Denali National Park and Preserve
1995
STATE OF PARK RESOURCES REPORT

RESOURCE CONDITIONS

Golden Eagle Nesting is Average while the Gyrfalcons are Soaring

We collected data on nesting territory occupancy and reproductive characteristics of golden eagles and gyrfalcons using two aerial surveys and many hours of ground work in an intensive study area in Denali. This intensive study area is east of the Toklat River, south of the northern park boundary, north of the Alaska Range and west of the Nenana River. This was the 9th consecutive year of monitoring reproductive characteristics of golden eagles in Denali and our study continues to provide the only long-term data on golden eagle reproduction in Alaska.

Golden eagles. We monitored 63 golden eagle nesting territories in 1995. Of these, territorial pairs of golden eagles occupied 56 (88.9%). We documented egg-laying at 30 nesting territories (53.6% of the territories occupied) and fledgling production at 18 territories (32% of the territories occupied). Twenty-seven fledglings were produced in the intensive survey area (compared with nine in 1994), resulting in a mean of 0.48 fledglings per territorial pair. Proportions of territorial pairs laying eggs and producing fledglings were higher in 1995 than in the past three years, but lower than all years from 1987 through 1991.

Banding efforts continued this year with the help of two Swiss assistants, Christian Grand and Paul Chollet. We banded 30 nestlings, collected data on nest site characteristics and prey remains, and collected shed adult feathers for genetic analysis at 21 nests (including four nests west of the intensive study area). We also visited an additional 10 nests and collected nest site characteristic data and shed feathers for genetic analysis.

Information on two band recoveries from golden eagles banded as nestlings in Denali was received this year. A golden eagle banded in July 1990 was found injured in the Coahuila Desert in north central Mexico in July 1994. Unfortunately, the injured bird died soon after it was found and the cause of the injury is unknown. This is the first documentation of an Alaskan golden eagle in Mexico. A golden eagle banded in July 1989 was captured on 17 March 1994 by Dr. Al Hamata near Ringling, Montana. Dr. Harmata is currently studying contaminants (particularly the presence of lead) in migrating golden eagles. Blood was collected from the trapped bird and it was released within a few minutes of its capture. We are awaiting results from blood analysis.

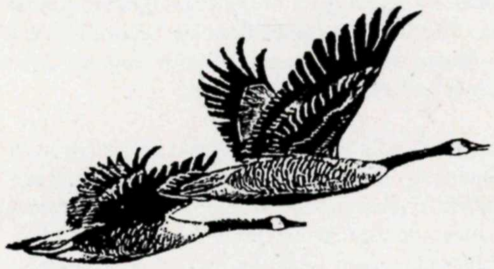
Research plans for golden eagles next year include: 1) continuing to monitor nesting territory occupancy and reproductive success, 2) intensive studies of post-fledgling movements on the breeding grounds, 3) identifying migratory routes and wintering areas of juveniles and adults using satellite radio telemetry, 4) habitat analysis of selected nesting territories, and, 5) the identification of individuals using molecular genetic techniques.

Gyrfalcons. Gyrfalcon nesting territory occupancy remained high this year and reproduction was nearly fourfold greater than in 1994, with 32 fledglings produced on the study area. This year we are studying the movements of juvenile gyrfalcons using satellite radio telemetry. This research complements our research on the movements of gyrfalcons on the Seward Peninsula, Alaska, and will provide important information on the movements and wintering locations of juvenile gyrfalcons from Denali. We selected three family groups to study, and in early July attached 30 gram satellite transmitters to eight nearly-fledged gyrfalcons at three nesting locations. The transmitters were attached using two gram backpack harnesses designed to fall off the birds in approximately one year. The transmitters are programmed to send data for approximately one year.

As of 15 September 1995, six of the eight radio-tagged birds had left Denali and were scattered about Alaska and the Yukon Territory, Canada. Three of these birds had moved large distances north, with two on the north slope of Alaska near Kotzebue and the Colville River, and one on the north slope of the Yukon Territory. Two of the eight birds remain in Denali. We will continue to monitor the movements of the radio-tagged birds until next summer.

The North American Migration Count 1995

The North American Migration Count (NAMC) is a grass-roots project instituted by independent birders to gather information about the distribution and abundance of all birds. In many ways it is very similar to the well-known Christmas Bird Count. NAMC is an event not associated with any particular organization. Partners in Flight, the American Birding Association, and many state and local organizations provide support by increasing awareness of the count. In 1993 more than 5,800 birders in 545 counties in 43 states and three Canadian provinces counted more than 2.2 million individuals of 554 species. The goals of the NAMC are to provide a "snapshot" of the progress of spring migration and obtain information on the abundance and distribution of species at this time. While the count is not an official research project, it does provide important information on the avian resources in Denali National Park and Preserve, Alaska.



