



# United States Department of the Interior



U.S. Fish and Wildlife Service  
Izembek National Wildlife Refuge  
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Izembek National Wildlife Refuge Report for the  
Kodiak/Aleutians Federal Subsistence Regional Advisory Council  
Fall Meeting – September 2015  
(Compiled in July 2015)



## INVENTORY AND MONITORING STUDIES

### Caribou

#### Unit 9D (Southern Alaska Peninsula)

The 2014-2015 Federal Subsistence hunt closed on March 31, 2015 and resulted in only 1 out of 20 permits being filled. In total, 20 permits were allocated to five communities (4 permits each; Cold Bay, King Cove, Sand Point, False Pass, and Nelson Lagoon). The Federal hunt is a split season and will be open this year from August 10 to September 20, 2015 and November 15, 2015 to March 31, 2016.

Izembek staff conducted an aerial winter minimum population count of the Southern Alaska Peninsula Caribou Herd on Game Management Unit 9D on 7, 8, 9, 11, and 12 March 2015. Weather conditions were highly variable throughout the survey and ground cover conditions were mostly bare. In total, we observed 1,316 caribou.

Table 1. Summary of Southern Alaska Peninsula caribou herd winter minimum population counts and fall composition surveys (2004 to 2015) conducted by U.S. Fish and Wildlife Service and Alaska Department of Fish and Game.

Year	Winter minimum population count	Fall Bulls : 100 Cows	Fall Calves : 100 Cows	Fall composition sample size
2004-2005	1,872	36	7	966
2005-2006	1,651	30	6	1,040
2006-2007	770	16	1	713
2007-2008	NA	15	1	431
2008-2009	NA	10	39	570
2009-2010	NA	21	43	679
2010-2011	NA	28	47	532
2011-2012	1,061	40	20	920
2012-2013	NA	45	20	500
2013-2014	NA	50	40	600
2014-2015	1,316	45	45	884

"NA" indicates no data was collected.

"Year" covers the period October-April. USFWS winter minimum population counts are normally conducted December through April; ADF&G fall composition ratios are calculated from an October survey.

#### Unit 10 (Unimak Island)

Izembek staff conducted an aerial winter minimum population count of the caribou on Unimak Island on 24, 25, and 31 January 2015. In total, we observed 230 caribou on Unimak Island during this survey.

Table 2. Summary of Unimak Island caribou herd winter minimum population counts and fall composition surveys (2004 to 2015) conducted by U.S. Fish and Wildlife Service and Alaska Department of Fish and Game.

<b>Year</b>	<b>Winter minimum population count</b>	<b>Fall Bulls : 100 Cows</b>	<b>Fall Calves : 100 Cows</b>	<b>Fall composition sample size</b>
2004-2005	1,006	NA	NA	NA
2005-2006	1,009	45	7	730
2006-2007	806	NA	NA	NA
2007-2008	NA	31	6	433
2008-2009	NA	9	6	260
2009-2010	400	5	3	221
2010-2011	224	8	8	284
2011-2012	94	6	7	117
2012-2013	NA	9.5	3	83
2013-2014	NA	10	19	67
2014-2015	230	15	22	127

"NA" indicates no data was collected.

"Year" covers the period October-April. USFWS winter minimum population counts are normally conducted December through April; ADF&G fall composition ratios are calculated from an October survey.

