

Round Island Field Report 2004



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Summary

U. S. Fish and Wildlife Service (USFWS) and Alaska Department of Fish and Game (ADF&G) staff were present on Round Island from May 5 through August 11, 2004. We counted walrus daily on all East side beaches. On West Main Beach, we counted walrus on 51 out of 94 days. The mean daily walrus count on Round Island was 549, with a range of 0 walrus on June 6 to 3494 walrus on May 6. Staff documented 43 walrus disturbance events resulting in 35 low level disturbances, 7 medium level disturbances, and 1 high level disturbance.

Steller sea lions were counted at the East Cape haul out every 2 to 5 days. Efforts to photograph injured, tagged or branded sea lions were greatly increased during early 2004. Photos were sent to ADF&G's tag/brand re-sighting working group. The mean number of Steller sea lions present during counts in 2004 was 93, with a range of 15 on July 25 to a high of 472 on May 10, 2004.

Seabirds productivity work and population plot counts were continued for pelagic cormorants, common murres and black-legged kittiwakes. Unsuccessful attempts were made to collect common murre and black-legged kittiwake eggs as a part of the Seabird Tissue Archival and Monitoring Program (STAMP.)

Other short term projects conducted in 2004 included an hourly sea watch project, an archeological survey of recently disturbed areas, including existing buildings, platforms and trail areas, a project documenting grey whale - Steller sea lion interactions, and invasive species (dandelion) removal along the traverse trail.

Dr. Martin Shultz, an Australian biologist, served as a volunteer on the island from May 5 through June 4. Two Bristol Bay Native Association interns arrived on the island on July 6 and departed on August 3. Both Alicia Active and Denise Coupchiak were from Togiak and are attending the University of Alaska- Anchorage. Three ADF&G staff and one USFWS biologist rotated duties on the island throughout the summer.

Cover Photo

Bristol Bay Native Association interns Alicia Active and Denise Coupchiak counting walrus. (Mary Cody, 2004)

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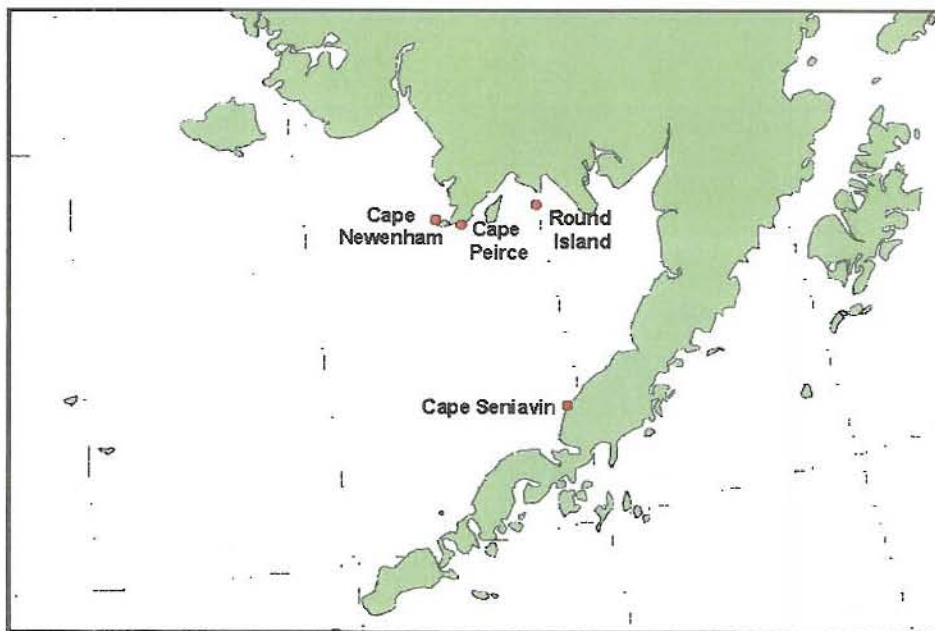
Introduction

The summer of 2004 was the twelfth consecutive year of a cooperative program between the Alaska Department of Fish and Game (ADF&G) and the Marine Mammals Management Office (MMM) of the U. S. Fish and Wildlife Service (USFWS). The two agencies provide staff and funding to monitor Pacific walrus (*Odobenus rosmarus*,) Steller sea lion (*Eumetopias jubatus*,) common murre (*Uria aalge*,) black-legged kittiwake (*Rissa tridactyla*) and pelagic cormorant (*Phalacrocorax pelagicus*) populations on Round Island. Staff also administer an internship program with the Bristol Bay Native Association (BBNA), a visitor program, monitor haul out disturbance, and maintain and improve trails and facilities on the island. In 2003 the cooperative agreement between the two agencies was renewed for another five years.

Round Island is in the Walrus Islands State Game Sanctuary and has often supported the largest number of walrus of the four terrestrial walrus haul outs in Bristol Bay, Alaska. The other terrestrial walrus haul outs in Bristol Bay are Cape Pierce and Cape Newenham, both within the Togiak National Wildlife Refuge (TNWR), and Cape Seniavin located on the Alaska Peninsula northeast of Port Moller (Figure 1). Cape Pierce and Cape Newenham are both monitored by TNWR staff. In 1998, 1999, 2001 and 2003, Cape Seniavin was monitored by MMM and/ or BBNA staff. Cape Seniavin was not monitored in 2004.

This report summarizes daily walrus counts, walrus disturbance events, Steller sea lion counts, seabird research and the internship program conducted on Round Island during this summer field season. For more information on the visitor program, trail and cabin maintenance, see the ADF&G report (Helfrich and Meehan 2004).

Figure 1. The largest summer terrestrial walrus haul outs in Bristol Bay, Alaska.



Methods

Weather

At the start of each walrus count we recorded wind speed and direction, cloud cover and type of precipitation. The maximum and minimum temperatures for the preceding 24 hours were recorded as near to 1400 hours as possible. Barometric pressure was logged daily at 0800 and at 2000 hours.

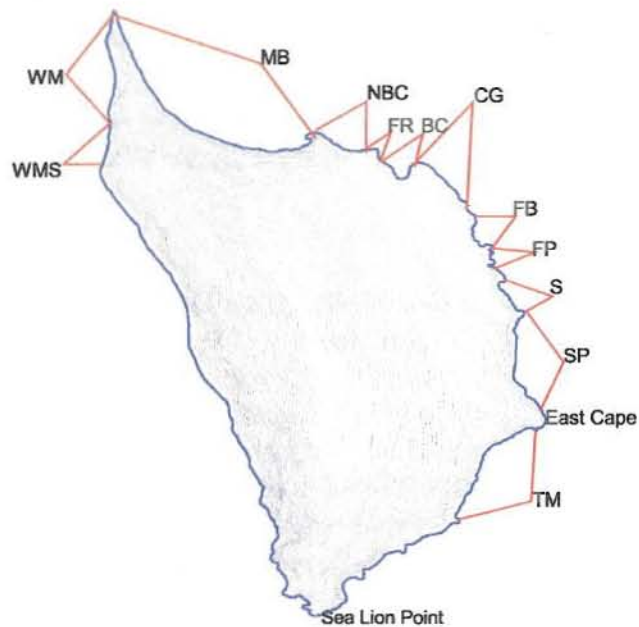
Walrus Monitoring

Walrus haul out counts followed protocols used since 1998 on Round Island to allow direct inter-year comparisons (Stroka 1998). Walrus haul out on nine beaches on the east side of Round Island and on two beaches on the west side of Round Island (Figure 2). All accessible east side beaches were counted at 0900, 1400 or 1700 hours from May 6 through August 10. Counts were occasionally started late due to conflicts with visitor arrival and departure schedules. Snow fall remaining in gullies along the trail leading to West Main Beach made the access route impassable until May 20. From May 20 through August 7, West Main Beach was counted whenever time and other duties allowed, except when gusting winds (above 20 knots) and heavy rain made the traverse trail leading to West Main Beach too dangerous to cross. The skiff was used for walrus counts on three occasions in July and August.

During all counts, each observer counted independently using 10 x 42 or 7 x 32 binoculars. At each beach, each observer counted walrus present on the beach three times, using a separate tally meter for each count. Observers either counted individual walrus or counted by groups of five, ten or twenty, depending upon herd size. Which count method was used was at the discretion of the observer. If ten or fewer walrus were present, we did not use tally meters. We have found that tally meters do not add precision when so few animals are being counted. Observers also counted walrus in the water within ten meters of shore in a separate count. Observers did not discuss or compare numbers during counts. After three counts, observers would compare numbers and try to locate where discrepancies may have occurred. If the observers felt that the amount of variation in their counts was excessive (20% or more) and had time, additional counts were done. The observer variation data (the amount of variability within and among observers at all haul outs) are reported in Udevitz et al, 2005.

