKS	FB	9:17	9:31	S	2	1	C	134	10	139	10	134	10	E	
7/2	9:00	HI	CG	9:09	9:11	S	2	1	C	0	5	0	5	0	5	E	
7/2	9:00	HI	BC	9:11	9:18	S	2	1	C	0	2	0	2	0	2	E	
7/2	9:00	HI	FR	9:18	9:20	S	2	1	C	11	1	11	1	11	1	E	
7/2	9:00	HI	NBC	9:28	9:29	S	2	1	C	0	0	0	0	0	0	E	
7/2	9:00	HI	MB	9:33	9:47	S	2	1	C	444	26	470	27	439	26	G	
7/2	9:00	HI	WM	10:27	10:28	S	1	2	C	0	5	0	5	0	5	E	
7/3	17:00	HI	SP	17:02	17:03	S	2	1	C	3	0	3	0	3	0	E	
7/3	17:00	HI	SB	17:05	17:14	S	2	1	C	154	11	154	9	160	7	E	
7/3	17:00	HI	FP	17:17	17:19	S	2	0	C	42	3	44	3	42	3	E	
7/3	17:00	HI	FB	17:23	17:36	S	2	1	C	242	12	233	12	240	11	E	

APPENDIX B2

Date	Sched 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
7/3	17:00	SKS	CG	17:31	17:33	S	2	1	C	0	0	0	0	0	0	E	
7/3	17:00	SKS	BC	17:24	17:31	S	2	1	C	0	0	0	0	0	0	E	
7/3	17:00	SKS	FR	17:22	17:24	S	2	2	C	24	4	24	4	24	4	E	
7/3	17:00	SKS	NBC	17:17	17:18	S	2	1	C	0	0	0	0	0	0	E	
7/3	17:00	SKS	MB	16:58	17:15	S	2	2	C	1270	61	1200	55	1390	58	G	
7/3	17:00	SKS	WM	15:52	15:53	S	2	3	C	0	0	0	0	0	0	E	
7/4	9:00	SKS	SP	9:58	10:00	S	2	1	C	8	12	8	10	8	9	E	
7/4	9:00	SKS	SB	9:43	9:56	S	2	1	C	233	35	238	33	228	32	E	
7/4	9:00	SKS	FP	9:32	9:41	S	2	1	C	116	15	115	18	117	15	E	
7/4	9:00	SKS	FB	9:11	9:26	S	2	1	C	191	81	187	80	193	82	E	
7/4	9:00	HI	CG	9:05	9:07	S	2	2	C	0	13	0	13	0	13	E	
7/4	9:00	HI	BC	9:07	9:18	S	3	2	C	1	18	1	18	1	18	E	
7/4	9:00	HI	FR	9:18	9:20	S	3	2	C	12	12	12	7	12	8	E	
7/4	9:00	HI	NBC	9:26	9:27	S	3	2	C	0	6	0	6	0	3	E	
7/4	9:00	HI	MB	9:31	9:55	S	3	1	C	1228	78	974	72	1028	62	G	
7/4	9:00	HI	WM	10:34	10:43	S	3	2	C	226	11	244	9	226	7	G	
7/5	17:00	HI	SP	18:21	18:22	S	2	2	C	1	0	1	0	1	0	E	
7/5	17:00	HI	SB	18:01	18:15	S	3	1	C	303	8	293	5	283	6	E	
7/5	17:00	HI	FP	17:54	17:59	S	3	2	C	68	5	68	2	67	2	E	
7/5	17:00	HI	FB	17:37	17:52	S	3	1	C	218	15	207	14	229	14	E	
7/5	17:00	SKS	CG	17:41	17:43	S	3	3	C	0	0	0	0	0	0	E	
7/5	17:00	SKS	BC	17:34	17:41	S	3	1	C	2	0	2	0	2	0	E	
7/5	17:00	SKS	FR	17:33	17:34	S	3	0	C	12	1	12	1	12	1	E	
7/5	17:00	SKS	NBC	17:29	17:30	S	3	1	C	1	0	1	0	1	0	E	
7/5	17:00	SKS	MB	16:57	17:20	S	3	1	C	1321	47	1391	46	1401	50	G	
7/5	17:00	HI	MB	16:57	17:20	V	3	1	C	1364	46	1341	36	1380	41	G	var ct (MB): 7/5 16:57; SKS 1st ct (seemed low:1195, 1201, 1295, counted again- presented in table)
7/5	17:00	SKS	MB	17:19		P	3	1	C	1321							
7/5	17:00	HI	MB	17:19		P	3	1	C	1360							
7/5	17:00	SKS	WM	15:59	16:08	S	3	1	C	157	1	160	1	159	1	G	
7/6	9:00	SKS	SP	9:40	9:41	S	3	3	C	0	1	0	1	0	1	E	
7/6	9:00	SKS	SB	9:31	9:38	S	3	2	C	35	10	35	10	35	9	E	
7/6	9:00	SKS	FP	9:27	9:29	S	3	2	C	16	6	16	6	16	4	E	
7/6	9:00	SKS	FB	9:13	9:25	S	3	2	C	39	30	38	26	39	24	E	
7/6	9:00	HI	CG	9:05	9:08	S	2/fog	2	C	0	17	0	14	0	15	E	
7/6	9:00	HI	BC	9:08	9:16	S	2	1	C	0	7	0	7	0	7	E	
7/6	9:00	HI	FR	9:16	9:18	S	2	1	C	5	31	5	24	5	26	E	
7/6	9:00	HI	NBC	9:24	9:25	S	fog	1	C	0	2	0	2	0	2	E	
7/6	9:00	HI	MB	9:26	9:35	S	fog	1	C	283	5	265	3	260	3	G	

APPENDIX B2

Date	Sched 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
7/6	9:00	HI	WM	10:19	10:20	S	fog	3	C	6	6	6	4	6	5	E	
7/7	9:00	HI	SP	9:27	9:28	S	fog	3	C	0	0	0	0	0	0	E	
7/7	9:00	HI	SB	9:20	9:24	S	fog	3	C	2	0	2	0	2	0	E	
7/7	9:00	HI	FP	9:17	9:18	S	fog	3	C	1	0	1	0	1	0	E	
7/7	9:00	HI	FB	9:08	9:13	S	fog	3	C	9	4	9	4	9	4	E	
7/7	9:00	SKS	CG	9:11	9:14	S	fog	3	C	0	0	0	0	0	0	E	
7/7	9:00	SKS	BC	9:14	9:21	S	fog	2	C	0	0	0	0	0	0	E	
7/7	9:00	SKS	FR	9:21	9:22	S	fog	2	C	0	3	0	3	0	3	E	
7/7	9:00	SKS	NBC	9:28	9:29	S	fog	2	C	0	0	0	0	0	0	E	
7/7	9:00	SKS	MB	9:32	9:38	S	fog	2	C	120	1	114	1	110	1	G	
7/7	9:00	SKS	WM	10:28	10:29	S	fog	3	C	0	0	0	0	0	0	E	
7/8	14:00	SKS	SP	14:20	14:21	S	5	2	C	0	0	0	0	0	0	E	
7/8	14:00	SKS	SB	14:15	14:18	S	5	3	C	0	0	0	0	0	0	E	
7/8	14:00	SKS	FP	14:13	14:14	S	5	3	C	0	0	0	0	0	0	E	
7/8	14:00	SKS	FB	14:08	14:12	S	5	3	C	0	0	0	0	0	0	E	
7/8	14:00	HI	CG	14:04	14:06	S	5	2	C	0	0	0	0	0	0	E	
7/8	14:00	HI	BC	14:06	14:13	S	5	1	C	0	0	0	0	0	0	E	
7/8	14:00	HI	FR	14:13	14:14	S	5	2	C	0	0	0	0	0	0	E	
7/8	14:00	HI	NBC	14:19	14:20	S	5	1	C	0	0	0	0	0	0	E	
7/8	14:00	HI	MB	14:22	14:31	S	4	1	C	266	5	253	4	276	4	G	
7/8	14:00	HI	WM	15:13	15:14	S	4	1	C	0	4	0	4	0	4	E	
7/9	14:00	HI	SP	14:16	14:17	S	fog	3	C	0	0	0	0	0	0	E	
7/9	14:00	HI	SB	14:12	14:14	S	fog	3	C	0	2	0	2	0	2	E	
7/9	14:00	HI	FP	14:10	14:11	S	fog	2	C	0	1	0	1	0	1	E	
7/9	14:00	HI	FB	14:04	14:08	S	fog	2	C	0	5	0	5	0	5	E	
7/9	14:00	SKS	CG	14:06	14:09	S	fog	2	C	0	0	0	0	0	0	E	
7/9	14:00	SKS	BC	14:09	14:17	S	fog	1	C	0	1	0	1	0	1	E	
7/9	14:00	SKS	FR	14:17	14:18	S	fog	2	C	2	3	2	3	2	3	E	
7/9	14:00	SKS	NBC	14:22	14:23	S	fog	1	C	0	0	0	0	0	0	E	
7/9	14:00	SKS	MB	14:25	14:34	S	fog	2	P	60	12	60	14	60	12	P	
7/9	14:00	SKS	WM	15:13	15:14	S	fog	2	C	0	3	0	3	0	3	E	
7/10	14:00	SKS	SP	14:34	14:35	S	2	1	C	0	0	0	0	0	0	E	
7/10	14:00	SKS	SB	14:25	14:29	S	2	1	C	0	1	0	1	0	1	E	
7/10	14:00	SKS	FP	14:22	14:23	S	2	1	C	0	0	0	0	0	0	E	
7/10	14:00	SKS	FB	14:07	14:18	S	fog	1	C	72	1	72	1	73	1	E	
7/10	14:00	HI	CG	14:12	14:15	S	2	1	C	0	0	0	0	0	0	E	
7/10	14:00	HI	BC	14:15	14:21	S	2	0	C	0	0	0	0	0	0	E	
7/10	14:00	HI	FR	14:21	14:22	S	2	1	C	15	0	15	0	15	0	E	
7/10	14:00	HI	NBC	14:30	14:31	S	fog	0	C	0	0	0	0	0	0	E	
7/10	14:00	HI	MB	14:32	14:43	S	fog	1	C	387	14	402	14	370	14	G	

APPENDIX B2

Date	Sched 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
7/10	14:00	HI	WM	15:28	15:29	S	2	1	C	0	4	0	4	0	4	E	
7/11	14:00	HI	SP	14:35	14:36	S	3	3	C	0	1	0	1	0	1	E	
7/11	14:00	HI	SB	14:24	14:31	S	3	3	C	23	3	23	3	23	3	E	
7/11	14:00	HI	FP	14:22	14:23	S	3	3	C	0	1	0	1	0	1	E	
7/11	14:00	HI	FB	14:08	14:19	S	2	3	C	111	5	108	4	112	5	E	
7/11	14:00	SKS	CG	14:06	14:09	S	4	3	C	0	0	0	0	0	0	E	
7/11	14:00	SKS	BC	14:09	14:24	S	4	1	C	124	11	120	10	122	10	E	
7/11	14:00	SKS	FR	14:24	14:25	S	4	2	C	8	4	8	3	8	4	E	
7/11	14:00	SKS	NBC	14:31	14:32	S	4	2	C	0	2	0	2	0	2	E	
7/11	14:00	SKS	MB	14:37	14:50	S	4	1	C	650	53	730	40	640	48	G	
7/11	14:00	SKS	WM	15:29	15:30	S	3	3	C	0	0	0	0	0	0	E	
7/12	9:00	SKS	SP	9:53	9:54	S	3	1	C	0	5	0	5	0	5	E	
7/12	9:00	SKS	SB	9:39	9:48	S	3	1	C	145	22	145	21	145	22	E	
7/12	9:00	SKS	FP	9:35	9:37	S	3	1	C	48	6	48	6	48	6	E	
7/12	9:00	SKS	FB	9:14	9:30	S	3	1	C	249	10	248	11	250	8	E	
7/12	9:00	HI	CG	9:04	9:07	S	3	2	C	0	6	0	6	0	6	E	
7/12	9:00	HI	BC	9:07	9:24	S	3	2	C	203	6	197	7	204	6	E	
7/12	9:00	HI	FR	9:24	9:25	S	3	2	C	7	9	7	8	7	9	E	
7/12	9:00	HI	NBC	9:33	9:34	S	3	2	C	0	2	0	2	0	2	E	
7/12	9:00	HI	MB	9:36	9:55	S	3	2	C	791	60	783	50	867	52	G	
7/12	9:00	HI	WM	10:40	10:41	S	4	3	C	0	2	0	2	0	2	E	
7/13	17:00	HI	SP	18:51	18:56	S	4	1	C	44	6	44	7	45	6	E	
7/13	17:00	HI	SB	18:25	18:48	S	4	1	C	424	5	426	4	415	8	E	
7/13	17:00	HI	FP	18:18	18:24	S	5	1	C	127	2	126	2	129	2	E	
7/13	17:00	HI	FB	17:56	18:17	S	5	1	C	365	11	381	8	363	10	E	
7/13	17:00	SKS	CG	18:07	18:10	S	4	3	C	3	0	3	0	3	0	E	
7/13	17:00	SKS	BC	17:47	18:07	S	4	3	C	282	1	278	1	288	1	E	
7/13	17:00	SKS	FR	17:45	17:47	S	4	3	C	12	3	12	3	12	3	E	
7/13	17:00	SKS	NBC	17:41	17:42	S	4	3	C	8	0	8	0	8	0	E	
7/13	17:00	SKS	MB	16:52	17:39	S	5	3	C	2444	29	2801	21	2742	31	G	
7/13	17:00	HI	MB	16:52	17:39	V	5	3	C	2446	27	2279	18	2086	15	G	Var ct (MB) 7/13 16:52
7/13	17:00	SKS	MB	17:32		P	5	3	C	2465							
7/13	17:00	HI	MB	17:32		P	5	3	C	2449							
7/13	17:00	SKS	WM	15:45	16:04	S	4	3	C	475	4	461	4	476	4	G	
7/14	17:00	SKS	SP	16:57	17:03	S	4	1	C	107	2	106	2	108	2	E	65+ in gulley on SP counted from V2 on EC not seen from normal VP at SP
7/14	17:00	SKS	SB	17:06	17:28	S	4	1	C	341	5	339	5	343	5	E	
7/14	17:00	SKS	FP	17:30	17:33	S	4	1	C	78	0	77	0	78	0	E	
7/14	17:00	SKS	FB	17:35	17:53	S	4	1	C	248	2	249	2	254	2	E	

