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**U.S. Department of the Interior
Fish and Wildlife Service
National Wildlife Refuge System**

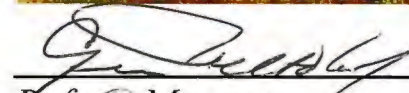
**SELAWIK NATIONAL WILDLIFE REFUGE
Kotzebue, Alaska**

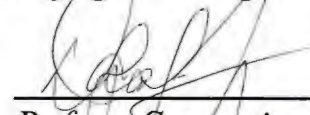
**ANNUAL NARRATIVE REPORT
Calendar Year
2001**

Selawik National Wildlife Refuge Annual Narrative

Kotzebue, Alaska
Calendar Year 2001




Refuge Manager 30 Sept 02
Date


Refuge Supervisor, N. Refuges 05/26/2006
Date


Regional Office Approval 10/27/06
Date



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Introduction

Selawik National Wildlife Refuge straddles the Arctic Circle in northwestern Alaska, encompassing an area approximately the size of Connecticut. The refuge was established by the Alaska National Interest Lands Conservation Act of 1980 (ANILCA). When land conveyances under the Alaska Native Claims Settlement Act are complete, 2.15 million acres are expected to remain under refuge management.

The refuge was established in part to conserve fish and wildlife populations and habitats in their natural diversity, including the Western Arctic caribou herd, waterfowl, shorebirds and other migratory birds, salmon and sheefish. Other purposes for establishment include providing continued opportunity for subsistence uses by local residents, and ensuring water quality and necessary water quantity within the refuge.



A congressionally designated National Wild and Scenic River, the Selawik meanders through the heart of the refuge, creating a rich succession of habitats. The river's name (and hence that of the refuge) is taken from the Inupiaq word "siilivik," which means "place of" (vik) "sheefish" (sii). The sheefish, a member of the whitefish family that weighs up to 60 pounds, is highly sought after by subsistence users and sport fishermen in the region.

Extensive tundra wetlands containing grass/sedge meadows dominate the refuge landscape, while boreal spruce forests, alder and willow thickets trace stream and river drainages. Multitudes of migratory waterfowl and shorebirds breed on the refuge's 24,000 lakes and ponds, while neo-tropical songbirds nest in bank forests and thickets. Moose, wolves, lynx, bears, musk oxen, arctic and red fox, beavers and muskrats are year-round residents of the refuge. Twice a year the Western Arctic Caribou Herd migrates across the refuge; in mild winters small bands remain to forage in lichen-covered foothills. The refuge's many rivers, sloughs and lakes support both freshwater and anadromous fisheries, and provide spawning grounds for sheefish, whitefish, northern pike and arctic grayling.

The Refuge staff currently consists of nine permanent, one term, one temporary, and one excepted appointment. Two volunteers worked with us the majority of the summer, and several others contributed to projects throughout the year. Refuge facilities include an office building with an apartment, a heated hangar, two government residences, a bunkhouse, an administrative cabin, and a leased office/bunkhouse facility in the village of Selawik.



Refuge headquarters in Kotzebue are 26 miles north of the Arctic Circle, making this the furthest north permanent duty station in the National Wildlife Refuge System. Access to the refuge is possible only by boat, float- or ski-equipped

airplane, snowmobile or dog team, as the nearest road is 350 miles away.



The city of Kotzebue, as seen from the cemetery hill south of town.

Subsistence use by local residents accounts for the majority of public use on the refuge. On a per pound basis, fish are the most widely harvested subsistence resource, followed by caribou. Snowmobile trails provide vital links between villages in winter months, and are usually in good traveling condition through the end of April.

The most popular destination on the refuge for local residents is remote Selawik Hot Springs. The site consists of two cabins and a bath house, and though managed by special use permit, the hot springs are available to all. Sport hunters account for most of the recreational use of the refuge - primarily in the months of September and October. However, occasional summer floaters also enjoy the wildlife viewing opportunities and solitude provided by Selawik Wild River.



Highlights

- Refuge staff completed a moose census on a 1,692 square mile portion of the Tagragvik River (1a).
 - Four radio-tagged Pacific golden plovers were located on the northern edge of the Seward Peninsula, just south of Selawik Refuge, demonstrating a previously unknown link between plovers wintering in Oahu and their summer breeding grounds (1b).
 - Refuge staff sent a ringed seal pup that had been separated from its mother to the Alaska Sea Life Center, and participated in its release back into Kotzebue Sound after successful rehabilitation (1b).
 - Selawik Refuge staff helped band 202 greater white-fronted geese and 30 Canada geese in the first successful goose banding project on the Selawik Refuge many years (4a).
 - One hundred twenty five copies of the educational video “Tuttunnaiq,” were sent out to public schools in the Northwest Arctic Borough, Native Villages in the region, public libraries, refuges in Alaska, other organizations involved in public education, and permitted transporters (5b, 7b).
 - Refuge staff and other Fish and Wildlife Service personnel monitored public use on the Selawik, Tag, and Kugaruk rivers, recording locations of groups of people, boats, and aircraft, and their activities in response to local concerns about the rising numbers of sport hunters on the refuge (7a).
 - Nearly 300 students from students in the Northwest Arctic Borough submitted poster and literature entries in the regional goose calendar contest, three of whom went on to win at the state-wide level (7b).
 - For the first time since the Innaigvik Interagency Information and Education center was established, Selawik Refuge provided staffing during the busy summer tourist season (7b).
 - Refuge staff participated in Alaska Department of Fish and Game’s educational caribou collaring project with six students from the Native Village of Point Hope and their teacher (7b).
 - The refuge filled a new Refuge Information Technician position in the Native Village of Selawik (8b).
 - Refuge volunteers spent 780 hours assisting staff with monitoring and studies, public education and recreation (8b).
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Climatological Review - 2001

<u>Temperatures (in Fahrenheit)</u> <u>from Normal</u>	<u>Actual</u>	<u>Departure</u>
Average high	28	
Average low	17	
Average temperature	23	
Highest recorded	74 (06/29)	
Lowest recorded	-36 (12/19)	
<u>Precipitation (in inches)</u>		
Total for year	10.13	
Greatest in 24 hours	0.71	
<u>Snowfall (in inches)</u>		
Seasonal total, 1999-2000	52.1	
Greatest in 24 hours	5.5	
Average depth	6.6	
<u>Wind speed (in miles per hour)</u>		
Average speed	10.6 (east)	
Greatest peak speed	60 (east, 04/02)	
<u>River break-up</u>		
Buckland River at Buckland, AK	Unavailable	(May 17 average break- up date)
Kobuk River at Ambler, AK	June 1	(May 17 average break- up date)

