



KNIFE RIVER INDIAN VILLAGES NATIONAL HISTORIC SITE



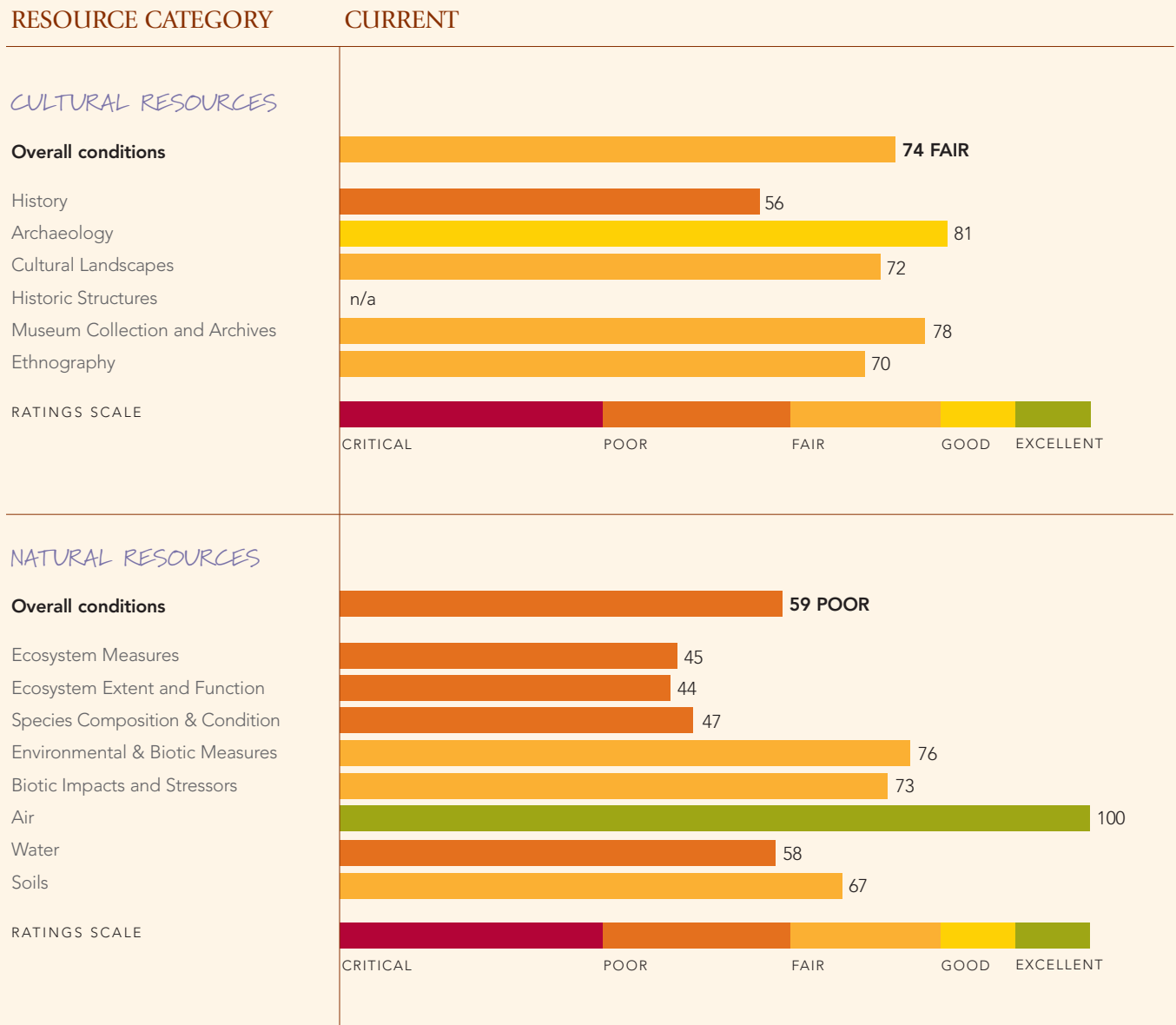
Several Hidatsa and Mandan villages once stood near the confluence of the Knife and Missouri rivers near present-day Stanton, North Dakota. In 1804, when Lewis and Clark visited the area, an estimated 4,000-5,000 people inhabited more than 200 earthlodges. The Corps of Discovery built Fort Mandan on the eastern shore of the Missouri River, downstream of the confluence with the Knife River, and spent a frigid winter in the company of the villages'

inhabitants. Historical evidence also suggests that Meriwether Lewis and William Clark met Sacagawea and her fur trader husband Toussaint Charbonneau in this area.