APPENDIX B2

Date	Sched 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
7/14	17:00	HI	CG	17:51	17:53	S	4	2	C	1	0	1	0	1	0	E	
7/14	17:00	HI	BC	17:35	17:50	S	4	2	C	147	0	149	0	141	0	E	
7/14	17:00	HI	FR	17:34	17:35	S	4	2	C	4	0	4	0	4	0	E	
7/14	17:00	HI	NBC	17:28	17:29	S	4	2	C	0	1	0	1	0	1	E	
7/14	17:00	HI	MB	17:05	17:26	S	4	2	C	1246	16	983	11	956	7	G	
7/14	17:00	HI	WM	16:18	16:28	S	4	3	C	228	1	213	1	229	1	G	
7/15	14:00	HI	SP	14:45	14:49	S	2	1	C	100	0	99	0	100	0	E	
7/15	14:00	HI	SB	14:30	14:42	S	2	1	C	168	6	177	6	167	6	E	
7/15	14:00	HI	FP	14:24	14:27	S	2	1	C	69	4	67	2	69	3	E	
7/15	14:00	HI	FB	14:03	14:20	S	2	1	C	143	8	147	4	141	8	E	
7/15	14:00	SKS	CG	14:03	14:05	S	2	1	C	0	1	0	1	0	1	E	
7/15	14:00	SKS	BC	14:05	14:18	S	2	1	C	77	0	77	0	76	0	E	
7/15	14:00	SKS	FR	14:18	14:21	S	2	1	C	13	2	13	2	13	2	E	
7/15	14:00	SKS	NBC	14:26	14:27	S	2	1	C	0	0	0	0	0	0	E	
7/15	14:00	SKS	MB	14:29	14:41	S	2	1	C	767	16	767	15	717	16	G	
7/15	14:00	SKS	WM	15:34	15:42	S	2	2	C	251	2	247	2	258	2	G	
7/16	9:00	SKS	SP	9:43	9:45	S	2	1	C	25	4	25	4	25	4	E	
7/16	9:00	SKS	SB	9:28	9:41	S	2	1	C	83	28	83	27	83	28	E	
7/16	9:00	SKS	FP	9:22	9:25	S	2	1	C	25	3	25	3	25	3	E	
7/16	9:00	SKS	FB	9:05	9:19	S	2	1	C	55	28	55	26	54	28	E	
7/16	9:00	HI	CG	9:06	9:08	S	2	2	C	0	4	0	4	0	4	E	
7/16	9:00	HI	BC	9:08	9:17	S	2	1	C	35	4	35	4	35	4	E	
7/16	9:00	HI	FR	9:17	9:19	S	2	2	C	4	8	4	6	4	7	E	
7/16	9:00	HI	NBC	9:24	9:25	S	2	1	C	0	2	0	2	0	2	E	
7/16	9:00	HI	MB	9:27	9:42	S	2	1	C	430	8	400	8	501	9	G	
7/16	9:00	HI	WM	10:22	10:28	S	2	2	C	127	0	125	0	128	0	G	
7/17	14:00	HI	SP	14:27	14:28	S	fog	1	C	0	3	0	3	0	3	E	
7/17	14:00	HI	SB	14:18	14:24	S	fog	1	C	88	10	86	7	90	8	E	
7/17	14:00	HI	FP	14:15	14:16	S	fog	1	C	16	0	16	0	16	0	E	
7/17	14:00	HI	FB	14:06	14:13	S	5	1	C	98	3	98	3	100	3	E	
7/17	14:00	SKS	CG	14:07	14:10	S	5	2	C	0	0	0	0	0	0	E	
7/17	14:00	SKS	BC	14:11	14:17	S	5	2	C	0	0	0	0	0	0	E	
7/17	14:00	SKS	FR	14:17	14:19	S	fog	2	C	8	2	8	2	8	2	E	
7/17	14:00	SKS	NBC	14:24	14:25	S	fog	2	C	0	0	0	0	0	0	E	
7/17	14:00	SKS	MB	14:27	14:37	S	fog	2	P	316	3	306	3	316	3	F	
7/17	14:00	SKS	WM	15:42	15:47	S	5	3	C	65	0	64	0	67	0	E	
7/18	9:00	SKS	SP	9:20	9:21	S	3	1	C	0	2	0	2	0	2	E	
7/18	9:00	SKS	SB	9:23	9:34	S	4	1	C	103	18	102	16	106	16	E	
7/18	9:00	SKS	FP	9:35	9:36	S	4	1	C	23	0	23	0	23	0	E	
7/18	9:00	SKS	FB	9:38	9:55	S	4	1	C	97	7	97	7	95	7	E	

APPENDIX B2

Date	Sched 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	9:00	SKS	CG	9:59	10:01	S	4	2	C	0	0	0	0	0	0	E	
7/18	9:00	SKS	BC	10:01	10:07	S	4	2	C	0	0	0	0	0	0	E	
7/18	9:00	SKS	FR	10:07	10:08	S	4	2	C	5	0	5	0	5	0	E	
7/18	9:00	SKS	NBC	10:12	10:13	S	4	2	C	0	0	0	0	0	0	E	
7/18	9:00	SKS	MB	10:16	10:23	S	4	2	C	340	4	340	4	360	4	G	
7/18	9:00	HI	WM	9:31	9:32	S	3	3	C	6	0	6	0	6	0	E	
7/19	14:00	DCO	SP	14:28	14:29	S	1	0	C	0	0	0	0	0	0	E	
7/19	14:00	DCO	SB	14:40	14:52	S	1	0	C	138	0	139	0	135	0	E	
7/19	14:00	DCO	FP	14:55	15:00	S	1	0	C	21	2	21	2	21	2	E	
7/19	14:00	DCO	FB	15:04	15:20	S	1	0	C	145	3	143	3	154	3	E	
7/19	14:00	DCO	CG	16:00	16:01	S	1	1	C	0	0	0	0	0	0	E	
7/19	14:00	DCO	BC	16:02	16:03	S	1	1	C	0	0	0	0	0	0	E	
7/19	14:00	DCO	FR	16:13	16:14	S	1	1	C	0	3	0	3	0	3	E	
7/19	14:00	DCO	NBC	16:25	16:26	S	1	1	C	0	0	0	0	0	0	E	
7/19	14:00	DCO	MB	16:31	16:35	S	1	0	C	383	0	400	0	380	0	G	
7/19	14:00	DCO	WM	17:30	17:31	S	1	1	C	0	0	0	0	0	0	E	
7/20	17:00	DCO	SP	17:06	17:07	S	4	2	C	1	0	1	0	1	0	E	
7/20	17:00	DCO	SB	17:11	17:29	S	4	1	C	237	2	250	2	211	2	G	
7/20	17:00	DCO	FP	17:31	17:33	S	4	1	C	36	0	36	0	37	0	E	
7/20	17:00	DCO	FB	17:37	17:52	S	4	1	C	239	4	232	4	262	6	G	
7/20	17:00	DCO	CG	18:30	18:32	S	4	1	C	0	0	0	0	0	0	E	
7/20	17:00	DCO	BC	18:35	18:45	S	3	1	C	10	0	10	0	10	0	E	
7/20	17:00	DCO	FR	18:46	18:47	S	3	1	C	14	1	14	1	14	1	E	
7/20	17:00	DCO	NBC	18:52	18:53	S	3	1	C	0	0	0	0	0	0	E	
7/20	17:00	DCO	MB	18:55	19:03	S	3	1	C	530	18	530	10	540	21	G	
7/20	17:00	GR	WM	19:50	19:55	S	4	2	C	22	0	22	0	22	0	E	
7/21	17:00	DCO	SP	17:18	17:19	S	2	1	C	0	0	0	0	0	0	E	
7/21	17:00	DCO	SB	17:25	17:45	S	2	1	C	250	1	258	1	243	1	G	
7/21	17:00	DCO	FP	17:46	17:53	S	2	1	C	53	0	52	0	54	0	E	
7/21	17:00	DCO	FB	17:55	18:15	S	2	1	C	241	5	235	5	246	5	G	
7/21	17:00	DCO	CG	18:20	18:23	S	2	1	C	5	5	5	5	5	5	E	
7/21	17:00	DCO	BC	18:24	18:35	S	2	1	C	54	4	54	4	56	4	E	
7/21	17:00	DCO	FR	18:36	18:38	S	2	1	C	20	0	20	0	20	0	E	
7/21	17:00	DCO	NBC	18:47	18:48	S	2	1	C	0	0	0	0	0	0	E	
7/21	17:00	DCO	MB	18:51	18:59	S	2	0	C	1300	53	1450	54	1250	43	G	
7/21	17:00	GR	WM	19:05	19:10	S	2	1	C	88	0	87	0	89	0	E	
7/22	14:00	DCO	SP	14:12	14:13	S	1	0	C	0	0	0	0	0	0	E	
7/22	14:00	DCO	SB	14:16	14:31	S	1	0	C	289	8	272	8	290	8	E	
7/22	14:00	DCO	FP	14:36	14:38	S	1	0	C	52	1	52	1	53	1	E	
7/22	14:00	DCO	FB	14:43	15:00	S	1	0	C	246	7	253	4	244	6	E	

APPENDIX B2

Date	Sched 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	14:00	DCO	CG	15:15	15:18	S	1	0	C	0	0	0	0	0	0	E	
7/22	14:00	DCO	BC	15:20	15:32	S	1	0	C	53	3	53	3	52	3	E	
7/22	14:00	DCO	FR	15:36	15:37	S	1	0	C	16	1	16	1	16	1	E	
7/22	14:00	DCO	NBC	15:45	15:46	S	1	0	C	0	0	0	0	0	0	E	
7/22	14:00	DCO	MB	15:50	15:58	S	1	0	C	1320	22	1350	22	1200	22	G	
7/22	14:00	GR	WM	16:10	16:12	S	1	1	C	130	0	129	0	131	0	G	
7/23	14:00	DCO	SP	14:45	14:46	S	5	1	C	0	0	0	0	0	0	E	
7/23	14:00	DCO	SB	14:56	15:05	S	5	1	C	115	12	114	12	119	12	E	
7/23	14:00	DCO	FP	15:07	15:09	S	5	1	C	16	1	16	1	16	1	E	
7/23	14:00	DCO	FB	15:15	15:22	S	5	1	C	117	4	112	4	119	4	E	
7/23	14:00	DCO	CG	15:42	15:44	S	5	1	C	0	0	0	0	0	0	E	
7/23	14:00	DCO	BC	15:45	15:57	S	5	1	C	1	0	1	0	1	0	E	
7/23	14:00	DCO	FR	15:58	16:00	S	5	1	C	2	3	2	3	2	3	E	
7/23	14:00	DCO	NBC	16:10	16:11	S	5	1	C	0	0	0	0	0	0	E	
7/23	14:00	DCO	MB	16:15	16:20	S	5	1	P	975	13	1000	11	900	16	G	
7/23	14:00	GR	WM	16:00	16:05	S	5	3	C	99	6	94	6	106	6	G	
7/24	14:00	DCO	SP	14:08	14:09	S	4	2	C	0	0	0	0	0	0	E	
7/24	14:00	DCO	SB	14:11	14:17	S	4	2	C	37	1	37	1	36	1	E	
7/24	14:00	DCO	FP	14:22	14:23	S	4	2	C	0	0	0	0	0	0	E	
7/24	14:00	DCO	FB	14:30	14:35	S	4	2	C	0	0	0	0	0	0	E	
7/24	14:00	DCO	CG	15:54	14:56	S	4	2	C	0	0	0	0	0	0	E	
7/24	14:00	DCO	BC	14:58	15:04	S	4	1	C	0	0	0	0	0	0	E	
7/24	14:00	DCO	FR	15:05	15:06	S	4	2	C	2	0	2	0	2	0	E	
7/24	14:00	DCO	NBC	15:12	15:13	S	4	1	C	0	0	0	0	0	0	E	
7/24	14:00	DCO	MB	15:18	15:22	S	4	1	C	360	5	330	5	360	5	G	
7/24	14:00	GR	WM	16:00	16:02	S	4	2	C	1	0	1	0	1	0	E	
7/25	9:00	DCO	SP	9:20	9:21	S	3	1	C	0	0	0	0	0	0	E	
7/25	9:00	DCO	SB	9:25	9:32	S	3	1	C	46	3	46	3	46	2	E	
7/25	9:00	DCO	FP	9:34	9:35	S	3	1	C	0	0	0	0	0	0	E	
7/25	9:00	DCO	FB	9:39	9:45	S	3	1	C	34	5	35	5	34	5	E	
7/25	9:00	DCO	CG	10:05	10:07	S	3	1	C	0	0	0	0	0	0	E	
7/25	9:00	DCO	BC	10:08	10:15	S	3	1	C	0	0	0	0	0	0	E	
7/25	9:00	DCO	FR	10:16	10:17	S	3	1	C	0	0	0	0	0	0	E	
7/25	9:00	DCO	NBC	10:24	10:25	S	3	1	C	0	0	0	0	0	0	E	
7/25	9:00	DCO	MB	10:30	10:33	S	3	1	C	360	2	320	2	370	2	G	
7/25	9:00	GR	WM	11:15	11:16	S	3	1	C	0	0	0	0	0	0	E	
7/26	9:00	DCO	SP	9:20	9:21	S	1	1	C	0	0	0	0	0	0	E	
7/26	9:00	DCO	SB	9:26	9:33	S	1	1	C	58	0	58	0	59	0	E	
7/26	9:00	DCO	FP	9:36	9:37	S	1	1	C	0	0	0	0	0	0	E	
7/26	9:00	DCO	FB	9:41	9:46	S	1	1	C	120	1	117	1	122	1	E	