The nine beaches along the east side of Round Island were counted in the following order during each count: Second Prime (SP,) Second Beach (S,) First Prime (FP,) First Beach (FB,) Campground (CG,) Boat Cove (BC,) Flat Rock (FR,) North Boat Cove (NBC,) and Main Beach (MB). West Main Beach is approximately forty-five minutes by foot from the Main Beach overlook. We counted West Main Beach as quickly as possible after Main Beach when time, trail and weather conditions allowed. West Main Beach South (WMS) is only visible by skiff, and was only counted three times during this summer. No walrus were observed on West Main Beach South. It is a very small area, even at very low tides, and missing it does not significantly affect total numbers for Round Island.

Figure 2. The location of east and west side beaches on Round Island.



The following information was recorded by all observers during each count: start and end times, count type, Beaufort sea state, beach condition, beach availability, beach used, visibility, land and water counts, and count quality. Walrus counts were divided into five categories: a scheduled count of east side beaches, a scheduled count of West Main Beach, a boat count of any beach, a photo count of any beach, or an opportunistic count (defined as any count that did not fit into the other categories). For beach condition, we used a scale based on the size of waves breaking on the beach: calm, wave height up to one foot, wave height between one and three feet, or wave height greater than three feet. Beach availability was recorded as a percentage in quartiles from 0 to 125% based on the amount of beach visible at mean low tide. Mean low tide was recorded as 100%. Beach used was recorded in 5 percent increments from 0 to 100%. Visibility was a subjective measure of whether any walrus were hidden by obstacles, such as rock walls, or poor viewing conditions, such as fog. Visibility was recorded as clear, partially obscured or obscured. Land counts included all walruses on the beach and those in the surf zone. Water counts included all walruses in the water within ten meters of shore. Count quality was a subjective measure of observer accuracy and was recorded as excellent, good, fair or poor. Count quality was recorded before looking at the actual count recorded on the clicker. For a complete copy of the count protocols, see Appendix A.

Photographic count project

In 2004, we continued to use a Canon EOS D30 digital camera system with multiple lenses and high resolution to test photo count strategies. We used photographic images to count walrus on each beach on Round Island. We used the Canon EOS-D30 camera with a variety of lenses (17mm through 400mm) and both 1.4 and 2.0 extenders depending upon the beach and where on the beach walrus were located. Photos were taken from the same locations at each beach on each day. We used the best lens combination for capturing the walruses with the highest resolution

possible. This varied from day to day depending upon the location and number of walrus present on the beach. We entered the number of photos taken and at what focal length alongside each count in the data book. Photos were downloaded onto a laptop in the field and individual photos were made into a single composite photo using a standard Photo Stitch program. We attempted to create composite photos of the entire beach wherever possible, so that fewer individual photos needed to be counted later on. This also made data storage and labeling easier. However, depending on where on the beach the walruses had hauled out, it was sometimes necessary to use several individual photos or composite photos for each beach. We tried to use as few photos per beach as possible.

We edited and improved visibility and lighting in the photos as necessary using Adobe Photoshop. We then imported the digital photos into an Arc View GIS program. Each observer who participated in the ground count counted the number of walruses in each photograph on three separate overlays by placing a brightly colored dot on each walrus as it was counted, this may help to reduce undercounting or double-counting. We then used the program to tally the number of dots (walrus) per photo/beach. While it takes a great deal more time to count from the photos, rather than on the ground, this method has significantly reduced observer variation, and creates a permanent record for comparison with future years. It also appears to reduce variation between observers over time, so may be a very effective training technique.

We continued to try to get one ground count paired with a photo count at least every third day, weather permitting. Count start times were also changed occasionally to accommodate other work that was occurring on the island, such as visitor arrival and departure schedules. A preliminary look at the data showed photo based counts to have a much smaller variance than ground counts. In addition, photo counts appeared to be an excellent training tool for improving ground count skills. Unfortunately, in rainy or foggy weather the photo resolution was not high enough to use the photos as a primary counting method.

Disturbance Documentation

We recorded sources of anthropogenic disturbance. These included boat, helicopter and airplane traffic, land-based visitor disturbance, staff and visitor arrivals and departures. We made every effort to minimize walrus disturbance by staff and visitors. When disturbances did occur, the following information was recorded: date, time, location, number of walruses on the beach where the disturbance occurred, number of walruses affected by the disturbance, behavior of the animals disturbed, the amount of time that passed before the walruses returned to their prior state, and the source of disturbance (if identified). Disturbance of walruses on the haul out was defined as any event that caused walruses to raise their heads, change their physical location or orientation on the beach, or to leave the beach (Salter 1979, Hessing and Sheffield 1989, Kruse 1997).

Steller Sea Lion Counts and Photo Project

A small Steller sea lion (*Eumetopias jubatus*) haul out located at East Cape was monitored every one to five days using the same methodology as walrus counts. We took photos during counts and opportunistically of any sea lions with brands, tags, injuries or net entanglements. These

photos were passed on to Lauri Jemison of ADF&G for use in the statewide ADF&G/NMML Steller sea lion brand re-sighting project.

Seabird Population and Productivity

We collected seabird population and productivity data for common murre (*Uria aalge*), black-legged kittiwakes (*Rissa tridactyla*) and pelagic cormorants (*Phalacrocorax pelagicus*) following protocols (Kettle, et al, 1997; Hatch and Hatch, 1981) used by the TNWR and by the Alaska Maritime National Wildlife Refuge (AMNWR.) Five population plots containing common murre, black-legged kittiwake and pelagic cormorants were delineated in 1997 (Rice 1997). In addition to the five plots used in 1997 and 1998 (Rice 1997, Stroka 1998,) a plot at First Beach containing a small pelagic cormorant colony was added in 1999. An additional pelagic cormorant colony plot at First Prime beach was added in 2000. As neither of these pelagic cormorant colonies was active in 2002, another small plot at Second Beach was added in 2002 (Cody 2002). In 2003, a new area at First Beach was colonized by pelagic cormorants, the Second Beach plot remained active and a new plot at West Main Beach was added. In 2004, only 12 nests at the Second Beach plot were observed. Photos were used to identify the plots and painted stakes installed to mark observation points.

Methods were consistent among years, with one exception: due to erosion, a new observation point was used for plot five in 2003 and 2004. This appears to change the extent to which plot five is visible. Observers counted the number of common murre, black-legged kittiwakes, black-legged kittiwake nests, pelagic cormorants and pelagic cormorant nests twice in each of the five Main Beach plots on ten days in June. Counts were conducted regardless of weather or disturbance factors. Tufted puffins (*Fratercula cirrhata*) and horned puffins (*Fratercula corniculata*) were recorded if present, but no attempts were made to follow their reproductive success or to estimate their numbers overall. In order to determine some measure of reproductive success, 25 black-legged kittiwake nests on plot two and 25 black-legged kittiwake nests on plot three, 25 pair of common murre on plot three, and 12 pelagic cormorant nests on the Second Beach plot were monitored every two to five days until we left the island on August 10. An additional 25 pair of common murre monitored on plot three are not included in this report. Productivity plots were checked for status upon our arrival and pelagic cormorant plots were already active, however cormorant data collection didn't start until May 13. The first population counts were started on June 2. Black-legged kittiwake nests and murre pairs were checked every two or five days from June 11 through August 8. We may have missed early eggs and re-lays of all three. We may also have missed early hatching dates and chicks with short survivorship. A telescope or 10 x 42 binoculars were used to determine nest contents and presence and behavior of adult birds.

Other Projects

Beach-found ivory was collected from the beaches whenever it was possible to do so without disturbing any walrus. All ivory was sold by the Eskimo Walrus Commission (EWC) in conjunction with the FWS and ADF&G during the Alaska Federation of Natives Convention in Anchorage, or at Beaver Round Up in Dillingham. The proceeds were deposited in the Pacific Walrus Conservation Fund which will help finance future walrus research.

A pilot sea watch project was started in 2004. Daily observations of passing marine mammals and their behavior took place for one hour per day from May 6 through June 6. This project greatly increased the number of observations of Steller sea lions interacting with gray whales as they migrated past the Island.

Fox dens were monitored informally and the presence and number of kits noted. Unusual sightings, first sightings of the season of bird and plant species and anything else of interest were recorded daily. An archeology crew spent a week in late May doing a site evaluation in preparation for possible outhouse and cabin replacements in the future.

Results and Discussion

Walrus Monitoring

We counted all east side walrus haul out beaches on 97 consecutive days from May 6 through August 10. A mean of all counts by all observers was used to determine the number of walruses using the haul out on a daily basis. Eight observers participated in walrus counts during different periods of the summer, with observers having a high level of variability in experience and days of participation. The combined daily mean of east and west side beaches was 549 walrus. This continues a five year overall declining trend. Mean counts may better reflect the number of walruses habitually using the haul out, but most historical data focused on high counts in an effort to capture the minimum total number in Bristol Bay in any given summer. In recent years, we've reported both.

