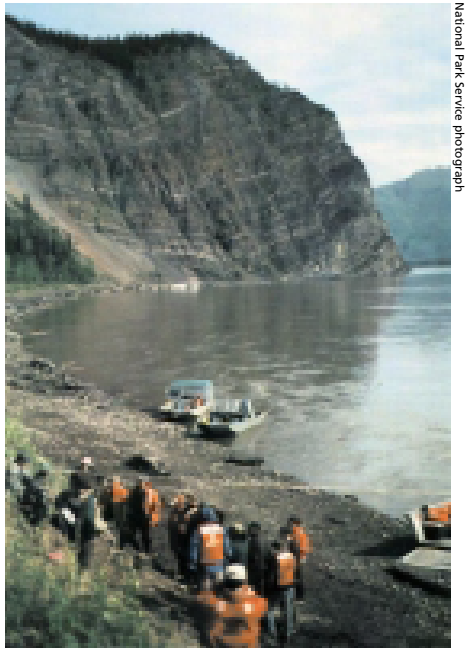
National Park Service photographs

International Mammoth Conference Visits Yukon-Charley Research Sites

This May the 3rd International Mammoth Conference drew quaternary scientists—paleontologists, biologists, geologists and archeologists-from around the world to Dawson City, Yukon Territory. The conference focused on mammoth evolution and ecology as a springboard for addressing broader issues of Pleistocene and Holocene ecology and environmental change. This year, because of its Beringian venue, it focused heavily on Beringian themes—the evolution of mammoth faunas and ecosystems, permafrost preservation, and the effects of past climate change on vegetation and animal communities. Participants attended workshops, poster and paper presentations, and field trips to key Beringian geological and paleontological sites.

One field trip brought a group of Russian, Canadian, and American scientists along with National Park Service staff to the town of Eagle and Yukon-Charley Rivers National Preserve. In Eagle, a community picnic and public lecture brought together the scientists conducting research in and around the preserve with local residents. There was a great showing of local interest among Eagle residents. Researchers talked informally about their projects, and an enthusiastic question and answer session resulted. Topics included volcanic ash stratigraphy and dating, Holocene flood history of the upper Yukon, and the archeology of the Calico Bluff site. Field trip stops included the Calico Bluff archeological site, where recent excavations have documented one of the best middle Holocene human occupations in Interior Alaska; Chester Bluff, where sediments document a series of catastrophic floods that temporarily reversed the flow of the Yukon River; and historic sites at Coal Creek and Slaven's Roadhouse.



National Park Service photograph

Field trip participants discuss archaeological surveys near Calico Bluff on the Yukon River. More than 250 species of fossils have been identified from the Upper Mississippian age Calico Bluff Formation.

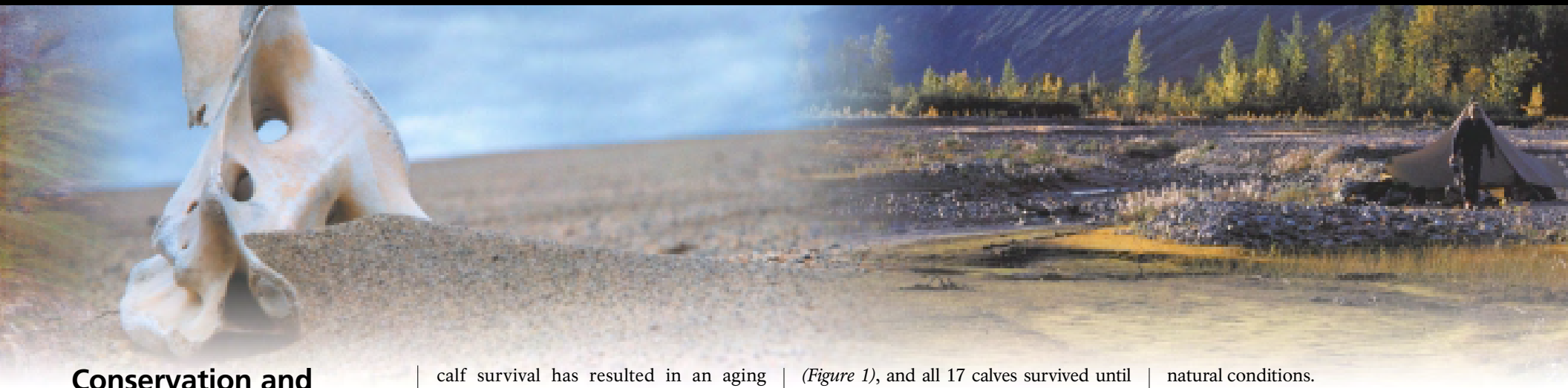
Superintendent Dave Mills also led a side trip to the preserve's Coal Creek field camp. This restored gold mining camp now serves as a year-round operations center for science and fire operations, emphasizing adaptive reuse of the historic district and landscape. Restored facilities include multiple historic cabins and offices, a mess hall, and a landing strip.