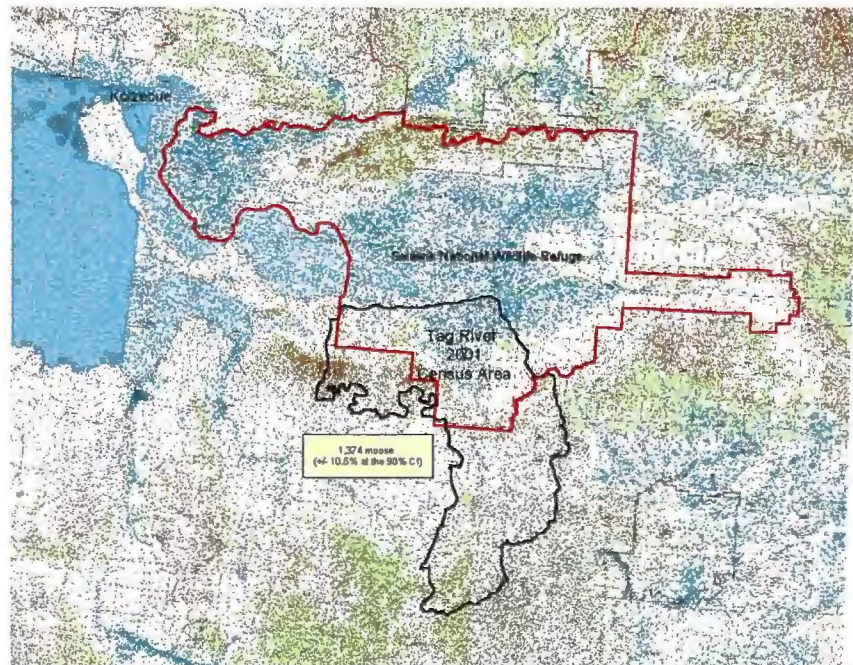
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Monitoring and Studies

1a. Surveys and Censuses

Moose

Selawik Refuge staff, with assistance from Alaska Department of Fish and Game (ADF&G), Bureau of Land Management (BLM) and National Park Service (NPS) staff, completed a moose census on the Tagragvik (Tag) River from March 22-26. The census area was 1,692 square miles and included the headwaters of the Tag River to approximately five miles above its junction with the Selawik River, the Selawik hills and refuge lands west of the Tag. Most of the fall sport hunting activity occurs within the area censused.



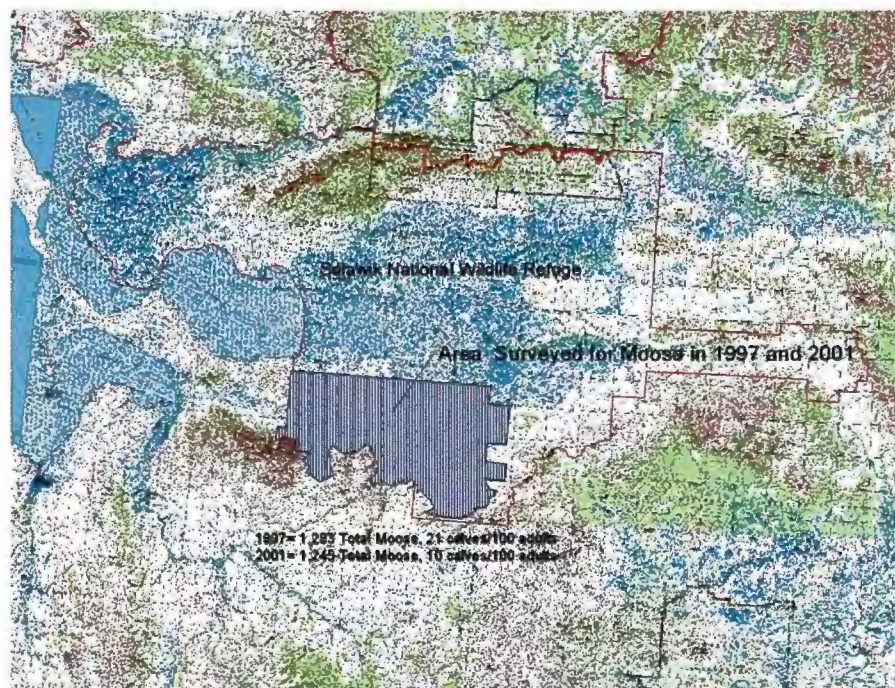
We used Gasaway's methodology to design the census and estimate moose population parameters (MOOSEPOP version 2.0, R. Delong and D. Reed, ADF&G, Fairbanks AK). Survey units that fell into areas without distinguishable landmarks were established as 12 square mile "blocks" that could be easily identified using GPS. Survey units in other areas used terrain features that were easily

identified. The area was stratified using the refuge PA-18 for the higher elevation and peripheral areas and a C-206 for the remainder.

We estimated the population in the survey area to be 1,374 moose (1,230 - 1,518 moose at the 90% CI or $\pm 10.5\%$). We surveyed 31% of the area (40 out of 130 units) and observed a total of 1061 moose (972 adults and 89 calves). The calf/adult ratio was 9 calves per 100 adult moose (0.08 - 0.1029 at 90% CI).

In addition to determining the number of moose currently present we wanted to evaluate the change in numbers and composition of moose since the last census in 1997. Only a portion of the area surveyed on 2001 was also surveyed in 1997. In 2001 we included the upper Tag River and other similar low-density areas. We did this based on a review of the movements of moose radio collared in the drainage and relocated over several years throughout the seasons.

Our conclusion was that overall numbers of adult moose had not significantly changed. Recruitment of calves into the population had however.



Overlap of 2001 and 1997 moose census areas

Table 1. Comparison of the Tag River moose population between 1997 and 2001 Gasaway moose censuses

	1997	2001
Census Area	778 mi ²	741 mi ²
Estimate of Total Moose	1283 (+/- 16%)	1245 (+/- 11%)
Moose per square mile	1.4	1.5
Calves per 100 Adult	21	10

Participants were as follows:

Observers: Jeanie Cole (BLM), Jimmy Fox (FWS), Joanna Roberts (FWS), Leslie Kerr (FWS), Barry Minor (Quicksilver Air), Oakley Cochran (Kotzebue- Arctic Sounder), Victor Karmun (ADF&G), Augie Nelson (Kotzebue), and Chris Kleckner (USGS).

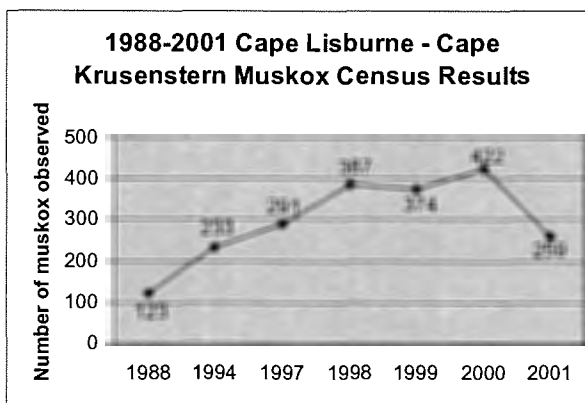
Pilots; Jim Rood-Northwestern Aviation, Sandy Hamilton Arctic Air, Brad Shults NPS, Jim Dau-ADF&G, Lee Anne Ayres -FWS

Muskox

This spring while Wildlife Biologist/Pilot Lee Anne Ayres and Wildlife Biologist Tina Moran were counting scoters, they spotted a cow and her 2-year-old just south of the Selawik River. A month later the same muskox were spotted at the Refuge cabin near the mouth of the Kuugrauk River. The Refuge received reports of a group of 15 muskox in the upper Derby Creek vicinity this fall. Muskox are typically found in treeless areas where the snow is shallow or blown clear so they access forage in the winter. The Selawik Hills, Tag flats and headwaters of the Huslia River drainage may meet those needs. Expanding groups of muskox in the lower Buckland River drainage are the most likely origin of these muskox.