On May 13, 1995, 12 participants counted birds from approximately 7:00 a.m. to 8:00 p.m. in selected locations within Denali and along the Stampede Road. A total of 73 species was observed during the day. Not surprising, the most common species recorded was White-crowned Sparrow (198) with American Tree Sparrow running a close second (158). Fourteen species of waterfowl (including harlequin duck, common loon, tundra swan, and ring-necked duck) were recorded. Golden eagles and northern harriers were the most common raptor species observed. High numbers of willow ptarmigan were counted along with several rock and white-tailed ptarmigan. Observers near Wonder Lake and Camp Denali provided most of the shorebirds for the count including American golden plover, whimbrel, surfbirds, and least sandpipers. Copies of Denali NAMC results and NAMC Newsletters are available from the Denali NAMC coordinator: Carol McIntyre, NPS, P.O. Box 74680, Fairbanks, Alaska, 99707.

Breeding Bird Surveys

Breeding bird surveys were conducted on two routes along the Denali Park road in 1995. The Toklat route from the Toklat river bridge to about mile 79 was conducted on 22 June. Weather conditions were good with temperatures in the high 40's to low 50's, light wind and clear to partly cloudy skies. Three hundred thirty seven individuals of 28 species were detected.

The Savage route runs from Savage River bridge to Sable Pass. Due to foggy, rainy weather, this route was not conducted until 28 June. Weather conditions were good with temperatures in the high 40's, little to no wind, and partly cloudy skies. Two hundred sixty two individuals of 18 species were detected.

Results of both routes were fairly consistent with counts reported previously. The exception is that the number of species on the Savage route was a bit lower. This may have been because this route was conducted nearer the end of the breeding season and some birds had stopped singing. It is planned that both routes be conducted closer to the 15th of June in the future, to provide a buffer in the event of bad weather.

Merlin Monitoring

The park employed the assistance of two part time volunteers through the summer to continue the Merlin monitoring work conducted by Scott Wilbor from 1990 through 1993. The monitoring effort focused on territorial occupancy and reproductive performance of Merlins found along major river drainages in northeastern Denali and in the Wonder Lake tundra region. With help from Carol McIntyre (NPS), Pat Owen (NPS), Peter and Suzanne Payton from the Alaska Bird Observatory and other park personnel, 30 potential territories were surveyed. At least 18 of these territories were determined to be occupied. Of the 18 occupied sites, at least 10 successfully fledged young. 1994 results indicate 21 of 35 surveyed territories known to be occupied with at least 14 successfully fledging young.

Sheep Census Shows Lamb Production Still Increasing

Ground-based and aerial trend counts for Dall sheep, *Ovis dalli*, were conducted in 1995 during the weeks of 26 June and 10 July. A total of 148 sheep were classified during the ground-based count. 77 ewes, 22 yearlings, and 35 lambs were counted, resulting in 45 lambs/100 ewes and 29 yearlings/100 ewes. The lamb count was down slightly from the 1994 survey period when 56 lambs/100 ewes were observed. The 1995 yearling count is up considerably from the 1994 survey result of 1 yearling/100 ewes and is indicative of the good 1994 lambing rate. Ground-based counts have been conducted along the park road corridor since 1974.

The fourth annual aerial sheep count was conducted over the Outer Range, upper Savage, upper Sanctuary, and upper Teklanika areas. Results indicated a total of 514 sheep counted. Of this total, 320 were unclassified, "ewe-like" animals, 92 were lambs, and 102 were rams.

Aerial counts were conducted in the southwest preserve lands on 10 and 12 July. Areas surveyed included Fourth-of-July Creek and the West Fork of the Yentna River, north to Mystic Pass and west to Shellabarger Pass. Results indicated a total of 371 sheep counted. Of this total, 192 were unclassified, "ewe-like" animals, 72 were lambs, and 107 were rams.

Moose Survey

An aerial moose census was conducted in late November 1994 of the park and preserve area between Lake Minchumina and the Kantishna Hills. Difficult weather conditions persisted over most of Alaska during the moose survey season causing the cancellation or interruption of many agencies' survey efforts. Marginal weather delayed the start of Denali's survey by two days, and snow and severe cold temperatures caused the survey aircraft to be grounded at Lake Minchumina for another day later in the survey.

The total survey area encompassed 1007 square miles consisting primarily of forested flat lands in the eastern region and flat lake lands in the western region. An overall estimate was 342 ± 55 moose (90% confidence interval), representing an average density of 0.34 moose per square mile. The survey area is known to have a low density of moose and the results obtained were within the expected range.

The moose population had a composition of 25 bulls:100 cows, and a productivity of 36 calves:100 cows. The productivity was significantly higher than expected for this area, but corresponds with an increase in productivity observed elsewhere across the Tanana Valley by the Alaska Department of Fish and Game. Bull ratios and age class structures in the population were 25 yearling bulls:100 bulls, 42 medium bulls:100 bulls, and 33 large bulls:100 bulls.

This census represents the first time that a precise estimate of moose numbers have been made for this region of the park and preserve. Yet, the survey area only represents approximately one half of the forested flat lands within the northwest region of Denali National Park and Preserve.