The conference field trip received wide support from a variety of funding sources and participants: the International Mammoth Conference, the Alaska Quaternary Center, Cultural Services Branch of the Yukon Tourism and Culture Department, the International Arctic Research Center, the Shared Beringian Heritage Program, Yukon-Charley Rivers National Preserve, and Tanana Chiefs Conference.

Abstracts of papers presented at the 3rd International Mammoth Conference are available at:
http://www.yukonmuseum.ca/mammoth/progabst.htm

Information about research opportunities in Yukon-Charley Rivers National Preserve can be found at:
http://science.nature.nps.gov/permits/servlet/ParkResPrefAppViewServlet?parkCode=YUCH

—by Jeff Rasic, Archeologist,
Gates of the Arctic National Park and Preserve,
Yukon-Charley Rivers National Preserve



Conservation and Complexity: The Chisana Caribou Herd

The Chisana caribou herd, inhabiting eastern Wrangell-St. Elias National Park and Preserve (WRST) and neighboring Yukon Territory, may be the only herd of the woodland subspecies, *Rangifer tarandus caribou,* found in Alaska. Preliminary genetic analyses indicate that Chisana caribou may be distinct from caribou found throughout the rest of Alaska.

Yukon Department of Environment, Alaska Department of Fish and Game, and WRST began a cooperative research program on the herd in 1987. The Chisana herd has declined from about 1,900 animals in 1988, to only about 315 in 2002. Although all licensed hunting of the herd was stopped in 1994, the herd has continued to decline. High mortality of calves (sometimes 100%) was observed, and is believed to be due to predation *(Farnell and Gardner 2002)*. The vast majority of these losses occur on preserve lands that contain most of the calving grounds. Low calf survival has resulted in an aging population, with increased adult mortality and reduced reproductive rates, further hastening the decline.

Last year the Yukon government afforded the herd its highest level of protection under the Yukon Wildlife Act. In spring of 2003, the Yukon Department of Environment implemented a captive rearing program adjacent to WRST—20 females were captured and radio-collared, 17 of which were pregnant. The females were contained in "predator proof" pens *(Figure 1)*, and all 17 calves survived until released at about two to four weeks of age. Within a few days, the animals returned to their native summer range in WRST. The National Park Service, Alaska Department of Fish and Game, and United States Geological Survey-Biological Resources Division have developed a monitoring program to track the herd, as well as determine the effectiveness of the captive rearing program. As of late July, the released captives have shown less than 50% mortality rate among calves, an improvement over natural conditions.

The plight of the Chisana herd presents a complex policy issue for the Park Service. NPS management policies are specific in maintaining native populations, natural processes, and genetic diversity. ANILCA specifies maintaining "healthy" wildlife populations. The Chisana herd, a native species that is genetically distinct, is declining due to natural processes (weather impacts and predation by native predators), calling into question whether a "healthy" population and genetic diversity are being maintained.

National Park Service photographs

Figure1.