Although the park's connection to the Lewis and Clark Trail (and to Sacagawea) is well established, Congress created Knife River Indian Villages National Historic Site in 1974 to focus on the cultures and lifestyles of the Plains Indians. As a result, the park's interpretation

In consultation with members of the Three Affiliated Tribes and a Park Service historical architect, the park designed and built an earthlodge replica similar to those used by the Hidatsa, Mandan, and Arikara peoples.

Note: When interpreting the scores for natural resource conditions, recognize that critical information upon which the ratings are based is not always available. This limits data interpretation to some extent. For Knife River Indian Villages National Historic Site, 50 percent of the information requirements associated with the methods were met.



The findings in this report do not necessarily reflect past or current park management. Many factors that affect resource conditions are a result of both human and natural influences over long periods of time, in many cases before a park was established. The intent of the Center for State of the Parks® is to document the present status of park resources and determine which actions can be taken to protect them in the future.



CHRIS ALLAN

Knife River Indian Villages is a small, protected property in a large region full of agricultural production and intense resource exploitation such as mining.

program focuses on the region's tribal groups—the Hidatsa, Mandan, and Arikara—while the movement of Lewis and Clark is one facet of the larger interpretation program.

Center for State of the Parks assessment of Knife River Indian Villages National Historic Site (Knife River) indicates that the park's cultural resources are in fair condition, with an overall score of 73 out of 100. Archaeology and museum and archival collections each scored 78, while history was the park's lowest scoring category at 56 out of 100.

Natural resources conditions rated a poor overall score of 59 out of 100, although it must be noted that this score was derived with just half of the resource information needed to completely fulfill Center for State of the Parks methodology requirements. Available information as well as identified gaps in natural resources condition information are discussed below.

KEY FINDINGS

- Park staff think holistically about the landscape as they strive to protect cultural resources in an environment that most closely mimics the surroundings as they were when the Hidatsa and Mandan inhabited their earthlodge villages. Often cultural resources goals closely reflect natural resources goals such as the need for prairie restoration in parts of the park.
- Invasive species, riverbank erosion, and a fungus that is killing trees threaten the park's cultural landscape. Archaeological resources are also at risk as riverbanks and the artifacts they contain erode into the river. Funds are needed to address these resource threats.
- The park has a state-of-the-art storage facility and an array of interesting museum objects and archives such as Plains Indian clothing, ceremonial objects, ceramics, historical documents, and photographs, but needs a full-time curator to properly care for the current collections, manage future acquisitions, and create museum exhibits.
- Knife River is a small, protected property in a large region full of agricultural production and intense resource exploitation such as mining. Four surface-mining operations, six coal-fired electric generation plants, and one coal gasification plant are within a 50-mile radius of the park boundary. Additional coal-bed methane operations in Wyoming and Montana pose potential threats because of increased nitrogen oxide emissions resulting in increased nitrogen deposition.



CHRIS ALLAN

The park's museum collection includes Plains Indian clothing.



Round depressions in the ground mark where earthlodges once stood.

CULTURAL RESOURCES

ARCHAEOLOGY—EXTENSIVE WORK UNCOVERS IMPRESSIVE RESOURCES

Between 1978 and 1981, researchers from the University of North Dakota conducted an intensive, park-wide archaeological survey of Knife River, making this park one of the few to have had such work. The park's 1,758 acres contain 65 archaeological sites and some of the best preserved examples of the northern Plains Indian earthlodge villages that once numbered in the hundreds along the Missouri River in North Dakota and South Dakota. Regrettably, dam construction, inundation with water, and erosion have destroyed many similar archaeological sites since the end of World War II when much of the Missouri River was dammed for flood-control. Others have been lost because of

agricultural use, construction, and industrial uses of the terraces along the river. As a result, Knife River affords an unequalled opportunity to visit the few surviving village sites of the Hidatsa and Mandan people.

The park contains three primary village sites, each with its own history and period of occupation. Although none of the original earthlodges remains, round depressions in the ground mark where they once stood; these are seen even more clearly in aerial views. The Big Hidatsa, occupied between 1600 and 1845, was the largest of the fortified villages along the Knife River. Today, 113 house depressions mark the locations of the traditional wood and sod homes that once stood there. The Lower Hidatsa village, inhabited from 1525 to 1780, contains 51 house depressions. The Sakakawea village site contained between three and four dozen

earthlodges, and occupation at the site lasted from the 1790s to 1834.