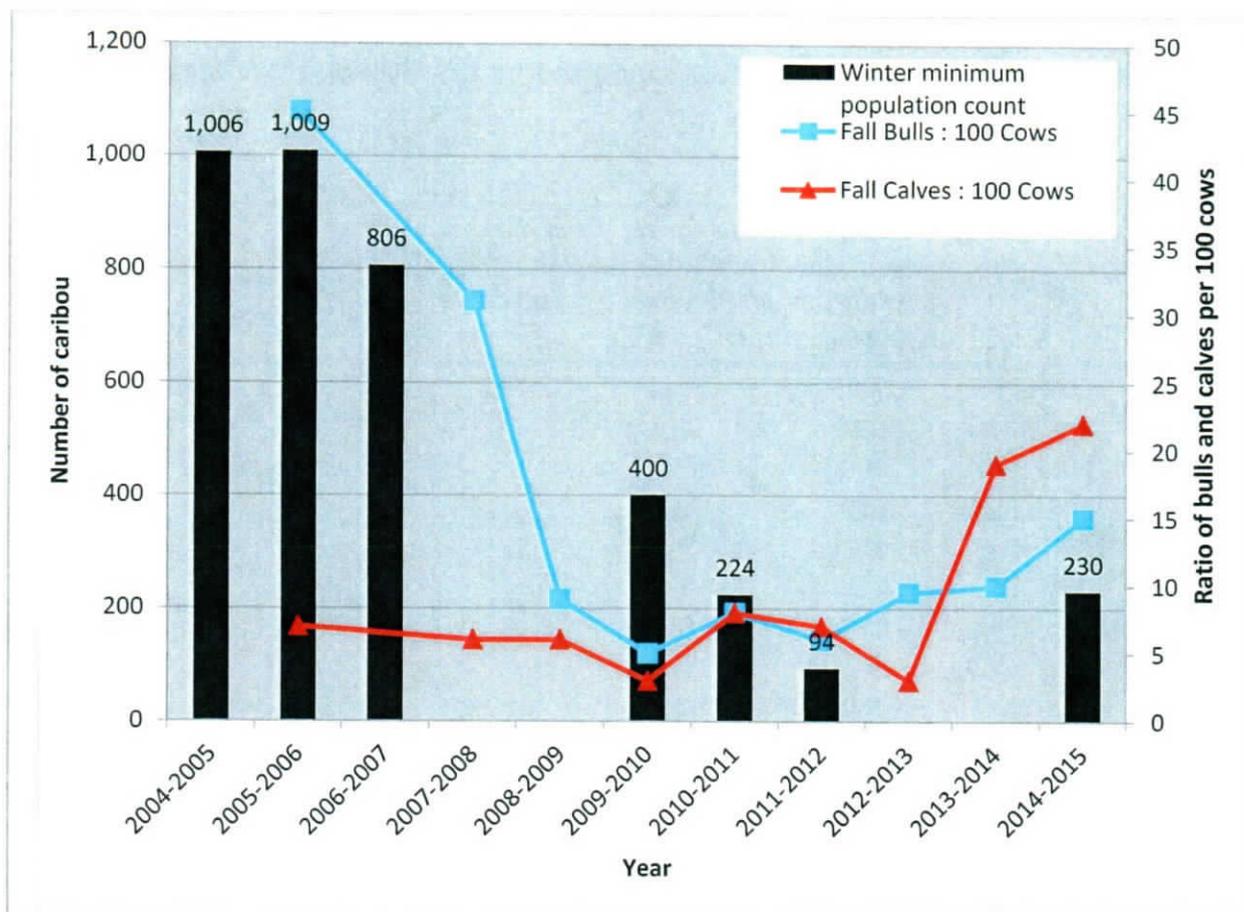


Figure 1. Population trends (winter minimum count, fall bull to cow ratio, and fall calf to cow ratio) for Unimak Island caribou from 2004-2015.

The Alaska Department of Fish and Game continued conducting a caribou calf mortality research project in June 2015. Radio collars were deployed on newborn calves to investigate cause specific mortality and estimate survival rates.

### Brown bear

The index of brown bear population size and productivity is estimated annually in the fall from aerial surveys flown along salmon streams on Izembek Refuge and Unimak Island. The survey is planned to be conducted during the last two weeks in August 2015.