Table 1. Summary of 2004 daily walrus count information for east side beaches.

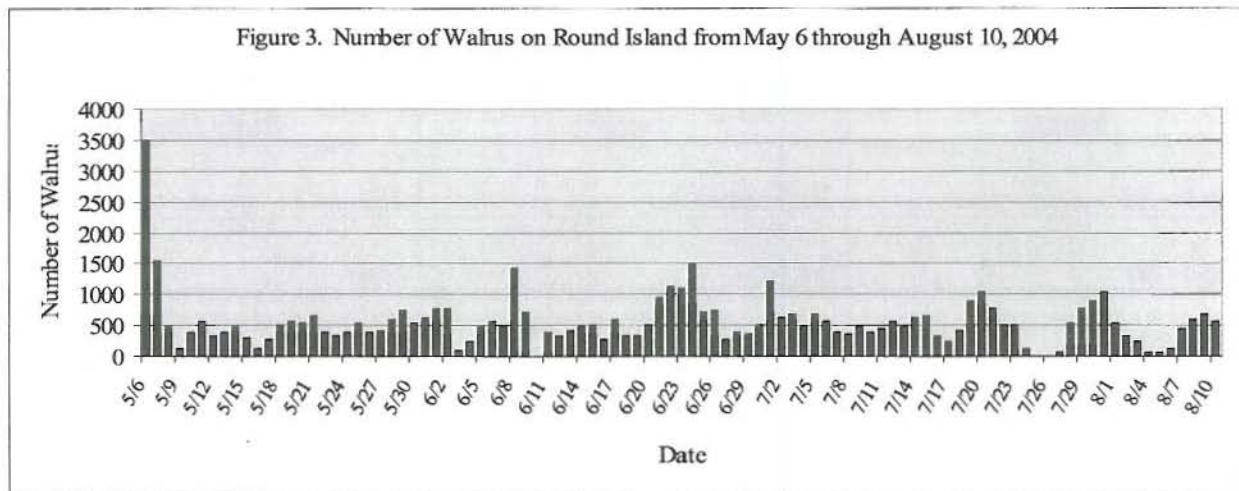
Month	Range	Daily Mean
May 5 - 31	125 - 3494	552
June 1 - 30	0 - 1484	504
July 1 - 31	0 - 1051	511
August 1 - 11	65 - 675	363
Summer Totals	0 - 3494	455

We counted West Main Beach on 51 days from May 20 through August 8. Counts of West Main Beach ranged from a low of zero on 19 days to a high of 522 walruses on June 1, with a daily mean of 81 walruses. Poor weather at the beginning of the season, numerous staff changes, and a staffing shortage at the end of the season all contributed to our inability to count West Main Beach on a daily basis. However, no walrus were observed on West Main Beach after July 9. It seems unlikely that we were missing large numbers of walrus during this time period, in spite of a ten day gap in counts between July 21 and 31. For a complete list by date of all counts, see Appendix B.

Table 2. Summary of 2004 daily walrus counts for West Main Beach.

Month	Range	Daily Mean
May 5 - 31	8 - 239	117
June 1 - 30	0 - 357	114
July 1 - 31	0 - 522	46
August 1 - 11	0	0
Summer Totals	0 - 522	81

Walrus numbers tend to build gradually and then to drop off sharply over cycles of about two weeks duration. Within this pattern, walrus numbers were highest in early May when we arrived, but dropped off immediately and remained consistently low throughout the summer (Figure 3). In 2001 and 2003, peak numbers built throughout the summer before dropping off in late July. In 2002, peak numbers were highest when we arrived in May and dropped throughout the rest of the summer.



We continued the photo count project throughout the summer, however the bulk of the photos were taken in May. Due to multiple staff changes and being short-staffed throughout much of July, we were unable to collect as much photo data as initially hoped. The photo count data will be analyzed over the winter of 2004-2005 as a part of the satellite photo project initiated by Doug Burn and Marc Webber of USFWS.

Steller Sea Lion Data

We counted Steller sea lions on 33 days between May 7 and August 4, 2004. The number of Steller sea lions present ranged from 472 on May 10 to 15 on July 25, with a mean count of 93. We observed sea lions with brands or tags on 25 days. We attempted to photograph each tagged, branded or injured sea lion and to document serious injuries. We observed as many as five nursing juvenile sea lions at a time, but no new pups of the year in 2004. Following the usual pattern, sea lion numbers were highest in early May and dropped rapidly near the end of May, perhaps do to the movement of herring in the area. Steller sea lions were frequently observed interacting with migrating Grey whales, and occasionally observed interacting with walrus. At least four individual sea lions were observed and photographed with fishing net debris tangled around their necks. Some had flipper wounds that appeared to be bite wounds, and many sea lions had round hairless sores on their bodies. All wounds were photographed when possible.

Table 3. Steller sea lion counts at East Cape on Round Island, 2004.

Month	Range	Mean
May 7 - 31	22 - 472	257
June 1- 30	24 - 68	40
July 1 - 31	15 - 67	42
August 4	32	32
Summer Totals	15 - 472	93

Seabird population counts and seabird productivity

Due to numerous personnel changes throughout the summer, seabird data was not collected as consistently as in previous years. Therefore, no attempt was made to analyze data for this report. The raw data has been passed on to Migratory Bird Management (USFWS) for inclusion in the seabird productivity data base, and to the Togiak National Wildlife refuge for possible inclusion in the Bristol Bay wide report.

Although seabird population counts were conducted in 2004, methods varied from those used in previous years. Plot count results were highly variable. Not all plots were counted on each day, and counts were completed regardless of disturbance by predators or weather, although both were noted. Plots were counted between one and ten times each. Counts therefore may be of limited use and are not analyzed in this report. Seabird productivity work was begun for pelagic cormorants two weeks or more after laying had begun. It was begun about a week after seeing the first black-legged kittiwake egg on May 29 for black-legged kittiwakes and common murre. Later in the season there were gaps of four to six days between nest checks for all three species. Seabird productivity work was not done consistently enough to give an accurate picture of laying

or hatching success, although it could be used for some measure of fledging success. All data has been passed on to MBM/BRD for their colony status database.

Ravens and foxes (*Vulpes vulpes*) were commonly seen predators in 2004. Ravens preyed upon adult murre and kittiwakes, on murre and kittiwake chicks, and on the eggs of all three monitored seabird species, in addition to voles. Foxes took adults, chicks and eggs of all three species, but were limited to the lower and more accessible cliff areas. Foxes were frequently seen taking parakeet auklets, pigeon guillemots, horned and tufted puffins, as well as voles. Ravens were frequently seen hunting and harassing murre and kittiwakes at all Main Beach plots. Ravens often flew by each cormorant plot and were observed taking unattended eggs, and harassing cormorant chicks. We also observed peregrine falcons (*Falco peregrinus*), rough-legged hawks (*Buteo lagopus*) and bald eagles (*Haliaeetus leucocephalus*) hunting at the seabird cliffs.

A greater black-tailed gull (*Larus crassirostris*) was observed on May 15 by three personnel near Main Beach. This represents the third recorded sighting of a greater black-tailed gull in Alaska. The other two sightings occurred near Homer in Kachemak Bay and along the Aleutian Island chain, both in the early 1990's.

Disturbance Events

We recorded 66 walrus disturbance events in 2004 (Table 4.) Potential disturbance events included boats, planes or helicopters arriving or departing, large rock falls, and some pedestrian activities. Walrus disturbance is conservatively defined as any change in one or more animal's behavior due to the event. These changes fall into three general categories. The categories, in increasing levels of severity, are head raises, reorienting bodies (usually toward the source of disturbance or toward the water,) and dispersal. Dispersal includes moving one body length or more toward the water as well as actually dispersing from the beach (Salter 1979, Kruse 1997).

Of the 66 events recorded in 2004, 23 caused no disturbance, 43 caused a disturbance and in no cases was the outcome unknown. We recorded 34 occasions when disturbance could be attributed to a boat, and 23 occasions when boats caused no disturbance, 2 occasions when disturbance could be attributed to a plane and 1 occasion when the disturbance could be attributed to staff activities or visitors on foot. In any disturbance that includes dispersals, walrus may be injured or killed. Walrus are particularly vulnerable during stampedes when they may sustain internal injuries (Salter 1979, Kruse 1997, Cody 2003). Any mortality due to anthropogenic causes is considered a "take" under the Marine Mammal Protection Act of 1972, and could be grounds for prosecution. Due to multiple staff exchanges, not all potential disturbance events were recorded, and it is not clear whether all disturbance events were recorded. Main Beach was usually not observed for disturbance events during the month of June, and no data was collected for June 14 through June 24.

Table 4. Summary of walrus disturbances records for May 5- June 14 and June 25-August 11, 2004.