The park's archaeological resources are generally in excellent condition, and staff give first priority to archaeological resource preservation and interpretation. Archaeological sites are well documented, the park's museum collections contain an abundance of artifacts for future study, and vandalism and looting are almost unknown. However, there are some persistent threats to the park's archaeological resources. The annual freeze and thaw cycle and spring rains expose artifacts near the ground surface. Fragments of animal bones, pottery shards, stone tools, beads, and even human bones emerge from the earth on a regular basis. Burrowing rodents also unearth artifacts at village sites, destroying intact archaeological deposits and redepositing displaced artifacts from their original contexts. Attempts to control the animals have been ineffective.

Erosion along the banks of the Knife River presents an even greater threat to the park's archaeological resources. One of the primary sites, the Sakakawea Village Site, is located on the banks of the Knife River and was heavily affected by erosion before the creation of the park. Since that time the bank has been stabilized and most of the impact has been limited. The Taylor Bluff village was also affected by severe erosion and received a similar treatment. The other two major village sites are not close to the river, but erosion still threatens other sites and has the potential to do great damage if it is not corrected.

The park needs funding for riverbank stabilization or other appropriate measures to prevent continuing loss of archaeological sites to erosion. Full funding to support a regional archaeologist to assist Knife River is also key to ensuring archaeological resources continue to

The park's museum collections contain an abundance of artifacts.

RESOURCE MANAGEMENT HIGHLIGHTS

- In consultation with members of the Three Affiliated Tribes and a Park Service historical architect, the park designed and built an earthlodge replica. Completed in 1994, the earthlodge emulates the structures built by the area's former inhabitants, with some modern improvements that are hidden from view. It incorporates a wooden palisade entrance, Douglas fir support poles, sweat lodge, fire pit, and cache pit. From April to November, the sod-covered structure is furnished with a wide assortment of traditional housewares, including bison skin blankets, beds, tools, weapons, ceramic pots, and cooking utensils, offering a glimpse into the traditional lives of Hidatsa, Mandan, and Arikara Indians.
- The park uses combinations of herbicide treatment, mechanical methods, native seed planting, and prescribed burns to restore native communities to a state representative of the landscape and vegetation that would have been familiar to the Knife River Indians (and to Lewis and Clark) in the early 1800s. For example, staff use flea beetles in combination with herbicides to control leafy spurge infestations.
- A team led by the Park Service's assistant regional curator completed an inventory of the museum collection in August 2005.
- The park uses a global positioning system (GPS) unit to record project information such as locations of invasive species, and a plotter has allowed the park to make maps, diagrams, and trailhead informational exhibits.



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receive excellent care. At present there is no funding for future archaeological work in the park.

CULTURAL LANDSCAPES—INVASIVE SPECIES AND DISEASES POSE THREATS

Cultural landscapes at Knife River include one parent landscape that encompasses the entire park and four smaller landscapes specific to the park's larger archaeological sites: Big Hidatsa, Lower Hidatsa, Sakakawea, and Taylor Bluff. If approved, the cultural landscape and its features could be listed in the National Register of Historic Places. Threats to cultural landscapes are the same at those affecting archaeological resources: animal burrowing and riverbank erosion.

A critical component of Knife River's cultural landscape program is a concerted effort to return the park to a native prairie representative of the landscape and vegetation that would have been familiar to the Knife River Indians (and to Lewis and Clark) in the early 1800s. Persistent invasive

plants have proved difficult to control, but the park continues to use combinations of herbicide treatment, mechanical methods, native seed planting, and prescribed burns to restore native communities. Funds are needed to support these treatments, as the cost of materials such as native seed and herbicides increases each year.

In addition to invasive plant species, a tree fungus has emerged as a serious threat to the park's cultural landscapes. The fungus (*Pereniporia fraxophila*) is a parasite that attacks the park's green ash trees and ultimately kills them, leaving large stands of dead trees. About 450 acres of the park's forest contain green ash, and the fungus affects almost all of these acres. In some stands the infestation rate has reached 100 percent, compared with the state average of about 20 to 30 percent. Smooth brome (*Bromus inermis*), an invasive species, is the major ground cover in these forest areas and limits the growth of new tree seedlings. Brome removal and additional tree plantings are needed to replace the failing and diseased trees.

Park staff use a variety of treatments, including prescribed burns, to restore native prairies and cultural landscapes.



HISTORY—PARK INTERPRETS MANY THEMES

Because there are no historic buildings within the park boundaries and because the built environment of the Knife River Indians now consists of archaeological remnants, park interpreters must be creative when interpreting park themes for visitors. They use published works and museum exhibits, educational films, tour presentations, brochures, and an impressive reconstructed earthlodge. The park's web site includes extensive information on a variety of topics, online lesson plans make the history of the Knife River Indians accessible to educators and students, staff offer on-site and off-site school programs, interpreters give talks and lead visitors on walks around the park, and the annual Northern Plains Indian Culture Fest includes programs and demonstrations such as hide tanning and beadworking. In 2005, the park conducted 1,061 interpretive programs and reached 30,268 visitors; the number of programs offered has increased over the past ten years.