### WATERFOWL

#### Pacific Brant

An index of productivity for the entire Pacific population of brant is generated from ground-based counts conducted in Izembek Lagoon and adjacent areas each fall when the birds are staging for migration. Brant productivity data have been collected at Izembek National Wildlife Refuge for 50 consecutive years. Brant production counts will be conducted this fall between 10 September and 5 November 2015 at observation points throughout Izembek Lagoon including: Grant's Point, Round Island/Outer Marker, Operl Island mud flats, and the areas between Neuman Island and Blaine Point. Counts will also be conducted in southwestern areas of Izembek Lagoon inside Norma Bay, from the south

shoreline of Norma Bay, and from the shoreline in the south central area of the lagoon between Norma Bay and Applegate Cove.

### Origin of Juvenile Black Brant

This fall Izembek NWR will collaborate with USGS scientists for a second year to collect primary feathers from juvenile Pacific Black Brant that are harvested by hunters in Izembek Lagoon. The purpose of this research is to determine the breeding origin for juvenile brant that use Izembek Lagoon in the fall. Stable isotope techniques will be used to measure the amount of hydrogen in the feathers since this varies by geographic location. Current speculation is that a greater portion of the annual production of brant is coming from breeding areas in the Arctic rather than in western Alaska, where brant production has traditionally occurred.

A preliminary sample of primary feathers collected from juveniles during the post-breeding period on the Yukon Delta (YKD) and in Arctic Alaska were analyzed for hydrogen ( $\delta^2\text{H}$ ) in 2014. The isotopic signatures of the feathers from these two locations were quite different, indicating that the stable isotope technique can be used to delineate geographic origin of the brant productivity. We also obtained a good initial sample of primary feathers from juvenile brant ( $n = 104$ ) taken by sport hunters at Izembek Lagoon in fall 2014. Preliminary analyses of these samples using stable isotope techniques show isotopic signatures spread over a wide range of values, representing birds from YKD and Arctic breeding locations (Figure 2). The results are intriguing, though preliminary, and provide support for the notion that the source of brant productivity may be shifting to the Arctic. Figure 2 shows the isotopic signatures (Deuterium,  $\delta^2\text{H}$ , and Oxygen,  $\delta^{18}\text{O}$ ) of primary feathers obtained from first year brant shot by sport hunters at Izembek Lagoon in fall 2014.

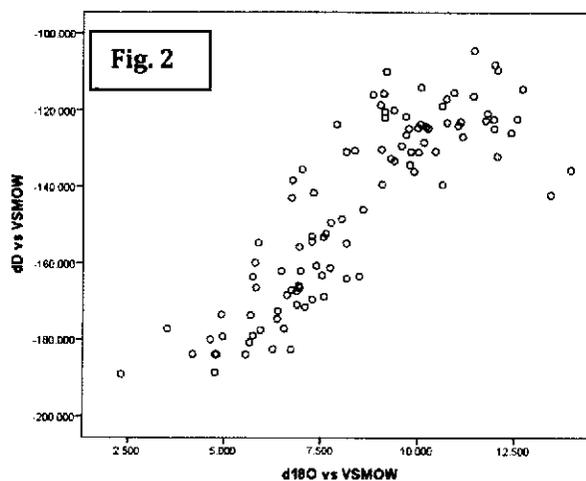


Figure 2. Preliminary analyses of 104 samples using stable isotope techniques show isotopic signatures spread over a wide range of values, representing birds from YKD and Arctic breeding locations.

### Tundra Swan

The annual Tundra Swan survey was conducted on the Izembek and Pavlof Units from 6-9 May 2015. We observed a total of 812 swans and 95 nests in both units combined. In the Izembek Unit we observed a total of 120 swans and 21 nests. There were 24 single swans, 4 single swans with nests, 8 pairs, 17 pairs with nests, and 42 in flocks. The density of swans in the Izembek Unit, 0.29 swans/mi<sup>2</sup>, was slightly higher than 2014 (0.21 swans/mi<sup>2</sup>; Figure 3) but below the long term average of 0.31 swans/mi<sup>2</sup> ( $\pm$  0.03 SE, 1998-2009). The density of breeding pairs observed on the Izembek Unit, 0.10 swans/mi<sup>2</sup>, was also slightly higher than 2014 (0.09 swans/mi<sup>2</sup>; Figure 3) and equal to the long term average of 0.10 swans/mi<sup>2</sup> ( $\pm$  0.01 SE, 1998-2009).

