



United States Department of the Interior



U.S. FISH AND WILDLIFE SERVICE
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Federal Subsistence Activity Report Kodiak National Wildlife Refuge, September 2016 – January 2017

Subsistence Permit Summary

Federal wildlife subsistence regulations afford opportunity for rural residents of the Kodiak area to harvest Roosevelt elk, Sitka black-tailed deer, and brown bear on Kodiak Refuge lands. Harvest opportunity for bear is restricted to residents of selected village communities. In complement, federal fisheries subsistence regulations afford opportunity to harvest fish and shellfish. Regarding the latter, most fish permittees target sockeye and coho salmon in inshore marine waters under jurisdiction of Alaska Maritime Refuge. Federal subsistence permits can be obtained at the Kodiak Refuge headquarters and, in the case of deer, at some villages. Permittees are required to carry their Federal subsistence permits, current state licenses, harvest tickets, and locking tags (bear) while hunting.

Table 1. Federal subsistence permits issued and estimated harvest (#) based on harvest reports, Unit 8, 2009-2017.

Species	2009-10	2010-11	2011-12	2012-13	2013-14	2014-15	2015-16	2016-17
Deer*	56(38)	67(42)	70(52)	20(11)	46(21)	45(39)	39(51)	47(15)**
Bear	6(1)	7(1)	5(2)	2(0)	4(0)	3(0)	6(3)	3(0)**
Elk	5(0)	8(1)	6(0)	2(0)	5(2)	9(1)	4(2)	6(0)
Fish				2(0)	8(36)	20(117)	19(63)	48(101)**

*Multiple deer eligible to be harvested per permit.

**Incomplete reporting. Season ongoing and/or refuge follow-up with permittees in progress.

Brown Bears

Population Assessment

The Refuge, in cooperation with the ADF&G, aerially surveys brown bear in late May to monitor trend in size of the population in different regions of Kodiak Island. No survey has been conducted since 2013 despite full preparation and agency commitments because above-average winter and spring temperatures prompted early leafing of deciduous shrubs and trees in late April and mid-May. Presently, protocol prescribes completing the survey after the conclusion of bear hunting season (May 15) but before significant shrub and tree leafing to maximize sightability of bears. Regional areas targeted for survey in 2017 include the Frazer-Red Lake vicinity and adjoining Sturgeon River vicinity.

Brown Bear Stream Surveys

Following established protocol, the Refuge aerially surveys bear use along selected streams of southwestern Kodiak Island between early July and mid-August to monitor trend in population composition and stream use. Surveys were not fully completed in 2016 because of the vacancy in a Refuge pilot position. Now that this position has been filled, we expect that surveys will be fully completed in summer 2017.

Bear Mortality

We are presently analyzing ADF&G records of bear mortality (harvest, DLPs) for 2015-16 regulatory year. Results will be reported at the next Council meeting.

Bear-Salmon Research

In summer 2016, the Refuge committed to partially support Will Deacy as post-doctoral researcher at Oregon State University between fall 2016 through spring 2018. Deacy's work will focus primarily on modeling brown bear-salmon relationships in southwestern Kodiak Island—an effort that builds on his 2013-2016 dissertation research in the same area. Presently, Deacy and colleagues are preparing a manuscript that addresses the bear behavioral responses to concurrent availability of primary salmon and berry food resources.

Bear-Berry Research

In 2015 the Refuge initiated a two-year pilot study, in consultation with various scientists and organizations. Purpose is to develop, test, and select repeatable standard methods of monitoring year-to-year variation in relative abundance and phenology of salmonberry, blueberry, elderberry, and devilscub. Results from future berry monitoring would be used to explain variation in trend of the bear population. We also acknowledge that trend monitoring results may be valued by peoples of Kodiak area that, like bears, partly subsist on berries.

Preliminary results from phenology monitoring indicated first salmonberry flowering and ripened fruit on 23 April and 19 June 2016, respectively. Compared to 2015, elderberry flowered 11 days earlier in 2016 (May 19) and fruit reddened 10 days earlier (July 9). It seems likely that mild winter-spring temperatures influenced timing of plant growth. Moreover, average January-July temperature deviated by +2°C in 2015 and +2.8°C in 2016 compared to the long-term (1981-2010) average recorded by the National Weather Service at the Kodiak State Airport.