The bulk of the interpretive program focuses on the lifeways of the Knife River Indians before Europeans and Euro-Americans arrived, bringing rapid and irreversible change. Interpretation also focuses on trade networks developed with fur companies, consequences of smallpox, archaeological resources, and early explorers and writers such as George Catlin, Karl Bodmer, Prince Maximilian, and others. The park also recognizes its importance as part of the legacy of the Lewis and Clark Expedition. Throughout the year, the park hosts a number of annual special events designed to draw visitors and to teach the public about various aspects of park significance. These annual events, along with the park's Northern Plains Indian Culture Fest in July, offer opportunities for American Indian speakers and other experts to address historical questions.



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MUSEUM COLLECTIONS AND ARCHIVES—IMPRESSIVE COLLECTION IS WELL PROTECTED

Knife River's archive and museum collection include more than 200,000 archaeological artifacts such as ceramics, lithics, bone, and beads, more than 2,000 biological specimens such as insects and plants, 165 ethnological items such as Plains Indian dress and ceremonial objects, historical documents and photographs, and a 1,500-volume library. Most of the collections are stored in a state-of-the-art facility located in the basement of the visitor center.

Although the park employs a museum technician for a period each year, a full-time curator is needed to properly care for the current collections, manage future acquisitions, and create museum exhibits. A full-time curator could also begin the process of digitizing the

The interior of the park's earthlodge is furnished with traditional housewares.

Knife River is in need of a full-time curator to expand the scope and complexity of museum exhibits, care for the current collections, and manage future acquisitions.



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collection data and images, thus making them available to the public via the Internet, which would extend the collection's resources to a much wider audience.

Because the museum exhibit area is modest in size, only a small fraction of Knife River's holdings can be exhibited at a given time. Temporary exhibits are developed on a regular basis by the museum technician and the interpretive staff, but a full-time curator could expand the scope and complexity of the exhibits.

ETHNOGRAPHY—TRADITIONALLY ASSOCIATED PEOPLES HAVE MUCH TO OFFER

Compared to archaeological resources at Knife River, the park's ethnographic resources are not well known. Published works by Alfred Bowers,

Gilbert Wilson, and others offer a good, ethnographic overview, but one that is far from complete. These publications also provide park interpreters with information about the Hidatsa, Mandan, and Arikara peoples, but additional ethnographic studies would add to current knowledge.

Knife River Indian Villages National Historic Site, in conjunction with Fort Union Trading Post National Historic Site and Theodore Roosevelt National Park, is participating in an ethnographic study scheduled to be completed by the end of 2006. The study will thoroughly examine eight Great Plains tribes (including the Hidatsa, Mandan, and Arikara), including archaeological and historical details, resource use and significance, and testimony from tribal representatives about the spiritual importance of the land. Much of the report will be based on

interviews and field studies with representatives of all of the associated tribes who are familiar with plant, animal, and mineral resources and even the spiritual elements of the landscape.

The fact that Knife River Indians used many plants for food and ceremonial and medicinal purposes is well known. What is lacking is an authoritative study that combines on-the-ground surveys of remnant native species and interviews with tribal experts who can explain traditional uses among tribal peoples. No such study exists for the Upper Missouri River watershed or for tributary environments such as the Knife River corridor. This project is urgent because with each passing year traditional knowledge is lost. Fortunately, an ethnobotanical study is scheduled to begin during the fall of 2006. Tribal representatives are uniquely qualified to expand the range of such a study to include ethnogeography, ethnozoology, and ethnominalogy. There is also a need to expand the number and diversity of oral history interviews with members of the Mandan, Hidatsa, and Arikara Nations. The Tribal Elders Council is doing some of these now, but additional funding from the National Park Service would benefit the project.

To fulfill the park's mission, interpreters must continue to focus considerable attention

on ethnography and on building and maintaining relationships with traditionally associated peoples such as the Three Affiliated Tribes of the nearby Fort Berthold Indian Reservation. Many of the sites at Knife River are important to the members of the Three Affiliated Tribes, the descendants of the original inhabitants of the earthlodge villages within the park. Sustained effort is necessary to ensure that associated peoples are active participants in park policy and development.

The park's interpretive division works closely with many tribal members and with the Three Tribes Museum; most of the presenters at the park's special events are tribal members, and two tribal members who are professors at Fort Berthold Community College are writing a new teacher's guide for the park.