In the Pavlof Unit, we observed a total of 692 swans and 74 nests. The total was composed of 75 single swans, 25 single swans with nests, 71 pairs, 49 pairs with nests, and 352 in flocks. There was one large flock of swans located on a lake that contained 242 swans. The density of swans in the Pavlof Unit, 0.98 swans/mi<sup>2</sup>, was greater than 2014 (0.51 swans/mi<sup>2</sup>; Figure 4) and the long term average of 0.57 swans/mi<sup>2</sup> ( $\pm$  0.03 SE, 1998-2009). The number of breeding pairs observed on the Pavlof Unit, 0.26 swans/mi<sup>2</sup>, increased from 2014 (0.18 swans/mi<sup>2</sup>) and was higher than the long term average of 0.23 swans/mi<sup>2</sup> ( $\pm$  0.01 SE, 1998-2009).

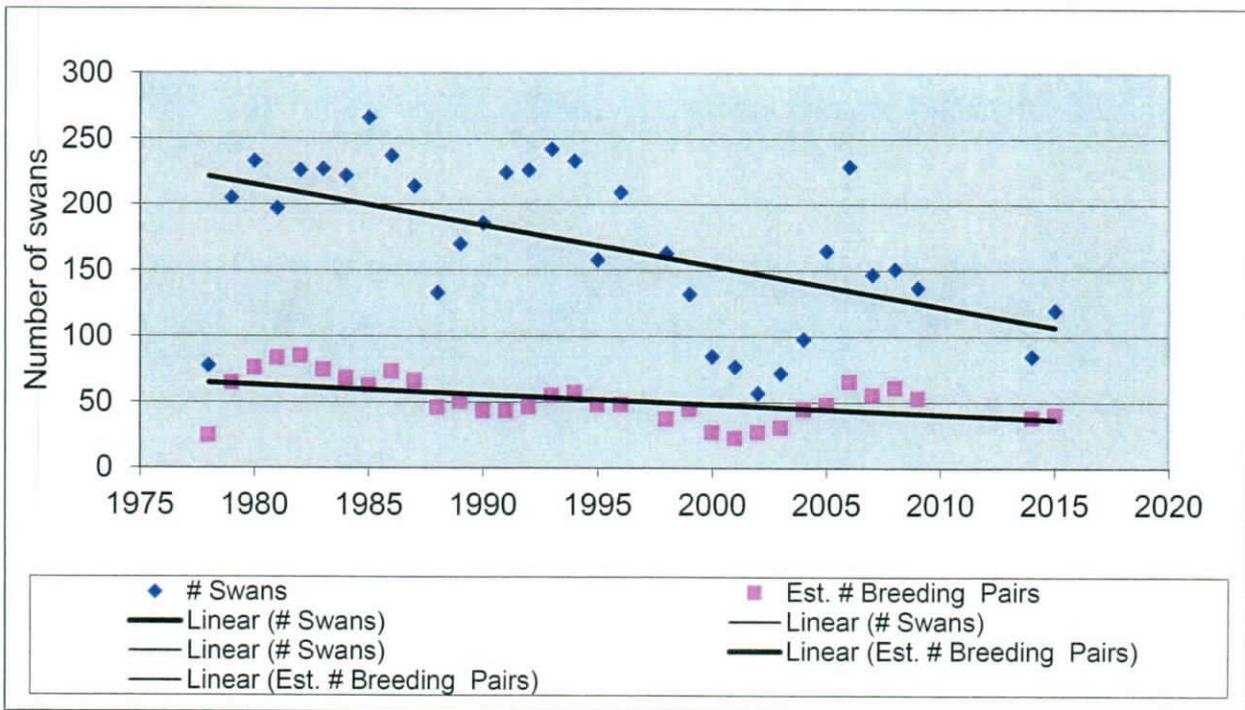


Figure 3. Annual Tundra swan aerial population survey trends (1978-2015) for the Izembek Unit on Izembek National Wildlife Refuge, Alaska.