APPENDIX B2

Date	Sched 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	9:00	DCO	CG	10:06	10:08	S	1	1	C	0	0	0	0	0	0	E	
7/26	9:00	DCO	BC	10:09	10:14	S	1	1	C	0	0	0	0	0	0	E	
7/26	9:00	DCO	FR	10:15	10:16	S	1	1	C	5	0	5	0	5	0	E	
7/26	9:00	DCO	NBC	10:25	10:26	S	1	1	C	0	0	0	0	0	0	E	
7/26	9:00	DCO	MB	10:28	10:30	S	1	1	P	410	0	420	0	380	0	G	
7/26	9:00	GR	WM	11:00	11:01	S	1	1	C	0	0	0	0	0	0	E	
7/27	9:00	DCO	SP	9:16	9:17	S	1	0	C	0	0	0	0	0	0	E	
7/27	9:00	DCO	SB	9:22	9:30	S	1	0	C	108	6	109	6	103	6	E	
7/27	9:00	DCO	FP	9:35	9:36	S	1	0	C	15	0	15	0	15	0	E	
7/27	9:00	DCO	FB	9:39	9:49	S	1	1	C	183	6	190	6	178	6	E	
7/27	9:00	DCO	CG	10:00	10:03	S	1	0	C	4	0	4	0	4	0	E	
7/27	9:00	DCO	BC	10:05	10:15	S	1	0	C	1	0	1	0	1	0	E	
7/27	9:00	DCO	FR	10:16	10:18	S	1	0	C	18	2	18	2	18	2	E	
7/27	9:00	DCO	NBC	10:25	10:26	S	1	0	C	0	0	0	0	0	0	E	
7/27	9:00	DCO	MB	NC	NC	NC	NC	NC	fog	NC	NC	NC	NC	NC	NC	NC	NC due to fog, 1600 est. ~1200 on MB from the summit
7/27	9:00	GR	WM	NC	NC	NC	NC	NC	fog	NC	NC	NC	NC	NC	NC	NC	
7/28	9:00	DCO	SP	9:15	9:16	S	2	1	C	7	8	7	8	7	8	E	
7/28	9:00	DCO	SB	9:20	9:45	S	2	1	C	393	38	432	36	388	38	G	
7/28	9:00	DCO	FP	9:47	9:50	S	2	1	C	105	21	111	19	104	27	G	
7/28	9:00	DCO	FB	10:10	10:20	S	2	1	C	252	18	243	17	266	20	G	
7/28	9:00	DCO	CG	10:30	10:32	S	2	1	C	7	2	7	2	7	2	E	
7/28	9:00	DCO	BC	10:33	10:58	S	2	1	C	284	8	286	8	281	8	G	
7/28	9:00	DCO	FR	11:00	11:02	S	2	1	C	26	4	26	4	26	4	E	
7/28	9:00	DCO	NBC	11:11	11:12	S	2	1	C	15	1	15	1	15	1	E	
7/28	9:00	DCO	MB	11:20	11:26	S	2	1	P	1400	20	1500	20	1400	20	G	
7/28	9:00	DCO	MB			P	2	1	P	1300							DCO did photo ct of MB= 1300
7/28	9:00	GR	WM	12:00	12:05	S	2	1	C	42	1	41	1	44	2	E	
7/29	9:00	DCO	SP	9:15	9:18	S	4	1	C	40	26	39	25	40	28	E	
7/29	9:00	DCO	SB	9:31	9:52	S	4	1	C	331	67	338	57	318	70	G	
7/29	9:00	DCO	FP	9:56	9:59	S	4	1	C	128	5	126	5	131	5	E	
7/29	9:00	DCO	FB	10:03	10:20	S	4	1	C	308	15	313	10	291	13	G	
7/29	9:00	DCO	CG	10:29	10:31	S	5	2	C	0	0	0	0	0	0	E	
7/29	9:00	DCO	BC	10:32	10:45	S	5	2	C	182	4	195	4	176	4	G	
7/29	9:00	DCO	FR	10:46	10:48	S	5	2	C	7	3	7	3	7	3	E	
7/29	9:00	DCO	NBC	11:15	11:16	S	5	2	C	1	0	1	0	1	0	E	
7/29	9:00	DCO	MB	11:22	11:35	S	5	2	C	1400	10	1200	15	1400	12	G	
7/29	9:00	GR	WM	9:40	9:45	S	5	3	C	147	0	134	0	151	0		
7/30	9:00	DCO	SP	9:15	9:25	S	2	1	C	134	16	143	17	126	13	G	Walrus seen in bay from EC that are not visible from SP vp.

APPENDIX B2

Date	Sched 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	9:00	DCO	SB	9:35	9:55	S	2	1	C	304	56	304	55	292	58	E	
7/30	9:00	DCO	FP	9:59	10:07	S	2	1	C	118	12	123	10	117	14	E	
7/30	9:00	DCO	FB	10:11	10:25	S	2	1	C	267	25	276	20	258	24	E	
7/30	9:00	DCO	CG	10:40	10:42	S	3	1	C	2	3	2	3	2	3	E	
7/30	9:00	DCO	BC	10:43	10:54	S	3	1	C	140	9	147	7	139	10	E	
7/30	9:00	DCO	FR	10:55	10:56	S	3	1	C	7	10	7	10	7	10	E	
7/30	9:00	DCO	NBC	11:04	11:05	S	3	1	C	0	0	0	0	0	0	E	
7/30	9:00	DCO	MB	11:07	11:20	S	3	1	C	670	9	800	8	620	9	G	
7/30	9:00	GR	WM	9:40	9:46	S	3	2	C	154	1	159	1	140	1	G	
7/31	14:00	HI	SP	14:00	14:06	S	2	1	C	109	35	107	30	109	35	E	
7/31	14:00	HI	SB	14:09	14:24	S	2	0	C	269	155	300	143	264	144	E	
7/31	14:00	HI	FP	14:25	14:28	S	2	1	C	76	17	77	14	76	14	E	
7/31	14:00	HI	FB	14:31	14:40	S	2	1	C	89	22	85	21	90	20	E	
7/31	14:00	HI	CG	14:57	15:00	S	2	1	C	0	10	0	7	0	4	E	
7/31	14:00	HI	BC	15:00	15:10	S	2	1	C	69	0	69	0	67	0	E	
7/31	14:00	HI	FR	15:10	15:11	S	2	1	C	7	1	7	1	7	1	E	
7/31	14:00	HI	NBC	15:14	15:15	S	2	1	C	0	6	0	6	0	6	E	
7/31	14:00	HI	MB	15:23	15:37	S	fog	1	C	952	34	864	28	1070	34	G	
7/31	14:00	HI	WM	16:22	16:29	S	fog	2	C	116	1	104	1	116	1	G	
8/1	14:00	HI	SP	14:44	14:47	S	fog	2	C	66	1	66	1	66	1	E	
8/1	14:00	HI	SB	14:23	14:41	S	fog	1	C	164	20	156	19	161	18	E	
8/1	14:00	HI	FP	14:19	14:21	S	2	1	C	45	3	45	3	45	3	E	
8/1	14:00	HI	FB	14:06	14:15	S	2	1	C	111	16	114	17	109	16	E	
8/1	14:00	SKS	CG	14:18	14:21	S	2	1	C	0	0	0	0	0	0	E	
8/1	14:00	SKS	BC	14:22	14:31	S	2	1	C	0	1	0	1	0	1	E	
8/1	14:00	SKS	FR	14:31	14:32	S	2	1	C	10	2	10	2	10	2	E	
8/1	14:00	SKS	NBC	14:38	14:39	S	2	1	C	0	0	0	0	0	0	E	
8/1	14:00	SKS	MB	14:42	14:56	S	fog	0	P	526	13	456	12	516	12	G	
8/1	14:00	SKS	WM	15:39	15:42	S	fog	2	C	55	0	57	0	54	0	G	
8/2	9:00	SKS	SP	10:00	10:03	S	2	1	C	52	4	52	4	52	4	E	
8/2	9:00	SKS	SB	9:40	9:51	S	2	1	C	122	46	122	40	124	43	E	
8/2	9:00	SKS	FP	9:36	9:38	S	2	1	C	27	1	27	1	27	1	E	
8/2	9:00	SKS	FB	9:25	9:33	S	2	1	C	72	11	73	11	71	11	E	
8/2	9:00	HI	CG	9:08	9:12	S	2	1	C	0	2	0	2	0	2	E	
8/2	9:00	HI	BC	9:12	9:22	S	2	1	C	0	1	0	1	0	1	E	
8/2	9:00	HI	FR	9:22	9:23	S	2	1	C	10	2	10	2	10	2	E	
8/2	9:00	HI	NBC	9:29	9:30	S	2	1	C	0	0	0	0	0	0	E	
8/2	9:00	HI	MB	9:33	9:46	S	2	1	C	427	16	340	17	435	15	G	
8/2	9:00	HI	WM	10:31	10:33	S	fog	2	C	34	0	34	0	34	0	E	
8/3	17:00	HI	SP	17:01	17:03	S	5	1	C	0	4	0	4	0	4	E	

APPENDIX B2

Date	Sched 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	17:00	HI	SB	17:05	17:19	S	4	1	C	131	12	131	9	132	10	E	
8/3	17:00	HI	FP	17:20	17:21	S	4	1	C	12	2	12	2	12	2	E	
8/3	17:00	HI	FB	17:24	17:32	S	4	1	C	92	8	91	8	90	8	E	
8/3	17:00	SKS	CG	17:02	17:04	S	4	2	C	0	0	0	0	0	0	E	
8/3	17:00	SKS	BC	17:04	17:10	S	4	1	C	0	0	0	0	0	0	E	
8/3	17:00	SKS	FR	17:10	17:12	S	4	1	C	3	2	3	2	3	2	E	
8/3	17:00	SKS	NBC	17:17	17:18	S	4	1	C	0	0	0	0	0	0	E	
8/3	17:00	SKS	MB	17:21	17:28	S	4	1	C	106	1	106	1	96	1	G	
8/3	17:00	SKS	WM	14:46	14:47	S	5	3	C	0	0	0	0	0	0	E	
8/4	17:00	SKS	SP	16:56	16:57	S	5	2	C	0	0	0	0	0	0	E	
8/4	17:00	SKS	SB	16:59	17:05	S	5	2	C	85	2	85	2	84	2	E	
8/4	17:00	SKS	FP	17:06	17:07	S	5	1	C	0	0	0	0	0	0	E	
8/4	17:00	SKS	FB	17:08	17:18	S	5	1	C	86	0	86	0	87	0	E	
8/4	17:00	HI	CG	17:25	17:28	S	5	2	C	0	0	0	0	0	0	E	
8/4	17:00	HI	BC	17:16	17:25	S	5	2	C	0	0	0	0	0	0	E	
8/4	17:00	HI	FR	17:15	17:16	S	5	1	C	0	1	0	1	0	1	E	
8/4	17:00	HI	NBC	17:09	17:10	S	5	1	C	0	0	0	0	0	0	E	
8/4	17:00	HI	MB	17:00	17:06	S	5	1	C	66	2	60	2	77	2	G	
8/4	17:00	HI	WM	15:29	15:30	S	6	3	C	0	0	0	0	0	0	E	
8/5	9:00	HI	SP	9:30	9:31	S	3	1	C	0	3	0	3	0	3	E	
8/5	9:00	HI	SB	9:15	9:26	S	3	1	C	74	11	75	9	73	10	E	
8/5	9:00	HI	FP	9:13	9:14	S	3	1	C	0	0	0	0	0	0	E	
8/5	9:00	HI	FB	9:01	9:07	S	3	1	C	68	3	69	2	67	3	E	
8/5	9:00	SKS	CG	9:04	9:07	S	3	2	C	0	0	0	0	0	0	E	
8/5	9:00	SKS	BC	9:07	9:13	S	3	2	C	0	0	0	0	0	0	E	
8/5	9:00	SKS	FR	9:13	9:14	S	3	2	C	0	0	0	0	0	0	E	
8/5	9:00	SKS	NBC	9:19	9:20	S	3	2	C	0	0	0	0	0	0	E	
8/5	9:00	SKS	MB	9:27	9:32	S	3	2	C	48	1	48	1	50	1	G	
8/5	9:00	SKS	WM	10:35	10:36	S	4	3	C	0	0	0	0	0	0	E	
8/6	9:00	SKS	SP	9:32	9:33	S	fog	3	C	0	0	0	0	0	0	E	
8/6	9:00	SKS	SB	9:25	9:29	S	fog	3	C	9	7	9	7	9	7	E	
8/6	9:00	SKS	FP	9:23	9:24	S	fog	3	C	0	0	0	0	0	0	E	
8/6	9:00	SKS	FB	9:14	9:21	S	fog	3	C	10	10	10	9	10	9	E	
8/6	9:00	HI	CG	9:05	9:07	S	fog	2	C	0	6	0	6	0	6	E	
8/6	9:00	HI	BC	9:17	9:19	S	fog	1	C	0	1	0	1	0	1	E	
8/6	9:00	HI	FR	9:19	9:20	S	fog	2	C	0	1	0	1	0	1	E	
8/6	9:00	HI	NBC	9:24	9:25	S	fog	1	C	0	1	0	1	0	1	E	
8/6	9:00	HI	MB	10:56	10:58	S	fog	1	O	~25	0					P	fog cover, estimate count from OP and TT
8/6	9:00	HI	WM	10:09	10:10	S	fog	3	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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	17:00	HI	SP	16:53	16:54	S	4	1	C	0	0	0	0	0	0	E	
8/7	17:00	HI	SB	16:56	16:59	S	3	1	C	0	0	0	0	0	0	E	
8/7	17:00	HI	FP	17:01	17:02	S	3	1	C	0	0	0	0	0	0	E	
8/7	17:00	HI	FB	17:04	17:30	S	3	1	C	228	3	219	1	230	3	E	
8/7	17:00	SKS	CG	17:40	17:45	S	3	1	C	0	0	0	0	0	0	E	
8/7	17:00	SKS	BC	17:35	17:40	S	3	1	C	0	0	0	0	0	0	E	
8/7	17:00	SKS	FR	17:34	17:35	S	3	1	C	0	0	0	0	0	0	E	
8/7	17:00	SKS	NBC	17:25	17:26	S	3	1	C	0	0	0	0	0	0	E	
8/7	17:00	SKS	MB	16:57	17:01	S	3	1	C	220	17	220	17	250	18	G	
8/7	17:00	SKS	WM	16:03	16:04	S	4	2	C	0	0	0	0	0	0	E	
8/8	14:00	SKS	SP	14:53	14:54	S	4	1	C	0	0	0	0	0	0	E	
8/8	14:00	SKS	SB	14:44	14:51	S	3	1	C	68	0	69	0	66	0	E	
8/8	14:00	SKS	FP	14:42	14:43	S	3	1	C	1	0	1	0	1	0	E	
8/8	14:00	SKS	FB	14:10	14:40	S	3	1	C	248	2	248	2	257	2	E	
8/8	14:00	HI	CG	14:06	14:08	S	fog	1	C	0	0	0	0	0	0	E	
8/8	14:00	HI	BC	14:08	14:15	S	fog	1	C	0	1	0	1	0	1	E	
8/8	14:00	HI	FR	14:15	14:17	S	3	1	C	8	0	8	0	8	0	E	
8/8	14:00	HI	NBC	14:23	14:24	S	3	0	C	0	0	0	0	0	0	E	
8/8	14:00	HI	MB	14:28	14:40	S	3	0	C	422	93	435	93	416	93	G	
8/8	14:00	HI	WM	15:28	15:29	S	fog	2	C	0	0	0	0	0	0	E	
8/9	14:00	HI	SP	14:50	14:51	S	2	1	C	0	0	0	0	0	0	E	
8/9	14:00	HI	SB	14:33	14:47	S	2	1	C	216	5	218	4	215	4	E	
8/9	14:00	HI	FP	14:30	14:31	S	2	1	C	0	0	0	0	0	0	E	
8/9	14:00	HI	FB	14:06	14:25	S	2	1	C	261	9	251	9	251	6	E	
8/9	14:00	SKS	CG	14:10	14:12	S	2	1	C	0	0	0	0	0	0	E	
8/9	14:00	SKS	BC	14:12	14:30	S	2	1	C	187	3	184	3	189	3	E	
8/9	14:00	SKS	FR	14:30	14:33	S	2	1	C	16	2	16	2	16	2	E	
8/9	14:00	SKS	NBC	14:37	14:38	S	2	1	C	0	0	0	0	0	0	E	
8/9	14:00	SKS	MB	14:41	14:49	S	2	1	C	740	14	710	11	750	12	G	
8/9	14:00	SKS	WM	15:31	15:32	S	2	2	C	0	0	0	0	0	0	E	
8/10	9:00	SKS	SP	10:00	10:01	S	3	1	C	0	0	0	0	0	0	E	
8/10	9:00	SKS	SB	9:30	9:58	S	2	1	C	346	25	356	21	339	22	G	
8/10	9:00	SKS	FP	9:28	9:29	S	2	1	C	11	0	11	0	11	0	E	
8/10	9:00	SKS	FB	9:12	9:26	S	2	1	C	272	15	283	11	287	13	E	
8/10	9:00	HI	CG	9:04	9:07	S	2	2	C	1	5	1	2	1	5	E	
8/10	9:00	HI	BC	9:07	9:30	S	2	1	C	248	4	255	4	245	4	E	
8/10	9:00	HI	FR	9:30	9:31	S	2	2	C	12	1	12	1	12	1	E	
8/10	9:00	HI	NBC	9:37	9:38	S	2	2	C	0	0	0	0	0	0	E	
8/10	9:00	HI	MB	9:41	10:06	S	2	1	C	1168	24	1144	21	1304	18	G	
8/10	9:00	HI	WM	10:50	10:51	S	2	2	C	0	0	0	0	0	0	E	