The Wolves Were Singing

Wolf pack and den site monitoring within Denali National Park and Preserve continued at a moderate to high level through 1995. The spring 1995, park-wide wolf population estimate was 98 wolves. Radio-tracking flights, conducted through the winter of 1994-1995, indicated a reduction in the number of wolves in the Headquarters pack which occupies lands within and adjacent to the eastern-most boundary of the park. This pack had drawn particular attention due to their location near the heavily-visited portion of the park. By mid-December only one wolf was regularly visible. This occurrence prompted the park to request the Alaska Board of Game to implement a closure to wolf harvest on lands east of and adjacent to the park. The request was presented at the March 1995 Board meeting. The Board opted not to take action on the request, but encouraged the National Park Service and Alaska Department of Fish and Game to meet to resolve this issue.

The park and the department subsequently met on a number of occasions and began developing a joint strategy to emphasize wildlife viewability on lands adjacent to the park. The two agencies are working to implement the initial phases of this program through a forum which will involve interested members of the public. The park favors protection of wildlife whose range straddles the park boundary but acknowledges the need for cooperation with the state as well as involvement of special interests.

The final radio-collared animal of the Headquarters pack was illegally snared outside the park in May. The park has consequently responded to an array of public commentary concerning hunting and trapping of wolves within and adjacent to the park.

Human Impacts to Park Waters

The Nenana River corridor along the park's eastern boundary represents the greatest recreational opportunity for use of water resources in Denali National Park and Preserve. With close proximity to Fairbanks and Anchorage, outstanding scenery, and easy and plentiful access, the Nenana River represents one of the premier recreational rivers in Alaska. Recreational opportunities and uses in this area include rafting (commercial and private), canoeing, kayaking, camping, and fishing.

For 1990, the National Park Service estimated that 21,500 people floated the river along part or all of the park boundary. An informal telephone poll of local rafting companies in 1995 raised the estimate of day river users to 30,000-35,000. A river trip conducted along the river corridor in August 1995 discovered extremely few impacts along the left (Park) bank from this use. Modern litter was essentially non-existent, and other impacts such as fire rings or trails were also negligible.

Associated with Nenana River use is the Riley Creek access put-in. Located at the intersection of the Parks Highway and Denali Park road, this area is employed as an access point mainly by private kayakers paddling the Nenana River canyon. Several well-developed trails exist from the road to the creek, and a small camping area and fire ring are also located nearby.

Park water bodies along the Parks Highway are also subject to recreational use. A small pond located on the Parks Highway at Mile 236 receives perhaps the greatest visitation of these near-road lakes and ponds. Swimmers, hikers, birdwatchers, and others may be found in small numbers at this easily accessible site. A small but well-developed trail exists from the road to the lake, and 2 fire rings were discovered nearby. Small amounts of human waste and litter were also found at this site.

Horseshoe Lake, accessed via the Horseshoe Lake trail at Mile 2 of the Denali Park road, receives the greatest visitation of all east-end water bodies. As such, impacts near and around the lake are numerous and relatively severe. Numerous trails exist, and near-bank vegetation has suffered extensive trampling. Though it is doubtful that water quality has been affected, accelerated sedimentation into the lake could occur if impacts continue to grow.

Geologic Mapping

Geologic mapping of the USGS 1:250,000 Mt. McKinley Quadrangle continued in 1995, with approximately 6 USGS personnel working out of Glen Creek Camp intermittently for a 20 day period. Work concentrated on the foothills between the Muldrow and Peters Glaciers, with refinements of Tertiary sedimentary and volcanic rocks previously mapped in the 1950's.

Field work accomplished during the 1995 season confirmed the existence of a thick Paleozoic sequence of marine sedimentary rocks north of the Denali fault that correlates with similar Paleozoic rocks south of the fault. These unit correlations, previously unrecognized, are based on both stratigraphic and fossil evidence, and suggest the Denali fault may not be a terrane-boundry fault, and that displacement on the fault may only range from 50 to 130 km of right-lateral offset.

Continuing weather problems during the month of August prevented field work from occurring in the high country. Additionally, the reduction in force (RIF) and reorganization of the USGS has effected the loss of most of the field party, including the USGS project leader, Bela Csejtey, who retires in October 1995. The USGS is still committed to completing the mapping effort, and a new USGS co-investigator will be named to continue the project with Phil Brease, Geologist at Denali.

Monitoring the Muldrow Glacier

Intensive survey work and photo-documentation was begun on the lower reaches of the Muldrow Glacier this field season to characterize the ice conditions and to anticipate the next surge event, as the glacier last surged in 1956-57. Dr. P. Jay Fleisher, glaciologist with the State University of New York at Oneonta, New York, has teamed up with Phil Brease, Denali Geologist, to survey and monitor ice surface elevations, flow rates, and physical and chemical meltwater discharge conditions.