Cause	None	Low	Medium	High
Boat (large and small combined)	23	32	2	
Plane			2	
Helicopter		1		
Pedestrians`		1		
Boat and Helicopter combined				1
Boat and Floatplane Combined		1		
Rock Fall			1	
Unknown			2	
Totals	23	35	7	1

Other Projects

Two college interns from the Bristol Bay Native Association, Alicia Active and Denise Coupchiak, both from Togiak, joined us on the island for the month of July. They participated in research and camp chores, the visitor program, data collection, data entry and field-checking. As we were short-staffed throughout much of their stay, their help was essential to keeping the field camp open. Tim Dyasuk, a Round Island intern in 2002, who worked for the ADF&G as a fisheries technician in 2003 and for BBNA as a natural resources intern in 2004, also returned to Round Island in August to help collect data and close out the field camp. Without BBNA's support, it would have been very difficult to keep the field camp open this summer. For more information on the interns' experiences in 2004, see the interns' reports in Appendix E.

No fox dens were known to be active. The pair at East Cape seemed to have moved to an alternate den site higher up on the hillside above East Cape. Fox were seldom observed at the den site on the hillside behind the cabin. No kits were observed at either site during the summer, however two fox kits were observed at the East Cape fox den in mid-September.

A pair of bald eagles and a pair of peregrine falcons were nesting in an inaccessible area on the southwest part of the island. For the fourth season, we again saw at least one short-eared owl (*Asio flammeus*) throughout the early part of the summer.

Judy Jacobs (USFWS-Ecological Services) assisted us with sending in earth worm samples to test whether they had been introduced to the island with garden soil at some point in the camp

area. Dorothy Fender, an independent consultant and a recognized expert identified them as a type of ice worm native to Alaska (*Enchytraeus geledus*.)

Recommendations

In 2004, we attempted to increase our focus on Steller sea lions without dropping any of the ongoing studies. We also had many staff changes due to family emergencies and illness. We continued an active visitor program and coordinated with National Park Service personnel on a week long archeology survey, and with SeeMore Wildlife personnel on a remote camera placement survey. It is clear that we have been attempting to add more duties without dropping anything, and that we have reached the point where we need to re-evaluate our priorities. Toward this end, I would recommend the following:

1. Finish at least a cursory analysis of walrus data currently being collected at Round Island. Revise and shorten data collection protocols as needed. For example, it may be more useful to document the number of walrus with photographs than to conduct three counts at each beach.
2. Placement of a remote camera at West Main Beach would alleviate the need to spend two hours per day hiking over to West Main Beach to count walrus, and would free up staff for other duties.
3. Drop the pelagic cormorant productivity work in order to focus more on the Steller sea lion brand and tag re-sighting project.
4. Drop the black-legged kittiwake and common murre productivity work. Instead focus on getting ten good plot counts for each plot and a thorough count of all remaining chicks.
5. Determine whether collection of the environmental variables data at each walrus beach is useful for analysis of walrus haul out use patterns. If not, eliminate these variables from the data collection protocols.

Acknowledgements

Dr. Martin Shultz spent a month volunteering his expertise and was a wonderful field companion. Alicia Active, Denise Coupchiak and Tim Dyasuk all helped to keep the program up and rolling. ADF&G field staff this summer were Diane Okonek, Missy Helfrich, Todd Rinaldi, Marian Snively and Heather Hoyt. Thank you to all. Togiak Fisheries, Inc. came to our rescue when bad weather kept the archeology crew, staff and volunteers stuck on island longer than planned. Thank you to the crew and captain of the *Camai*, this is the second time that they've rescued us in bad weather! Thank you to all the staff back in the offices of ADF&G and USFWS as well.

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Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

- I. **DAYLOG.DB** - Daily environmental information table. This information primarily is collected once per day.

Log ID:	Concatenation of location code and the date in yymmdd format: for instance: a count on Round Island on May 10, 1997 would be entered: RI970410.
Location	General location of haul out counts (CP = Cape Peirce, CN = Cape Newenham, CS = Cape Seniavin, RI = Round Island)
Date	Date in the format mm/dd/yy
Time	Military (24 hr) recorded when you start to collect the environmental data at the first beach counted.
Cloud Cover	A qualitative description of the visible sky. Record at the first beach counted. C = clear (no clouds or haze). B = broken (individual clouds separated by open sky, stretches of clear sky within a cloud cover, or patchy fog or haze). O = Overcast (no clear sky visible). If the entire sky is obscured, except for a fine line at the horizon, record as overcast.
Wind Speed	The estimated wind speed at the observer's position obtained with a hand-held anemometer. Record in nautical miles per hour (kts). Face into the wind, make sure nothing is obscuring or deflecting the wind at your position. If you are standing at a bluff where the wind funnels up, take a

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

step back and get out of the main drift. This will allow you to obtain a more accurate wind speed reading. Hold the anemometer directly in front of you at eye level, record the average reading after watching changes for 60-90 sec.

Wind Direction Estimated compass direction of prevailing wind. Stand facing the direction of the wind. If you are in an area where the wind swirls around local topography, assess the direction of prevailing wind offshore, beyond the influence of land. Record the direction the wind is coming from, not the direction it is going. If necessary, use a compass to help identify headings. Line north up, then, holding the compass directly in front of you, turn until you face into the wind and read the direction indicated on the compass. Enter the direction in a 1 or 2 letter code:

N = north; **S** = south; **E** = east; **W** = west

NE = northeast; **SE** = southeast; **NW** = northwest; **SW** = southwest

V = variable- the wind keeps switching directions and seems irregular

NO = no wind detectable.

Precipitation Any precipitation, such as rain, sleet, snow, or fog. Record at the first beach counted. Usually, conditions are very dynamic so record the worst weather encountered while you are collecting the above weather information. **S**=snow, **SL**= sleet, **R**= rain, **F**= fog, **RF**= rain and fog

Barometer AM Barometer reading at about 08:00 in the morning (in mmHg).

Barometer PM Barometer reading at about 20:00 (8:00) at night (in mmHg).

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

Tide	Record the tidal state just before you leave camp to begin counts. Each location has different methods for determining tidal stage. If your camp relies on a published tide table, look up the day's record and if necessary, extrapolate tide stage according to differences in time zone and area (this information is available as "correction factors" in every tide book). Each tide stage will be of equal duration. Enter the following codes, to indicate tide stage during counts: H = high L = low R = rising F = falling
Max Temp	Maximum temperature: read the minimum-maximum thermometer immediately before you leave camp to begin counts. Record the maximum temperature for the last 24 hrs.
Min Temp	Minimum Temperature: read the minimum-maximum thermometer immediately before you leave camp to begin counts. Record the minimum temperature recorded for the last 24 hrs. <u>RESET the thermometer before you leave camp for counts.</u>
Comments	Record any time. This is you narrative pertaining to walrus observations/problems with methodology, or needed changes. Comments can be an important part of your field observations so be thorough and concise.

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

II. COUNTS.DB- Daily walrus count information which is recorded at each beach counted.

Beach Name of the beach being counted. Enter the 4-letter identifier which has been entered into the data base look-up table. If additional beaches must be added to the lookup table, follow directions in "data base management" section. Appendix one is a printed look-up table for beach codes.

Start Time Enter the time you begin to count the walrus on the beach. Use 24-hr. (Military) time.

End Time Enter the time you conclude counting the beach. Use 24-hr. (Military) time.

Method The method used for counting the beach. Enter appropriate code before you start counting.

O = opportunistic ground count- an unscheduled count which occurred because you were just walking by or were doing something else (as opposed to counting this beach as part of a regularly scheduled counting round).

S = scheduled ground count- a scheduled count performed as part of your daily census activities.

A = aerial count (made from an aircraft).

GP = ground photograph- counts made (or which will be made) from photographs of this beach taken from the ground. Enter the Roll # and frame #'s into the comments section of the DAYLOG.DB part of the form.

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

This information is crucial to keep accurate records of photographic counts, especially when count methods are compared later.

AP = aerial photograph-counts made (or which will be made) from photographs of this beach which were taken from an aircraft. Enter the Roll # and frame #'s into the comments section of the DAYLOG.DB part of the form. This information is crucial to keep accurate records of photographic counts, especially when count methods are compared later.

B = boat count. Count of beach made from a vessel of some kind, either as part of a scheduled counting plan or an opportunistic approach.

Observer If you make the count alone, enter your 3 initials (First, Middle, Last). If you count with a partner or group of people, enter **G** (Group). If the identity of the counter is unclear or unknown, leave this field blank.

Beaufort Sea State Before you begin counting, record the Beaufort sea state (0-7) of waters offshore, away from land effects. This is important because islands and shore topography can have major effects on perceived localized water conditions. The Beaufort Scale is described in detail in Appendix 2. In general the codes are:

0 = sea like a mirror. Wind speed is under 1 kt. No waves.

1 = slightly rippled- water's surface looks like orange peel or scales. Wind speed ranges from 1-5 kts. Sea waves are smooth and less than 1 ft.