Preliminary discussions with the U.S. Fish and Wildlife Service suggest that the herd may warrant protection under the Endangered Species Act. If listed, the Chisana herd would constitute the only terrestrial mammal listed under the Endangered Species Act in Alaska, and would occur primarily on NPS lands. Furthermore, such a listing will instigate discussions of predator control on NPS lands since NPS management policies provide for predator control as part of an approved recovery plan for threatened and endangered species.

The Yukon Territory school system has a website on the captive rearing program at: **http://www.yesnet.yk.ca/schools/stelias/caribou/**

Farnell, R. and C. L. Gardner. 2002. *Status of the Chisana caribou herd: 2002.* Department of Environment, Government of Yukon, Whitehorse, Yukon, Canada. 22pp.

-by Mason Reid, Wildlife Biologist, Wrangell-St. Elias National Park and Preserve

Wolverines' Secrets Soon to Be Uncovered

In 1961, Frank and John Craighead built and placed the first radio-transmitting collar on Marian, a female grizzly bear in Yellowstone National Park, in order to learn the secrets of her daily wanderings. Over 40 years later, home-made radio transmitters have yielded to satellite transmitters — small, high-tech transmitters that send location (latitude and longitude coordinates) and activity information about an animal to satellites that process the data and then e-mail the information to biologists. Technological improvements of satellite transmitters have reduced the weight of the transmitters from nearly 25 pounds (11 kg) to less than 9 ounces (257 gm), for the current wolverine design.

National Park Service photograph

Satellite-transmitting radiocollar placed on wolverines.

National Park Service photograph

Wolverine habitat in the upper Noatak valley.

National Park Service photograph

Tranquilized wolverine being fitted with a satellite radiotransmitter.

As part of a larger ecological study of wolverine distribution and survival, biologists tested prototype satellite transmitters to track the movements of ten wolverines (7 males, 3 females) in the Noatak National Preserve between 1999 and 2002. During the 113 days that the transmitters operated, 617 locations were recorded for these ten wolverines. For comparison, during the same three years, researchers were only able to obtain 150 locations of these same wolverines by observing them from aircraft. Inclement weather, distance from Kotzebue, and short, winter days all contributed to the limited information by traditional observation from aircraft.

Ultimately, using a small number of satellite-telemetered wolverines, biologists will be able to characterize the movements and home ranges of wolverines throughout the valley. Although technology will never substitute for traditional field observations, satellite transmitters may prove to be the best method to study the movements of these far-ranging, secretive carnivores.

-by Brad Shults, Wildlife Biologist and Pilot, Western Arctic National Parklands;

Kyran Kunkel, Turner Endangered Species Fund, Bozeman, Montana; and

Fredrik Dalerum, Stockholm University, Stockholm, Sweden

High Whale Numbers Found at Glacier Bay National Park and Preserve

A record number of humpback whales were in Glacier Bay National Park this summer, and biologists recorded a rare sighting of three generations of related whales.

Since 1985, park biologists have monitored humpback whale populations in Glacier Bay and nearby Icy Strait. This year's survey estimates at least 40 whales in Glacier Bay and another 20 in Icy Strait, with movement between the areas, according to NPS whale biologists Chris Gabriele and Janet Doherty. Humpback whales are distributed throughout Glacier Bay, with high concentrations seen recently in three areas: the Bartlett Cove/Point Carolus area has about two dozen whales; the Upper Sitakaday Narrows has about 10 whales; and the Beartrack Cove area has three to four whales.

Whales entered Glacier Bay early this year, arriving into the lower bay in mid-May. By June 12, 30 whales had been at the entrance to the bay. "All observations to date suggest that the marine mammal and bird activity this year is due to the high abundance of capelin smelt, a small schooling fish," Gabriele said.

Whales return to southeast Alaska each summer after a 1,500-mile migration from Hawaii. Among those back this year are four related whales, representing three generations. A whale designated as #581 was seen in June in Icy Strait with a calf; her 16-year-old daughter (#1042) was also seen nearby with her calf. Collaborative studies with other researchers revealed that the 16-year-old along with other whales spent time in Tenakee Inlet, southeast of Glacier Bay in October and November 2002, presumably eating herring that overwinter there.