During a three day period in early August of 1995, six new survey stations were established and tied (controlled) to seven old stations (originally established by Brad Washburn), ice surface elevations were surveyed on 11 miles of glacial centerline to establish a longitudinal gradient, two new flow rate targets were established at the 10 and 20 km points on the glacier centerline, and some positions of lateral moraine crests and trimlines were surveyed as well. In addition, photo stations were initiated at monuments "Dome," "Lower Cone," "Bench," and "Grassy," and the meltwater release channels were examined for future chemistry and sediment sampling strategy.

Next year, resurveys of the flow rate targets and the longitudinal gradient will be conducted, and the survey net and photo stations will be expanded up-glacier to monitor the probable trigger area for the next surge. Futhermore, the meltwater gaging and water sampling program will be initiated.

Snow Surveys

In continued cooperation with the USDA Natural Resource Conservation Service (formerly the Soil Conservation Service) snow surveys were continued during the winter of 94-95. Ground surveys were conducted monthly throughout the winter at Lake Minchumina, Rock Creek Ridge and the Headquarters Air Quality Station, as well as at a new course established at Kantishna and an old course that was re-established at Purkeypile. Hourly snow pillow (snow water content) data were also collected on a Campbell 21X data-logger at the Air Quality Station site. Monthly overflights were made of the five aerial snow markers on the south side of the range at Chelatna Lake, Nugget Bench, Dutch Hills, Ramsdyke Creek and Tokositna Valley.

During the summer, all five aerial markers on the south side of the range were refurbished. Poles were straightened, slats were painted and flattened, and missing slats were replaced. In addition, the Kantishna snow course was relocated to a more protected location to reduce the effects of wind on the course. All other courses were brushed and stakes were replaced. All courses will again be surveyed this winter, and aerial markers flown on a monthly basis.

Rock Creek Snowpack Temperature Gradients

Snowpack and snow/ground interface temperatures were measured at the Rock Creek permafrost site as a portion of the Long Term Ecological Monitoring (LTEM) program. Thermocouple wires were installed in nine ground-level and three vertical (30, 60, & 90cm) positions. A full winter of data from October to May was obtained, although, two of the three in the vertical string were not covered with snow during the majority of the winter. Snow stratigraphy pits were dug monthly in the vicinity of the site to "ground truth" the snowpack conditions.

During the 1995 field season, thermisters and dataloggers were installed at permafrost, forest, tree-line, and tundra site to monitor five ground-level and three vertical (15, 25, & 35cm) positions at each site.

Water, Water Everywhere

Sampling on streams throughout Denali National Park and Preserve continued in 1995 as part of an ongoing cooperative study initiated in 1994 by Pamela J. Edwards of the USDA Forest Service and Michael J. Tranel of the National Park Service, Denali National Park. Water samples were collected this summer from 84 different sites on 61 different streams on both the north and south sides of the park. Most sites were sampled more than once, when logistically possible, to maximize data on varying flow regimes. Field analysis and data collection were done by Pamela J. Sousanes and Michael J. Tranel. Samples were also collected and sent to the Forest Service Timber and Watershed lab in Parsons, West Virginia for further chemical analysis.

Field measurements included temperature, pH, electrical conductivity, total dissolved solids, dissolved oxygen and stream discharge. A Hach Model 44600 meter was used to obtain temperature, conductivity and total dissolved solids. Dissolved oxygen was measured with a Hach Model 16046 meter which was calibrated daily according to atmospheric pressure and temperature. A Swoffer wading rod and current meter was used to measure stream discharge, and pH was measured with a Cole-Parmer pH wand which was calibrated daily. (For further details of field collection methods, see the report on the 1994 field season by Pamela J. Edwards and Michael J. Tranel.)

Laboratory analysis was done for pH, electrical conductivity, chloride (Cl), nitrate nitrogen (NO -N), sulfate (SO), calcium (Ca), magnesium (Mg), sodium (Na), potassium (K), ammonium (NH), dissolved organic carbon (DOC), alkalinity, turbidity, and suspended sediment. A complete report of laboratory analysis is forthcoming.

Numerous sites were added to the 1994 stream inventory, including the following along the road corridor: Rock Creek (at mouth), Middle Hines Creek (at slump), Hines Creek (at Rock Creek confluence), East Slump Creek, East Fork Tributary, East Stony Creek, and Gorge Creek. Two additional sites were sampled in the Kantishna Hills: Upper Middle Caribou Creek and Lower Middle Caribou Creek. New sites on the south side of the park included Long Creek (in Denali State Park near the proposed visitor center location), Fourth-of-July Creek, Alder Creek above Ruth Glacier, and Alder Creek at Slide Creek. New sites in the Dunkle Hills included Costello Creek, Camp Creek, and Colorado Creek (2 upper sites and 1 at the mouth). Streams not identified on any USGS map were named in 1995 according to geographic location for sample identification.

the water characterization project was coordinated with a parkwide macro-invertebrate study being conducted by Sarah C. Roberts. Samples for both projects were collected at the following 13 additional sites: N4, Tattler Creek, S4, S5, East Fork River, Toklat River (East and West Fork), Little Stony Creek East, Little Stony Creek West, Hogan Creek, N3, S1 and S2. Stream discharge was not measured at these sites either because they were too shallow or because of braided channels.