In general we observed decreased abundance of devilscub fruit but increased abundance of elderberry, salmonberry, and blueberry fruit in 2016 compared to 2015. The 20 monitored devilscub plants produced a similar number of fruit clusters in both years but fewer fruit per cluster in 2016. Elderberry supported 17% more fruit clusters per plant and 8% more fruit per cluster in 2016 compared to 2015. We observed a 118% increase in number of salmonberry fruit. However, 66% of fruit comprised few (<30) drupelets with minimal potential value to foraging brown bear or people. Blueberry fruit were 60% more abundant in 2016 compared to 2015. See the next page for presentation of tabular results. A stakeholder meeting scheduled for April 10 will discuss final project results, report reviews, and recommendations for implementing operational monitoring.



Figure 1. Example of image from timelapse camera used to monitor progression of annual growth (i.e., phenology) of salmonberry.

Sitka Black-tailed Deer

Agency field observations plus informal hunter interviews indicated continued increase in the population and level of harvest opportunity. The population increase is attributed primarily to high over-winter survival associated with relatively mild winters between 2013-2016.

Roosevelt Elk

Radio-collared elk provide a basis for ADF&G's efforts to track herd locations and to estimate herd composition and population size in late summer prior to hunting season operation. Results from the ADF&G's 2016 elk survey indicated a population size of 1,050 elk including 100 in the Waterfall herd, which summers in the vicinity of Refuge lands on Afognak Island. Post-hunt analysis indicated that 87 elk were harvested in 2016 including two animals from the Waterfall herd.

Mountain Goat

In 2016, biologists with the ADF&G and Refuge cooperatively surveyed approximately 80% of known goat summer range on Kodiak Island during August. Of the 2,256 goats counted 1,770 were adults and were 486 kids. The ADF&G issued 249 drawing permits and 1,616 registration permits. A total 89 goats was harvested by drawing hunts and 180 goats have been harvested by registration hunt. Some additional harvest is expected in registration hunt 480 between early January and mid-March 2017 when the season closes.

Reindeer

Distribution of reindeer is restricted to southwestern Kodiak Island where suitable habitat occurs. Over the past 20 years, herd size has fluctuated between 300 and 335 animals. In late May 2016, the ADF&G counted a total 375 (341) reindeer consisting of 291(289) adults and 84 (52) calves. Preliminary analysis indicated that 33 (36) reindeer were harvested in 2016, which is the highest recorded, and is about twice the level of recent annual harvests following prohibition of an allowance to hunt the same day a hunter is transported to the field (i.e., same-day airborne).

Migratory Birds

Nearshore Marine Bird Surveys

In summer 2016, the Refuge continued a survey initiated in 2011 focusing on marine nearshore birds in the intertidal zone and shallow inshore waters. We conducted surveys in June and August, when the majority of resident breeding birds had established nests and populations were relatively stable. August survey data provided bases for estimating productivity of species with distinctive juvenile plumages, including marbled murrelets and pigeon guillemots. Surveys were conducted from small skiffs using the Refuge research boat, the M/V Ursa Major II, as a mobile home base. In summer 2016, Refuge staff surveyed the west side of Kodiak Island from Viekoda Bay southwest to Gurney Bay, completing 128 transects along approximately 1600 km of shoreline. This region was last surveyed in June and August 2013. The most commonly encountered species included: black-legged kittiwakes, glaucous-winged and mew gulls, tufted and horned puffins, common murre, marbled murrelets, pigeon guillemots, and harlequin ducks (Table 2). Productivity was higher in 2013 than in 2016 for all species except Bald Eagles and Black Oystercatchers (Figure 2).

Table 2. Preliminary counts for select marine bird and mammal species surveyed on transects in June and August, 2013 and 2016 by Kodiak Refuge on the west side of Kodiak Island from Viekoda to Gurney Bays.

	June 2013 Counts	June 2016 Counts	August 2013 Counts	August 2016 Counts	Productivity August 2013	Productivity August 2016
Nearshore Transects						
Harlequin Duck	192	398	506	1102		
Barrow's Goldeneye	10	102	148	44		
Common Merganser	280	542	142	216		
Bald Eagle (Adult)	188	229	145	277	0.013	0.202
Bald Eagle (Subadult)	11	38	15	140		
Black Oystercatcher	62	102	42	58	0.024	0.086
Nearshore & Offshore Transects						
Pelagic Cormorant	50	100	33	183		
Red-faced Cormorant	2	0	0	24		
Mew Gull	71	32	1897	2111	0.038	0.014
Glaucous-winged Gull	1166	1035	1927	3114	0.276	0.027
Black-legged Kittiwake	3774	1931	5300	4749	0.113	0.023
Arctic Tern	198	223	247	343	0.241	0.149

Aleutian Tern	2	0	0	1		
Common Murre	626	2	428	343		
Pigeon Guillemot	521	409	495	494	0.306	0.115
Kittlitz's Murrelet	1	0	12	1		
Marbled Murrelet	1170	218	1346	526	0.086	0.040
Tufted Puffin	369	260	415	517		
Horned Puffin	134	0	223	278		
Marine Mammals						
Sea Otter	718	717	513	927		
Harbor Seal	274	374	441	470		