A 13-knot speed limit has been in place in lower Glacier Bay since late May to reduce whale disturbance and decrease the risk of whale-vessel collisions. Given the number of whales in the bay and the fact that they are feeding in mid-channel, Park Superintendent Tomie Lee has requested vessels to use extra caution while navigating through any areas where whales are likely to be. The whale monitoring effort is a long-term project of park biologists, with significant assistance from volunteers and several vessel operators who contact the park with sightings.

—Chris Gabriele, Wildlife Biologist, Glacier Bay National Park and Preserve

Editor's note: An article by Chris Gabriele and others on underwater acoustic monitoring research of humpback whale songs at Glacier Bay appeared in the fall 2002 issue of Alaska Park Science, available at **http://www.nps.gov/akso/AKScience2002.pdf**

National Park Service photograph

National Park Service photographs

On-Line Volcano Information

The Alaska Volcano Observatory (AVO) has an on-line atlas and database of photos of selected Alaska volcanoes, including many in national parks. The Alaska Volcano Observatory is a joint program of the U.S. Geological Survey, the Geophysical Institute of the University of Alaska Fairbanks (UAFGI), and the State of Alaska Division of Geological and Geophysical Surveys. AVO was formed in 1988, and uses federal, state, and university resources to:

- conduct monitoring and other scientific investigations in order to assess the nature, timing, and likelihood of volcanic activity;
- assess volcanic hazards associated with anticipated activity, including kinds of events, their effects, and areas at risk; and
- provide timely and accurate information on volcanic hazards, and warnings of impending dangerous activity to local, state, and federal officials and the public.

Photograph courtesy of R. McGimsey, 1990

The following links will take you to a variety of useful databases:

Atlas
http://www.avo.alaska.edu/avo4/atlas/atlas.htm

Photos
http://geopubs.wr.usgs.gov/dds/dds-39/
http://geopubs.wr.usgs.gov/dds/dds-39/captions.txt

Catalogs of volcano-related earthquake events
2002: **http://geopubs.wr.usgs.gov/open-file/of03-267/**
2000 - 2001: **http://geopubs.wr.usgs.gov/open-file/of02-342/**
1994 - 1999: **http://geopubs.wr.usgs.gov/open-file/of01-189/**

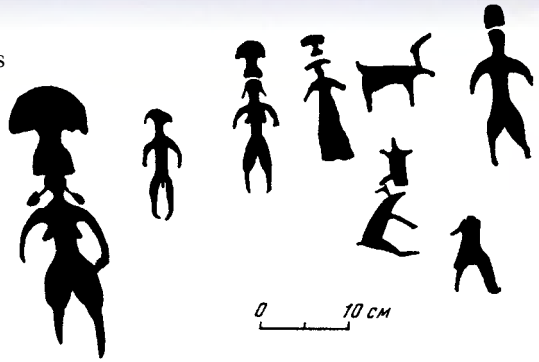
Mysteries in the Rocks of Ancient Chukotka

In 1965, a geologist conducting work in northern Chukotka discovered a series of petroglyphs on rocky cliffs along the Pegtymel' River. The geologist had stumbled upon the northernmost petroglyphs known to prehistorians. On his return to Magadan, he reported his find to Nikolai N. Dikov, a director of archeological research in the Russian Far East. When Dikov visited the site in 1967 with a crew of archeologists and artists, they surveyed the area, conducted test excavations at the occupation sites, and recorded the petroglyphs.

Dikov's research culminated in the publication *Naskal'nye Zagadki Drevnei Chukotki (Petroglify Pegtymelia)*, in which he explores the origins of these intriguing images—who made them, when, and why. The author divides the petroglyphs into five canons based on the style of art, then compares the canons with art from other regions of Eurasia. Dikov utilizes the archeological and ethnographic data to

attempt to date the petroglyphs.