Both clear and glacial streams were sampled in this project. On the north side of the park 32 clear streams were sampled at 48 different sites, and 10 glacial streams at 12 different sites (including 2 sites on the Nenana River just outside the park boundary) were sampled. On the south side 11 clear streams were sampled at 13 different sites, and 8 glacial streams were sampled at 11 different sites. There were a total of 60 sites on the north side and 24 sites on the south side.

What Was Today's Weather?

A good understanding of weather is important for any ecological study. The weather station and snow survey network was significantly expanded in 1995 to meet these needs. Also, the process of compiling and making historic records more available was started. Records from long established stations such as the National Weather Service site at Denali Park Headquarters are now kept on file for easier access. The retrieval of other similar sets of records is planned for the future.

A new RAWS (Remote Automated Weather Station) system was installed at the Wonder Lake Ranger Station to support an increased focus on studies in the road corridor. This type of station is effective in remote locations such as Denali because it sends information to a satellite and then to a computer instead of requiring a person to periodically go to the site and record or retrieve the information. Another station of this type was purchased for the south side of the park. It will be installed next spring at the proposed location for the new visitor center at the end of the Petersville road. Two other RAWS stations have been in place for several years at Lake Minchumina and McKinley River and continued to provide year round information for this northwest portion of the park.

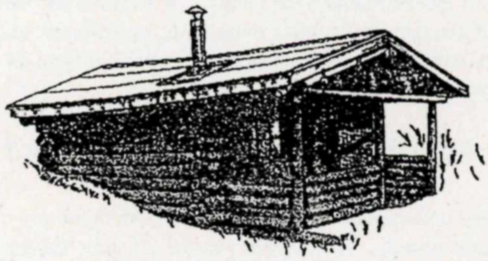
Weather stations in the Rock Creek Long Term Ecological Monitoring watershed near park headquarters were completed and produced high quality year round information. The observations from these stations are summarized in a report that is now available for the many other ecological studies that are underway in that area.

List of Classified Structures

What is the List of Classified Structures? The "LCS" is an evaluated inventory of all historic and prehistoric structures that have historical, architectural, and/or engineering significance within parks of the National Park System in which the National Park Service has any legal interest.

Structures are defined as constructed works that serve some form of human activity and that generally are immovable. The list is evaluated or "classified" by the National Register criteria. In general, the following structures are included in the LCS:

- all historic and prehistoric structures that individually meet the criteria of the National Register of Historic Places.
- all structures that are contributing elements of sites or districts that meet National Register criteria.
- structures managed as cultural resources because of decisions reached through the planning process. These usually are structures that are not yet 50 years old but have achieved significance.
- large structural features of cultural landscapes that are managed as structures, including walls, fences, and roads.



The LCS is a management tool focused on structures as the base unit. There are four general types of information in each LCS record... Identification, Historical, Management, and Bibliographic. As an automated database, the LCS facilitates the retrieval of information on a variety of levels to assist park managers and cultural resources specialists to make and record management decisions. The LCS has also evolved into a powerful research tool, assisting staff, scholars, and the general public.

During the 1995 field season, approximately 175 structures were evaluated in the park. This documentation process includes accurate mapping using global positioning system technology, producing measured drawings, photographs, physical description, condition assessment, and determining existing and potential impacts. Previous to the 1995 field season, Denali National Park and Preserve had 29 structures listed on the LCS. Upon final review from the Park, the updated existing structures and the anticipated new structures will bring the total to 153 structures listed on the LCS for Denali National Park and Preserve.

Long Term Ecological Monitoring

During the past decade, the National Park Service has repeatedly identified the need for long term data sets which document the condition of park natural resources. In 1991, the Service established a prototype ecological monitoring program to address this issue. Parks from across the National Park System were provided an opportunity to compete for program participation. Denali was selected to start this program along with four other parks in 1992. A total of ten parks will eventually serve as prototypes, with all parks that have significant natural resources participating at some level.

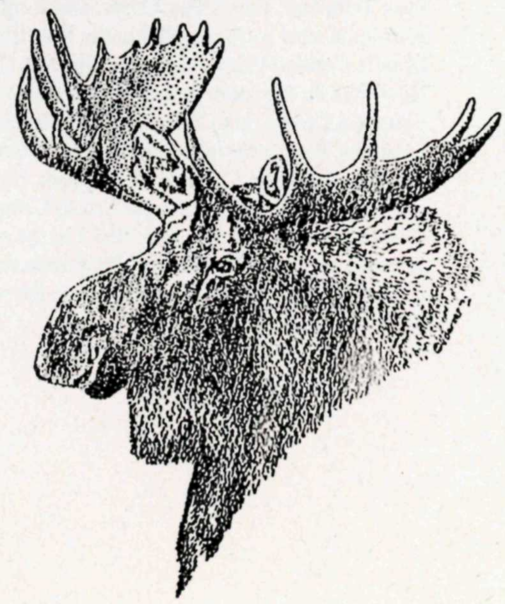
The primary goal of Denali's Long Term Ecological Monitoring (LTEM) Program is to obtain a scientifically based inventory of the type and condition of the natural resources that park management is responsible for protecting. The variation of those resource conditions will then be monitored and documented through time with the objective of determining if that variation is a result of natural causes or is human induced.