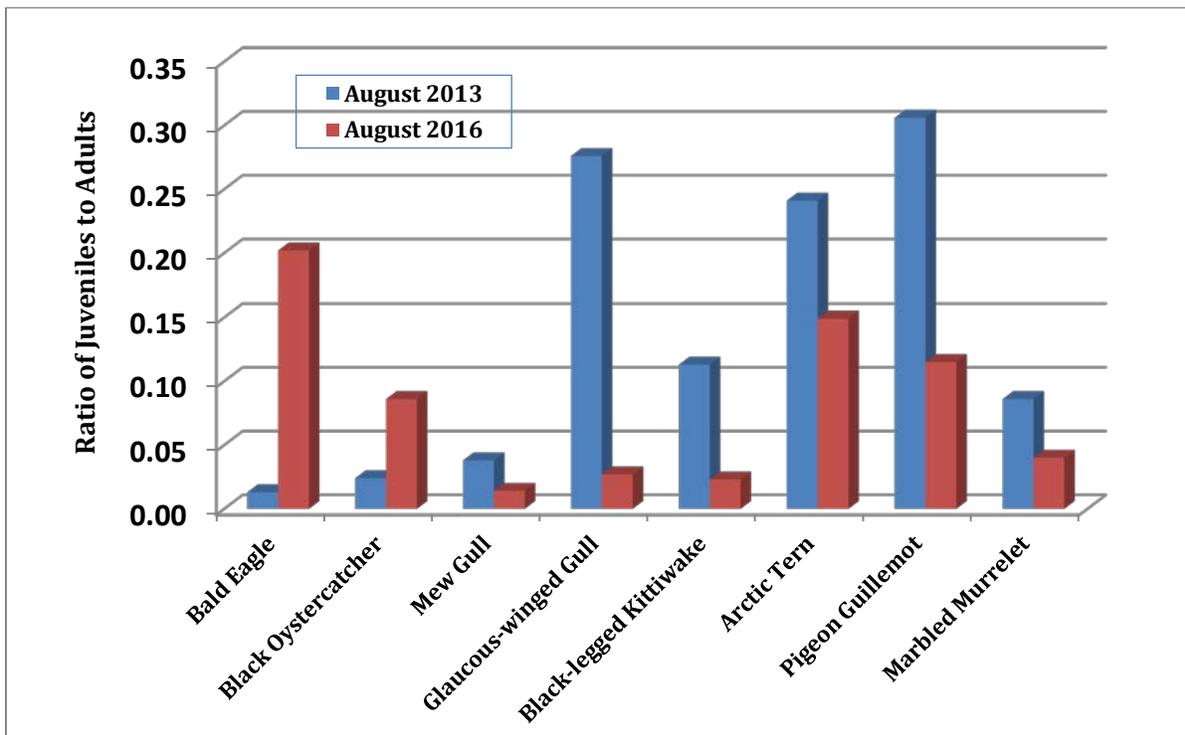


Figure 2. Comparisons of productivity (i.e., ratio of juvenile (hatch-year) to adult birds) surveyed on the west side of Kodiak Island in 2013 and 2016.

A link to the survey report with complete results from 2011-2013 can be found on the Kodiak National Wildlife Refuge website at:

https://www.fws.gov/uploadedFiles/Region_7/NWRS/Zone_2/Kodiak/PDF/Report2016_1_MarineBirdSurvey_2011_2013_KodiakNWR.pdf

Fisheries

Buskin River Fish Habitat Restoration

On January 11, the Exxon Valdez Trustee Council approved \$4.5 million in funding to implement a proposal jointly prepared by the Service, ADF&G, and NOAA. Objectives of the project are restoration of fish passage via removal of 10 barriers, and via replacement of another 10 barriers (i.e., culverts) in partnership with three supportive landowners, the U.S. Coast Guard, Alaska Department of Transportation and Public Facilities, and the Natives of Kodiak. Completion of barrier removal and replacement will restore access to over six miles of upstream habitat and 53 acres of lakes in the 26 square mile Buskin River drainage. For more information contact Heather Hanson, Fish Passage Engineer, heather_hanson@fws.gov.



Figure 3. Salmon passage barrier scheduled for replacement at the outlet of Boy Scout Lake. Note the failed attempt of the encircled coho salmon to access the lake via the bottom-corroded culvertr. Photo: Franklin Dekker/USFWS.