APPENDIX B2

Date	Sched 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	17:00	HI	SP	17:01	17:03	S	2	0	C	27	6	27	3	27	4	E	
8/11	17:00	HI	SB	17:05	17:27	S	2	1	C	476	24	477	9	456	15	E	
8/11	17:00	HI	FP	17:30	17:35	S	2	0	C	93	7	92	4	94	7	E	
8/11	17:00	HI	FB	17:37	17:54	S	2	0	C	363	8	335	6	349	7	E	
8/11	17:00	SKS	CG	17:38	17:40	S	2	1	C	0	0	0	0	0	0	E	
8/11	17:00	SKS	BC	17:24	17:38	S	2	1	C	135	2	136	2	133	2	E	
8/11	17:00	SKS	FR	17:22	17:23	S	2	1	C	22	2	22	2	22	2	E	
8/11	17:00	SKS	NBC	17:17	17:18	S	2	1	C	0	0	0	0	0	0	E	
8/11	17:00	SKS	MB	17:04	17:15	S	2	1	C	2122	19	1792	14	2192	22	G	
8/11	17:00	SKS	WM	16:16	16:22	S	2	1	C	80	1	80	1	80	1	G	
8/12	9:00	SKS	SP	9:51	9:52	S	2	1	C	6	2	6	2	6	2	E	
8/12	9:00	SKS	SB	9:35	9:49	S	2	1	C	186	42	183	45	187	39	E	
8/12	9:00	SKS	FP	9:31	9:33	S	2	1	C	54	7	54	7	54	7	E	
8/12	9:00	SKS	FB	9:20	9:29	S	2	1	C	113	19	112	15	113	19	E	
8/12	9:00	HI	CG	9:05	9:08	S	3	1	C	0	3	0	3	0	3	E	
8/12	9:00	HI	BC	9:08	9:20	S	3	1	C	72	4	71	3	75	4	E	
8/12	9:00	HI	FR	9:20	9:21	S	3	1	C	10	9	10	9	10	8	E	
8/12	9:00	HI	NBC	9:27	9:28	S	3	1	C	0	0	0	0	0	0	E	
8/12	9:00	HI	MB	9:31	9:47	S	fog	1	C	634	10	773	6	623	9	G	
8/12	9:00	HI	WM	10:32	10:35	S	fog	2	C	26	0	26	0	26	0	E	
8/13	14:00	HI	SP	14:41	14:42	S	5	1	C	7	5	7	0	7	1	E	
8/13	14:00	HI	SB	14:20	14:36	S	5	1	C	176	35	172	31	179	28	E	
8/13	14:00	HI	FP	14:17	14:18	S	5	1	C	0	1	0	1	0	1	E	
8/13	14:00	HI	FB	14:03	14:14	S	5	1	C	127	13	121	11	129	11	E	
8/13	14:00	SKS	CG	14:05	14:07	S	5	2	C	0	1	0	1	0	1	E	
8/13	14:00	SKS	BC	14:07	14:14	S	5	1	C	12	0	12	0	12	0	E	
8/13	14:00	SKS	FR	14:14	14:16	S	5	2	C	0	1	0	1	0	1	E	
8/13	14:00	SKS	NBC	14:21	14:22	S	5	2	C	0	0	0	0	0	0	E	
8/13	14:00	SKS	MB	14:23	14:30	S	5	2	C	171	3	161	3	191	3	G	
8/13	14:00	SKS	WM	15:02	15:03	S	5	3	C	0	0	0	0	0	0	E	

APPENDIX C

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

DATE	Survey Type	Cape Peirce	Cape Newenham	Hagemeister Island
1/1/2011	Ground photo	0		
2/14/2011	Aerial	0		0
5/13/2011	Ground photo	4		
5/18/2011	Ground photo	36		
6/9/2011	Ground photo			3
6/23/2011	Ground photo			124
6/24/2011	Ground photo			189
6/25/2011	Ground photo			80
6/26/2011	Ground photo			311
6/27/2011	Ground photo			202
6/28/2011	Ground photo	22		
6/29/2011	Ground photo	63		4
6/30/2011	Ground photo	298		472
7/1/2011	Ground photo	238		6
7/2/2011	Ground photo	260		27
7/3/2011	Ground photo			159
7/4/2011	Ground photo	169		0
7/6/2011	Ground photo	12		
7/7/2011	Ground photo	0		
7/8/2011	Ground photo	17		4
7/10/2011	Ground photo	10		
7/12/2011	Ground photo	8		
7/13/2011	Ground photo	13		19
7/14/2011	Ground photo	0		
7/15/2011	Ground photo	4		
7/16/2011	Ground photo	0		154
7/17/2011	Ground photo			5
7/18/2011	Ground photo	9		
7/19/2011	Ground photo	107		24
7/20/2011	Ground photo			20
7/23/2011	Ground photo	13		
11/21/2011	Aerial	230		124

APPENDIX D

Appendix D. Summary of variability tests between observers during 2011 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**
5/10	160	228	29.82	218	218	0.00	26.61	4.59
5/12	204	248	17.74	231	245	5.71	11.69	1.22
5/13	1242	1142	8.76	1167	1113	4.85	6.43	2.61
5/15	652	601	8.49	540	533	1.31	20.74	12.76
5/29	1233	1146	7.59	1281	1205	6.31	3.75	4.90
6/8	1081	1060	1.98	1092	1051	3.90	1.01	0.86
6/25	1259	1197	5.18	1349	1341	0.60	6.67	10.74
7/5	1368	1410	2.98	1321	1360	2.87	3.56	3.68
7/13	2473	2473	0.00	2465	2449	0.65	0.32	0.98

Walrus count observers: *SKS: Stephanie K. Sell; HLI: Heidi Isernhagen*

APPENDIX E

Appendix E. Steller sea lion daily count data for 2011, Round Island, Alaska

Date	Start Time	Finish Time	View 1 land/water	View 2 land/water	View 3 land/water	View 4 land/water	Total Land	Total Water	Total	Brand	Photo	% Certain	Comments
5/6/11	1110	1156	144/6	1/1	17/0	7/0	169	7	176	A291	Y	100	
										A415	Y	100	
										X3	Y	100	
										T237	Y	100	
5/7/11	954	1015	52/5	0/0	10/5	0/0	62	10	72	none			
5/8/11	NC												
5/9/11	1146	1205	90/4	9/0	22/0	3/2	124	6	130	A415	Y	100	
5/10/11	1224	1250	115/5	11/0	17/0	6/2	149	7	156	A280	Y	100	
										A196	Y	99	
										T237	Y	100	
										A372	Y	90	
5/11/11	1518	1549	75/13	8/1	27/0	31/13	141	27	168	X3	Y	100	
										A114	Y	100	
										A420	Y	100	
										X168	Y	100	
										M717	Y	100	
5/12	1415	1457	97/22	21/0	36/4	31/6	185	32	217	A415	Y	100	suckling behavior w photo
										X305	Y	100	
										V16	Y	100	
										A462	Y	100	
										A64	Y	80	
5/13/11	1438	1500	117/1	2/2	24/0	3/0	146	3	149	A2_ _	N		
										A196	N	100	
5/14/11	NC												
5/15/11	1550	1619	264/0	1/0	32/0	1/0	298	0	298	none			entanglement w photo; photo ct of V1 beach
5/16/11	932	1014	184/9	3/0	32/2	0/0	219	11	230	A69	Y	100	entanglement w photo
										A64	Y	100	9:47 disturbance on V1 cause unk, all RO only 3DS
5/17/11	932	1000	205/9	4/0	29/1	4/4	242	14	256	A462	Y	100	
5/18/11	1601	1635	379/4	2/0	32/0	0/11	413	15	428	A420	Y	100	Photo ct of V1 beach
										X168	Y	100	
										A278	Y	100	
										A415	Y	60	
										T2_ _	Y	30	
5/19/11	1506	1551	237/97	1/1	25/6	6/12	269	116	384	A712	Y	100	~34 large bulls on V1

APPENDIX E

Date	Start Time	Finish Time	View 1 land/water	View 2 land/water	View 3 land/water	View 4 land/water	Total Land	Total Water	Total	Brand	Photo	% Certain	Comments
										X305	Y	100	
										M717	Y	100	
										A415	Y	100	
										A114	Y	100	
5/20/11	1429	1459	326/25	5/0	21/1	0/0	352	26	378	A196	Y	100	
										X168	Y	100	
										A415	Y	98	
										A79	Y	100	
5/21/11	930	954	83/7	0/0	18/1	0/0	101	8	109	none			suckling behavior w photo
5/22/11	934	1005	198/20	0/0	16/2	0/0	214	22	236	A230	Y	100	
5/23/11	1649	1707	202/20	0/0	42/2	5/0	249	22	271	M717	Y	100	
										A230	Y	100	
										A278	Y	100	
5/24/11	1421	1444	169	0/0	27/12	0/0	196	12	208	none			V1-photo ct included H20, 2 animals (V3) had substance on fur did not come off in H20-photos in file
5/25/11	932	1010	189/16	0/0	21/13	0/0	210	29	239	A291	Y	100	photo of entanglement
										M717	Y	100	
5/26/11	940	1003	252	0/0	33/4	0/0	285	4	289	A291	Y	90	V1-photo ct included H20
										A196	Y	100	
5/27/11	953	1037	92/34	4/0	36/11	3/15	135	60	195	A291	Y	80	suckling behavior w photo, large male w odd substance on face would rub off on rocks but not easily
5/28/11	1503	1527	114/47	30/2	36/1	20/11	200	61	261	A688	Y	100	
5/29/11	1548	1620	125/34	5/0	50/7	58/18	238	59	297	M717	Y	100	Walrus in H20 by V4- SSL swimming around it. Both curious
										A196	Y	100	
										A291	N	100	
										A712	Y	100	
										A637	Y	100	
5/30/11	953	1025	145/24	17/0	34/6	18/5	214	35	249	A688	Y	100	
										A196	Y	100	
										A369	Y	100	
										M717	Y	100	
										A637	Y	100	
5/31/11	1328	1350	93/15	0/0	11/5	0/0	104	20	124	A369	Y	100	
6/1/11	947	1012	111/7	10/0	38/8	0/0	159	15	174	A688	Y	100	