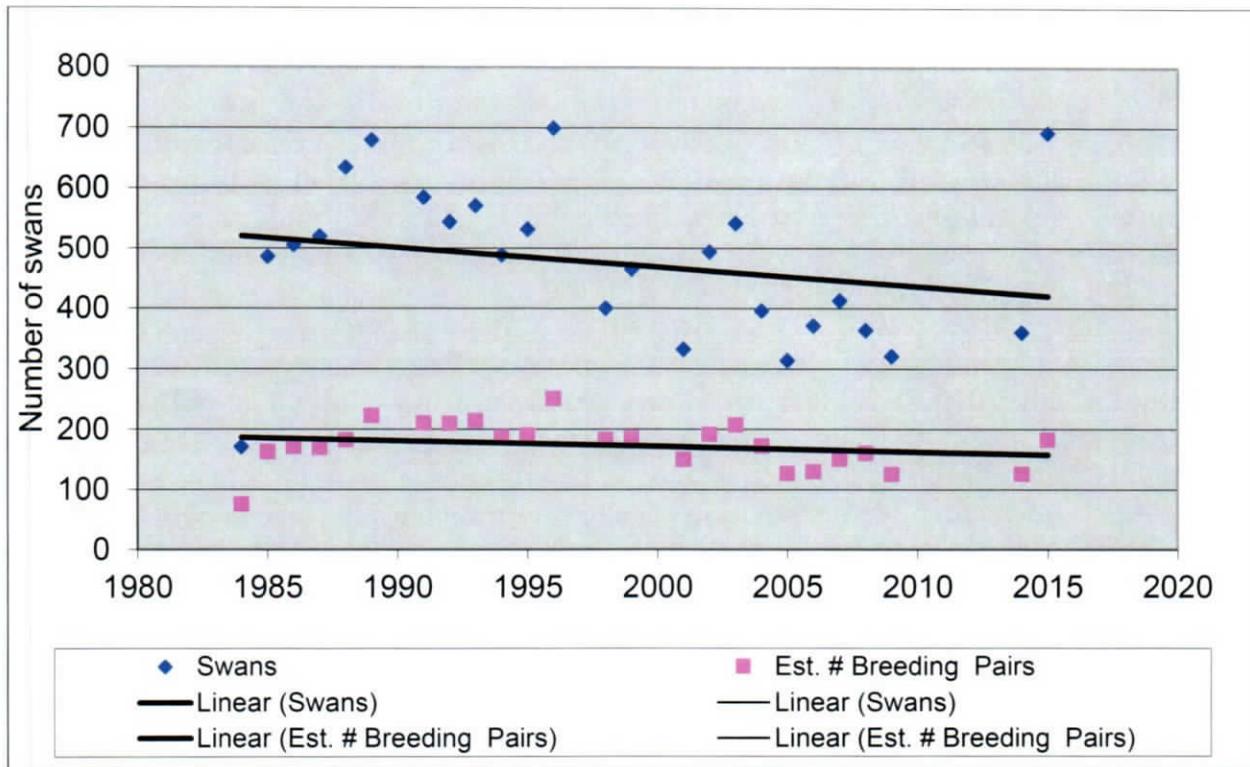


Figure 4. Annual Tundra swan aerial population survey trends (1984-2015) for the Pavlof Unit on Alaska Peninsula National Wildlife Refuge (managed by Izembek National Wildlife Refuge), Alaska.

### Avian Influenza and Avian Blood Parasites

Izembek NWR will continue working in cooperation with the U.S. Geological Survey (USGS) to collect Avian Influenza and blood parasite samples from hunter-harvested waterfowl in September and October 2015.