The purpose of this information is to provide a rational basis for taking management action on park resource preservation issues of a local and regional nature. A secondary benefit is the creation of a quality subarctic data base that can be incorporated into studies of major scientific questions that relate to issues of a global nature.

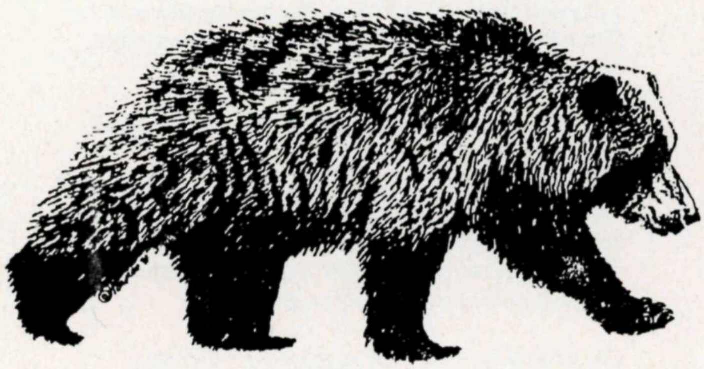
Another goal of the program is to fully document and communicate the process and operational requirements of establishing a long term inventory and monitoring program under the special conditions and large landscapes that are a concern in the management of national park lands in Alaska. This information will be used to assist in the development of other resource inventory and monitoring programs throughout the Alaska Field Area.

Denali's program was originally designed around the idea of monitoring various resources in a group of five watersheds located throughout the park. These watersheds were to be representative of the park's terrestrial habitats, aquatic systems, and climatic regimes. The Rock Creek watershed, a small system near park headquarters, was selected for preliminary work based on its easy access, the presence of the park's air quality station within the study area, and the availability of data from previous studies. Glaciers, a significant physical feature of many Alaskan parks, are not present in Rock Creek, but monitoring was started in other areas.

This summer a review team from the National Biological Service visited Denali and evaluated the progress of the LTEM program. One of the team's recommendations was a workshop this winter to further refine the design of the program. The objective will be to improve its usefulness for answering the many questions that are faced by park management and to enhance its integration with other existing research activities at the park. The results of this workshop, along with other recommendations by the team, will be incorporated into the program and implemented next season.



RESOURCE STEWARDSHIP ACTIVITIES



Bear-Human Interactions

There were a total of 216 documented bear-human interactions within the park in 1995, compared to 204 in 1994. Of this total, 39 occurred in the frontcountry and 177 occurred in the backcountry. 190 of the interactions were classified as encounters, which include any situation of close enough proximity between bears and humans that the bear clearly knows of a human presence, excluding serious charges, property damage, and physical contact. 26 of the interactions were classified as incidents including seven cases of property damage, one bear obtaining human food, and 11 control actions. Incidents include situations when a bear makes physical contact with a human, property, or food without inflicting injury, when any serious-appearing charge comes within close proximity to a human, or when a bear deliberately approaches and investigates a campsite. A backpacker sustained minor scrapes when a bear removed his backpack. As the injuries were minor and did not come directly from the bear, this incident was classified as property damage.

As in 1994, wildlife management staff began the season in March by patrolling park lands south of the Alaska Range. Previous illegal snowmachine activity and wildlife violations on park lands necessitated the need for increased National Park Service presence.

"On The Road Again"

In April of 1995, the Division of Research and Resource Preservation initiated research of wildlife observability along the park road corridor, and a study of wildlife responses to vehicles and pedestrians along the park road. Between 1 May and 24 September, 72 days were spent on the park road compiling visibility and behavioral data. 63 of those days researchers drove between Park Headquarters and Eielson Visitor Center and conducted five minute observations of the behavior of moose, sheep, caribou, bears, or wolves within 1000 meters of either side of the park road. Nine days were spent observing individual animals and recording behavioral changes in response to various stimuli between 90 and 180 minutes at a time. Protocols were established for each of the various monitoring efforts. Universal Transverse Mercator coordinates for all locations of wildlife were recorded and will be entered in a geographic information system. Databases were designed for all behavioral data. Researchers also maintained 8 infrared-beam traffic counters along the park road to monitor vehicle activity. The counters recorded the date and time to the minute of every vehicle passing through the beam. The counters were downloaded during every trip out on the park road and were then transferred to a computer database system. Researchers also initiated a visibility monitoring program involving volunteer shuttle and tour bus drivers. Drivers recorded the location of wildlife, distances from the road and sex/age composition of the animal groups. The purpose of the project is to establish a long term monitoring program for wildlife observability and behavior along the park road. The information will in part be used for developing an overall road use management plan. A final report and analysis of 1995 data is being prepared and will be available by 1 November.