APPENDIX E

Date	Start Time	Finish Time	View 1 land/water	View 2 land/water	View 3 land/water	View 4 land/water	Total Land	Total Water	Total	Brand	Photo	% Certain	Comments
6/2/11	1444	1518	186/2	3/1	27/1	0/0	216	4	220	M717	Y	100	
										A369	Y	100	
6/3/11	1420	1446	9/47	0/0	19/1	0/0	28	48	76	none			
6/4/11	1040	1104	136/14	0/0	30/0	0/0	166	14	180	none			Suckling behavior (photo)
6/5/11	1453	1519	205/32	0/0	32/1	6/0	243	33	276	A637	Y	100	
										A688	Y	100	
6/6/11	1503	1551	180/5	0/0	30/0	2/3	212	8	220	A688	Y	100	Suckling behavior (no photo)
6/7/11	1501	1533	178/17	0/0	30/0	0/0	208	17	225	M717	Y	100	
6/8/11	1515	1559	115/85	6/1	39/4	38/4	198	94	292	M717	Y	100	Cheek injury (photo)
										A712	Y	100	
										A688	Y	100	
6/9/11	1743	1803	54/42	9/2	42/2	24/5	129	51	180	M717	Y	100	SSL w protruding eyeball (photo)
										A637	Y	100	
6/10/11	1514	1544	147/7	0/0	23/0	0/0	170	7	177	A712	Y	100	
6/11/11	1446	1509	146/5	0/0	30/0	0/0	176	5	181	none			
6/12/11	NC												
6/13/11	957	1025	190/4	38/0	19/0	1/1	248	5	253	A637	Y	100	
6/14/11	1101	1127	175/12	19/1	24/1	0/0	218	14	232	none			
6/15/11	1509	1535	108/34	28/8	27/1	18/22	181	65	246	A688	Y	100	
6/16/11	1014	1054	170/6	14/0	14/0	0/0	198	6	204	M717	Y	80	Partial photo, suckling behavior (photo)
6/17/11	954	1026	161/3	2/0	12/1	0/0	175	4	179	A637	Y	100	
6/18/11	957	1031	205/18	29/0	22/0	0/12	256	30	286	none			
6/19/11	951	1016	111/13	23/4	16/0	2/5	152	22	174	A688	Y	100	
										A712	Y	100	
6/20/11	1510	1537	54/54	39/8	37/2	63/18	193	82	275	A637	Y	100	
6/21/11	1457	1517	158/7	20/0	27/0	8/0	213	7	220	A637	Y	100	
6/22/11	1542	1616	57/33	36/0	49/0	68/8	210	41	251	A637	Y	95	eye injury (photo)
										A420	Y	100	
										A688	Y	100	
6/23/11	1515	1551	54/16	29/1	29/0	30/12	142	29	171	A688	Y	100	
6/24/11	1018	1053	141/8	34/0	19/1	2/6	196	15	211	none			
6/25/11	1620	1644	45/30	27/2	33/1	72/14	177	47	224	A688	Y	100	
6/26/11	1530	1547	45/2	13/0	20/0	0/0	78	2	80	A712	Y	100	
6/27/11	1012	1042	71/5	46/0	23/1	0/0	140	6	146	A712	Y	100	
										A637	Y	80	

APPENDIX E

Date	Start Time	Finish Time	View 1 land/water	View 2 land/water	View 3 land/water	View 4 land/water	Total Land	Total Water	Total	Brand	Photo	% Certain	Comments
6/28/11	1614	1635	102/2	34/0	35/0	1/0	172	2	174	A637	Y	100	Photo of eye injury
6/29/11	1423	1444	99/2	41/1	32/0	0/0	172	3	175	A712	Y	100	
6/30/11	1029	1111	161/9	28/0	25/1	6/10	220	20	240	none			
7/1/11	1454	1515	120/11	23/1	38/0	2/2	183	14	197	none			
7/2/11	1014	1101	182/3	6/1	37/1	4/14	229	19	248	A605	Y	100	
										A688	Y	100	
										A637	Y	60	Partial photo
7/3/11	1528	1553	98/17	22/8	29/4	19/11	168	40	208	none			
7/4/11	1019	1039	83/12	10/0	24/2	7/7	124	21	145	none			
7/5/11	1353	1413	112/5	6/0	29/2	15/6	162	13	175	none			
7/6/11	959	1013	8/31	1/0	3/0	0/0	12	31	43	none			
7/7/11	1027	1041	38/2	0/0	14/0	0/0	52	2	54	none			
7/8/11	1438	1518	167/7	1/0	33/0	25/7	226	14	240	none			15:06 DS, most flush from V1 (photos) 4 CORA making racket and flying low, poss. Cause?
7/9/11	1431	1457	96/0	1/0	34/1	2/0	133	1	134	A712	N	100	
7/10/11	1453	1528	54/61	7/4	54/8	61/27	176	100	276	A688	Y	100	
										A637	Y	100	
7/11/11	1609	1626	96/4	1/0	41/1	2/1	140	6	146	A712	Y	100	
7/12/11	1010	1035	180/1	2/0	38/0	0/1	220	2	222	none			eye injury (photo)
7/13/11	1359	1430	186/6	1/0	36/0	2/0	225	6	231	none			
7/14/11	1408	1436	208/5	0/0	21/1	8/4	237	10	247	A688	Y	100	
										A637	Y	100	
7/15/11	1535	1556	111/22	0/0	35/5	12/28	158	55	213	A688	Y	100	
										A605	Y	100	
7/16/11	1014	1130	178/22	1/0	43/0	14/11	236	33	269	A605	Y	100	eye injury (photo)
										A712	Y	100	
										A637	Y	100	
										V?	Y	80	
7/17/11	1444	1500	124/2	1/0	19/2	0/0	144	4	148	none			
7/18/11	1120	1136	177/3	0/0	34/0	4/0	215	3	218	none			
7/19/11	1315	1430	71/33	2/0	34/3	45/14	152	50	202	A605	Y	100	
										A712	Y	100	
										A637	Y	100	
7/20/11	1625	1640	85/0	0/0	18/0	to windy	103	0	103	none			
7/21/11	1408	1445	93/10	3/1	32/0	35/17	163	29	191	A688	Y	100	
										A712	Y	100	

APPENDIX E

Date	Start Time	Finish Time	View 1 land/water	View 2 land/water	View 3 land/water	View 4 land/water	Total Land	Total Water	Total	Brand	Photo	% Certain	Comments
7/23/11	1040	1110	80/6	0/0	16/0	0/0	96	6	102	A637	Y	100	
7/24/11	1020	1045	7/70	0/0	14/4	0/0	21	74	95	none			
7/25/11	1445	1515	77/0	31/0	45/0	23/1	176	1	177	A688	Y	100	
7/26/11	1815	1850	70/0	10/4	34/0	67/4	181	8	189	A688	Y	100	photo of eye injury
7/27/11	1830	1910	60/0	27/0	51/2	80/2	218	4	222	none			
7/28/11	1533	1612	129/2	13/0	36/0	12/0	190	2	192	none			
7/29/11	1705	1740	113/0	16/0	37/0	43/3	209	3	212	A637	Y	100	
7/30/11	1710		53/33	12/0	48/0	37/8	150	41	191	none			
7/31/11	NC												
8/1/11	1523	1550	90/0	17/0	45/7	0/3	152	10	162	none			
8/2/11	1021	1102	143/15	32/0	48/0	26/4	249	19	268	A637	Y	100	photo of eye injury
													photo of 2-3 walrus next to V3 slight DS (photo)
8/3/11	1430	1501	54/3	35/3	40/1	27/2	156	9	165	A637	Y	100	
8/4/11	1435	1509	0/14	21/0	74/0	11/0	106	14	120	A712	Y	100	
8/5/11	951	1024	64/0	42/0	67/0	10/2	183	2	185	A712	Y	100	
8/6/11	948	1001	0/~15	0/1	38/10	0/0	38	~26	64	none			
8/7/11	1600	1624	0/0	37/0	65/1	72/1	174	2	176	none			
8/8/11	1511	1535	0/1	53/0	66/3	62/10	181	14	195	A712	Y	100	photo of jaw injury
										A688	Y	100	
8/9/11	1515	1547	3/1	43/0	71/2	81/20	198	23	221	A688	Y	100	
										A712	Y	100	
8/10/11	1017	1045	77/15	42/3	58/5	7/35	184	58	242	A688	Y	100	Photo of eye injury
										A605	Y	100	
8/11/11	1609	1638	56/10	39/3	52/2	67/18	214	33	247	A605	Y	100	
8/12/11	1007	1023	95/14	40/0	47/5	19/9	201	28	229	A712	Y	100	Disturbance ~29 DS off back of V3 (between V1&V3)
8/13/11	1505	1537	97/4	36/2	43/0	15/15	191	21	212	A605	N	100	

APPENDIX F1

Appendix F1. Pelagic Cormorant Productivity Data, Observation Point and Second Beach.

2011 Pelagic Cormorant Productivity Observation Point (OP)

Nest #	5/23	5/27	5/30	6/2	6/5	6/8	6/11	6/14	6/17	6/20	6/23	6/26	6/29	7/3	7/7	7/11	7/15	7/20	7/22	7/26
1	e1	e3	e4	e4	e3+	e4	e4	IP	e4	e3+	c2e2	c2+e1	c4	c3	c3+	c3	c3	c3	c3	c3
2	e1	e2	IP	e3+	e4	e4	e4	e3+	e3+	IP	e3+	c2e1	c1+e1	c2+	c2+	B	N	N	N	N
3		e2	e3	IP	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N	N
4		e2+	e2+	e2+	e4	e3+	IP	e2+	e2+	e3+	IP	c1+e1+	IP	c1+	c3	c3	c3	c3	c2+	c3
5					e1	e3+	e3	IP	e3	e3	e3+	e2+	e3	e3	c3	BP	c2+	N	N	N

Nest #	7/28	8/1	8/5	8/7	8/10
1	c3	c3	c3	f3	
2	N	N	N	N	
3	N	N	N	N	
4	c3	c3	c3	c3	f3
5	N	N	N	N	

2011 Pelagic Cormorant Productivity Second Beach (SB)

Nest #	6/4	6/5	6/8	6/11	6/14	6/18	6/20	6/23	6/26	6/29	7/3	7/7	7/11	7/15	7/20	7/24	7/29	8/1	8/5	8/13
1	e3+	e2+	e3+	IP	e1+	e3+	e1+	e3	e3	c2e1	c2+	c3	c2	c2	c2	c2	c2	c2	c2	f2
2				e1	e2	e3+	e2+	e2+	e2+	e1+	e1	IP	c1e1	c1+	c1+	c1+	c2	c1+	too late	
3				e2+	e2+	IP	e3	e2+	e3	e3	e2+	B	B	B	B	B				
4				e1+	e2+	B	B	B	B	N	B	N	N	B	B	B				
5					e1	e3	IP	e3+	IP	IP	e1+	e1+	c3	c2+	c2	c2	c2	c2	too late	
6						e2	IP	e3	e3	N	N	N	N	N	N	N				
7						e1	e2	e2+	e1+	N	N	N	N	N	N	N				
8						e2	e2+	e3+	IP	e2	IP	e2+	e2	e2	N	N				
9						e2+	e1+	IP	e1+	e2+	N	N	N	N	N	N				
10						e2+	e2	e3	IP	N	N	N	N	N	N	N				
11						e1	e1	e1	B	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 Edead (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. Black Legged Kittiwake Productivity Data, Observation Point Plots.

2011 BLKI Productivity Plot 2 - Observation Point																							
Nest #	6/1	6/4	6/6	6/7	6/10	6/13	6/16	6/19	6/22	6/25	6/28	7/1	7/4	7/7	7/10	7/13	7/16	7/20	7/22	7/25	7/28	8/1	8/4	8/7
1	e1	e2	e2 e1	e2	e2	e2	e2	e2	e2	e2	e2	c1e 1	c2	c2	c1+	c1	c1 c dead	c1	c1	c1	c1	c1	f1	
2	e1	e2	+	e2	IP	e2	e2	e2	e2	e1+	e2	IP	c1	c1	c1	c1		**B**	N	N	N	N		
3		e2	IP	e2	IP	IP	IP	IP	e1+	IP	IP	c1+	c1	c1	c1	c1	c1	N	N	N	N	N		
4		e1	IP	e1 +	IP	IP	IP	IP	IP	e1+	c1	c1	c1	c1	c1	c1	c1	c1	P	c1	P	B		
5		e1 +	IP	e1 +	e1+	e1	e1	e1	IP	e1+	P	B	B	N	B	B	N	B	B	B	N	N		
6		e1	IP	e1 +	IP	IP	e1+	e1	e1+	IP	e1	c1	c1	BP	c1	P	c1	N	N	N	N	N		
7		e1	e1 +	e1	e1+	e1	e1	e1	e1	e1	IP	IP	e1	e1	e1	e1	e1	e1	e1	B	N	N		
8		e1	e1 +	e2	IP	e2	e2	e2	IP	e2	c1e 1	c1+	c1+	c1e 1	c1e 1	c1+	c1	c1	c1	c1	c1	c dead		
9		e1	e1	e1	IP	e1+	e1	e1	IP	e1	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	N	N		
10		e1	IP	e2	IP	e2	IP	IP	IP	e1+	c1e 1	c2	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
11		e1	IP	e2	IP	IP	e1+	e2	e1+	P	e1+	c2	c1	c1	c1	BP	c1	c1	c1	c1	N	N		
12		e1	IP	e1	IP	IP	IP	e1	IP	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
13		e1	e2	e2	B	B	B	B	B	B	B	B	B	N	N	N	N	N	N	N	N	N		
14		e1	e1	e1	IP	e1	e1	e1	e1	e1	e1	c1	c1	c1	c1	c1	c1	c1	N	N	N	N		
15		e2	IP	N	B	N	N	N	N	N	N c1e	N	N	N	N	N	N	N	N	N	N	N		
16		e1	e2	e2	e1+	e2	e2	e2	e1+	e2	1	c1	c1 c1e	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
17			e1	e2	IP	e2	e2	e2	e2	e2	IP	e2	1	BP	B	N	N	N	N	N	N	N		
18			e1	IP	e1+	B	B	B	B	B	B	B	N	N	N	B	B	B	N	B	N	N		
19			e1	e1	IP	e1	e1	e1	e1	e1	e1	e1	c1	c1	c1	BP	c1	c1	c1	N	N	N		
20			e2	IP	IP	e2	IP	e2	e2	e2	e2	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1
21			e1	e2	e1+	IP	e1+	e2	e2	e2	e2	e2	c2	c2	c1	c1	c1	c1	c1	c1 dead	c1	c1	c1	f1
22			e2	e2	e1+	IP	e2	IP	e1+	e2	e2	c1+ c1e	c2	c2	c1	c1	c1	c1	c1	N	N			
23			e1	e1	IP	IP	e1+	e2	IP	e2	e2	1	e2	c1+	c1	c1	c1	c1	c1	N	N	N		
24			e1	e1	B	B	B	B	B	e1	B	B	N	N	N	N	N	N	N	N	N	N		
25				e2	IP	IP	e2	e1+	e2	IP	IP	c2	c2	c1	c1	BP	c1	c1	c1	c1	c1	c1	c1	f1
26				e1	e1	IP	e2	e2	e2	e2	e2	IP	e2	c2	c1+	c1	c1	c1	c1	c1	c1	c1	B	
27				e1	IP	B	B	B	N	N	N	N	N	N	N	N	N	N	N	N	N	N		