As a result of the research conducted at Izembek Refuge, Andrew Ramey and his colleagues have published a research article in the scientific journal *Virology* (August 2015). The article is titled "Dispersal of H9N2 influenza A viruses between East Asia and North America by wild birds". This article highlights some of the outcomes of their work, and the results provide evidence for intercontinental viral dispersal by migratory birds.

### Eelgrass Monitoring

In collaboration with USGS scientists, we are continuing to conduct monitoring surveys on the eelgrass located in Izembek Lagoon. The Izembek Lagoon has one of the largest eelgrass beds in the world and is a critical habitat resource for many species. Bimonthly surveys are conducted from April through October at Grant's Point in Izembek Lagoon to provide information on seasonal changes in eelgrass productivity and abundance, and information on trends relative to environmental factors such as sea level rise, water temperature, light levels, salinity, and turbidity. In addition, this information will be utilized to examine regional trends and develop a monitoring plan for eelgrass in four refuges within southwest Alaska.

The staff at Izembek Refuge are currently working with USGS partners and the USFWS Inventory and Monitoring program from the Regional Office to develop a more intensive monitoring program to observe and quantify the trends in health and productivity of the eelgrass habitat in Izembek Lagoon. This has involved developing a formal study protocol and refining the current survey methods. The comprehensive monitoring effort will incorporate a multi-scale design to assess health and distribution trends annually over the next 30 years. The bimonthly surveys at Grant's Point (Level 3) will be continued as 1 of 3 parts of the overall survey design. Level 2 of the survey consists of an extensive point sampling design that covers a grid pattern of 120 points across the lagoon where abundance and standing crop estimates are measured; this survey will be conducted annually. In July 2015, Level 2 of the survey was conducted. Level 1 of the survey will entail collecting and classifying satellite imagery every 5-10 years to document changes in the spatial extent of eelgrass across the lagoon. The three levels will be combined to assess overall health and changes in distribution of eelgrass throughout the lagoon over time.

#### **Steller's sea lion population monitoring**

During summer 2013 we initiated a population monitoring effort for the Steller's sea lions that utilize haul out areas on Unimak Island. The Steller's sea lion populations in Alaska are listed under a threatened status. In 2013 and 2014 we deployed a total of 9 cameras at 6 haul out sites (Figure 5). One photo is collected every hour during the day on each camera (Figure 6). The photos from 2014-2015 will be retrieved in late July 2015. The photos will be used to document important haul out areas, conduct minimum population counts annually, and determine timing of the use of haul out sites on Unimak Island.



Figure 5. Camera stand deployed with remote camera to photograph Steller sea lion haul-out at Oksenof Pt. on Unimak Island, Alaska.