The 2001 Cape Thompson-Cape Krusenstern Muskox census was completed July 6th through 11th by refuge staff and ADF&G personnel. The lower count is attributed to movements of groups outside the census area and poor sightability of groups utilizing thick riparian willow habitat. The composition data is reasonably accurate and resulted in 9% total calves and 14% short yearlings. Earlier observations also suggested lower calf production occurred in 2001. Plans are to conduct the next census in the spring when snow cover

will improve sightability and restrict movements.



The National Park Service began a behavioral research study on muskox in Cape Krusenstern. The objectives are to document group composition and gain insight into dispersal dynamics of the groups located on the monument.

Abundance and Production of Greater White-fronted Geese

A growing concern about a possible decline of the Interior Alaska greater white-fronted goose population has resulted in an increased refuge and Office of Migratory Bird Management effort to study the population. Aerial surveys and banding efforts for Greater White-fronted Geese and Canada Geese are conducted on the Innoko, Koyokuk/Nowitna and Selawik Refuges to help monitor the population. On Selawik Refuge, lakes south of the Selawik River were surveyed in mid-July. Survey results are reported below.

Total white-fronted and Canada geese observed during intensive aerial survey of major molting areas on Selawik NWR.

	1999*	2000	2001
White-front adults	2,244	2,741	2,844
White-front young	436	129	45
Total white-fronts	2,680	2,870	2,889
Canada adults		5,143	5,225
Canada young		82	138
Total Canada geese		5,225	5,363

** Fewer transects were surveyed in 1999, so direct comparisons should not be made between 1999 and 2000/2001 figures.*

Scoters

Concern about the suspected decline of scoters - especially black scoters - prompted Selawik Refuge staff to conduct a breeding pair survey for scoters. This expanded the annual Breeding Bird Population Survey conducted by the Office of Migratory Bird Management (MBM). MBM conducts a Breeding Bird Population Survey that includes scoters, but only a small portion of the refuge is usually surveyed in the project, which takes place in early June.

Aerial surveys for black scoters were conducted between June 23 and 25 over the lakes north and south of the Selawik River, mostly using transects. Black scoters were the most abundant species present, and most of these were still paired on lakes. Small rafts of surf and white-winged scoters were observed in the lakes between the Selawik and Inland Lakes. During the survey, 202 pairs, 57 solo males, and 31 solo females were observed. Preliminary results concluded that there is an estimated density of 1.34 black scoters/km² on the refuge.

Coastal Survey

Coastal surveys conducted in the fall help detect concentrations of staging waterfowl. Using a Super Cup, the pilot and an observer records numbers and locations of all birds observed during the survey. The low-level surveys along the coast are done weekly from late August through September from the mouth of the Noatak River to the Mangoak River on the SE shore of Selawik Lake. This year we shared our data with NOAA. NOAA will use the data to develop a regional map and database of sensitive resources for oil spill response purposes. We reviewed the current survey objectives and concluded those that could be met with this technique may have been accomplished.

1b. Studies and Investigations

Traditional Knowledge of Whitefish in Selawik, Alaska

The refuge contracted Susan Georgette, Alaska Department of Fish and Game, Subsistence Division, to document Selawik residents' local knowledge of whitefish ecology. She also reported on the characteristics of their whitefish subsistence fishery. The project was conducted from June 15 2001 through April 30, 2002 with the approval of the Selawik IRA. Selawik resident, and Refuge Technician, Clyde Ramoth provided invaluable assistance by

identifying key respondents, setting up and participating in the interviews, and contributing contextual information. The project goals were:

1. Review and prepare a bibliography of biological, cultural and anthropological literature pertaining to whitefish in the Northwest Arctic Region.
2. Develop an interview guide covering three main topic areas: natural history of whitefish, subsistence harvest and use of whitefish, and the relationship between beaver and whitefish.
3. Interview Selawik residents using a key respondent approach.
4. Mapping. Collect preliminary information on locations and timing of seasonal camps, fishing areas, and net locations.

Progress was made on all four goals. Local residents expressed their pleasure working with Susan and Clyde and their support of the project. Susan completed a report summarizing their findings and providing suggestions for additional research topics. The following are some excerpts from that report.

“Selawik residents recognize at least 5 species of whitefish, and possibly as many as 7. The characteristics of each species, their names, and their relationship to western taxonomy are still being explored.”

“Selawik whitefish feed primarily on thin-shelled, freshwater clams, which are abundant in the muddy river bottoms.”

“The best months for harvesting fish are June and September, as they move in and out of the lakes. Subsistence harvest typically stretches for about three weeks beginning after break-up, usually in late May.”

“In the 1950’s residents dug channels through narrow stretches of land to shorten travel to important subsistence camps. By allowing the Selawik River to drain into Inland Lake and Inland Lake to Tuklomarak River one resident believes the drainage patterns for the area were changed.”

“Selawik elders uniformly reported that beavers were not found in the Selawik area when they were growing up in the 1920’s – 1940’s”

The final report is located in the biological files and in the refuge library. The author will be continuing this project for 2-3 years

with funding from the Office of Subsistence Management, Fisheries. Additional villages that utilize whitefish will be included.

Waterfowl utilization and wetland bathymetry on Selawik National Wildlife Refuge

In the winter of 2000, the refuge contracted Rachel Brubaker to organize, analyze and prepare a written summary of waterfowl studies she, and other refuge biologists, had done. She completed her report this year. It provides an excellent summary of the work done prior to her specific studies as well as a thorough description and discussion of the work she directed. The report was submitted to ARLIS and complements the report on Selawik Refuge bathymetry she completed the 2000. The following is the abstract.

Abstract: In the late 1980's, the USFWS set a goal of improving waterfowl population and production estimates in Alaska, especially for Northern Pintail. Since waterfowl habitat in Alaska covers vast remote areas, the best hope of improving estimates depends on use of remote sensing techniques to stratify habitat. This study at Selawik National Wildlife Refuge was designed in two phases: Phase I involved intensive study of three plots conveniently located for a three-year intensive ground study. Phase II involved extending correlations and observations of the intensive study areas to randomly selected brood survey plots scattered across the Kotzebue Sound Production Area.

The study attempted to stratify waterfowl habitat on the basis of wetland depth. Since dabblers are known to use shallow water for feeding, this study used bathymetric mapping and patterns of ice-out to identify shallow water habitats, and mapped waterfowl locations on repeated surveys to establish use patterns. In Phase I, all dabbler species showed a statically significant preference for shallow water (less than two feet deep) and avoidance of deep water (greater than four feet). Diver species (Scaup spp.) showed no preference for shallow water, but did show an avoidance of deep water. Sea duck species showed no preference based on water depth. Bathymetry and ice-melt patterns, with the habitat divided in to "open water" and "ice covered" zones. Ice-out patterns in the spring follow wetland bathymetry, as shallow areas with bottom-fast ice are covered with water, while deeper areas are covered with floating ice. The waterfowl use patterns indicated a strong avoidance of the spring ice-covered areas, and preference for the spring water-covered areas.