APPENDIX F2

2011 BLKI Productivity Plot 3 - Observation Point

Nest #	5/ 29	5/ 30	6/ 1	6/ 2	6/4	6/6	6/ 10	6/ 13	6/ 16	6/ 19	6/ 22	6/ 25	6/ 28	7/1	7/4	7/7	7/ 10	7/ 13	7/ 16	7/ 19	7/ 22	7/ 25	7/28	8/ 1	8/ 4	8/ 7
1	e1	e1	e2	e2	e2	e2	IP	IP	e2	IP	e2	e2	c1e 1	c1+	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
2	e1	e1	e1	e2	e2	e2	e2	IP	e2	e2	e2	e2	c1e 1	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
3		e1	P	e1	e1	IP	e1	e1	e1	e1	e1	e1	e1	IP	c1	c1	c1	BP	N	N	**B**	N	N	N		
4		e1	IP	e2	e1 +	e2	e1+	e1+	e1	e1	IP	e1	e1	c1	c1	c1	c1	c1	N	N	B	B	N	N		
5		e1	e1	IP	e2	e1 +	e2	e1	e1+	e1	e1	e1	IP	B	B	B	B	B	B	B	B	N	N	N		
6		e1	IP	e2	e2	e2	e2	e2	e2	e2	e2	e2	e2	c2	c1	c1	B	B	B	N	N	N	N	N		
7			e1	IP	e1	e1	e1+	e1	e1	e1	e1	e1	c1e 1	c1	c1	c1	c1	c1	c1	N	N	N	N	N		
8			e1	e2	e2	e2	e2	IP	B	B	B	B	B	B	B	N	N	N	B	B	B	N	N	N		
9			e1	e1	IP	IP	IP	e2	e2	IP	e1+	IP	c2	c1+	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
10			e1	e1	e2	IP	e2	e2	e2	e2	e2	e2	c1e 1	c1e 1	c1e 1	c1e 1	c1	N	B	N	N	N	N	N		
11			e1	e1	e1	e1	e1	e1	e1+	e1+	e1	B	B	B	B	B	N	N	N	N	N	N	N	N		
12			e1	IP	e2	e1 +	e1+	e2	e2	e2	e2	e2	IP	c1+	B	B	B	B	N	N	B	B	N	N		
13			e1	e2	e1	IP	IP	IP	e1+	IP	IP	e1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
14			e1	e1	e1	e1	e1+	e1	e1	e1	B	B	N	B	B	N	B	N	N	N	B	N	N	N		
15				e1	e2	e2	e2	e2	e2	e2	e2	e2	c1e e2	c1+	c1+	c1+	c1	c1	c1	B	B	N	N	N		
16				e1	e2	e2	IP	e1+	IP	e2	IP	e2	1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	c1	f1	
17				e1	IP	IP	B	N	N	N	B	N	N	N	N	N	N	N	N	N	N	N	N	N		
18				e2	e2	e2	IP	e2	e1+	e1+	e1+	e2	c2	c2 c1e	c2 c1e	c1+	BP	BP	c1	c1	c1	c1	c1	c1	f1	
19				e1	e1	e2 e1	e1+	IP	e2	e1+	e2	e2	IP	1	1	c1	c1	c1	c1	c1	c1	c1	c1 c	B		
20				e1	e2	+	e1+	e2	IP	e2	IP	e1+	c2	c1+	c1	c1	BP	c1	c1	c1	c1	c1	dead	N		
21				e1	e1	e1	e1	B	B	B	B	B	B	N	N c1e	B	N	B	B	B	B	N	N	N		
22					e1	e2	e2	e2	e2	e1+	e1+	e2	e2	e2 c1e	1 c1e	c1+ c1e	c1 c1e	c1 c1e	N	N	B	N	N	N		
23					e1	e2	IP	e2	e2	e2	e1+	e2	e2	1	1	1	1	1	c1	c1	c1	c1	c1	B		
24					e1	e2	IP	IP	e2	e2	e2	e2	e2	IP c1e	c1+	c1	c1	c1	c1	B	N	N	N	N		
25					e1	e2	e2	e1+	IP	e1+	e1+	e2	e2	1	c1+	c1	c1	c1	c1	c1	dead	c1	c1	c1	c1	f1
26					e2	e2	IP	e2	e2	e2	e2	e2	c2	c1+	c1+	c1	c1	BP	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 E_{dead} (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. Common Murre Productivity Data, Observation Point Plots.

2011 COMU Productivity Plot 1 - Observation Point																				
Nest #	6/10	6/13	6/15	6/16	6/19	6/22	6/25	6/28	7/1	7/4	7/7	7/10	7/13	7/16	7/20	7/22	7/25	7/28	8/1	
1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	IP	IP	B	N	N	
2	e1	B	B	B	N	B	B	B	B	B	B	B	B	B	B	P	B	N	N	
3			e1	B	B	B	B	B	B	B	B	B	B	B	N	B	B	N	N	
4			e1	e1	e1	IP	e1	e1	e1	e1	e1	e1	e1	e1	c1	c1	BP	B	N	
5				e1	e1	B	B	B	B	e1	e1	IP	e1	e1	IP	IP	IP	IP	e1	
6				e1	e1	B	B	B	B	B	B	e1	e1	e1	IP	IP	e1	IP	e1	
7					e1	B	B	B	B	e1	IP	e1	e1	IP	IP	IP	IP	IP	e1	
8					e1	B	N	B	N	B	e1	e1	e1	N	N	N	N	N	N	
9					e1	B	N	B	N	N	e1	IP	e1	N	N	N	N	N	N	
10					e1	e1	IP	IP	IP	B	B	P	P	B	B	P	B	N	N	
11					e1	B	B	B	B	B	e1	IP	e1	e1	IP	IP	P	IP	e1	
12						e1	e1	e1	e1	e1	e1	IP	IP	e1	IP	IP	B	N	N	
13						e1	e1	e1	e1	IP	IP	IP	IP	deleted	grass		deleted	N	N	
14						e1	e1	IP	e1	e1	e1	e1	IP	B	B	B	B	N	N	
15							e1	B	B	B	B	B	B	B	N	B	P	N	N	
16							e1	B	B	B	B	B	P	e1	c1	IP	IP	IP	e1	

all birds re-laid eggs too late

2011 COMU Productivity Plot 2 - Observation Point																					
Nest #	6/9	6/11	6/13	6/16	6/19	6/22	6/25	6/28	7/1	7/4	7/7	7/10	7/13	7/16	7/20	7/21	7/25	7/28	8/1	8/4	8/7
1	e1	e1	e1	N	N	B	N	B	e1	N	N	B	N	N	N	N	N	N	N	N	
2	e1	e1	e1	e1	e1	IP	e1	e1	e1	e1	e1	e1	e1	e1	N	P	P	BP	c1	c1	f1
3	e1	e1	B	N	B	B	B	e1	B	B	N	B	N	B	P	N	N	N	N		
4	e1	e1	e1	e1	e1	IP	e1	e1	e1	IP	e1	IP	e1	B	B	B	B	N	N		
5	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	N	B	N	N	N	N	N		
6	e1	e1	e1	e1	e1	e1	B	e1	e1	B	B	B	B	B	B	N	N	N	N		
7	e1	e1	B	N	B	B	N	B	N	N	N	N	B	N	N	N	N	N	N		
8	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	IP	e1	B	N	N	N	N		
9	e1	e1	B	B	B	B	B	e1	e1	e1	e1	e1	IP	e1	P	N	N	N	N		
10		e1	e1	IP	B	B	B	B	e1	IP	e1	e1	e1	IP	IP	IP	IP	c1	c1	B	
11		e1	e1	IP	e1	B	B	N	P	N	N	N	B	N	N	N	N	N	N		
12		e1	e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	e1	e1	c1	BP	BP	c1	BP	f1	
13		e1	IP	e1	B	B	B	B	B	P	e1	e1	e1	B	N	N	N	N	N		
14			e1	P	IP	IP	e1	e1	e1	e1	e1	e1	IP	B	B	N	N	N	N		
15			e1	e1	e1	e1	e1	IP	e1	e1	e1	IP	e1	c1	c1	c1	c1	BP	c1	f1	
16			e1	B	B	B	B	B	B	e1	e1	e1	e1	B	B	N	N	N	N		
17			e1	e1	e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	P	P	c1	P	BP	P	f1
18			e1	e1	e1	e1	e1	e1	e1	IP	IP	e1	B	B	P	N	N	N	N		
19				e1	e1	e1	e1	e1	B	B	B	N	B	B	B	N	N	N	N		
20				e1	P	B	N	B	B	B	e1	e1	e1	e1	P	IP	P	c1	B		
21				e1	e1	B	B	B	B	B	N	N	B	B	N	N	N	N	N		

22				e1	IP	e1	e1	IP	e1	e1	IP	IP	B	B	B	N	N	N	N		
23				e1	B	B	B	B	N	B	B	B	B	B	B	N	N	N	N	N	
24				e1	e1	B	N	B	B	B	B	B	B	B	B	B	N	N	N	N	
25				e1	IP	IP	B	B	B	B	N	B	B	B	B	B	B	N	N		
2011 COMU Productivity Plot 4 - Observation Point																					
Nest #	**6/9**	**6/11**	**6/13**	**6/16**	**6/19**	**6/22**	**6/25**	**6/28**	**7/1**	**7/4**	**7/7**	**7/10**	**7/13**	**7/16**	**7/20**	**7/22**	**7/25**	**7/28**	**8/1**	**8/4**	**8/7**
1	e1	B	B	B	B	B	B	e1	IP	e1	e1	e1	IP	e1	IP	IP	N	N	N		
2	e1	B	B	B	B	B	B	P	IP	e1	e1	e1	P	e1	IP	IP	N	N	N		
3	e1	e1	IP	IP	P	e1	e1	e1	IP	e1	P	e1	e1	c1	BP	P	P	P	B		
4	e1	e1	B	B	B	B	B	e1	B	P	e1	e1	e1	e1	e1	IP	e1	e1	B		
5	e1	e1	IP	e1	IP	B	B	B	B	B	B	B	P	P	B	P	B	N	N		
6	e1	N	N	N	N	N	B	N	N	N	B	B	N	B	N	B	N	N	N		
7	e1	B	B	B	N	B	B	e1	e1	e1	e1	e1	IP	P	N	B	N	N	N		
8		e1	IP	e1	e1	e1	e1	e1	e1	B	B	B	B	B	N	B	B	N	N		
9		e1	P	e1	e1	e1	e1	B	B	B	B	B	P	e1	e1	e1	e1	IP	B		
10		e1	N	N	B	B	B	e1	e1	IP	IP	e1	N	B	B	N	N	N	N		
11		e1	B	B	B	B	B	e1	IP	e1	e1	e1	IP	e1	e1	e1	B	N	N		
12			e1	P	e1	e1	B	N	B	N	N	N	B	B	N	N	N	N	N		
13			e1	e1	e1	IP	e1	e1	e1	e1	e1	e1	B	B	N	N	N	N	N		
14			e1	e1	e1	e1	e1	e1	e1	e1	IP	e1	e1	c1	BP	BP	c1	P	B		
15			e1	B	B	B	B	B	B	B	N	B	B	B	N	N	N	N	N		
16			e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	IP	c1	c1	BP	c1	BP	c1	f1	
17			e1	P	P	e1	B	B	B	B	N	B	B	B	N	N	N	N	N		
18			e1	e1	e1	e1	e1	e1	IP	e1	e1	e1	e1	e1	IP	c1	c1	BP	c1	c1	f1
19			e1	e1	e1	e1	e1	IP	e1	e1	e1	e1	e1	c1	BP	BP	c1	BP	B		
20				e1	e1	e1	P	e1	e1	P	e1	e1	e1	IP	e1	P	P	P	B		
21				e1	P	e1	e1	IP	e1	IP	e1	e1	e1	e1	BP	c1	c1	BP	c1	f1	
22				e1	B	P	P/B	B	B	B	e1	e1	IP	e1	IP	IP	IP	IP	e1	too late	
23				e1	e1	e1	B	B	B	B	B	P	N	B	N	B	N	N	N		
24				e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	BP	c1	B	P	P		
25				e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	e1	N	B	N	N	N		
26				e1	e1	B	B	B	B	B	B	B	B	B	B	B	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. fox pred.

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_{dead} (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. Population Counts, Observation Point Index Plots.