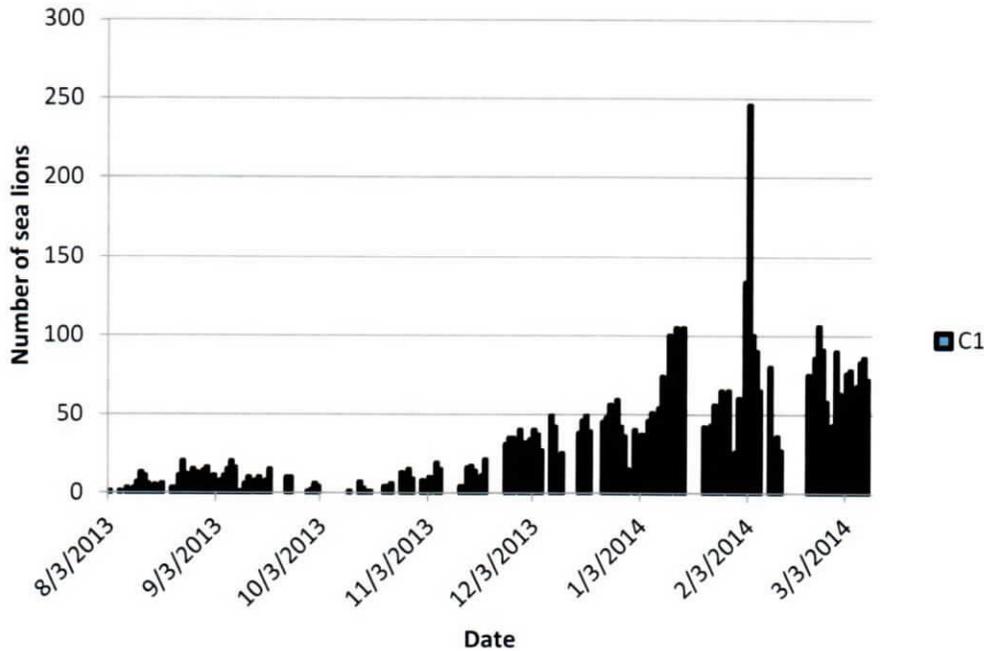


Figure 6. Number of Steller sea lions observed in photographs collected from a remote camera (C1) placed at a haul-out location on Cape Sarichef, Unimak Island, Alaska

**Walrus Monitoring**

In 2014, as many as 2,000 walrus were observed hauled out on Unimak Island during July to November. In July 2015, we deployed a remote camera near Urilia Bay to monitor the continued presence of Pacific walrus on Unimak Island. Intermittent monitoring has shown this to be the only location the walrus are currently using for a haul out site on the island. The camera will capture a photograph once every hour from 0600h-2200h. We will periodically download the photos to count the number of walrus hauled out and to document the timing and frequency of use of the haul out site.



### **Walrus Mortality Event**

From late May through July, there were a number of reported dead walrus observed on Amak Island, the barrier islands on Izembek Lagoon, and on Unimak Island. We estimate there may have been as many as 30 dead walrus in this area based on field observations, reports from other marine mammal taggers, and reports from fishing vessels. The cause of death is currently unknown. The carcasses observed were too decomposed to collect viable organ samples for analysis. We encourage people to contact the refuge office as soon as possible when these events occur to facilitate rapid collection of samples when possible.

### **Seabird Mortality Event**

The first apparent die off occurred in early May and consisted mostly of Common murre and some gull species. The bird carcasses were observed on the inner shore of Izembek Lagoon and on the barrier islands of the lagoon (100-200 birds). They were too decomposed to obtain samples for analysis. In early July, more seabird carcasses were noticed as well as sick birds that were still alive. There were gulls, horned puffins, black legged kittiwakes, and a few other species that were reported and observed either dead or very sick. This occurred in Izembek Lagoon, near the Cold Bay dock, and in False Pass. We collected 5 birds and sent them to the USGS National Wildlife Health Center lab in Wisconsin for analysis. Cause of death was unknown at the time of submission of this report.

### **Water Temperature Monitoring**

In August 2015, the water temperature sensor stations that were deployed in streams utilized by salmon last year will be visited to download data, exchange sensors, and collect additional discharge data. The data will be used to establish a baseline for the refuge, and will also be added to a statewide database that hosts a monitoring network for southwest Alaska.

## **EDUCATION AND OUTREACH ACTIVITIES**

### **Christmas Bird Count and Trivia Night**

By sunrise on December 18, 2014, the Cold Bay Christmas Bird Count was underway as several students and Izembek staff donned their binoculars and bird field guides and headed out on the refuge. Students from the Cold Bay School assisted Izembek Staff with conducting nearly eighty percent of the local count. The students had the opportunity to test out high powered optical equipment while observing many different bird species. They also learned the importance of keeping accurate records and detailed notes. Members of the community completed the remainder of the count and volunteered several hours of their day to make observations in critical areas around town. In total, 24,186 birds were counted during the survey and participants recorded 25 different species of birds. These results were compiled and submitted to an online database where the data are publically available (<http://birds.audubon.org/christmas-bird-count>).