In Phase II, ice melt patterns were photographed on 24 randomly selected one square mile plots, and the area of ice-free water during ice melt was positively correlated with waterfowl use. Results established on the Upinigvik study area were verified on the randomly selected one square mile plots, as ice-free area during breakup proved to provide the most significant predictor of waterfowl use. While ice-out patterns do not explain all the observed variability between wetlands, use of this remotely measurable parameter does result in improved waterfowl population and production estimates.

Moose Telemetry Study

Information on collared moose is reported by collar year , which is from April 2001 to April 2002. Radio tracking flights were conducted once a month with the exception of September, December, January and February.

Telemetry Observations Tag Moose Study April 2001 -April 2002	Collared moose	Bulls	Cows	Short Yearlings/Cow Ratio
Beginning of the year	37	5	32	
Mortalities	7	2	5	
Mortality Rate*	18.9%*			
Missing Collars	1		1 (9904)	
Spring Recruitment				11.7
End of Year Status	29	3	26	

* The mortality rate is not considered to be a valid parameter due to the small sample size and aging sample of moose. Four out of the 7 moose were collared as adults in 1998 and most likely selected for their larger size.

Movements of collared moose continue to follow the same patterns as in previous years. Moose in the Tag and upper Selawik demonstrated slight seasonal movements while newly collared moose in the Warings had more pronounced movements and

distances between their winter and summer ranges. We assume is related to the increased snow depth on the south side of the Warings. The best time to census moose in the Waring Mountains and Kugarak drainage may be in the fall when the majority of moose are still in rutting areas and before deeper snow causes them to disperse along the river corridor.

We retrieved 4 radio collars from the field and investigated associated kill sites. Plans are to conclude the project, remove remaining radio collars and complete a final report by spring 2003.

The Western Arctic Herd Caribou Knowledge Project

The objective of this project is to combine local hunter's knowledge of caribou with scientific findings to improve our understanding of how and why caribou populations change in size. This was the second year of the refuge's support for the project in the form of a capacity building grant. The project is also funded by the National Science Foundation and coordinated by the Kotzebue IRA, the Kiana Traditional Council and Dartmouth College of Hanover, NH. Efforts to contact hunters were expanded to include other villages (Point Hope, Noorvik, Selawik) this year. A poster summarizing the project was prepared and distributed.

Alaska Marine Mammal Tissue Archival Project

The U.S. National Biomonitoring Specimen Bank (NBSB) was developed and maintained at the National Institute of Standards and Technology in Gaithersburg, Maryland. This banking system provides for the long-term storage of well-documented and cryogenically preserved specimens. This program is to establish and maintain a resource of selected specimens for the purpose of: 1) providing samples for future retrospective analysis, (2) providing samples for future analyses using improved techniques, and (3) providing a resource of samples that have been collected and stored in a systematic and well-documented manner for investigating environmental trends. The refuge provided financial support to the IRA in the form of a capacity building grant to assist their participation in this project.

Dr. Paul Becker, NIST and Dr. Geoff York, USGS, met with the Tribe (Kotzebue IRA) to assist in efforts to collect muscle samples from 3 seal species in Kotzebue Sound, which represent gaps in the current archive. The seal species targeted are the bearded seal (*Erignathus barbatus*), ringed seal (*Phoca hispida*) and the spotted

seal (*Phoca largha*). Their goal is to obtain muscle samples from 12 individuals of each species. The AMMTAP center provided on-site field training and materials to the collectors to assure previously established protocols would be followed. To date 12 bearded seals have been collected. The project is funded through January 2003. A final report will be available in April 2003.

Pacific Golden-plovers

Wildlife Biologist/Pilot Lee Anne Ayres and Refuge Volunteer John Bertrand spent a day tracking Pacific golden-plovers in the Selawik Hills/Deering area. The tracking flight supported a range and distribution study being conducted by Dr. Oscar Johnson, of Montana State University. The study monitors movements of the birds from their wintering grounds in Hawaii to their breeding grounds in Alaska.

Dr. Johnson and his colleagues in Hawaii radio-tagged 21 plovers in Oahu in April. Refuge staff located four of the elusive tagged birds at sites on the northern edge of the Seward Peninsula, just south of Selawik Refuge, demonstrating a previously unknown link between plovers wintering in Oahu and their summer breeding grounds. Dr. Johnson hopes to locate nesting areas through additional tracking efforts in 2002.

Ringed Seal

In mid-April, a local resident found a baby seal that had been separated from its mother near Sadie Creek. The pup was further inland than usual for this time of year. The rescuer brought the seal to WB/P Lee Anne Ayres, who sent it to the Alaska Sea Life Center in Seward the following morning.

Sea Life Center personnel determined that the seal (who they named "Sadie") was a healthy 10 to 14 day-old male ringed seal. Sadie was cared for at the center for three months. During that time, human contact was kept to a minimum to prevent the seal from becoming habituated to humans. After being weaned from formula, Sadie learned to catch and eat live fish.

On July 11, the young seal returned to Kotzebue with Sea Life Center Veterinarian Natalie Noll and Research Director Tammy Breard. Sadie was then flown to a beach on Cape Krusenstern, where WB Moran helped release him back into his natural environment.



WB Tina Moran helps the rescued seal pup stay cool before its long journey to the Alaska Sea Life Center in Seward.

Sea Life Center personnel attached a satellite transmitter to the seal; the transmitter is tracking its locations and diving behavior. Very few ringed seals have been monitored in the wild, so this gave biologists a unique opportunity to collect information about the species. Within a week of his release, Sadie had moved north to Cape Seppings.



After successful rehabilitation, Sadie returns to Kotzebue Sound.



2

Habitat Restoration

2a. Wetland Restoration

Nothing to report.

2b. Upland Restoration

Nothing to report.

2c. Riverine Restoration

Nothing to report.

2d. Deepwater/Coral Reef Restoration



Nothing to report.



3

Habitat Management

3a. Water level management

Nothing to report.

3b. Moist soil management

Nothing to report.

3c. Grazing/mowing/haying

Nothing to report.

3d. Farming



Nothing to report.

3e. Forest management

Nothing to report.

3f. Fire management

Nothing to report.

3g. Pest plant control

Nothing to report.



4

Fish and Wildlife Management

4a. Bird Banding

On July 11, WB/P Ayres and Outreach Specialist Joanna Roberts participated in a one-day banding effort on the Selawik Refuge. The effort included personnel from Migratory Bird Management, and Innoko, Koyukuk/Nowitna and Selawik refuges. During the well-coordinated effort, crews banded 202 greater white-fronted geese and 30 Canada geese. Satellite transmitters were implanted in three greater white-fronted geese, two of which are wintering in Mexico. Six greater white-fronted geese were recaptured during the banding drive. This was the first successful goose banding project on the Selawik Refuge in some years.

2001 band recoveries for birds banded on Selawik NWR, AK.

Species recovered	Year banded	Year recovered	Recovery location
Greater white-fronted goose	1988	2001	Alberta, Canada
Greater white-fronted goose	1990	2001	Arkansas
Greater white-fronted goose	1990	2001	Texas
Lesser Canada goose	1990	2001	Washington
Northern pintail	1993	2001	California
Northern pintail	1995	2001	California
Northern pintail	1995	2001	California

4b. Disease monitoring and treatment

Nothing to report.

4c. Reintroductions

Nothing to report.

4d. Nest structures

Nothing to report.

4e. Pest, predator and exotic control

Nothing to report.