2011 Population Count - Plot 1 - Observation Point										
Date	Count #	Start Time	Finish Time	# BLKI	# BLKI Nests	# COMU	# PECO Nests	#PECO	# HOPU	# TUPU
6/15	1	14:36	14:38	26	22	88	0	0	0	0
6/15	2	14:39	14:41	24	22	88	0	0	0	0
6/17	1	11:10	11:12	33	22	104	0	0	0	0
6/17	2	11:13	11:16	33	22	109	0	0	0	0
6/21	1	16:03	16:05	31	24	115	0	0	0	0
6/21	2	16:06	16:08	31	24	117	0	0	0	0
6/24	1	11:56	11:59	30	22	115	0	0	0	0
6/24	2	12:00	12:02	30	22	122	0	0	0	0
6/27	1	13:39	13:42	25	22	125	0	0	0	0
6/27	2	13:42	13:45	26	21	128	0	0	0	0
6/30	1	10:25	10:28	20	21	119	0	0	0	0
6/30	2	10:29	10:32	21	21	130	0	0	0	0
7/3	1	11:23	11:25	31	23	121	0	0	0	0
7/3	2	11:26	11:28	31	23	123	0	0	0	0
7/6	1	11:35	11:38	26	24	134	0	0	0	0
7/6	2	11:39	11:41	27	24	134	0	0	0	0
7/9	1	16:37	16:40	15	21	114	0	0	0	0
7/9	2	16:41	16:43	15	21	114	0	0	0	0
7/12	1	12:31	12:34	14	20	112	0	0	0	0
7/12	2	12:35	12:38	14	21	105	0	0	0	0
2011 Population Count - Plot 2 - Observation Point										
Date	Count #	Start Time	Finish Time	# BLKI	# BLKI Nests	# COMU	# PECO Nests	#PECO	# HOPU	# TUPU
6/15	1	14:45	14:49	94	69	127	0	0	0	0
6/15	2	14:50	14:53	93	72	128	0	0	0	0
6/17	1	12:02	12:07	85	70	152	0	0	0	0
6/17	2	12:08	12:11	86	71	163	0	0	0	0
6/21	1	16:09	16:13	92	77	163	0	0	0	0
6/21	2	16:14	16:17	85	75	157	0	0	0	0
6/24	1	12:51	12:55	87	74	167	0	0	0	0
6/24	2	12:56	13:00	90	74	163	0	0	0	0
6/27	1	13:46	13:50	75	75	168	0	0	0	0
6/27	2	13:51	13:54	71	73	169	0	0	0	0
6/30	1	10:34	10:39	78	76	182	0	0	0	0
6/30	2	10:40	10:45	79	77	191	0	0	0	0
7/3	1	11:29	11:32	86	75	207	0	0	0	0
7/3	2	11:34	11:36	86	75	203	0	0	0	0
7/6	1	11:42	11:47	83	76	178	0	0	0	0
7/6	2	11:48	11:53	83	77	184	0	0	0	0
7/9	1	16:44	16:47	64	73	138	0	0	0	0
7/9	2	16:48	16:50	64	76	134	0	0	0	0
7/12	1	12:39	12:43	51	63	126	0	0	0	0
7/12	2	12:44	12:47	54	64	127	0	0	0	0

APPENDIX G

2011 Population Count - Plot 3 - Observation Point										
Date	Count #	Start Time	Finish Time	# BLKI	# BLKI Nests	# COMU	# PECO Nests	#PECO	# HOPU	# TUPU
6/15	1	15:09	15:14	119	90	47	2	1	0	0
6/15	2	15:15	15:20	122	90	46	2	1	0	0
6/17	1	11:49	11:54	120	89	77	2	1	0	0
6/17	2	11:55	11:58	123	90	75	2	1	0	0
6/21	1	16:26	16:29	116	92	51	2	1	0	0
6/21	2	16:30	16:33	119	91	54	2	1	0	0
6/24	1	12:39	12:42	103	80	43	2	1	0	0
6/24	2	12:43	12:45	106	85	43	2	1	0	0
6/27	1	14:04	14:08	99	89	84	2	1	0	0
6/27	2	14:09	14:12	100	89	81	2	1	0	0
6/30	1	11:21	11:25	96	87	83	2	1	0	0
6/30	2	11:26	11:30	97	87	84	2	1	0	0
7/3	1	11:47	11:50	98	84	99	2	1	0	0
7/3	2	11:51	11:55	100	84	97	2	1	0	0
7/6	1	12:25	12:28	90	84	46	2	1	0	0
7/6	2	12:29	12:31	90	81	45	2	1	0	0
7/9	1	16:56	16:58	75	87	29	2	1	0	0
7/9	2	16:59	17:01	76	86	29	2	1	0	0
7/12	1	13:21	13:24	56	80	30	2	1	0	0
7/12	2	13:25	13:28	55	82	31	2	1	0	0

2011 Population Count - Plot 4 - Observation Point										
Date	Count #	Start Time	Finish Time	# BLKI	# BLKI Nests	# COMU	# PECO Nests	#PECO	# HOPU	# TUPU
6/15	1	15:21	15:26	115	88	562	3	3	0	0
6/15	2	15:27	15:31	111	90	575	3	3	0	0
6/17	1	11:28	11:38	122	92	526	3	3	0	0
6/17	2	11:39	11:48	128	91	544	3	3	0	0
6/21	1	16:34	16:39	124	96	517	3	3	0	0
6/21	2	16:40	16:47	130	93	539	3	3	0	0
6/24	1	12:20	12:29	118	93	652	3	3	0	0
6/24	2	12:30	12:39	116	98	662	3	3	0	0
6/27	1	14:13	14:19	100	95	631	3	3	0	0
6/27	2	14:20	14:27	103	95	582	3	3	Some birds flushed towards the end of the 2nd ct	
6/30	1	10:59	11:09	105	95	628	3	3	0	0
6/30	2	11:10	11:20	109	93	637	3	3	0	0
7/3	1	11:56	12:04	114	93	743	3	3	0	0
7/3	2	12:05	12:12	115	95	736	3	3	0	0
7/6	1	12:09	12:16	90	89	473	3	3	0	0
7/6	2	12:17	12:24	92	92	451	3	3	0	0
7/9	1	17:02	17:09	76	94	442	3	3	0	0
7/9	2	17:10	17:16	76	93	449	3	3	0	0
7/12	1	13:03	13:11	62	84	533	3	2	0	0
7/12	2	13:12	13:20	58	86	539	3	2	0	0

APPENDIX G

2011 Population Count - Plot 5 - Observation Point										
Date	**Count #**	**Start Time**	**Finish Time**	**# BLKI**	**# BLKI Nests**	**# COMU**	**# PECO Nests**	**#PECO**	**# HOPU**	**# TUPU**
6/15	1	15:03	15:05	13	9	122	0	0	0	0
6/15	2	15:06	15:08	13	9	124	0	0	0	0
6/17	1	11:18	11:22	10	7	172	0	0	0	0
6/17	2	11:23	11:26	11	8	172	0	0	0	0
6/21	1	16:19	16:20	15	14	158	0	0	0	0
6/21	2	16:21	16:24	14	14	163	0	0	0	0
6/24	1	12:06	12:10	13	11	196	0	0	0	0
6/24	2	12:11	12:14	13	12	216	0	0	0	0
6/27	1	13:56	13:59	13	13	190	0	0	0	0
6/27	2	14:00	14:02	13	13	186	0	0	0	0
6/30	1	10:48	10:51	18	18	230	0	0	0	0
6/30	2	10:52	10:55	19	17	242	0	0	0	0
7/3	1	11:39	11:40	19	16	203	0	0	0	0
7/3	2	11:41	11:45	19	16	201	0	0	0	0
7/6	1	12:00	12:03	23	19	126	0	0	0	0
7/6	2	12:04	12:08	22	18	132	0	0	0	0
7/9	1	16:52	16:53	19	18	61	0	0	0	0
7/9	2	16:53	16:55	18	18	61	0	0	0	0
7/12	1	12:54	12:57	17	20	204	0	0	0	0
7/12	2	12:58	13:00	19	21	205	0	0	0	0

APPENDIX H

Appendix H. Round Island Daily Observations - 2011

DATE	SPECIES	NUMBER	LOCATION	OBSERVATION
5/5	PAWA	~50	WM	Seen from helo on approach to RI
5/5	GRWH	2-3	N of cabin	Swimming
5/5	CORA			First sighting
5/5	BLKI			First sighting
5/5	COMU		SB	First sighting
5/5	HADU	12	SB	First sighting
5/5	LALO	1	CG	Male
5/5	Red fox	1	CG	First sighting
5/6	PAAU	~89	N of cabin	First sighting, hanging out on the water
5/6	TUPU	2	N of cabin	First sighting
5/6	GCRF	1	FB	First sighting on a rock
5/6	PIGU	2	FB	First sighting
5/6	Woolly lousewort		T1	Starting to come up with wool
5/6	AMPI	1	EC	First sighting
5/6	Willow		FB	Starting to bloom
5/6	Club moss		EC	Starting to bloom
5/6	NOHA	1	E of cabin	Male
5/7	GRWH	3	N of cabin	Rolling in water
5/7	NOHA	1	E over cabin towards CG	Female
5/7	SASP	1	FBS	First sighting
5/7				Set up cook tent in CG
5/8	HOPU	2	FB	First sighting
5/8	BAEA	2	N of cabin	First sighting
5/8	NOHA	1	around cabin & CG	
5/8	GWGU			First sighting
5/9	GRWH	2-3	E of cabin	
5/9	NOHA	2	FBS	Flying with SEOW
5/9	SEOW	3	FBS	Flying with NOHA
5/9	ATSP	1	by cabin	First sighting
5/9	People	2	MB	2 males poach walrus on MB
5/10	SEOW	1	FBS	
5/10	GCSP	1	EC	First sighting
5/10	MISC	2	fly over 2000'	USFWS fly over for MB walrus poaching event
5/11	CORE	2	SP	First sighting
5/11	RLHA	2	EC	First sighting
5/11	COMU	0	OP	No murres around on cliffs or water
5/12	NOPI	1	BC	First sighting (male)
5/12	ATSP	1	SB	In thickets
5/12	WATA	1	FP	First sighting
5/12	GRWH	2	E of cabin	
5/12	SEOW	1	W in front of cabin	Flying over CG
5/12	Caterpillar	3	EC	First sightings on trail to EC, blk, fuzzy, w orange band on head
5/12	MISC	2	cabin, MB	AST and SKS investigation of mortality on MB (via helo), collected evidence and head from poached walrus
5/12	CRAU	2	NBC	First sighting w group of PAAU
5/13	LTDU	1	BC	First sighting (male)
5/13	LALO	3	W of cabin	2 males, 1 female on trail
5/13	WATA	2	BC	Foraging on rocks
5/13	HADU	20-25	BC, NBC	
5/13	Caterpillar	6	EC	Seen on trail to SSL
5/14				Big storm on island, gale winds, 10 ft seas
5/15	HETH	1	OP1	First sighting
5/16	EMGO	1	E of cabin	First sighting on a rock
5/16	RNGR	2	FR/BC	First sighting
5/16	Duck (Mallard?)	1	BC	
5/16	LALO	1	CG	Male
5/16	SEOW	1	On hill behind CG	
5/16	GRWH	2	E of FB	
5/16	Grass sprigs			Coming up all over island
5/16	RLHA	2	behind cabin & CG	

APPENDIX H

DATE	SPECIES	NUMBER	LOCATION	OBSERVATION
5/16	NOHA	1	behind cabin & CG	
5/17	RBME	1	SB	First sighting (female)
5/18	Woolly lousewort		EC	Blooming
5/18	PAWA	1	FR	Bloody patches on R pectoral flipper not natural looking, consistently scratching
5/18	WCSP	1	FRS	First sighting
5/18	Caterpillar	11	NBC-FR	
5/19	HETH	3	EC	In willow thickets
5/19	WCSP	2	EC	In willow thickets
5/19	NOHA	1	EC	Female flying
5/19	RLHA	1	EC	Flying
5/19	SEOW	1	over water in front of cabin	
5/19	TRSW	3	2(E of cabin), 1(N of cabin)	First sighting
5/19	WCSP	2	1(SB), 1(TT)	
5/19	RBME	1	CG	Female
5/21	SEOW	1	over cabin - E	
5/21	Stairs			Stringers and braces up for stairs in BC
5/21	Spring			Spring opened up (due to prodding by staff), water tank full
5/22	Frigid coltsfoot	1	FR	First bloom
5/22	Spring			Hooked up spring
5/23	NOHA	1	cabin	Fly by cabin with PAAU in talons heading E
5/23	AMRO	1	EC	first sighting
5/23	bearberry		T1	First bloom
5/23	PECO		OP	PECO lay eggs
5/24	REPO	1	CG	
5/24	marsh violet		SB	First bloom
5/25	YRWA	1	cabin	Male
5/25	AMRO	1	hill behind cabin	
5/25	ROPT	1	hill behind cabin	First sighting
5/25	garden sorrel		EC-V3	First bloom
5/25	Narcissus-flowered anemone		hill behind cabin	First bloom
5/26	WCSP	3	cabin	
5/26	GRSC	1	CG	Male- first sighting on island?
5/26	WIWA	1	MB	First sighting
5/26	YRWA	1	FB	Female
5/27	DEJU	1	cabin	First sighting
5/27	WIWA	3	SB	males
5/27	OCWA	3	SB	2 female, 1 male
5/27	SEOW	1	FBS	
5/27	PAAU	~200	SP	Large group on the water
5/27	CORA	3	SB	Raven chicks hatched (c3+) within the last couple days
5/27	Mouse-eared chickweed		V4	First Bloom
5/27	Fiddlehead fern		TT	First bloom
5/27	Umbel-flowered bittercress		EC-V4	First bloom
5/28	BAEA	2	South side island	Collecting grass for nest, getting chased by ravens
5/28	MERL/PEFA	1	South side island	First sighting
5/28	DCCO	1	fly by cabin	First sighting
5/29	BLKI	2	OP	First eggs laid
5/29	CORA	4	SB	4 chicks hatched
5/29	Yellow anemone		FR/NBC	First bloom
5/29	Blackish oxytrope		N of T1	First bloom
5/29	Few- flowered corydalis		By summit stake	First bloom
5/29	Kamchatka rockcress		By summit stake	First bloom
5/29	Forget-me-not		EC-V3	First bloom
5/30	Pixie eye primrose		TT	First bloom
5/31	Cloudberry		FB	First bloom
5/31	Short-stalked sedge		FB	First bloom
5/31	Rosewort		EC	First bloom
5/31	DUSH	1	EC	In mouth of fox- first sighting
5/31	DUSH	1	BC/CG	Dead on trail
5/31	SEOW	1	BC	Flying over H20
6/1	Purple cress		FRS	First bloom