A large number of the petroglyphs are of swimming deer pursued by spear-wielding men in boats. These undoubtedly portray the taking of migrating deer as they swam across the Pegtymel' River. Other scenes depict whaling, bear hunting with dogs, and strange mushroom figures, which appear to be human females with mushroom headdresses.



Dikov includes excellent illustrations of all 104 petroglyph groups and about three dozen photographs of selected groups. Anyone interested in rock art will be intrigued by this book, which has been published in translation by the Beringia Heritage International Park Program, National Park Service, 240 West Fifth Avenue, Anchorage, Alaska 99501, under the title *Mysteries in the Rocks of Ancient Chukotka (Petroglyphs of Pegtymel')*.

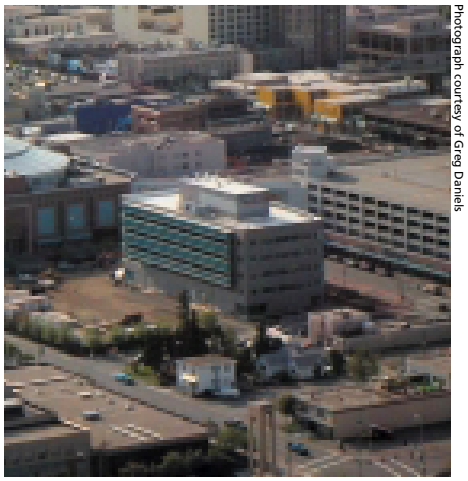
-by Richard L. Bland,
Museum of Natural History,
University of Oregon, Eugene, Oregon

It's Easy To Be Green

The National Park Service's Alaska Regional Office has moved into its new location in downtown Anchorage. The new mailing address and contact information are: 240 West 5th Avenue, Room 114, Anchorage, AK 99501; Main Phone: 907-644-3510. A complete listing of direct phone numbers for individual employees is on our internet site at: **http://www.nps.gov/akso.**

The office building houses about 225 Park Service employees who provide technical and administrative support and oversight for the 16 national parks in Alaska. Information about visiting Alaska's national parks and other public lands is still available at the Alaska Public Lands Information Center on 4th Avenue. Questions about all your public lands in Alaska can be directed to them at 271-2737.

The new building is also green. Green in that many new features in the building utilized recycled materials. For example, fiberboard in the elevators is made from sunflower seed hulls, recycled newspapers, and bio-based resins. Fiberboard made from recycled newspapers and bio-safe resins are incorporated into the lobby.



Photograph courtesy of Greg Daniels

Timber grass bamboo was used in the elevator cabs and in the directorial and conference rooms. Unlike hardwood trees, which require more than 120 years to grow to maturity, bamboo grows to maturity in less than six years and is a renewable resource. Bamboo can be harvested from the same plant multiple times. Timber grass bamboo is not a food source or habitat for pandas.

All the carpeting in the building is made from fibers with recycled content, and carpets were produced using 71% less water than traditional methods. The ceramic tile entry is made with 70-75% recycled solid waste—a combination of post-consumer recycled glass, post-industrial grinding paste from the computer industry, and post-industrial mining waste from the sand and gravel industry. In addition, office lighting contains occupancy sensors that turn lights on or off, saving on energy use and cost.