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

2 = small wavelets- the crests are still glassy. Wind speed ranges from 6-11 kts and you can begin to feel a breeze on your face or hear the grasses rustle. Sea waves are slight- 1-3 ft.

3 = large wavelets which begin to crest with foam. The first signs of whitecaps will be seen. Wind speeds range from 12 -19, and you could imagine a light flag extended in the wind. Sea waves are moderate: 3-5 ft.

4 = Small waves are consolidating into lines (rather than individual wavelets); numerous whitecaps. Wind speeds range from 20-28. Loose clothing will flap. Sea waves can be 3-8 ft.

5 = Many waves, growing slowly to ridges, many whitecaps and some spray off of the wave crests. Wind speeds range from 29-38 kts. Your eyes will tear and the binos will be difficult to hold steady. Sea waves range from 3-8 ft.

6 = Large waves are forming, walrus probably can disappear in the troughs. Lots of whitecaps. Spray trails (streaks of foam) are beginning to form down the backs of the waves. You have to lean into the wind and probably have to drop to your knees to count, you can't look directly into the wind without squinting hard. Wind speeds are 39-49, sea waves range from 3-8 ft.

7 = You probably shouldn't be out counting walrus. Winds are up to 50-60 kts, sea waves are 8-12 ft. Waves are leaving obvious foam streaks in their path. The sea is frothing and white with spray. There is little chance of being able to hold your binoculars steady, so the counts are probably pretty inaccurate.

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

Beach Condition	An evaluation of the waves breaking on the beach you are counting. 0 = very calm- no wave splash at all. 1 = little waves- ranging to 1 ft (0.3 m). 2 = moderate waves- ranging from 1 ft - 3 ft (0.3 m to 1.0 m). 3 = rough waves > 3 ft (>1m).
Beach Availability	An assessment of amount of beach available to walrus for hauling out. Beach availability is recorded for each beach counted. It combines aspects of both tide and weather conditions. 100% available is the amount of beach visible during mean low tide during a calm day. You are going to have to make observations of each beach counted to determine what 100% is. Identify landmarks you can reliably see to help you identify levels of beach availability. Using the amount of beach exposed during mean low tide on a calm day as 100% we will be looking at extremes in both directions. Break changes down by quartiles. For example: if it's a pretty low tide and an additional 25 % of beach is available, record the beach availability as 125%. If the tide is high and only 50% of the mean low beach is exposed, record it as 50%. If tide is high and waves are breaking on the cliff face, that might be 0% beach availability.
Visibility	This is a qualitative assessment of the visibility of the haul out you are counting. C = clear- there are no obstructions (physical, weather, or sun glare) which impede your ability to clearly see all of the haul out. P = partially obscured- fog blows in and out during the count, partially obscuring some of the haul out all of the time. The sun glare might be bad, but you can still squint hard and make a count.

Appendix A. Walrus Count Protocols For the Bristol Bay Walrus Haul out Data Base.

O = obscured- bad weather or sun glare can make it impossible to count a beach. If you linger for a time and conditions don't change- you probably can't get a decent count, so enter this qualifier.

Land The number of walrus counted on a particular beach. These animals must be on exposed beach or standing in tide wash.

Water All animals in the water and within 50m of the shore line

Appendix B. Round Island Daily Walrus Count Results, May 6 through August 10, 2004.

Date	East Side Totals	West Side Totals	Total Number of Walrus
5/6/2004	3494		
5/7/2004	1539		
5/8/2004	460		
5/9/2004	127		
5/10/2004	381		
5/11/2004	577		
5/12/2004	319		
5/13/2004	393		
5/14/2004	480		
5/15/2004	300		
5/16/2004	125		
5/17/2004	278		
5/18/2004	509		
5/19/2004	558		
5/20/2004	545	61	606
5/21/2004	652	205	857
5/22/2004	388	239	627
5/23/2004	326	184	510
5/24/2004	373	198	571
5/25/2004	544	146	690
5/26/2004	372	35	407
5/27/2004	402	8	410
5/28/2004	586		
5/29/2004	751	75	826
5/30/2004	532	80	612
5/31/2004	624	54	678
6/1/2004	774	138	912
6/2/2004	763	162	925
6/3/2004	98		
6/4/2004	246		
6/5/2004	487	80	567
6/6/2004	576	76	652
6/7/2004	467	204	671
6/8/2004	1420	131	1551
6/9/2004	711	120	831
6/10/2004	0		
6/11/2004	383	357	743
6/12/2004	322	199	521
6/13/2004	407		
6/14/2004	471		
6/15/2004	503		
6/16/2004	271		
6/17/2004	581	223	804
6/18/2004	326	187	513
6/19/2004	328	58	386

Appendix B. Round Island Daily Walrus Count Results, May 6 through August 10, 2004.

6/20/2004	515		
6/21/2004	948	2	950
6/22/2004	1134	0	1134
6/23/2004	1097	1	1098
6/24/2004	1484		
6/25/2004	721		
6/26/2004	743		
6/27/2004	265	0	265
6/28/2004	383	0	383
6/29/2004	355	80	435
6/30/2004	506	154	660
7/1/2004	1217	522	1739
7/2/2004	615	69	684
7/3/2004	678	140	818
7/4/2004	481	95	576
7/5/2004	674		
7/6/2004	550		
7/7/2004	380	0	380
7/8/2004	342	0	342
7/9/2004	469	1	470
7/10/2004	373	0	373
7/11/2004	456	0	456
7/12/2004	559	0	559
7/13/2004	481	0	481
7/14/2004	623	0	623
7/15/2004	660	0	660
7/16/2004	325		
7/17/2004	227		
7/18/2004	428	0	428
7/19/2004	879	0	879
7/20/2004	1039	0	1039
7/21/2004	772	0	772
7/22/2004	512		
7/23/2004	490		
7/24/2004	129		
7/25/2004	0		
7/26/2004	0		
7/27/2004	72		
7/28/2004	524		
7/29/2004	762		
7/30/2004	895		
7/31/2004	1051	0	1051
8/1/2004	524		
8/2/2004	336	0	336
8/3/2004	246		
8/4/2004	73	0	73
8/5/2004	65		
8/6/2004	107		

Appendix B. Round Island Daily Walrus Count Results, May 6 through August 10, 2004.

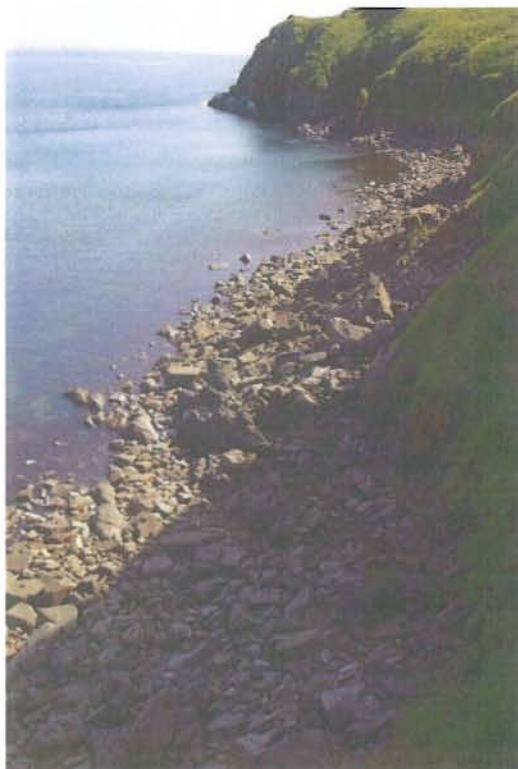
8/7/2004	450	0	450
8/8/2004	595		
8/9/2004	675		
8/10/2004	557		