Maintenance Worker Willie Johnson takes a break during fall public use monitoring activities.

5

Coordination Activities

5a. Interagency coordination

Refuge staff continued participating in the Western Arctic Caribou Herd (WACH) Working Group, which formed in 1997 to; (1) ensure the conservation of the WACH, (2) safeguard the spiritual and cultural well being of Alaska Natives and the interests of all users of the herd, and (3) integrate indigenous knowledge and western science. Its mission is to develop an integrated grass roots process for sharing representation, responsibility and decision-making among stakeholders in management of the WACH. It is composed of representatives from local villages, subsistence hunters, reindeer herders, guides, sport hunters and state and federal resource agencies. The group has been meeting to exchange traditional and western scientific knowledge and develop a cooperative management plan. The Alaska Department of Fish and Game(ADF&G), Fish and Wildlife Service (FWS), National Park Service (NPS) and Bureau of Land Management (BLM) support the Working Group.

This year, the refuge entered a cooperative agreement with ADF&G to provide funds to support continued existence of the WACH working group. In addition, the refuge covered travel costs for two refuge staff to attend and participate in all meetings, made space available in the bunkhouse when needed, and made available the federal interagency conference room for meetings. ADF&G agreed to make meeting arrangements, cover costs and assist with travel arrangements for non-agency participants, prepare and distribute meeting summaries, and provide the FWS with expense reports.

During its spring meeting in Kotzebue, the Working Group formed a planning committee to draft the new plan. OS Fox represents the Selawik Refuge on the committee; she attended meetings in February, April, July and October, and the committee made much progress on a draft management plan for the WACH. The group plans to meet once more and present a final draft to the full Working Group at the spring 2002 meeting.

Selawik Refuge hosted an interagency law enforcement coordination meeting. Representatives from Alaska Department of Public Safety (ADPS), BLM, NPS and FWS attended. This was a great step toward improving coordination among agencies. The BLM representative remarked that it was an excellent opportunity for information exchange and all agreed it should become an annual event.



Multi-agency law enforcement personnel meet to share information and coordinate law enforcement activities in the region.

A joint-use hangar agreement letter was signed by Alaska Department of Fish and Game, Alaska Department of Public Safety and Selawik Refuge.

The NPS continues to lead operations at the Innaigvik interagency education and information center in Kotzebue. This year, for the first time, Selawik Refuge provided staffing at the facility the duration of the busy summer tourist season. We also helped coordinate interagency participation in Kotzebue's Fourth of July Celebration, and provided new furniture for the children's activity area in the center.

Whitefish play an especially critical role in subsistence in and around Selawik Refuge because salmon are generally not available.

Despite their significance as a food source in the area, whitefish have received very little attention in subsistence or biological studies. Because we need more data about this resource and its importance in local communities, we contracted Susan Georgette of ADF&G to begin documenting traditional knowledge of whitefish held by Selawik residents. Georgette is working with Selawik Refuge Information Technician Clyde Ramoth, Subsistence Coordinator Barbara Armstrong, and Maniilaq Resource Specialist Enoch Shiedt to gather information this fall and winter. A pre-proposal to fund subsequent years of research in Selawik and other selected communities has been submitted to the federal Office of Subsistence Management; the project has been recommended for funding in 2002.

5b. Tribal coordination

Staff cooperated with the NANA Regional Elders' Council and Robert Aqqaluk Newlin, Sr. Memorial Trust to develop a video aimed at educating youth in Northwest Arctic communities. The video, which features local Alaska Natives describing traditional caribou hunting practices within the context of their own culture, was completed and distributed this year. One hundred twenty five copies were sent out to public schools in the Northwest Arctic Borough, Native Villages in the region, public libraries, refuges in Alaska, other organizations involved in public education, and permitted transporters. Plans are to debut the video publically at a special refuge system birthday celebration premiere event in March, 2002.

The refuge helped the Kotzebue IRA expand their efforts to combine traditional and scientific knowledge of caribou in the region. Project staff visited with Selawik hunters to learn more about the body condition of the caribou they saw and harvested. Project leader Alex Whiting, IRA Environmental Specialist, worked closely with the National Science Foundation and Gary Kofinas of the Institute of Arctic Studies, Dartmouth College.

The refuge and the Native Village of Selawik entered into an agreement to improve monitoring of snow depth on the refuge. Under a contract agreement, the IRA became responsible for obtaining monthly snow depth readings from a marker located near the Kuugarauq River shelter cabin (66° 43', 158° 48'). Obtaining the required monthly reading has always been a challenge given the distance from Kotzebue and poor flying conditions. Checking the marker by snow machine and from Selawik was both a practical

solution and a way of involving the village government in resource monitoring activities on the refuge. In November, Floyd Ballot was hired by the IRA and accompanied WB/P Ayres to locate the marker, and become familiar with the data recording and overall state program. The data from the snow marker is being forwarded on to USDA, Natural Resource Conservation Service.



Snow marker near Kuugaraug River cabin.

5c. Private land activities

Nothing to report.

6

Resource Protection

6a. Law Enforcement

During the fall hunting season, law enforcement officers contacted 91 hunters, most of whom were sport hunters. One notice of violation was issued for wanton waste of a moose that had fallen into a lake and was not retrieved.



Popular Special Agent Mike Wade is welcomed into one of the hunting camps he checked in on.

6b. Permits and economic use management

Selawik Refuge requires anyone providing a “commercial visitor service” on the refuge to have a permit. There are two categories of permits related to hunting: guiding/outfitting and transporter/air taxi. One guiding/outfitting permit is issued on the refuge. Applicants must compete for this permit every five years. Transporter/air taxi permits are not limited, and the application process is not competitive.

This fall, the permitted guide/outfitter on Selawik Refuge provided services for about a dozen hunters. Six transporter/air taxi

businesses provided services on the refuge to over 100 hunters. Most of the sport hunters on the refuge floated or camped in the upper Tag river area and were pursuing moose, caribou and bear.

In the past, a Selawik resident was permitted to transport hunters into the refuge by watercraft. This year no one had such a permit.

6c. Contaminant investigation

Nothing to report.

6d. Contaminant cleanup

Nothing to report.

6e. Water rights management

Nothing to report.

6f. Cultural resource management

Nothing to report.

6g. Land acquisition support

Nothing to report.

6j. Threats and conflicts

The Alaska Department of Transportation continued to re-assess the feasibility of land transportation corridors through northwest Alaska and Selawik Refuge. The department's primary concerns are linking mining sites to the Bering Sea coast or the road system in eastern Alaska, and providing safer access for travel between villages. Airport runways will likely be expanded in the future as village populations increase. Refuge concerns center around disruption of animal and fish migrations, and air and water quality degradation. The possibility of the development of a route from the Ambler mining district to Nome could have the biggest impact to refuge resources.

7

Public Education and Recreation

7a. Provide visitor services

Subsistence activities comprise most of the public use occurring on Selawik Refuge, but some recreational uses also occur.

Subsistence activities include hunting, fishing, trapping, wood gathering and berry picking. Although subsistence use is primarily an occupation for local residents, it also affords a valuable form of recreation - and is considered part of the Native "way of life."