-Communications Office, Alaska Region

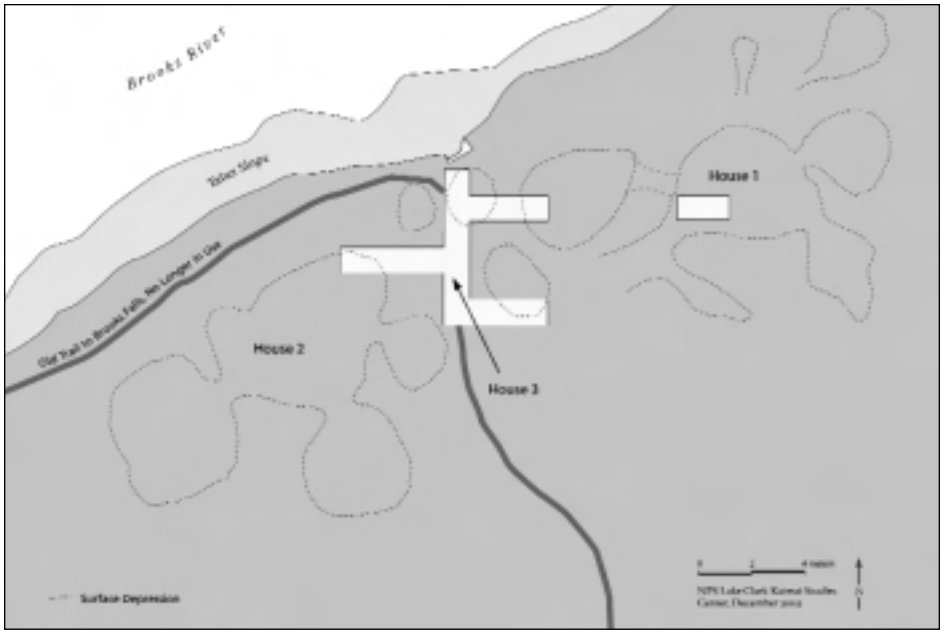


Figure 2. (above) Figure3. (below)

National Park Service photograph

Working on the Edge: the Brooks River Cutbank Archeological Data Recovery Project

The Brooks River is the heart of Katmai National Park and Preserve. Brooks Camp is the gateway to the geologically significant Valley of 10,000 Smokes and the home of many of Katmai's famous brown bears. The area is also a National Historic Landmark and an archeological district consisting of 19 different sites. People have made their homes along the Brooks River for at least 4,500 years, and many of the descendants of earlier Brooks River residents still live on the Alaska Peninsula. Descendant communities and park archeologists share an interest in protecting these important archeological sites.

The Brooks River Cutbank site has been steadily eroding as the river meanders *(Figure 1)*. The site is fairly recent, dating to the Bluffs Phase (A.D. 1450-1800). In 1999 NPS archeologists discovered human remains eroding from the river bank. In compliance with federal law and NPS policy, archeologists contacted culturally affiliated Alaska Native groups through the Council of Katmai Descendants. Archeologists and the council agreed on a plan for the disposition of the human remains and an excavation at the site that would address questions of mutual interest. Both were interested if the the burial could be linked stratigraphically to either of the two nearest houses, allowing researchers to learn more about the individual's life, and whether the houses were built in the same multi-room style as contemporaneous houses elsewhere on the Alaska Peninsula and Kodiak Island. In 2002, archeologists began excavations designed to answer these questions *(Figure 2)*.

The site held surprises. Between the two houses, visible on the surface, was a third older house. In addition, the burial appears to be more recent than all three of the houses, although further excavation in 2003 will provide more information. The newly discovered house had an ingenious deep cold-trap entrance tunnel. Within the third house, archeologists found incised pebbles *(Figure 3)* lightly etched with stylized human figures. The pebbles resemble those commonly found on Kodiak Island, suggesting a long-distance connection.

Further scientific investigations are in progress at the Cutbank site. Geologists are currently identifying the volcanic tephras found in the soils, and archeologists conducted a second excavation season. In the summer of 2003, archeologists studied the third house, its chronological relationship to the two nearby houses, and cultural connections across the region. Erosion cannot be stopped, but through archeological investigation and partnering with local communities, we can learn about prehistoric lifeways before the evidence vanishes.

—by Dale M. Vinson and
Barbara E. Bundy,
Lake Clark-Katmai Studies Center

National Park Service photograph

Figure 1.

Alaska Park Science

National Park Service
Alaska Support Office
240 W. 5th Avenue
Anchorage, Alaska 99501

National Park Service photograph

Cindy Williams, an undergraduate anthropology student at University of Alaska Anchorage, searches for small artifacts.

Top-Right: Black chert at a prehistoric chert quarry on Wrench Creek.

National Park Service photograph