Appendix C: Beach Photos for Arc View GIS Counts

Second Prime vantage point A



Second Prime vantage point B



Appendix C: Beach Photos for Arc View GIS Counts

Second Beach vantage point A



Second Beach vantage point B



Appendix C: Beach Photos for Arc View GIS Counts

First Prime Beach vantage point A



First Prime Beach vantage point B

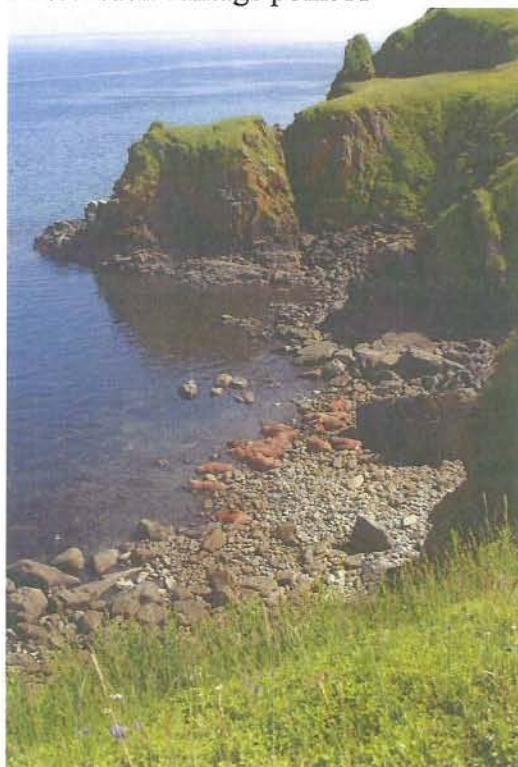


Appendix C: Beach Photos for Arc View GIS Counts

First Prime vantage point C



First Beach vantage point A



Appendix C: Beach Photos for Arc View GIS Counts

First Beach vantage point B



Campground Beach vantage point A

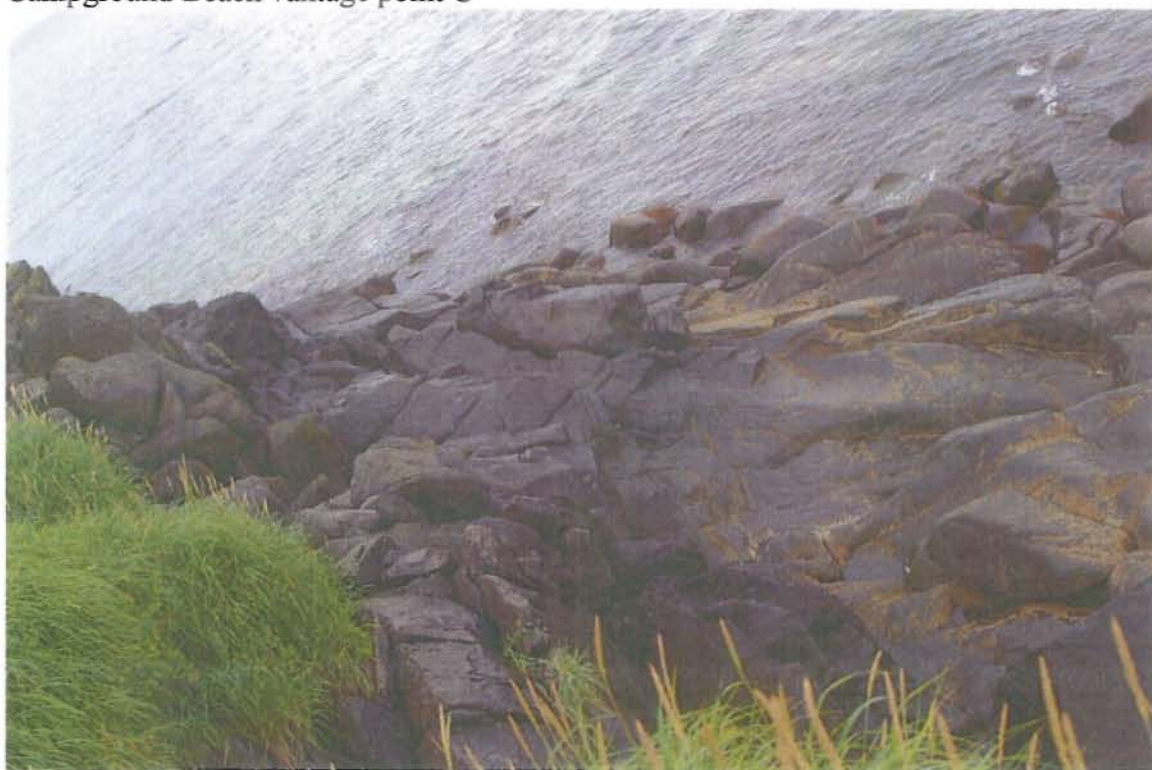


Appendix C: Beach Photos for Arc View GIS Counts

Campground Beach vantage point B



Campground Beach vantage point C



Appendix C: Beach Photos for Arc View GIS Counts

Campground Beach vantage point D

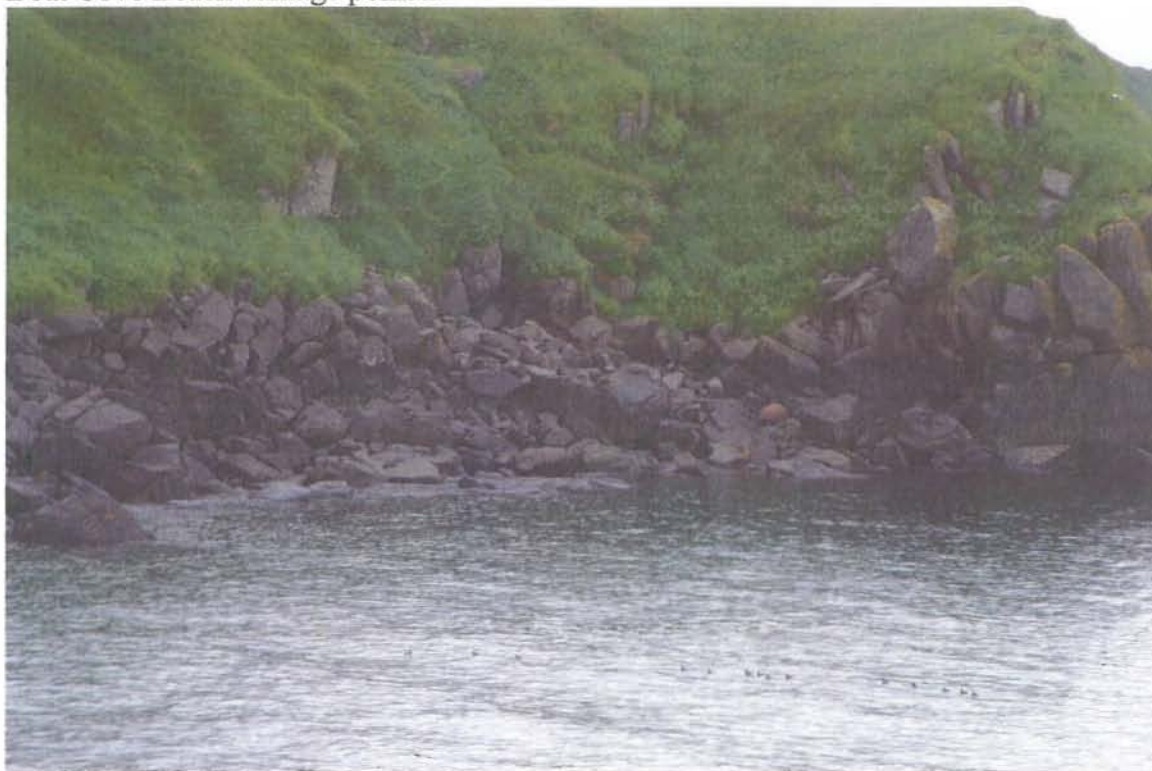


Boat Cove Beach vantage point A



Appendix C: Beach Photos for Arc View GIS Counts

Boat Cove Beach vantage point B



Flat Rock vantage point A



Appendix C: Beach Photos for Arc View GIS Counts

Flat Rock vantage point B

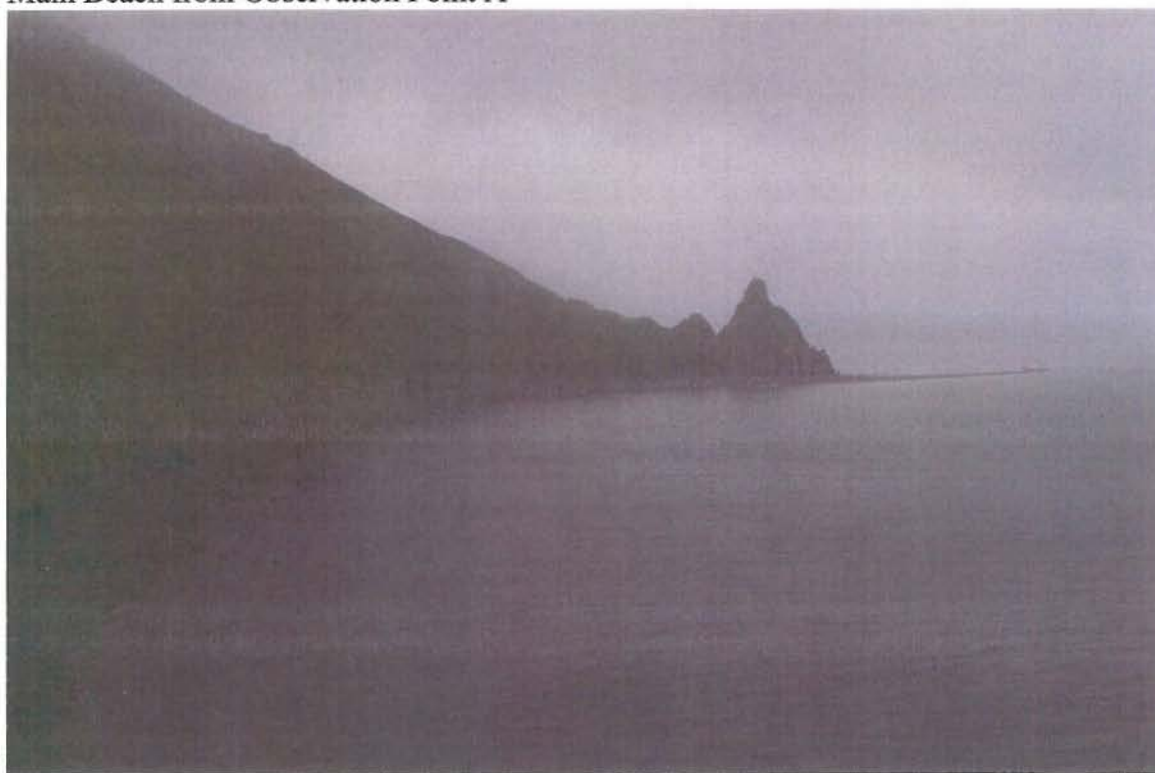


North Boat Cove Beach



Appendix C: Beach Photos for Arc View GIS Counts

Main Beach from Observation Point A



Main Beach from Observation Point B



Appendix C: Beach Photos for Arc View GIS Counts

Main Beach from Traverse Trail (composite of six photos)



West Main Beach vantage point



Appendix D. Steller Sea Lion Counts on the East Cape of Round Island in 2004.

Date	Land Count	Water Count	Total
5/7	375		375
5/8	200	0	200
5/10	470	2	472
5/12	363	86	449
5/13	346	8	352
5/14	346	50	396
5/17	370	13	383
5/18	233	37	270
5/20	200	74	274
5/22	169	20	189
5/24	300	21	321
5/26	160	14	174
5/28	95		95
5/29	95		95
5/30	50	0	50
5/31	22	0	22
6/1	64		64
6/7	32	2	34
6/9	24	0	24
6/12	31	0	31
6/14	41	0	41
6/16	36	0	36
6/17	66	2	68
6/22	26	0	26
6/28			48
6/29	25	2	27
7/4	52	3	55
7/9			35
7/14			67
7/19	48	1	49
7/25	0	15	15
7/29	30	0	30
8/4	30	2	32

2004 Round Island Intern Report by Alicia Active: The Decrease in the Number of Walrus in 2004

Abstract

We started our counts as soon as our internship started on July 6, 2004 and ended on August 2, 2004. As of July 29, 2004 we counted an average of 501 walrus on Round Island in the month of July 2004, a maximum of 1,041 walrus on July 20, and a minimum of zero walrus on July 25 and July 26. This year the number of walrus counted on Round Island was lower than previous years.

Introduction

After a summer of working on Round Island I have learned that the number of walrus returning to haul out on Round Island this year has decreased compared to the past years. While working with the biologists for four week some of their speculations for the decrease were that the walrus were staying farther north, close to the receding ice edge or going to other haulouts around Bristol Bay like Cape Seniavin, Cape Pierce, or Cape Newenham. I think that both speculations are right, maybe the walrus went somewhere else for the summer to haul out and some are staying close to the ice edge where it isn't so hot.

When I was growing up I used to see dead walrus wash up on shore in Togiak and if we were lucky have some walrus, a delicacy to my people, to eat that somebody has shot in the bay. My interest in walrus started in Jr. High in Togiak when I wanted my people to have the opportunity to legally hunt walrus off Round Island, as they were able to before it became a sanctuary. I, including my classmates, wrote letters asking permission to hunt on the Round Island every year to the ADF&G, USFWS, the State of Alaska, the United States Senator and Representative, and the newspapers around Alaska. A few

Appendix E. BBNA Intern Reports

years after that in 1995 we were granted permission to hunt a certain number of walrus off the island, at which time we had a big potluck in our village.

I had seen flyers around Togiak for an internship on Round Island with BBNA and though it would be great opportunity for me to earn money for college this fall and a chance to work with walrus on an island I had never been on. At the end of June I received a phone call from the BBNA that I had been selected to work on the island as an intern, I was excited. Early July 6, 2004 Denise Coupchiak, another intern, and I left Togiak with three visitors with Paul Markoff. Paul took us to Anchor Point where Terry Johnson took us on his boat to Round Island. When we finally reached Round Island, Denise and I got into a Zodiac with Terry where he took us on land where Mary Cody, a USFWS biologist, met us. During that time there were a couple walrus in boat cove and that is when we learned our first lesson: do not disturb the walrus on the beach.