APPENDIX H

DATE	SPECIES	NUMBER	LOCATION	OBSERVATION
6/2	Stream violet		EC	First bloom
6/2	Cranberry		EC	First bloom
6/2	Storm			Big storm on island started in the PM, gale winds (90kph), 13 ft seas
6/3	Storm			Big storm on island continued in the AM, gale winds (90kph), 13 ft seas
6/3	PAWA	1	BC/MB	New mort on MB = old mort moved out of BC?
6/4	PAWA	1	FR	Walrus calf seen in H20 around FR
6/4	Cuckoo flower		behind cabin	First bloom
6/4	Rock Jasmine		SP	First bloom
6/4	Ivory	2	SP	Two large tusks seen from staff VP at SP- will try to collect 6/5
6/4	BAEA	1	cabin	Flying over H20 in front of cabin
6/5	CORA	5	SB	Five chicks in raven next
6/5	One-flowered cinquefoil		MB look-out trail by cabin	First bloom
6/5	Brooks saxifrage		SB	First bloom
6/5	Tall Jacob's ladder		SB	First bloom
6/5	Alp lily		T1	First bloom
6/5	Staff	1	RI	Ed makes it to Round Island via Pollux helicopter
6/6	Labrador tea		EC	First bloom
6/6	Alaska violet		Summit stake	First bloom
6/6	Swedish dwarf cornel		all over	First bloom
6/7	COMU	1	OP2	First eggs laid
6/8	DCCO	1	SB	On cliffs w PECOs
6/8	CAGO	1	MB	First sighting
6/8	PAWA	1	WM	Walrus calf seen on the beach w other males
6/8	CORE	8	SB	
6/8	Nagoon berry		SB	First bloom
6/8	Spring beauty		FRS	First bloom
6/8	BAEA	1	cabin	Takes fish from mouth of SSL in H20
6/9	Radar		behind cabin	Radar tower put up for test run
6/9	Minke whale (?)	1	cabin	First sighting
6/10	Varied thrush	1	BC	First sighting
6/10	CORE	~30	EC	Flocks flying around EC
6/10	Northern watercarpet		EC	First bloom
6/10	Lupine		EC	First bloom
6/10	Bog rosemary		behind cabin	First bloom
6/10	Star flower		EC	First bloom
6/10	Pink plume		EC	First bloom
6/11	PAWA	1	WM	Walrus calf on WM
6/12	PAWA	1	WM	Walrus calf on WM
6/12	ASLC camera	1	WM	Alaska Sealife Center camera installed on WM
6/13	ASLC camera		WM	Both cameras taking min photos and working correctly
6/13	Chocolate lily		EC	First bloom
6/13	Hairy arctic milkvetch		FR	First bloom
6/14	LASE	1	CG	First sighting still in lanugo on the rocks
6/14	PAWA	1	WM	Walrus calf on WM
6/14	Arctic dock		FP	First bloom
6/14	CORE	~100	T1	Flocks flying around EC
6/14	Langsdorf lousewort		SB	First bloom
6/14	Wild geranium		EC	First bloom
6/15	ASLC camera	2	WM	Cameras not working on 6/14, changed cards and reset both
6/15	Capitate valerian		FR	First bloom
6/15	Winter cress		BC	First bloom
6/16	Forget-me-not		SP & EC	Pink color phase on SP and seen on EC
6/16	Bank swallow	1	T1	First sighting
6/16	Carrion beetle	3	EC	First sighting on dead bird wing

APPENDIX H

DATE	SPECIES	NUMBER	LOCATION	OBSERVATION
6/17	ASLC camera	2	WM	Reset both cameras, not taking photos again
6/18	DUSH	3	SB	All dead on trail w/in 50+ ft of each other by VP closest to cabin
6/18	PAWA	1	WM	Walrus calf seen on WM beach
6/19	Alaska poppy		FRS	First bloom
6/19	ASLC camera	2	WM	Reset both cameras and changed cards, not working again
6/19	Steller sea lion	1	SB	SSL seen hauled out on the E side of the beach
6/19	CORE	~50	EC	Flock flying around
6/19	NOHA	1	S of FB	Male flying and landing
6/19	Whorled lousewort		FB	First bloom
6/19	COMU	1	OP1	SKS saw COMU lay an egg
6/20	PAWA	1	N of cabin	Mort floating by cabin heading W
6/20	BAEA	1	On cabin roof	Staff heard scratching during data entry and thought raven until walked out on porch to see a 2nd year juvenile- crazy.
6/20	CORE	~150-200+	E of cabin	Flock flying around cabin
6/20	CORA	1	SB	Chick fledge/fall from nest at SB
6/21	BAEA	1	SB	Juvenile eagle chased by raven
6/21	PEFA	1	SB	Heading East
6/22	PAWA	1	MB	Walrus calf seen and heard on MB
6/23	GRWH	1	SB	Large adult surfaced and sounded once, heading E
6/23	PECO	1	OP	PECO #1 hatched 2 of 4 chicks
6/24	BAEA	1	Cabin	On roof and stove pipe in early AM
6/24	Arctic daisy		FB	First bloom
6/24	Arctic wormwood		T1	First bloom
6/24	PAWA	1	EC	Walrus bit by bull SSL for getting too close to V3, walrus tusked bull once before leaving
6/24	BAEA	1	EC	Juvenile eagle on PECO nest w PECO eggs at V4
6/24	PEFA	1	EC	Flew off rock on approach to V2
6/24	PAWA	2	EC	2 walrus confronted by bull SSL from V3 for hauling out on V4, no contact just exchange of grunting
6/25	PAWA	1	EC	Walrus hanging out in the H20 between V1 and V3, bull SSL scared him away w grunts
6/25	PAWA	1	WM	Walrus calf heard and seen on beach at WM
6/26	BLKI		OP	Chicks hatch on OP3 and OP4
6/28	Yellow oxytrope		SP	First bloom
6/28	PEFA	1	SP	Flying around cliffs
6/28	COMU, BLKI	3, 2	BC	5+ COMU and BLKI carcasses in BC being scavenged by 2 ravens; unk cause of death
6/29	ASLC camera	1	WM	Beach camera not working: CF card error, took card out to replace 6/30
6/29	PAWA	1	MB	Walrus calf seen and heard on MB coming out of H20, looks fat and healthy
6/29	Dandelion	2	TT	First bloom
6/30	GRSC, HADU, or AMWI	1	FRS	Bill found on trail, looked small like juvenile or small female
6/30	PAWA	1	MB	Walrus calf heard on MB, no visual
6/30	ASLC camera	1	WM	Beach camera card changed and camera rest
7/2	Red fox	1	EC	First kit seen by dens on EC
7/2	PAWA	1	MB	Walrus calf heard but not seen
7/2	Northern goldenrod		T1	First bloom
7/3	PAWA	1	MB	Calf heard on MB, no visual
7/3	CORA	1	SB	Staff saw chick fledge
7/3	Wild iris		FB	First bloom
7/4	Northern yarrow		SB	First bloom
7/4	Monkshood		EC	First bloom
7/4	Lessing's arnica		FRS	First bloom

APPENDIX H

DATE	SPECIES	NUMBER	LOCATION	OBSERVATION
7/4	Moth	1	SB	Bluish/navy wings w orange spots, red/orange body- A. opulenta?
7/5	Dwarf arctic bitterweed		FRS	First bloom
7/6	Alpine meadow bistort		FB	First bloom
7/6	PAWA	1	FB	Mort floating just off the beach getting pushed to shore by waves and other walrus. Live walrus playing, touching, and tusking mortality.
7/7	CORA	2	NBC	CORA chicks heard in gulley between NBC and OP.
7/7	Bog saxifrage		FRS	First bloom
7/8	Humpback whale	2	N of cabin	Swimming E in front of cabin
7/8	Humpback whale	2-3	EC	Breaching, rolling, caudal peduncle slapping off shore ~5-8mi
7/10	PAWA	1	MB	Walrus calf on MB seen and heard
7/10	CORA	4	WM	Fledglings on beach of WM
7/11	PAWA	1	SB	Walrus w large open wound on lower left side of body (photo)
7/11	songbirds	many	all over	Songbird fledglings on trails
7/11	Common wormwood		OP	First bloom
7/12	Yellow rattle		E of cabin	First bloom
7/14	Alpine milkvetch		Summit stake	First bloom
7/15	Tall fireweed		cabin	First bloom
7/15	PAWA	1	FB	Walrus calf on FB
7/15	Red fox	2	EC	First fox kits seen
7/15	Humpback whale	7-8	EC	Seen breaching and swimming offshore
7/16	Humpback whale	6-7	E&W of cabin	Pacing back and forth sounding, breaching and tail slapping in the evening, sounded like gun shots
7/16	PAWA	1	SB	Walrus calf on SB
7/19	PAWA mort	1	WM	Very bloated
7/19	A. Opulenta	1	FR	
7/19	Shrews and 1 Lemming? Dead	8 and 1	from EC to WM	Possible killed by fox but not eaten
7/19	Red fox	3	between WM and FR	All adults
7/19	Unidentified Whale sp.	2	off shore 1 mile E.	Diving repeatedly in one area
7/20	WATA	1	FB	
7/21	A. Opulenta	2	near FR	Wings on trail
7/21	Rodents			I never observed such a high rodent population between 2003 and 2009. D. Okonek
7/21	Red fox	3	behind cabin	this year's pups
7/21	Red fox	4	on traverse trail	this year's pups
7/21	PAWA calf	1	WM	See photo in DCO obs. file
7/23	PEFA	1	EC	
7/23	Unidentified Whale sp.	2	1 mile out in front of cabin	
7/23	PAWA	1	FB	Calf on FB
7/24	A. Opulenta	1	near cabin	
7/24	grass of parnasses	blooming	FB area	
7/24	Semi palmated plover	1	CG	
7/25	Red fox	1	OP4	Fox flushed all COMU off and was taking eggs.
7/31	PAWA	1	SB	Walrus calf on SB
7/31	PAWA	~70	SB	Approximately 70+ walrus chiming around the large rock at SB
7/31	Staff	4	RI	SKS & HI, back on island, DCO, and GR off island
7/31	Visitors	6	RI	F/V Dreamboat, and F/V Shodan crewmen come to shore for day visit, first & only visitors on island this season
8/1	Sitka burnet		all over	First sighting since back on island
8/1	Mountain harebell		TT & SP	First sighting since back on island
8/1	Northern bedstraw		FRS	First sighting since back on island
8/1	Spotted saxifrage		TT	First sighting since back on island
8/1	RISE	1	BC	First sighting, seen sleeping on the rocks
8/1	WATA	1	BC	

APPENDIX H

DATE	SPECIES	NUMBER	LOCATION	OBSERVATION
8/1	PAWA	1	SB	Walrus calf on SB
8/1	GLGU	1	SB	Immature gull eating jellyfish on SB
8/1	PAWA	1	EC	Walrus mort on rocks east of V1 viewpoint
8/2	COMU	1	SP	Dead COMU fledgling on the water at SP
8/2	PAWA	1	SB	Walrus calf still on SB
8/2	PAWA	3	EC	Caused slight disturbance to SSL on V3 viewpoint by swimming close to rock
8/2	RISE	1	BC	
8/2	GLGU	1	BC	Glacous gull picking at dead auklet (?) on the water in BC
8/2	GLGU	~10+	WM	Fledglings on beach of WM
8/2	Marsh five-finger		FB	First sighting since back on island
8/2	Cook tent	1	CG	Staff disassembled cook tent and put away for winter
8/3	Terrestrial anomaly	1	WM	2 large chunks of cliff on the beach at North end, no walrus present, staff suspects could have caused a disturbance
8/3	Monkey flower	1	OP	Single flower on the side of trail to OP not on stock…SKS never seen on island before.
8/3	USFWS remote camera	1	TT	Staff erected USFWS camera to capture walrus numbers on MB
8/4	PAWA	1	N of cabin	Walrus mort floating by cabin, suspect might be one of the morts from WM
8/5	COMU	1	BC	Large fledgling on water
8/5	PECO	1	BC	Dead fledgling in BC, chest cavity opened
8/5	PAWA	1	WM	Very decomposed mort on beach with nose plate and skull exposed, one tusk
8/5	Algae		BC	Mass of thin algae in clumps on shore with dead adult BLKI, and COMU fledgling tangled in it, suspect they drowned
8/5	Loon?	1	BC, CG	SKS 90% sure she heard a loon in BC and CG but never saw
8/5	BLKI	1	Cabin	BLKI fledgling flying over trails around cabin
8/6	RISE	1	BC	
8/6	COMU		N of cabin	COMU "peepers" heard on water near cabin
8/6	PECO	1	MB	PECO fledgling on water
8/7	BLKI & COMU		OP	All remaining birds on plots 2, 3, 4 fledged
8/7	KIEI	1	FB	Male
8/7	KIEI	1	BC/CG	Fledgling on the water
8/7	COMU	3	BC	All fledglings around algae dead in the water
8/8	PAWA	1	FB	Walrus calf
8/8	NOHA	1	EC	Female
8/9	ASLC camera	1	FB	Took down AK Sealife Center camera
8/10	BAEA	1	MB	
8/10	LASE	1	EC	Laying on rocks while staff on beach extracting 2 tusks from walrus mortality
8/10	PAWA	1	EC	2 tusks extracted from mortality
8/11	RLHA	1	EC	
8/11	PAWA	1	SB	Walrus calf
8/13	Stairs			Hauled gear to BC beach, and took down stairs
8/13	Water system			Emptied water tank, drained lines, boarded up shower.
8/14	Staff	2		Leave Round Island