Was There A Southerly Wonder Lake Outlet?

Speculations based on Al Werner's and Jon Child's (Mt Holyoke College, Massachusetts) Wonder lake sediment coring efforts in 1993 suggest that the outlet for Wonder Lake once flowed south during a portion of Late Wisconsin time, rather than north out of Lake Creek as it does today. In an effort to investigate this possibility, Phil Brease, and others from the Division of Resources Physical Sciences branch, ran eight shallow refraction seismic traverses along the Wonder Lake road near the campground in an attempt to find the buried outlet channel.

Preliminary data from the seismic runs suggests an ice marginal channel existed in a swale just north of the campground loop road. This correlates with surface mapping done by Werner showing that an advance or recessional ice limit sat just south of the swale at about 12-14,000 years before present (YBP). Furthermore, subsurface bedrock (~30 feet deep) was detected beneath the road near the Wonder Lake bus stop. Seismic traverses should next be run along the campground road toward the water tank, and perhaps along the lake access road, to determine if subsurface bedrock would restrict any southerly outflow of the lake to the marginal channel location.

Reclamation and Restoration Planning

A Draft Parkwide Reclamation and Restoration Program Plan was prepared during November and December, 1994, based on research and field work conducted during the 1994 field season. The plan was reviewed within the park and the Alaska Field Office during January, 1995. While several changes have been recommended, the basic concepts in the plan have been widely accepted. These planning concepts include:

1. Classification of disturbed areas according to whether they are recovering or whether either restoration or reclamation is required.

2. Classification of cultural resources into the following categories:

I. Active Preservation: actively preserve those unique and representative features that contribute to the cultural landscape of Denali National Park and Preserve.

II. Protection (No intervention): No active preservation/intervention proposed to preserve cultural features; obtain additional documentation as needed when threatened with loss and allow to deteriorate in place.

III. Release (Restore native vegetation and landform): "Landscape restoration" to natural conditions to enhance natural resources and protect overall cultural patterns.

The next steps in this planning process include:

1. Revise draft plan
2. Develop a Programmatic Agreement to expedite compliance for individual site plans
3. Develop site restoration plans for individual watersheds and conduct reclamation/restoration accordingly.

Relocation of Kantishna Mining Camps

Personal property was removed from six former mining camps in the Kantishna Hills beginning in September, 1994. Leonard Kragness and assistants worked during September and October, 1994 to prepare the camps for the winter move and to remove all property from Slate, Eldorado, and upper Glacier Creeks. During April, 1995, personal property was removed from Middle Caribou, Lower Caribou, and Glacier Creeks. All property was stored in a staging area established on lower Friday Creek near the Kantishna Airstrip. During the summer of 1995, Sam Turner worked for Leonard Kragness to haul all of these items out the park road and south to the Talkeetna/Trapper Creek area. The staging area was cleaned up and re-contouring completed in September, 1995.

Negotiations continue to acquire the mining claims on which the personal property was located, with the exception of those on Slate Creek, which became null and void in 1993. Some contaminated soil remediation will be necessary at each of the former mining camp sites. Still, removal of personal property is a significant step in the land acquisition and reclamation processes.

The relocation project stayed generally within the guidelines established by the March, 1994 Environmental Assessment. Record high temperatures and a rapidly melting snowpack resulted in some new tracks appearing on the west-facing slopes between Caribou Creek and the Kantishna Airstrip. On-site assessment determined that these areas would likely recover within 2-3 years and that additional rehabilitation was unnecessary. Re-contouring of the Friday Creek staging area was also completed to NPS requirements.

The remaining mining camp covered in the 1994 Environmental Assessment is the Gold King camp at the confluence of the East and West Forks of Glen Creek. Removal of personal property from this camp is pending continuing litigation.

1995 Visitor Services Project Update

The 1988 Visitor Services Project was repeated in August, 1995 to provide updated information for the Entrance Area/Road Corridor Planning Project. Nearly 900 survey forms were distributed to visitors at the Visitor Center and at the Savage River check station. Nearly half of these surveys have been returned, and analysis is continuing at the Denver Service Center. The survey forms distributed to visitors asked questions about services in the park and the immediate vicinity as well as addressing level of satisfaction on the park road.

ADMINISTRATIVE PROGRESS

Personnel Changes

1995 saw a number of significant personnel changes within the Division. A number of employees who had been of seasonal or term appointments were converted to permanent positions. These included Jennifer Wolk (Museum Technician), Andrea Blakesley (Air Quality Technician), Joe Van Horn (Staff Natural Resources Specialist), and Ken Karle (Hydraulic Engineer). New staff members also came on board including Midori Raymore (Office Assistant), Kevin Fox (Wildife Biologist), Elaine Furbish (Plant Ecologist), Jan Passek (Fire Management Officer), and Mike Klensch (Biological Technician). Jobe Chakuchin (Natural Resource Specialist) transferred to Gates of the Arctic National Park. Current staffing levels represent a substantial commitment to resource preservation and put the National Park Service in a favorable position to deal with future threats to park resources.