As soon as we had everyone safely ashore, Mary gave us an introduction and the rules for the island. We separated from the visitors and headed up to where we were going to stay for four weeks on the island. My bag with all my stuff was heavy, and seemed to be getting heavier and heavier, and the trail to the camp seemed like a never-ending trail. I had many questions on our way to our home for four weeks, one of where we were going to be staying. Paul, who had been on this internship before said he stayed in a small tent which made me think that both Denise and I had to stay in a tent but was told that were going to be staying in a weather port behind the main cabin.

After getting settled in we went to the main cabin for lunch where we met the ADF&G biologist, Marian Snively. After talking for a while and getting to know a little about each other, we all took off for our first counts at 1400 without Marian, who was not feeling well. We learned, during our first counts, that there were less Walrus returning to Round Island this year than years before. The reasons for this were unknown and were speculations that the walrus may be going to other places to haul out or that it was because the ice edge was farther north than usual.

Methods and Materials

Once a day we went to ten beaches to count the walrus at random times either at 0900, 1400 or 1700. Each person doing the counts would fill out a Bristol Bay Walrus Haulout Monitoring Program daily log. Information to fill in the daily log before the counts included: Log Id, Location, Date, Time (Military time of count started), Cloud Cover (Clear, Few, Scattered, Broken, Overcast), Precipitation (None, Rain, Fog, Snow, Rain and Fog, or Sleet), Tide (High, Low, Rising, Falling), Wind Speed (km/hr) and Direction, Max and Min Temp, and AM and PM Barometer.

Other information to fill at each beach during the counts included: Beach (code for the beach being counted), Start and End time (Military time), Method (Scheduled ground count, Interval count, Correlation Count. Scheduled counts of West Main beach, Opportunistic ground count, or Boat count), Observer (Three initials), Beaufort Sea Scale (Beaufort #1- Sea like a mirror, no waves, #2- Ripples with appearance of scales; no foam crests, #3 Large wavelets; crests begin to break; scattered whitecaps, #4 Small wave .5-1.35m high, becoming longer; numerous whitecaps. Loose clothes flap in the wind, #5 Moderate waves of 1.25-2.5m taking longer to form; many whitecaps. Wind will cause eyes to tear, #6 Larger waves 2.5-4m forming; whitecaps everywhere. Cannot look directly into the wind without squinting; may have to lean into wind when walking, #7 Sea heaps up, waves 4-6m; extremely poor conditions for walrus counts) Beach condition (0-3 calm-rough waves), Beach availability (Amount of beach available to walrus for hauling out, 100% is the amount visible during mean low tide on a calm day), Beach used (Amount of haulout being used), Visibility (Clear, Partially obscured, Obscured), Land count, Water count, and Count Quality (Excellent, Good, Fair, or Poor). When there were three or more walrus we would count three times using our tally wackers (that was why there were three for us to use). On Second Beach (S) and First Beach (FB) we would count from two different areas of the beach and end our time when we were done we would counting the entire beach.

Everyday on scheduled ground counts our counts started and ended at the same two beaches. On scheduled ground counts we would start on Second Prime (SP), then on to

Appendix E. BBNA Intern Reports

Second Beach (S), First Prime (FP), First Beach (FB), Campground (CG), Boat Cove (BC), Flat Rock (FR), North Boat Cove (NBC), Main Beach (MB), and end at West Main (WM). When it was too windy and raining we would not go to the West Main Beach because of the trail's dangerous steep terrain. On days it was too hot and the water was calm we would take the boat out around the island at that point we would start our counts at Flat Rock, then Boat cove, Campground, First Beach, First prime, Second Beach Second prime, include West Main South (WMS), Main Beach, and end at North Boat Cove.

Results

Denise and I started our counts on July 6, 2004 and ended on August 2, 2004. Almost everyday there were no walrus hauling out on Second Prime, First Prime, and West Main, if there were any, there would be a couple on the beach or in the water. Second Beach and First Beach would have about the same number of walrus hauling out, and Main Beach would have the most walrus out of all the beaches.

As of July 29, 2004, we counted an average of 501 walruses on both the east and west side beaches (total number of walrus divided by the number of counters). During our internship the most walruses we counted on Round Island was 1,041 on July 20 and the least was zero on July 25 and 26 (Figure 1).