Accurately estimating the number of use-days spent by the public while engaged in traditional or subsistence uses on refuge lands is difficult. Estimates of use-days have been made in the past, but are speculative. Refuge access is not monitored, not controlled, and the refuge is very remote. An assessment of traditional or subsistence-type public access is better obtained through household surveys. The most recent estimate of all public use activity is 4,000 use-days per year.

This fall, refuge staff and other Fish and Wildlife Service personnel monitored public use on the Selawik, Tag, and Kugaruk rivers from September 2 through September 21. We monitored use from the refuge cabin, noting locations of groups of people, boats, and aircraft, and their activities. We also recorded wildlife sightings and behavior, including where and when we saw caribou crossing rivers and their reactions to our boat and plane.

During the monitoring period, we saw or heard 33 boats and eight planes. Some boats were encountered more than once during the period. There was an average of three people in each boat. In a few cases, we saw people camped or subsistence hunting. We also saw a few groups picking berries. Boat traffic seemed to be evenly distributed between the Kugaruk and Upper Selawik rivers, and the heaviest traffic occurred on weekends.

We observed no planes herding or harassing animals. Flight paths for the majority of observed planes was in a general east/west direction south of Selawik River, at an altitude near 1,000 feet. One low-flying aircraft was later determined to be a NANA-contracted overflight looking for hunter trespass.



Local subsistence users often base their activities out of small wall tents, such as this one on the upper Kugarak River.

During periods of adequate snow cover people from surrounding villages travel to the refuge to hunt and fish. Roughly, 200-300 people travel to the Selawik Hot Springs each winter, and nearly 100 visitors associated with the Kobuk 440 dog race cross refuge lands each April. Residents of Selawik and Noorvik travel by boat in summer and fall to native allotments to gather berries and catch fish.

Non-residential recreational activities consist primarily of hunting for caribou, moose and bears. Some recreational canoeing and floating also takes place on the refuge, primarily on the Selawik Wild and Scenic River.

During the fall hunting season, 130 hunters who were transported by permitted air taxi services harvested 68 caribou, 44 moose, 2 black bears, 1 grizzly bear, and 2 wolves. It is unknown how many animals were harvested by subsistence hunters.

Small game hunting occurs on the refuge nearly year-round, primarily by local residents. Animals taken include ptarmigan, waterfowl, rabbits and fur-bearers.

7b. Outreach

Each year the refuge sponsors a regional goose calendar and literature contest. First place entries at the regional level are then forwarded to Anchorage, where they are judged in a state-wide

competition sponsored by the U.S. Fish and Wildlife Service, Ducks Unlimited, National Audubon Society, Alaska Department of Fish and Game, and the Association of Village Council Presidents.

The purpose of the fun and educational contest is to encourage local children to learn more about geese that nest in western and southwestern Alaska during the summer. By participating in the contest, students in turn (through wide distribution of the calendar) help us educate a much larger segment of the public about these geese, many of which have declined significantly since the 1960's.

This year, Outreach Specialist Fox worked hard to increase regional participation in the annual goose calendar poster and literature contest. Her efforts were successful, as the refuge received nearly 300 entries from schools throughout the Northwest Arctic Borough School District!

Judging for contest was conducted in Kotzebue on February 15. Each student who participated in the contest was awarded a certificate of appreciation. In addition, first, second and third place winners and those given an honorable mention received ribbons. Contest judges were: Linda Jeschke, National Park Service; Jim Magdanz, Alaska Department of Fish and Game; Mary Ann Porter, National Park Service; Gladys Richards, Kotzebue elder; and Ross Schaeffer, Northwest Arctic Borough Mayor.



Refuge staff and judges for the "2002 Wild About Geese" calendar contest display the regional level winning poster entries.

Three students from the region were winners at the state level of the contest, and the 2002 calendar, "Wild About Geese," featured their poetry and artwork. Carl Thomas, age 18, from Buckland won third place in the grades 9-12 poetry category; Sondra Outwater, age 13, from Kiana won second place in the grades 6-8 poster category; and Lawrence Adams, age 17, from Kivalina won third place in the grades 9-12 poster category.

The calendar was distributed in December. Approximately 1,000 calendars were sent to schools in Ambler, Buckland, Deering, Kiana, Kivalina, Kobuk, Kotzebue, Noatak, Noorvik, Selawik and Shungnak.

In May, Audubon Alaska employee Bucky Dennerlein conducted a two day teacher's workshop for her Audubon Bird Academy program. Four refuge employees, two park service employees, one elementary school teacher and two volunteers attended the workshop. After learning how to present the curriculum, OS Fox, Bucky Dennerlein and volunteer Nan Eagleson flew to the village of Buckland to conduct the Bird Academy. Unfortunately, dense fog prevented a safe landing and the event had to be cancelled.



Participants in the Bird Academy teacher's workshop select bird bills and feet for a demonstration.

For the first time since the Innaigvik Interagency Information and Education center was established, Selawik Refuge provided staffing during the busy summer tourist season. Refuge Volunteer Michelle Prehoda spent three days each week introducing visitors

to the refuge and explaining refuge programs. She also constructed a new refuge display and coordinated refuge participation in Kotzebue's Fourth of July celebration. Michelle did a wonderful job representing the refuge, and increased our visibility in the interagency facility greatly. We are hoping to expand our participation in the center in the future.



Refuge Volunteer Michelle Prehoda worked diligently to improve refuge visibility at the Innaigvik Center, and also helped biologists conduct surveys throughout the summer.

In July, U.S. Fish and Wildlife Service Special Agent Mike Wade, Wildlife Biologist Tina Moran and Administrative Technician Lynn Johnson teamed up to conduct a non-toxic shot clinic in Kotzebue. The team provided classroom discussion and field training on the effectiveness of steel shot loads for hunting waterfowl, and on the risk lead shot presents to waterfowl and other wildlife. A few hardy Kotzebue residents braved cold weather after the indoor classroom sessions and headed out to learn and practice proper steel shot shooting techniques in the field.



Special Agent Mike Wade shares useful tips on how to select effective steel shot loads.

RV Prehoda spent a week at Camp Sivuniigvik, assisting Park Service personnel with environmental educational programs. The camp is located just outside of the refuge on the northern part of the Kobuk River delta - approximately 30 miles east of Kotzebue. At Camp Sivuniigvik, children from northwest Arctic communities learn about the importance of their past, helping Inupiaq traditions and values survive for generations to come. Peer counselors, respected elders and skilled craftsmen instruct and mentor the children, teaching them how to net, cut and dry fish, weave baskets, bead and sew skins. The children learn about natural resources, and are also taught survival and safety skills.



Camp Sivuniigvik students learn how to cut and dry fish.



Students at Camp Sivu also learn how to prepare fish heads the traditional way.

Refuge Volunteer John Bertrand presented a program entitled "Bosque del Apache Refuge: A Winter Haven for Arctic Birds" at the Innaigvik Education and Information Center. Bertrand volunteers at the Bosque del Apache Refuge in New Mexico in the winter, where thousands of our arctic nesting birds also spend their winters. Many Kotzebue residents attended, and the informative and interesting program was very well received.

In August, refuge staff received a report that a walrus calf had been discovered within the city limits of Kotzebue. The calf appeared to be very weak, but could hold its head up when approached. Soon after receiving the report, the local radio station announced the location and condition of the walrus, and within minutes throngs of people were coming and going around the walrus, including an Arctic Sounder reporter.



