



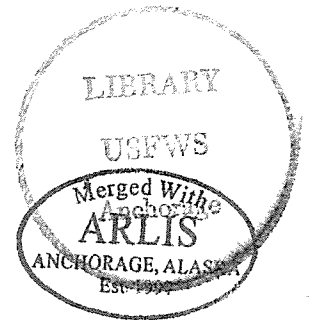
ANNUAL NARRATIVE REPORT

Calendar Year 1979

ARCTIC NATIONAL WILDLIFE RANGE  
Fairbanks, Alaska

C  
L  
R  
R  
9

ARCTIC NATIONAL WILDLIFE RANGE  
Administrative Headquarters  
Fairbanks, Alaska



ANNUAL NARRATIVE REPORT  
Calendar Year 1979

NATIONAL WILDLIFE REFUGE SYSTEM  
Fish and Wildlife Service  
U.S. DEPARTMENT OF THE INTERIOR



#### Personnel

1. Averill Thayer, Refuge Manager, GS-12, PFT
2. Don Ross, Assistant Refuge Manager, GS-11, PFT
3. Paul Benvenuti, Assistant Refuge Manager, GS-11, PFT\*
4. Mike Jacobson, Assistant Refuge Manager, GS-9, PFT
5. Mike Spindler, Wildlife Biologist, GS-9, PFT
6. Paul Liedberg, Administrative Officer, GS-7, PFT\*\*
7. Patricia Young, Administrative Clerk, GS-6, PFT\*\*\*
8. Phil Koehl, Bio. Tech., GS-6, INT.\*\*\*\*

\* Transferred to Chincoteague NWR, Virginia, July 14, 1979

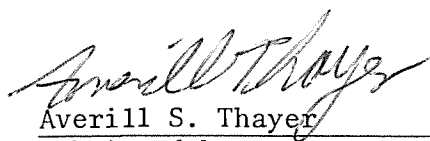
\*\* EOD April 22, 1979

\*\*\* Resigned August 25, 1979

\*\*\*\* Terminated September 8, 1979

#### YACC

- |                   |                                   |
|-------------------|-----------------------------------|
| 1. Belinda Staley | 5. Florine Henry                  |
| 2. Mark Stevens   | 6. Edward Bennett                 |
| 3. Paula Britten  | 7. Donald Putugook                |
| 4. Susan Weeden   | 8. Richard Williams, Group Leader |



Review and Approvals

Averill S. Thayer 2/29/80  
Submitted by

Area Office Date

Arctic National Wildlife Range  
Refuge

Regional Office Date

## TABLE OF CONTENTS

	<u>I. GENERAL</u>	<u>PAGE</u>
A.	Introduction . . . . .	1
B.	Climatic and Habitat Conditions . . . . .	1
C.	Land Acquisition . . . . .	1
D.	System Status. . . . .	2
	<u>II. CONSTRUCTION AND MAINTENANCE</u>	
A.	Construction . . . . .	2
B.	Maintenance. . . . .	2
	<u>III. HABITAT MANAGEMENT</u>	
A.	Croplands. . . . .	3
B.	Grasslands . . . . .	3
C.	Wetlands . . . . .	3
D.	Forestlands. . . . .	3
E.	Other Habitats . . . . .	3
F.	Wilderness and Special Areas . . . . .	3
G.	Easements for Waterfowl Management . . . . .	3
	<u>IV. WILDLIFE</u>	
A.	Endangered and Threatened Species. . . . .	3
B.	Migratory Birds . . . . .	3
C.	Mammals and Non-Migratory Birds. . . . .	4
	<u>V. INTERPRETATION AND RECREATION</u>	
A.	Information and Interpretation . . . . .	7
B.	Recreation . . . . .	9
C.	Enforcement. . . . .	9
	<u>VI. OTHER ITEMS</u>	
A.	Field Investigations . . . . .	10
B.	Cooperative Programs . . . . .	10
C.	Items of Interest. . . . .	11
D.	Safety . . . . .	11

## I. GENERAL

### A. Introduction

The Arctic National Wildlife Range (ANWR) was established by executive order in 1960 for the purpose of preserving unique wildlife, wilderness and recreational values. The ANWR, located in the northeastern corner of Alaska, contains approximately 8,900,000 acres. The area was withdrawn from all forms of appropriation under the public land laws, including the mining but not mineral leasing laws.