Discussion

According to Steven Rice's 2002 report, up to 14,000 walrus were counted on the island in one day (Rice 2002). According to Mary Cody in 2000 there was an average of 2,242 walruses, in 2001 an average of 1,576 walruses, and in 2002 an average of 1,031 walruses from both east and west side beaches (Cody, 2000,2001,2002). The walrus must have gone somewhere else to haulout. During our stay at Round Island we had overheard someone say that there were thousands of walrus at Cape Seniavin; maybe that is where they all went and that is where they should have sent us for the internship. We also had a visitor Alan Richards from Washington say that while fishing the water was six degrees warmer than usual this year. Because of the warmer water in the Bristol Bay,

I think that it was too warm for all the walrus to return to Round Island and that is the reason for the lower number of walrus returning to Round Island.

Conclusions

After counting the walruses for four weeks on Round Island, I found that there were less walrus this year than the years before. Counting the walrus on Round Island was fun and challenging, but if I can make it through the four weeks anyone can too.

Recommendations

1. Salmon should be delivered to the Round Island group at least every week.
2. When you are going to hire new interns, have the interview at least a month before the internship begins instead of a week and a half before it begins.

Appendix E. BBNA Intern Reports

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Round Island Student Intern Field Report by Denise Coopchiak

July 6-August 3, 2004

Round Island: a preservation site for many marine mammals, such as: walrus, sea lions, and sea birds.

ABSTRACT:

Round Island is a protected zone for marine mammals such as: walrus, sea birds, and Stellar sea lions. It preserves, enriches and ensures a hope for the future. We counted the walrus daily, sporadically at 9:00 a.m., 2:00 p.m. and 5:00 p.m. We hiked through the nine beaches.

INTRODUCTION:

Round Island is filled with many marine mammals. I would like to explore why Round Island is important to them, with an emphasis on walrus.

Round Island is a small island in Alaska located in Bristol Bay, near the village of Togiak. Known by the Yup'ik as "Qayassiq" meaning "kayak place" is one very important walrus haul out sites (resting areas) in North America, as well as resting grounds for many sea birds and sea lions (Sinnott, 1992).

Round Island was established in 1960 by the State of Alaska that created the Walrus Islands State Game Sanctuary. (Alaska Department of Fish & Game, 1991). The Alaska Department of Fish and Game Division of Wildlife Conservation manage the Walrus Islands including Round Island. The purpose of the Walrus Islands is to "protect walruses and other game, allow for walrus research and visitor use" (Plan Teams, 1991).

Round Island is closed for hunting and access to the island is restricted. In 1995, the Alaska Board of Game adopted regulations, which allow the Alaska Department of Fish and Game to issue permits for subsistence hunting for use by the Alaskan Natives on Round Island for the period of October 1 to October 31. Over the years, it has changed from October 1 to October 31 to September 20-October 20. The current annual Round Island subsistence hunt is from September 10 to October 30. Many controlled

Appendix E. BBNA Intern Reports

places in this world have rules and regulations, and Round Island is no exception.

The Alaska Department of Fish and Game, Division of Conservation has a wonderful way of introducing their rules; it goes, "Round Island is a truly unique wilderness area where a rich variety of plants and animals interact with each other and with earth, sea and sky to form a fragile eco-system. To preserve that balance and at the same time allow people to experience it, we have established some restriction to your activities..." and they are:

- 1) The cost of a 1-day permit is \$10 (U.S.). Permit fees are non-refundable. This permit is non-transferable.
- 2) Visitors acknowledge that Round Island is remote wilderness located far from medical facilities. The ADF&G and its employees are not liable for the health and safety of visitors.
- 3) Visitors, or their agents, must contact ADF&G in Dillingham or on Round Island prior to 9:00 a.m. on the morning of their arrival to arrange for pick-up. Permits are invalid if contact is not made.
- 4) Visitors may only approach the island within the designated access corridor. Vessels may remain moored within the access corridor during the time and date and must have a crewmember on board at all times.
- 5) All beaches are closed to visitor access (except for loading and unloading in the Boat Cove).
- 6) **PROHIBITED ACTIVITIES:** On Round Island adjacent waters within three miles of the island include:
 - 0 discharge of firearms
 - 0 disturbance or harassment of wildlife
 - 0 removals of wildlife or wildlife parts
 - 0 swimming, diving or boating
 - 0 domestic animals and pets are not permitted on Round Island.
- 7) Additional rules may be posted as necessary to maintain the integrity of the sanctuary and its wildlife.

There are eleven beaches on Round Island. Walrus haul out in about nine of the beaches listed. One of the beaches is only accessible when the weather is perfect. (e.g., when it is not raining, when it is not windy or when it is not foggy) One of the beaches is only accessible by a boat and one where the sea lions rest. The nine beaches' names where the walrus haul out are: Second Prime, Second Beach, First Prime, First Beach, Camp Ground, Boat Cove, Flat Rock, North Boat Cove and Main Beach. The beach that is only accessible when the weather's nice is West Main Beach.

The beach only accessible by boat is West Main South. The last beach is where the Steller sea lions stay is called East Cape.

The main reason walrus come out to Round Island is to haul out, which means "a resting area". They come from the ice caps off the Bearing Sea, where they stay during the winter with the females and breed. Therefore, from May until December they come to Round Island to haul out and eat. One important fact to know is the only walrus on this island are males. No one understands why only males spend the summer at Round Island or at the other Walrus Islands during the Summer and Fall.

METHODS AND MATERIALS:

Every day, the biologist Mary Cody, the other intern Alicia Active, and I would perform the counts. There was another biologist that was here, but she had to leave before the season was over.

The first day Alicia and I got onto Round Island, Mary Cody gave us a booklet for recording the number of walrus, two pencils, and three tally registers (a.k.a clickers) and a pair of binoculars.

We hiked around the nine or ten beaches depending on the weather, counted the walrus, and recorded them in a booklet. We recorded the beach name, the start and end of the time we observed the walrus on each beach. We recorded the method used (e.g. S=scheduled count, I=interval count, C=Correlation count, O=opportunistic ground count, B=boat count). We recorded who the observer was, and the observer would put their initials on the form. We observed the Beaufort Sea state (BSS). There are seven numbers, 0 being the least and 7 being the greatest. Zero has a sea like a mirror, no waves, 7 has a sea that heaps up, waves 4-6m; white foam from breaking waves begins to be blown in streaks. This is an example of an extremely poor weather condition for walrus counts when the waves are above 4 to 6 m. When it is extremely windy, there is little chance of holding binoculars steady enough for a reliable count. We observed the beach condition and the following conditions were noted: 0 being very calm, 1 having small waves, 2 moderate waves, 3 rough waves. Beach availability is how much beach is available for the walrus to haul out. Beach used is the amount of available haul out is being used by walrus. Visibility is how visible the haul out you are counting such as: c=clear, p=partially obscure, o=obscured-impossible to count the beach. Land count is the number of walrus on the beach. Water count is the number of walrus in the water three feet from land. Finally, count quality is if the count is fair or poor, e=excellent, g=good, f=fair, p=poor. Excellent count is when you don't

have any problems counting the walrus. Poor count conditions is when you have a lot of problems with the walrus counts (e.g. Fog, wind...etc).

We counted the walrus everyday, rain or shine. There were also sea bird counts and stellar sea lion counts. The sea bird counts were done every other day. We recorded the number of adults in a nest and noted if they had an egg or a chick on a designated plot. The Steller sea lion counts were done every five days. Besides counting Steller sea lions we looked for tags on them.

After each day, we entered our data into a computer program called Paradox. The database holds all the records of our counts, the BSS, beach condition, beach availability, beach used, and other related walrus monitoring or seabird survey information.

Here is an example of one day worth of data: see figure 1

RESULTS AND DISCUSSION:

So the result of having Round Island as a sanctuary is a wonderful thing for the marine mammals that come here to rest or nest because they are able to reproduce and go on living without being disturbed.

Its actually is a good thing for the people that come here too. Biologist make a living studying the mammals, tourists come and want great pictures, so it's a win/win situation.

Here is an example of one day's worth of data (for the walrus counts) see figure 1

CONCLUSION:

Four weeks on the island wasn't *that* bad. It actually went by pretty quickly, except for the week and a half of straight rain. I do not know if I would want a job for the whole season, but it was an experience. I have learned many things during my time here. I learned that this year the walrus numbers have decreased; I learned I shouldn't stay up so late before a nine a.m. count; I learned that you should be in perfect condition to hike up to West Main. I also learned how to make stovetop pop corn, and rain makes

Appendix E. BBNA Intern Reports

moods swing to the extremes. I have learned many things I would not trade anything in the world for.

In conclusion, Round Island is a special haven for the marine mammals because they are protected here. Many walrus, if they should talk, would say "thank you". If Round Island were not a sanctuary, would there be any more walrus, sea birds, or sea lions?

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Appendix E. BBNA Intern Reports

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