Biological Service Field Station Creation Virtually Seamless

The establishment of a Denali Field Station of the National Biological Service (NBS), started in 1994, was completed during 1995 with the signing of a Memorandum of Understanding between the park and the Alaska Science Center. NBS personnel continue to be heavily involved in natural science investigations that have direct application to park management needs. Caribou, wolf, bear, and restoration ecology studies all continue. NBS staff also initiated studies related to wildlife and park road use.

Research Administration

During 1995, park staff continued cooperating with numerous investigators from other agencies and institutions. Significant progress was made in the development of the database of park studies. This database now contains about 530 records ranging from Dall sheep studies to wind velocity studies. Research files have been secured in fireproof file cabinets and are organized in such a fashion that they are readily retrievable.

Information Resources and Networking

A Branch of Information Resources was established in 1994 within the Division. During 1995, staff in that Branch installed the hardware and software necessary for the operation of a Geographic Information System. Park staff is using both Arcinfo and Arcview software to manage and manipulate spatial data. Substantial effort was put into developing a wide variety of digital themes for general use and for specific applications within the park. Immediate uses of this technology were found to support bear research, subsistence management, backcountry management, and various planning efforts.

During 1995, the park installed a local area network with many of the users within the Division of Research and Resource Preservation. Communications capabilities were substantially improved through use of this technology and the Division now has links to other agencies via electronic mail systems and to the Internet.

Financial Support

Funding to support research and resource preservation activities at Denali came from a variety of sources during 1995:

Park Funds	$ 1,265,901.00
Other NPS Funds	$ 565,910.00
Non-NPS Sources	$ 808,063.00

These figures do not reflect additional funds that independent investigators expended on projects in the park other than NBS and USGS.

For Further Information write to:
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ADMINISTRATIVE PROGRESS

PERSONNEL CHANGES

During 1996, two important personnel changes occurred. Early in the summer, the park hired Penny Knuckles as an Ecologist and placed her in charge of the park's Long Term Ecological Monitoring Program. This was in response to a recommendation made during the 1995 review of the park's monitoring program. Penny was working most recently at Yukon-Charley Rivers National Preserve as a Natural Resources Management Specialist. Her presence on the staff should greatly enhance management of the park's monitoring program. In the fall, Kevin Fox accepted a position at Yukon-Charley Rivers National Preserve as a Unit Manager. His departure from the park's Wildlife Biologist position will create a significant void.

RESOURCE APPRENTICE IN DENALI

1996 was the first summer Denali sponsored a student through the multi-agency Resource Apprenticeship Program for Students (RAPS). The program was designed to give hands-on experience to high school Juniors and Seniors, especially Native Alaskans, who are interested in natural resource careers.

Gilbert Dementi, Jr., a resident of Cantwell, Alaska, joined our staff for seven weeks. He worked on a variety of projects that taught him new skills and gave him a chance to see the type of work we do in the field and the office. He assisted with wildlife, vegetation and trail surveys, and an aerial survey for salmon. Andrea Blakesley, his primary mentor in the program, shifted the focus of his office work to include many computer projects once she discovered it was an area in which he was both interested and talented. Gilbert completed a number of scanning and digitizing projects, becoming familiar with equipment and software that were unavailable to him at his school. We gained as much from having him here as he did from participating in the program, and are looking forward to sponsoring another student in the future.

FINANCIAL SUPPORT

Funding to support research and resource preservation activities at Denali came from a variety of sources during 1996:

Park Funds:	$1,329,050.00
Other NPS Funds:	460,794.00
BRD and USGS Funds:	599,816.00
Total:	$2,389,660.00

These figures do not reflect additional funds that independent investigators expended on projects in the park other than BRD and USGS.

FINANCIAL TRENDS

Since fiscal year 1992 there has been a gradual increase in the amount of funding committed to resource preservation at Denali. Comparing FY92 to FY96, nearly $700,000.00 more funding has been put into resource programs. This increase has been the result of several factors. First, the implementation of LTEM program development efforts resulted in significant increases. Second, the Servicewide professonalization initiative and the conversion of a number of seasonal employees to permanent positions improved the financial picture. Third, emergence of pressing resource issues, primarily related to the park road and Alaska Range south slope development, focused the need for additional financial resources to study resource conditions. Finally, a larger staff has permitted better approaches to obtaining funding from special fund sources. Broader diversity in the use of fund sources is apparent in 1996 over 1992.

Some financial setbacks were experienced during this period of time. $275,000.00 was removed from park funds and sent to the BRD in FY94 for management of the LTEM program. While BRD continued to apply most of that funding to Denali, some was lost to administrative costs. Similarly, BRD scientists who were working on caribou, bear, and revegetation projects at Denali lost some of their funding to overhead. FY93 was the last year of special funding for the wolf study. No base increases were given to carry the monitoring element of the wolf program forward. This had to be absorbed within existing park funds. Fortunately these losses have been offset by other increases although some implications remain for those programs.

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