In the Alaskan arctic the ANWR offers unique scientific, recreational, and aesthetic values. It is the only area in the United States where the transition from the boreal forest to the arctic coastal plain and Arctic Ocean is not yet committed to industrial development. It is the only practicable area where people may travel on foot or by boat and traverse a full range of north slope landscape and habitats due to the close proximity of the Arctic coast and mountains. Mt. Isto, 2,758 m; Mt. Chamberlin, 2,749 m; Mt. Hubley, 2,717 m; and Mt. Michelson, 2,699 m; the four tallest peaks in the Brooks Range are located in ANWR. The ANWR contains the only extensive glaciation in the Brooks Range as well as a full complement of arctic flora and fauna. This includes critical calving ground for the Porcupine caribou herd, the largest in Alaska (approximately 100,000 caribou), reintroduced muskox, and critical habitat for the endangered Peregrine Falcon, Snow Geese and other migratory bird species.

### B. Climatic and Habitat Conditions

Breakup on the north slope of the Wildlife Range began earlier than the previous year with rivers becoming impassable to snow machine travel by mid-April.

Summer weather on the arctic coastal plain was about normal with fog, low cloudiness, and wind. When the summer sun does break through at Barter Island and mountains break the horizon to the south its a great day. Kaktovik people don't think of weather in terms of good and bad - weather is weather and a part of life.

Fall weather was mild and winter late in coming. Peters Lake was still not frozen over through mid-October. The previous year a thin layer of ice had formed on the lake by about the end of the first week in October.

### C. Land Acquisition

The Washington office began a process of trying to arrange a land trade with the village of Kaktovik. One of the features of the proposed land trade would give Barter Island to the village of Kaktovik and the Fish and Wildlife Service (FWS) would obtain a building site in Kaktovik. Negotiations for the land trade took place in early January 1980 and as things turned out the FWS was unable to acquire a building site by outright purchase but instead will lease a site from the village.



Village of Kaktovik on Barter Island

(ANWR File photo)

D. System Status

Annual Work Plan advices for the ANWR were received in Migratory Birds, Mammals and Non-Migratory Birds and Interpretation and Recreation. Advices under Migratory Birds included a study of migratory birds on the south side of the Brooks Range and census of staging Snow Geese. Both advices were completed. A study to locate raptor nesting sites was initiated on the south slope. In Mammals and Non-Migratory Birds, management plans for Dall sheep, caribou, and fur animals were begun but not all completed. Habitat research on the Porcupine caribou herd continued. A cooperative photo census of the herd with the Alaska Department of Fish and Game, and Yukon Game Branch was completed with data analysis still in progress at years end. Final rehabilitation of Peters Lake field station was not completed for lack of money. In Interpretation and Recreation a hunter entry permit system was written.

1. Funding

Funding increased in MB and MNMB, and increased slightly in I&R for FY 79. Overall funding in FY 79 increased by \$23,000.

Fiscal Year 1979

Migratory Birds-	66,000
Mammals and Non-Migratory Birds	231,000
Interpretation and Recreation	<u>55,000</u>
TOTAL	352,000
Full time permanent staff - 7	

II. CONSTRUCTION AND MAINTENANCE

A. Construction

The rotting fence around our Fort Yukon cabin was torn down by Pat Young and Norma Milke during the summer. They also completed a general refurbishing of the cabin's interior. Norma dug a new hole for the outdoor privy. Ave Thayer later rewired the cabin interior and installed safer light fixtures. New wood fencing was acquired late in the year and is stored for use.

B. Maintenance

Supplies for a Young Adult Conservation Corps (YACC) barrel removal program were stored in the Barter Island DEW line hangar. This program, however, did not receive the expected funding. With no money to pay for the high cost of hangar storage some of the equipment and supplies were hauled to Beaufort Lagoon by snowmachine. The remainder including many mattresses, bed frames, plywood and chairs, propane bottles and tools were stored outside. It is covered with heavy duty tarps tied down, to withstand wind storms which frequently lash the coast in early winter.

### III. HABITAT MANAGEMENT

#### A. Croplands thru D. Forestlands

Nothing to report.