After the count was completed, members of the community joined together for a potluck celebration followed by a trivia game night. There was an impressive turnout with almost

one third of the town participating in the evening activities. The trivia questions were all related to birds and their habitats on the refuge. The students and adults all displayed their impressive knowledge of the local bird species and waterfowl hunting regulations.



### Refuge Open House

Refuge staff hosted the annual open house at the refuge office in April 2015. Local adults and youth participated in a scavenger hunt and tours of the hangar and refuge aircraft. All had the opportunity to explore biology displays throughout the office and were surprised by a visit from Puddles, the refuge mascot. We all gathered for a BBQ lunch to share stories about the refuge and catch up on new programs and accomplishments at the refuge.



### Youth Conservation Corps (YCC) visit Izembek Refuge

In July 2015 the YCC crew from Alaska Maritime Refuge spent 10 days working at Izembek Refuge. The crew consisted of a leader, an assistant youth leader, and four members who were all from Alaska (Sand Point, Homer, Adak, and St. Paul). The YCC completed several maintenance projects on the refuge and had the opportunity to learn about programs and projects happening at Izembek NWR.

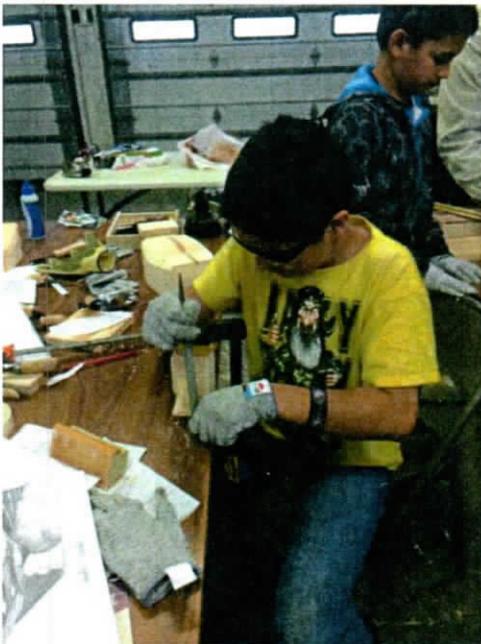
### Ferry Tours

Refuge volunteers and staff continued to provide refuge tours to passengers arriving in Cold Bay every two weeks between May and September on the Tustumena ferry via the

Alaska Marine Highway System. Up to 24 visitors can be accommodated on each tour. The tours are popular and provide a great outreach opportunity for the Refuge and local community. Tour destinations include the Refuge office and Grant's Point overlook. Stops are made along the route when wildlife (bears, birds, caribou, etc.) are visible to provide wildlife observation and photography opportunities. The tours are supported by local volunteers that serve as tour guides on the bus and provide local stories and facts about the refuge and Cold Bay. For many ferry passengers, this tour is the highlight of their trip.

### **Waterfowl Decoys**

This spring students from the Cold Bay School attended a series of workshops hosted by the staff at Izembek Refuge to design and carve their very own waterfowl decoys. Students were initially provided with a block of wood that was roughly shaped to emulate a specific waterfowl species such as a green-winged teal, northern pintail, or goldeneye. The students learned about wood carving techniques, safety, waterfowl anatomy, feather structure, artistic painting, and wildlife observation. After watching videos and demonstrations, students started to practice carving techniques on scrap wood. These early practice sessions allowed them to learn the advantages of each carving tool and develop confidence with their techniques. The students quickly progressed to shaping and carving their own decoys using a variety of tools and sandpaper. Small details such as feathers and nostrils were carefully carved out by the enthusiastic and dedicated students. In the final phases, decoys were enhanced with glass eyes and several coats of paint to achieve a life like appearance. The hard work and many hours of careful attention to detail resulted in impressive artwork and an incredible learning experience for all involved in the project.



### **Refuge Website**

For further information on some of the programs and studies that are conducted on the refuge, please refer to our website. The refuge maintains a website at the following location: <http://www.fws.gov/refuge/izembek/>. We often post articles about recent activities and results of surveys on the site.