A walrus calf rests on the beach near Kotzebue.

ROS Fox worked with Marine Mammals to find a marine mammal aquaria willing to accept the walrus. However, the animal continued to get weaker, and upon closer inspection it was determined it had been injured by shotgun pellets. A female walrus had been harvested in the region recently, and it was suspected that the calf may have been hers.

After extensive consultation with Marine Mammals, the NANA Regional Elders' Council, and the Kotzebue Police Department, it was agreed that the appropriate action was to dispatch the walrus. The decision was made because: (1) marine mammal aquaria did not favor transporting an injured animal and one curator expressed support of humane dispatch; (2) the walrus calf, which appeared to

be about four months old, would not be able to survive in the wild long without its mother and may have been too large to bottle-feed; (3) in general, the public wanted something to be done to end the calf's suffering; and (4) the walrus continued to weaken as the day progressed.

After obtaining police department consent to discharge a firearm within city limits, an Inupiaq elder shot the walrus. The reason for humanely dispatching the animal, as well as the value of walrus to the Inupiaq people was explained to people still present at the scene. ROS Fox worked closely with the Arctic Sounder reporter to see that his information was accurate and informative. A story was written and appeared in the Arctic Sounder the following week.

OS Fox participated in Alaska Department of Fish and Game's annual caribou collaring project with six students from the Native Village of Point Hope, their teacher, a member of the Western Arctic Caribou Herd Working Group, and ADF&G and NPS staff. The annual project takes place at Onion Portage, where caribou have been crossing the Kobuk River for thousands of years.

Point Hope students spent two days learning about the caribou herd and assisting biologists. Students involved in the project helped capture and hold caribou while blood samples were collected, and even got to put collars on the animals! The educational project was very successful, as evidenced by comments made by students later, indicating they have become interested in pursuing biological degrees as a result of their experience.



A Point Hope student listens intently as ADF&G employee Geoff Carroll explains how satellite telemetry works.

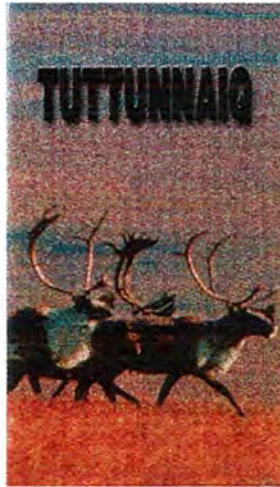


Point Hope students Clara and Annabelle help hold and collar a cow caribou.



The 2001 Onion Portage caribou collaring crew finally stands still long enough for a group photo to be taken.

In cooperation with NANA Regional Elders' Council and Robert Aqqaluk Newlin, Sr. Memorial Trust, the refuge finished a new video aimed at educating youth in Northwest Alaska communities. The production, which features local Alaska Natives, describes and shows traditional Inupiaq hunting practices, and discusses the spiritual relationship between caribou and the Inupiaq people. "Tuttunnaiq" (Caribou Hunt) was distributed to all public schools in the Northwest Arctic Borough, public libraries, and other organizations involved in public education. The video was also sent to all refuge-permitted transporters and guides; at least one transporter showed it to clients before taking them into the field.



The long awaited caribou hunting video "Tuttunnaiq" was produced by request of local elders, who are concerned that youth in the region are losing awareness of the importance of caribou in their Inupiat culture.

Clyde Ramoth began working as a Refuge Information Technician in October. In the position, which is new to the refuge, Clyde serves as a bridge between refuge staff and area residents who use refuge resources. We are excited to be working with him to improve public outreach in local villages.

OF Fox designed new and improved full-color refuge bird and mammal lists, and a Selawik Refuge fact sheet. She also designed and compiled the first ever Selawik Refuge Newsletter, which will be mailed to boxholders in local villages early in 2002. We obtained Washington office approval to print the publication in color annually. We believe this may be the first full-color newsletter distributed widely in our region!

8

Planning and Administration

8a. Comprehensive conservation planning

Because access to public lands has been restricted in many areas in northwest Alaska, sport hunter numbers on Selawik Refuge are increasing. Since 1994, reported sport hunter numbers have tripled on the refuge. Many people who enjoy the refuge are expressing concern about the rising number of sport hunters on the refuge. Residents of Selawik and northwest Alaska have reported that sport hunting on the refuge is in direct competition with their subsistence lifestyle. Meanwhile, transporters and guides are finding it more and more difficult to find quiet places for their clients to hunt.

Based on conversations and comments we received, we have concluded the major concerns of the public are: (1) low flying aircraft disturb animals on the ground and may cause caribou and moose to change their movements; (2) transporter/air taxi competition on the refuge is increasing due to increased demand for services; (3) sport hunters sometimes trespass on Native allotments; and (4) game meat harvested by sport hunters is being wasted or left behind in Kotzebue, while only antlers are taken home.



Public Use Specialist Helen Clough helped monitor public activity on the refuge in September.

We are working with Helen Clough, a public use specialist for the Fish and Wildlife Service, to address these concerns. We monitored public use in September to help determine how serious these concerns are, and would like to continue that monitoring on the refuge in the future. We intend to further research the major concerns identified by the public and gather more public comments. These issues must be fully explored before decisions are made and formal public use planning is initiated.

8b. General administration

Funding - Fiscal Year 2000

Recurring Base

Refuge Operations	1261	\$ 788,000
Refuge Operating Needs	1261	\$ 109,000
Subsistence (Fixed costs)	1261	\$ 92,000
Pay Act Allocation	1261	\$ 16,000

Flexible/One-Time

Annual maintenance	1262	\$ 5,000
Deferred maintenance	1261	\$ 6,000
Fire	9251	\$ 5,000

TOTAL \$1,021,000

Personnel

Two new permanent employees joined the Selawik staff in 2001. In March, Tina Moran was converted and transferred from her SCEP student position with Yukon Delta Refuge in Bethel to a new Wildlife Biologist position. Clyde Ramoth started in an Office of Subsistence Management funded Refuge Information Technician position in October. This was a long awaited position, as Selawik Refuge has not had an RIT for some time now.

SCEP student Jody Oyen joined the staff in May under an excepted appointment, and spent the summer field season with us.



WB Tina Moran filled a new positions and specializes in waterfowl.



RIT Clyde Ramoth connects refuge staff and local residents.



Student Trainee Jody Oyen prepares for a telemetry flight.

In July, six-year veteran Refuge Manager Leslie Kerr transferred to become the new manager of Kodiak Refuge in southwestern Alaska. Biological Technician Susan Easton resigned and moved in October.

Jimmy Fox and Joanna Fox were both promoted this year.



Before departing for her new position at Kodiak Refuge, RM Leslie Kerr accepts an award for her long tenure at Selawik from Northern Refuges Supervisor Jerry Stroebele.



2001 Selawik Refuge Staff. Back row, left to right: Joanna Fox, Jimmy Fox, Lynn Johnson, Nancy Norvell, and Tina Moran. Front row, left to right: Willy Johnson, Michelle Prehoda, Lee Anne Ayres, and Susan Easton. Not present: Leslie Kerr, Jody Oyen, Ralph Ramoth, and Clyde Ramoth.