#### E. Other Habitats

Abandoned camp debris discarded at Joe Creek in the early 50's was removed. This included shovels and picks used in fashioning a crude airstrip on dry tundra along the creek bed. Several 55 gal. barrels and a wheel barrow remain to be removed. A nearby aufeis field (an ice field formed by overflow in winter) permitted access and removal of debris by ski equipped aircraft in early June.

While funding for a YACC barrel removal project fell through for FY 79, the project will likely get underway in FY 80 with \$444,000 authorized to get the barrel rolling. The military may provide transportation of some supplies.

#### F. Wilderness and Special Areas

Alaska Lands Legislation remained stalled in Congress as the year drew to a close with no action taken to alter the status quo. One of the key issues is whether to allow oil exploration on the ANWR. One Senate version yet to be passed would allow oil exploration while the House passed version would not.

#### G. Easements for Waterfowl Management

Nothing to report.

### IV. WILDLIFE

#### A. Endangered and Threatened Species

A raptor survey was conducted by Mike Spindler, Michelle Mouton, and Phil Koehl. One Peregrine Falcon was observed in June (see B. 2 for details).

#### B. Migratory Birds

##### 1. Waterfowl, Marsh, Waterbirds, Shorebirds, and Terrestrial Birds

Mike Spindler and field assistants Michelle Mouton and Phil Koehl spent June and early July on Mancha Creek conducting migratory bird census and habitat utilization studies. This area is of particular interest because it is near the northern limit of the tree line. A variety of boreal birds found further south are also found here. Three 10 hectare census plots, one in spruce forest, one in spruce woodlands and one in willow-cottonwood thickets were laid out and regularly censused. The most common birds in the Spruce forest plot were Gray-cheeked Thrush and Yellow-rumped Warbler; White-crowned Sparrow and American Robin in Spruce woodland plot; Gray-cheeked





Mancha Creek

(File photo)

Thrush and Orange-crowned Warbler in the willow-cottonwood thicket. Highest numbers of birds were seen in the spruce forest plot and fewest in the willow-cottonwood thicket. The first documented breeding of Gray-headed Chickadees in Alaska was observed by Mike Spindler in the spruce forest plot. A species of Oxytropis (a legume) unknown from North America and possibly new to science was discovered by Michelle Mouton in the Firth/Mancha Research Natural Area. Detailed morphological and cytological studies are in process. A final bird/habitat report for the Mancha Creek area will be available in 1980.

University of Alaska graduate student Phil Martin and assistants Sue Raich and Richard Culver spent the summer on the Canning River Delta conducting migratory bird habitat and population studies. This was the first of a two year study. Phil's project is being sponsored and financially supported by the FWS. This is an important bird producing area and one where more information is needed because of pending oil development offshore just west of Canning Delta. Data from Phil's summer work is in the process of being analyzed.

Mike Spindler, Mike Jacobson and Bruce Conant using a DeHaviland Turbine Beaver (N754) flew a Lesser Snow Goose survey of the arctic coastal plain from September 6 to September 13. A visual estimate of 195,000 Snow Geese on the ANWR coastal plain with an additional 41,000 on the Yukon north slope west of Kay Point was made. Analysis of aerial photography of some flocks indicates that visual estimates may be high by a factor of 50%. The percent of young in the snow goose population staging on the Alaska north slope was very low, in the range of 3-4%. Most of these birds breed in the Anderson River/Banks Island colonies.

The entire coastal portion of the Wildlife Range was surveyed for Whistling Swans in conjunction with the Snow Goose survey. A total of 70 adults and 82 cygnets were counted. The majority of birds were observed in the Canning River Delta and Aichilik Kongakut River Deltas.

## 2. Raptors, Other Migratory Birds

A raptor survey in the Firth/Mancha Creek Research Natural Area was conducted in conjunction with other migratory bird studies in the area by Mike Spindler and assistants. Golden Eagles and Kestrels were the most commonly observed raptors nesting in the area. Less common raptors nesting in the area were Rough-legged Hawk, Hawk Owl, Short-eared Owl, and Gyrfalcon. One Arctic Peregrine Falcon was seen but no nest located.