Akalura Creek Salmon Escapement Monitoring

In 2015 we estimated $32,802 \pm 7,336$ (95% CI) sockeye salmon (*Oncorhynchus nerka*) returning to the system, with peak counts recorded on August 19. Data was collected via combination of fixed timelapse camera recording a burst of three images per minute, and via continuously daytime-operated video camera, which served to calibrate timelapse-based fish counts back in the office (Figure 4). Presently data from 2016 is being processed and analyzed, and plans are in development for continued 2017 project operation. To obtain a copy of the 2015 report contact Kevin Van Hatten, kevin_vanhatten@fws.gov.



Figure 4. Example of image from timelapse camera used to monitor sockeye salmon escapement in Akalura Creek, Kodiak Island.

Networked Monitoring of Salmon Habitat Temperatures

Supported by a grant from the Western Alaska Landscape Conservation Cooperative (LCC), The Refuge coordinated implementation of a collaboratively-developed strategic plan for automated, hourly monitoring of temperature of important salmon streams and lakes. The purpose of the network is to coordinate temperature monitoring in accordance with identified data collection standards and to make these data publically accessible. Presently, network partners include the Refuge, USFWS/Office of Subsistence Management, U.S. Geological Survey, Alutiiq Tribe of Old Harbor, Larsen Bay Tribal Council, Sun'aq Tribe of Kodiak, ADF&G, and KRAA. Fieldwork by network partners in 2016 focused on continued monitoring of 32 streams and 25 lakes that serve important salmon spawning and/or rearing functions.

Education, Outreach, and Other Noteworthy Activity

Alaska Migratory Bird Calendar Contest

Kodiak will continue to participate in the Migratory Bird calendar contest. "Migratory Birds Bring Me _____". This open-ended theme leaves space for the children to express their own connections to migratory birds. The purpose of the contest is to encourage children to learn about bird conservation. Student entries will be submitted in mid-February followed by Refuge-sponsored judging of entries in Kodiak in late February. Highest ranked entries will be forwarded for final judging in Anchorage. The recently released 2017 calendar features art and literature of Kodiak island students.

Invasive Plant Management

Since 2003, the Refuge has consistently operated an integrated pest management (IPM) program to address the invasive plant threat to native fish and wildlife habitat resources. In 2016 we applied IPM methods in partnership with landowners and the Kodiak Soil and Water

Conservation District to control highly invasive plants in 12 areas including Akalura Cannery, Alitak Cannery, Buskin River watershed, Camp Island vicinity, Garden Island, Harvester Island vicinity, Uganik Cannery, and Refuge, Coast Guard, and State Park properties in Kodiak. The major new start in 2016 was the Buskin project where reed canarygrass has impacted native wetlands that support salmon spawning and rearing habitat. By mid-October, the end of the control opportunity period, in mid-October we had treated about 80% of the 4-acre infestation area. Canarygrass eradication from the watershed area will likely require four-six years of follow-up treatments. For more on the Refuge's IPM strategy, see: http://www.fws.gov/refuge/Kodiak/what_we_do/resource_management.html.

Refuge Staff Transitions

Kodiak Refuge had a number of staff change since last year. **Anne Marie La Rosa** retired in December 2016, concluding three years as Manager of Kodiak Refuge and total 32 years of productive federal service, primarily with the Fish and Wildlife Service. In January 2017 **Michael Brady** was selected as Kodiak Refuge's new Manager and is scheduled to start duty in early April. Michael brings an extremely diverse work experience that includes many different positions within the Service, and in several different regions of the country. Michael is currently serving as the Project Leader for Hopper Mountain National Wildlife Refuge Complex and Condor Recovery Program in Ventura, California. Before becoming the Project Leader, Michael was the Deputy Wildlife Refuge Manager for Alaska Peninsula/Becharof NWR, Alaska. Michael has also held various positions at Monomoy NWR (MA), Ding Darling NWR (FL), Stone Lakes NWR (CA), Blackwater NWR (MD) and Chincoteague NWR (VA). Michael graduated with a Bachelor's Degree in Environmental Science from the University of Massachusetts at Lowell. The Refuge Information Technician position has remained vacant following the resignation of Tonya Lee. We miss her contribution and vast knowledge of the people and archipelago. She is sorely missed. The Refuge has chosen to leave the position vacant until additional outreach has been done to identify just the right slate of applicants. The Refuge would appreciate all members of the RAC to assist us to identify likely candidates for the next recruitment process. Finally in December, Law Enforcement Officer, Jeff Hicks, filled our vacant LE Officer Pilot position. Jeff has moved south to Kodiak Island from Dillingham, Alaska, where he served in a similar capacity at Togiak National Wildlife Refuge. We are glad to have him on board.