2001 Selawik Refuge Staff:

<u>Permanent Full Time</u>	<u>Grade</u>	<u>Entered On Duty</u>	<u>Departed</u>
1. Kerr, Leslie A. Refuge Manager	GS-13	7/23/1995	Transferred 7/14/01
2. Ayres, Lee Anne Pilot/Biologist	GS-12	1/30/2000	
3. Fox, Jimmy L. Refuge Operations Specialist	GS-11	9/10/2000	
4. Fox, Joanna L. Outreach Specialist	GS-11	11/5/2000	
5. Johnson, William Maintenance Worker	WG-8	10/12/1991	
6. Johnson, Lynn R. Administrative Technician	GS-6	1/24/2000	
7. Moran, Christine Wildlife Biologist	GS-9	3/11/2001	
8. Ramoth, Clyde Refuge Information Technician	GS-7	10/22/2001	
<u>Permanent Part Time</u>			
9. Ramoth, Ralph Field Logistics Coordinator	WG-6	6/12/1992	
<u>Temporary/Term</u>			
10. Easton, Susan J. Biological Technician	GS-5	6/4/2000	resigned 10/6/2001
11. Norvell, Nancy Computer Specialist	GS-11	7/8/1998	
<u>Excepted</u>			
12. Oyen, Jody Student Trainee	GS-4	5/20/01	

Volunteer/Work Programs

Refuge volunteers spent 63 hours assisting with surveys and censuses, and 35 hours working on studies and investigations. In addition, they spent 108 hours providing visitor services and 573.5 hours conducting outreach activities.

RV John Bertrand returned to Kotzebue and spent six weeks converting refuge photos to digital files. This year he finished scanning photos from all of our old annual narrative reports, and archiving them in a new digital library. Bertrand also helped locate radio-tagged Pacific golden-plovers just south of Selawik Refuge, and assisted with other biological surveys.



RV John Bertrand takes a quick break during a chilly, late spring survey.



RV Michelle Prehoda displays tokens of appreciation she received from refuge staff at the end of a busy summer.

RV Michelle Prehoda came to Kotzebue from Tennessee in May, and spent the summer staffing the interagency Innaigvik Education and Information Center. She also helped WB/P Ayres conduct aerial radio-tracking surveys, participated in Camp Sivuniigvik, inventoried environmental education materials, and compiled biological information from past annual narrative reports.

Staff/Volunteer Training

In January, RM Kerr attended Advanced Simplified Procurement. WB/P Ayres attended spin awareness training in January. Fortunately for the staff, she did not demonstrate what she practiced in the aerobatic training when she returned to the refuge!

ROS Fox and OS Fox attended annual law enforcement refresher at Marana, Arizona in March. They both also attended firearms requalifications in Kenai, AK in August.

WB Moran attended two classes at the Alaska Bird Observatory in May - Passerine Banding and Breeding Bird Counts.

In June, ROS Fox and RV Prehoda completed the Bear and Firearms Safety course. WB/P Ayres, BT Easton, MW Johnson, AT Johnson, WB Moran, FLC Ramoth, ST Oyen, RV Prehoda and RV Bertrand all successfully qualified to carry shotguns in the field. ROS Fox, AT Johnson, MW Johnson, WB Moran, and RV Prehoda attended OAS-B3 Basic Aviation Safety. ROS Fox and AT Johnson also completed First Aid and CPR courses, and WB Moran attended Dunker training.

OS Fox attended Public Outreach and Education: Overview and Program Planning at NCTC in September. In October, WB/P Ayres and WB Moran attended Basics for New Supervisors at NCTC.



OS Fox applies skills she gained during training at NCTC to the refuge outreach program!

Equipment and Facilities

The refuge maintained Piper Supercub N788. The plane was flown 312.5 hours, an increase of 62.5 hours from the last year. The refuge chartered Cessna C-206's on wheels and floats for a total of 36 hours to accomplish refuge projects. The primary projects involved transporting gear and personnel and conducting survey work in cases where distance and/or short day length precluded use of the refuge Supercub. The refuge also chartered a R-44 to retrieve dropped moose collars and a Casa to deliver gas barrels to Selawik. Additional seat fares were purchased from local scheduled operators for transportation to meetings and between villages, primarily during winter months.

Breakdown for Selawik NWR PA-18 flight hours:

<u>Flight Category</u>	<u>Hours</u>
Training	3.3 (NPS Scout - 6.1 hours)
Maintenance	21.5
Law Enforcement	41.1
Refuge Projects	228.2 (NPS/ADF&G projects - 10.5 hours)
Logistics/General	18.4



In an effort to improve the public's ability to distinguish our plane from private aircraft, we identified the Supercub with lettering under the wings and on the sides of the plane.

N788 was loaned to Arctic National Wildlife Refuge to assist with their caribou census. Weather precluded their need for it.



ARM Jimmy Fox works on the float plane dock at the refuge hangar in Kotzebue.



Snow drifts completely buried refuge residence driveways during a long and windy winter!

9

Provisions Unique to Alaska

9a. Subsistence

Refuge staff continued working with the Federal Subsistence Board and Alaska Department of Fish and Game local advisory councils to address subsistence-related concerns.

9b. Public access

Access to the refuge is possible only by boat, float- or ski-equipped airplane, snowmobile or dog team, which complicates both use and management of the refuge. Despite its vastness, access to the refuge during snow-free months is extremely limited. Few lakes are large enough or deep enough to support float plane access. Similarly, only a few landing places on refuge rivers are reliable at all water levels. Subsistence hunters are further limited by the high cost of boat gas, and the shallow depth of most rivers. Conflicts between sport and subsistence hunters are on the rise, and complaints about crowding and trespass on native-owned lands are becoming common. Because access to public lands has been restricted in many areas of northwest Alaska, sport hunter numbers on Selawik Refuge, where there are currently no restrictions, are increasing. Access management will be a major challenge in the years ahead.

Use of the trails between Noorvik, Selawik, Buckland and Ambler is high during periods of adequate snow cover. The trail between Noorvik and Selawik was surveyed by the State of Alaska using GPS equipment. Aircraft access via navigable and non-navigable waters peaks in September when special use permittees are operating, with a handful of private aircraft landing on the refuge during hunting season.

9c. Manage commercial/subsistence fisheries

The refuge funded a contract study (primary investigator Susan Georgette, ADF&G) to document traditional whitefish fishing practices and target species in the Selawik region. A variety of biological, cultural and anthropological literature was reviewed during fall 2001. In addition, an interview guide was developed

covering three major topic areas: natural history of whitefish, subsistence harvest and use of whitefish, and the relationship between beaver and whitefish. Interviews in the village of Selawik were started in September 2001, and will continue in early 2002.

9d. Manage private lands

Nothing to report.

9e. Navigability determinations

Nothing to report.



Trail-markers help refuge visitors navigate safely through the refuge in the winter.

Credits

OS Fox prepared the Introduction, Highlights, sections 1b, 5a, 6a, 6j, 7a, 7b, 8b, 9a, 9b and 9c, parts of sections 5b, 8a and 8b, photo captions, and compiled and edited the report.

BT Prehoda compiled the Climatological Review.

WB/P Ayres prepared parts of sections 1a, and a portion of sections 5b and 8b.

WB Moran prepared section 4a, parts of sections 1a,

ROS Fox prepared section 6b, parts of section 8a,