## C. Mammals and Non-Migratory Birds and Others

### 1. Game Animals

#### a. Caribou

Monitoring of winter range of caribou through the winter



Snow Geese

(M. Jacobson 8/79)

of 1978-1979 revealed that about 10-20,000 caribou from the Porcupine herd were wintering in Alaska. This is the first time since the winter of 1972-1973 that a large segment of the herd had wintered in Alaska. Major concentrations of caribou were observed in the Sheenjek River drainage and around Arctic Village. Some caribou wintered as far west as the Middle Fork of the Chandalar River and south into the northern fringes of the Yukon Flats. One group of caribou was seen within 20 miles of Ft. Yukon and another 10 miles northeast of Venetie.

During July the FWS, Alaska Department of Fish and Game (ADF&G) and Yukon Game Branch cooperated in an aerial photo census of the Porcupine caribou herd. This was the third aerial census of the herd, the first occurring in 1972 and the second in 1977. The technique has been refined to obtain better confidence limits for the final estimate. Post-calving aggregations began forming farther east (near the Kongakut River Delta) than in previous years. Analysis of aerial photos and composition data collected by ADF&G was still in progress at years end.

A caribou habitat study conducted by Denver Wildlife Research Center on the ANWR continued into a second summer. Steve Machida is the principal field investigator. Results of 1979 field work are not yet available.

b. Dall Sheep

A FWS contract was given to Analytical Services to complete an aerial inventory of Dall sheep, conducted in 1976 and 1978. The same team (biologist Tony Smith and pilot Bill Lentch) conducted the 1979 survey as well as those in 1976 and 1978. Drainages which remained unsurveyed in 1978 (Canning River, East Fork Chandalar, East side of the Kongakut and Sheenjek Rivers) were completed in 1979. A total of 4,796 sheep were observed during a total of 160 hours of surveys between 1976 and 1979.

The estimated population of sheep in the ANWR is 7137 and an estimated 3825 sheep in the proposed D-2 extensions. The overall ram/ewe ratio is 53 rams/100 ewes. The proportion of rams in the total population is 27%. There are an estimated 1927 rams in the ANWR sheep population.

In addition to aerial surveys, ground surveys to obtain habitat and composition data were made in March and July by ANWR staff. Surveys were made in a selected study area in the headwaters of the Hulahula drainage. Studies will continue in this area in the future to determine seasonal movements and distribution. A mineral lick study will begin on the Hulahula and Canning Rivers in 1980.

c. Brown/Grizzly Bears

No grizzly bears were reported killed by sport hunters in 1979. One large male bear was killed in April by a Kaktovik subsistence hunter and another male bear was taken by a sport hunter in August (claiming defense of life and property). The actual number of bears killed is probably higher due to illegal hunting.

d. Moose

Moose were surveyed in mid-November by Ross and Spindler in the Sheenjek and Coleen River drainages using a Heliocourier airplane. A total of 151 moose were counted in the Sheenjek, and 244 in the Coleen drainage, which represented increases over previous surveys in these drainages. Calf production appeared good with approximately 55 calves/100 cows for both drainages.

e. Muskox

Muskox continue to do well and are increasing. In mid-April, Ross and Spindler counted 112 muskox prior to calving. This is an increase of 26 muskox over the previous year's survey also made prior to calving.

Muskox, to date, are found in three main groups, one near the Canning River, another near the Jago River and one near the Sadlerochit River. In addition, one group of 2 four-year or older bulls and one group of 3 four-year or older bulls were observed in different locations well removed from the other main groups this year. Approximately 16 calves were born to the Sadlerochit Group in May and June. Number of calves born to other groups is unknown.

Martha Robus, a University of Alaska graduate student, completed field work on a muskox habitat study in the Sadlerochit River drainage. Kent Jingfors, also a University of Alaska graduate student continued observations of muskox through the summer and early winter, gathering data for a forage selectivity study. Kent will finish his study in 1980.

f. Wolves

A den of wolves was located on East Patuk Creek during the course of sheep studies in the Hulahula River drainage. There was a rabies outbreak in the drainage in 1977 which decimated one pack of wolves. In the Coleen River valley five wolves in three different groups were seen during the November moose survey.

2. Other Mammals

University of Alaska graduate student Bob Burgess completed



Musk ox near the Sadlerochit River

(K. Jingfors 6/79)

field work on a study of the affects of Arctic fox predation on bird and small mammal populations at Demarcation Bay. A number of foxes were radio collared and their movements were followed on the ground with radio tracking equipment.

While conditions were unfavorable for bowhead whaling by most communities along the Alaskan arctic coast this year, Kaktovik had a good fall hunt bagging a total of five whales. Some of the meat was shared with communities not getting any whales this year. The weather during September, the usual hunting time, was too stormy for hunting. In October, when weather is usually much stormier, the weather was good. Whales were numerous and close to shore.

Archie Brower, the present mayor of Kaktovik, reported sighting a gray whale off Arey Spit in September. Gray whales are uncommon off the coast of the ANWR.

a. Polar Bears

No dens were observed on the ANWR this year. No systematic effort was made to find them.

The people of Kaktovik do not actively hunt polar bear but they do shoot them if they stay around town. Three polar bears, a female with two grown cubs were shot by Kaktovik residents in October.

3. Resident Birds

Nothing to report.

4. Other Animal Life

Steve MacDonald with the University of Alaska museum spent a week trapping small mammals on Mike Spindler's bird census plots on Mancha Creek. Tundra Red-backed Voles were the most common small mammals trapped.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On Refuge

The ANWR does not have a formal interpretive program.

Jake Jacobson accompanied a Heritage Conservation Service crew on a float trip down the Canning River to assess its potential for Wild and Scenic River designation.

Ave Thayer drafted a policy statement on Wild and Scenic Rivers for the new Refuge Manual.

Ave Thayer and Gary Hickman accompanied Senator Jackson's legislative assistant, Denny Miller on a tour of the ANWR with stops at Peters Lake, Prudhoe Bay and Blackfish Lake.

Ave Thayer also accompanied a group of White House staff members and two members of the House Subcommittee for Environment and Natural Resources, David Bonior and Andrew Maguire on separate VIP tours to the Range. Tours were made in July and August respectively.

Gilbert Grosvenor, Vice President of National Geographic Society and wife accompanied Ave Thayer and Paul Liedberg to the ANWR with an overnight stop at Peters Lake.

## 2. Off Refuge

In June, Alaska Natural History Association book sales were begun in the refuge office in Fairbanks. The most popular of the selection of seven books available are Mammals of Mt. McKinley and Wild, Edible and Poisonous Plants of Alaska

In August, the Fish and Wildlife Service and Alaska Department of Fish and Game hosted the third meeting of the Porcupine Caribou Technical Committee in Fairbanks. Ave Thayer and Ray Cameron for ADF&G coordinated the meeting. The Porcupine Caribou Committee is comprised of technical representatives from U.S and Canada government agencies with management responsibilities for the herd. This session was devoted to outlining the research needs for the herd.

The refuge staff received numerous inquiries from the public concerning regulations for the newly designated national monuments. Maps and regulations available in the office were fast moving items of interest to many people, particularly miners.

In September, Ave Thayer accompanied representatives from the State Department and Solicitors Office in Washington on a familiarization flight over caribou habitat.

Jake Jacobson gave several slide show presentations to school children in Kaktovik. Paul Benvenuti presented programs in first-aid, to three groups through the Tanana Valley Community College, and taught CPR to a Tanana Valley Community Valley class. Paul also talked about local birds to 4th graders at the Badger Road school and presented a program to Lathrop High School students about Alaska Lands and the Fish and Wildlife Service.

In the December issue of "National Geographic" magazine an article was published about the ANWR entitled Our Last Wilderness.





Don Ross and Jake Jacobson coring ice at Peters  
Lake.

(M. Spindler 5/78)

## B. Recreation

### 1. Wildlife Oriented

In March, the Alaska Board of Game adopted an ADF&G lottery sheep hunting permit system for the ANWR. A total of 450 permits were available with 50 of the permits allotted to the village of Kaktovik for subsistence purposes. Out of the 400 remaining permits, 100 were set aside for non-resident hunters.

The permit system was a step in the right direction but it did not solve a chronic overcrowding problem in the Hulahula, Canning, and Sheenjek drainages. Too many permits were available and they were not allocated by drainage as the staff had proposed. About 109 sheep were killed by 186 sport hunters. In the subsistence hunt, 16 sheep were killed, about 2/3 rams and 1/3 ewes. Drainages now being overharvested are the Canning, Hulahula, Jago, and Sheenjek.

A draft Sheep Management Plan was prepared with recommendations for improving sheep management on the ANWR. Paul Benvenuti drafted a Public Use Management Plan for the Wildlife Range.

Four permits were issued to guided hiking/boating groups this year: Great World, Wilderness Alaska Unlimited, Sobek, and Mountain Travel. Permits for guided hunts were issued to Andreis, Grasser, Hendricks, Knutson, Rivers, Want, Wassom, Wilson and Wirschem.

Two Kaktovik people, Herman Aishanna and wife Mildred accompanied Jake Jacobson to observe the level of public use activity in the Hulahula drainage during the sheep hunting season. Two people from Arctic Village, Bill Tritt and Donald Sam spent nine days working for the Range on the upper Sheenjek River during mid-August. They also collected public use information during the sheep hunting season, providing us with a useful, detailed report of their observations..

### 2. Non-Wildlife Oriented

Recreation by both native and non-native visitors is almost exclusively wildlife oriented.

## C. Enforcement

One suspected case of an illegal taking of sheep was investigated but no violation was uncovered. State of Alaska Fish and Wildlife Protection officers were assisted in an investigation of alleged hunting out of season by a guide in the Hulahula.

Paul Benvenuti spent 12 days in the Peters/Schrader Lake area during the spring bear hunt but no bear hunters or aircraft were seen. Visibility was poor much of the time.

Law enforcement on the Wildlife Range will be enhanced with the arrival of John Collins, a Special Agent transferring to Fairbanks from Arkansas. In a trial program between Refugees and Law Enforcement,

John will be devoting the majority of his time to law enforcement on the ANWR.

## VI. OTHER ITEMS

### A. Field Investigations

Archeological investigations led by Curt Wilson (Anchorage Area Office) continued into their third field season. The majority of work was at the Turner Overlook site in the foothills south of Demarcation Bay. This site was probably very important in the yearly subsistence pattern of this area during the 1840's and 1850's. The Turner River site and nearby graves have yielded substantial numbers of artifacts and some human skeletal remains.

Brief descriptions of other field investigations are mentioned in other sections of the narrative. The following field investigations supported by FWS were conducted on the ANWR by University of Alaska graduate students:

Robert Burgess, Arctic Fox Ecology - field work completed.  
 Phil Martin, Canning River Delta Bird Study - first field season.  
 Kent Jingfors, Muskox Feeding Selectivity - first field season.  
 Martha "muskox" Robus, Muskox Habitat Preferences - field work completed

Field Investigations conducted by ANWR staff were as follows:

Caribou Winter Distribution  
 Muskox Census Composition  
 Dall sheep Distribution and Composition in Winter and Spring  
 Fall moose Census in Sheenjek and Coleen River drainages  
 Small Bird Population Census and Habitat Analysis in Firth/Mancha  
 Creek Research Natural Area.  
 Snow Goose Fall Staging Census  
 Coastal Lagoon Bird Census  
 Whistling Swan Census  
 Raptor Survey in Mancha Creek

### B. Cooperative Programs

Special Use Permits for surficial geology studies were issued to the following companies:

Chevron, USA  
 Exxon Co., USA  
 Shell Oil Co.  
 Union Oil

The U.S. Geological Survey was issued a permit for locating survey control points. The State Division of Natural Resources was issued a permit for surficial geology studies on the coastal plain of the ANWR. Karen Gustafson with the University of Washington was issued a permit for plant collecting as part of a Natural Region Theme Study for the Heritage Conservation Resource Service. The Los Alamos Scientific Laboratory was issued a permit for taking small



Okpilak field camp

(M. Spindler 6/78)

samples of soil and water from nine square mile grids as part of a uranium sampling program. A permit was issued to the latter group last year but no sampling was done on the Wildlife Range.

Range staff is periodically checking precipitation gauges at Barter Island, Jago River and Kavik River for the Soil Conservation Service.

#### C. Items of Interest

Our on-again-off-again YACC barrel removal project was on again at year's end with authorized funding of \$444,000. Richard Williams acting as the YACC coordinator was terminated in July when funding fell through for the project in FY 79. Richard is eager to return and continue working on the project in 1980.

Pat Young who had been on the staff for four years and Paul Benvenuti who had been on the staff two years took positions elsewhere during the year. Paul departed in July to Chincoteague NWR. Pat moved out of the ice-fog and the stuffy Federal Office Building in August to higher ground and the world of academia at the University of Alaska. Good luck to both.

Paul Liedberg arrived in May from Agassiz NWR to take over the newly created position of Administrative Officer for the Range.

A draft treaty for management of the Porcupine caribou herd received a variety of public comment during the year, much of which was supportive of the concept. A draft EIS for the treaty was being written by Peter Lent from the Anchorage Area Office at year's end.

A joint State-Federal Beaufort Sea Oil lease sale was held as scheduled in December despite law suits filed by native villages and other groups to halt the sale. Tracts near the western boundary of the Range in the vicinity of Flaxman Island were some of the more highly sought of the leases.

Our 4X4 Dodge pickup, arrived in Barter Island in August via the annual Cool Barge. It was put to work immediately and will ease the job of transporting people and gear between the airport and field station in the village.

As of years end, position description for all staff personnel had been updated and rewritten in the FES format, seven since the first of May.

A classification audit was conducted by the Area Office Personnel division in May. This was the only administrative review made for the year.

#### D. Safety

Two tragedies occurred on the Range in August. Tom Lorenz, an archeological assistant to Curt Wilson suffered a heart attack and died while he was working at the Turner Overlook site south of Demarcation Bay. Due to a communication foul up and remoteness of the location the body was not removed and flown to Fairbanks for



Barrels on reef

(ANWR File photo)

several days. Tom had a history of heart troubles.

In a second mishap, a woman hiking with two companions east of Schrader Lake was badly mauled by a female grizzly with cubs. She apparently hiked over a hill and surprised the bear at very close range. The attack was so sudden the women had no opportunity to take any defensive action. Her husband luckily was a doctor and administered prompt first-aid which saved her life. A member of their group made a forced march to Peters Lake where Paul Fischer (Fisheries Services) used his aircraft radio to call for a helicopter from the Prudhoe Bay oilfield. The victim was taken to the Fairbanks hospital and later to San Francisco in serious condition.

Figure 7. Species of Fish Which Inhabit Arctic Estuarine or Fresh Waters

Arctic char	<u>Salvelinus alpinus</u>
Arctic grayling	<u>Thymallus arcticus</u>
Arctic cisco	<u>Coregonus autumnalis</u>
Least cisco	<u>Coregonus sardinella</u>
Bering cisco	<u>Coregonus laurettae</u>
Broad whitefish	<u>Coregonus nasus</u>
Humpback (lake) whitefish	<u>Coregonus pidschian</u>
Round whitefish	<u>Prosopium cylindraceum</u>
Lake trout	<u>Salvelinus namaycush</u>
Pink salmon	<u>Oncorhynchus gorbuscha</u>
Chum salmon	<u>Oncorhynchus keta</u>
Arctic lamprey	<u>Lampetra japonica</u>
Burbot	<u>Lota lota</u>
Alaska blackfish	<u>Dallia pectoralis</u>
Rainbow smelt	<u>Osmerus mordax</u>
Northern pike	<u>Esox lucius</u>
Longnose sucker	<u>Catostomus catostomus</u>
Ninespine stickleback	<u>Pungitius pungitius</u>
Slimy sculpin	<u>Cottus cognatus</u>
Fourhorn (deepwater) sculpin	<u>Myoxocephalus quadricornis</u>
Arctic flounder	<u>Liopsetta glacialis</u>
Starry flounder	<u>Platichthys stellatus</u>

Several drainages in the eastern Arctic have been surveyed in winter (Kogl 1971; Yoshihara 1972, 1973; Furniss 1974, 1975; Craig 1976b, 1976e; and others). Overwintering populations of fish and other aquatic animals occur in various segments of these watersheds, principally near springs and in major deep channels and deltas. The Sagavanirktok River is the largest in the eastern Arctic, in terms of both drainage area and length of main stem, and contains overwintering populations of many species.

Springs are perhaps the most important habitat for fish during winter. The locations of springs are apparently related to fracture zones in the Lisburne Limestone Formation along the northern flank of