The park needs to continue efforts to create stronger relationships with the Lakota, Dakota, Ojibwe, Assiniboine and other people with connections to the area. In addition, both park officials and tribal representatives have expressed frustration that the park does not count any American Indians among its permanent employees. Park managers would also like to increase the number of American Indians on the seasonal staff. Efforts are being made to remedy the situation.



CHRIS ALLAN

Exhibits at the park's visitor center interpret American Indian themes, and park managers are making efforts to attract American Indians as permanent employees.



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Park staff strive to protect cultural resources in an environment that most closely mimics the surroundings as they were when the Hidatsa and Mandan inhabited their earthlodge villages.

NATURAL RESOURCES

RESOURCE MANAGEMENT—CULTURAL AND NATURAL RESOURCES INTERSECT

Natural resources are important components of Knife River Indian Villages National Historic Site. The environment, location, and resources were primary reasons why the Mandan, Hidatsa, and Arikara settled and lived in the area for hundreds of years. There is a natural intersection between the park's cultural resources management and its natural resources management. Staff think holistically about the landscape as they strive to protect cultural resources in an environment that most closely mimics the surroundings as they were when the Hidatsa and Mandan inhabited their earthlodge villages.

Funding limitations prevent the park from hiring permanent natural resources manage-

ment staff. Instead, the park's law enforcement/resource management ranger, facility manager, and chief of interpretation work together with seasonal staff to address natural resources issues such as prescribed burns, non-native plants, and inventory and monitoring. With the increasing complexity of resource management concerns and mandates, the need for a dedicated resource manager is increasing. A fire management plan and a prairie management plan, scheduled for completion in 2006 and 2007, respectively, will help guide natural resources management. A resource stewardship plan that includes these and other topics is also critically needed, and will be completed when national and regional guidelines are determined.

Often cultural resources goals closely reflect natural resources goals such as the need for prairie restoration in parts of the park.

Occasionally, staff must find a balance between cultural resources goals and natural resources goals when management prescriptions vary. For example, prescribed burns can help promote the reestablishment of native vegetation and the cultural landscape when properly timed, but they can also affect bird, reptile, and amphibian habitat and kill invertebrate communities. Park staff must find an ecological balance, which they pursue based on research and monitoring, expert recommendations, scientific approaches, and a holistic view of park ecosystems.

LAND USE—POTENTIAL NEARBY OIL AND GAS DEVELOPMENT POSES A THREAT

Before Knife River Indian Villages became a national park, regional grasslands and riparian woodlands were used for timber harvesting, grain crop cultivation, haying, and grazing. Across North America, prairie habitat has decreased more than 99 percent since Euro-American settlement. Today, Knife River represents a small, protected property in a large region full of agricultural production. In spite of intensive surrounding land use, parklands still include remnants of the historic prairie ecology and rare examples of Missouri River bottomland and terrace landforms.

The park stands in dramatic contrast to examples of aggressive resource exploitation in the surrounding region. The demand for inexpensive electricity has led to the strip mining of lignite coal near the park for use in coal-fired electrical generating and gasification plants. Four surface-mining operations, six electric generation plants, and one coal gasification plant lie within a 50-mile radius of the park boundary.

Additional proposed coal-bed methane development in Wyoming and Montana would result in a significant increase in regional nitrogen oxide emissions, which would likely translate into increased nitrogen deposition in the Northern Great Plains parks. Grasslands can be quite sensitive to nitrogen deposition, and com-

munity composition could be affected. Additionally, an increase in nitrogen deposition can enhance the establishment and expansion of invasive plants, underscoring the importance of investigating the effects of nitrogen deposition.

NON-NATIVE PLANTS—STAFF BATTLE INVADERS

Primary natural resource management concerns at Knife River are the presence of non-native plants, lack of natural vegetation regeneration as a result of competition from the non-native species, monoculture in the prairies, tree diseases, and riverbank erosion. Two main research needs highlighted by managers are: monitoring prescribed burn areas to document the success of prairie regeneration and non-native plant control; and investigating ways to keep white-tailed deer out of the park to reduce their grazing effects on vegetation.

To control non-native plants and encourage prairie regeneration, staff mow certain fields, burn infested areas, apply herbicides, and reseed some areas. The park implemented a pre-

Reseeding areas with native plants is one strategy the park uses to encourage prairie regeneration.



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The park's riparian areas provide critical wildlife habitat.

scribed fire plan in 1997 and has conducted regular burns since then; a new prescribed fire plan is currently being revised. The effects of fire on native and non-native species are complex. While fires can help promote diverse prairie communities, they must be appropriately timed or they can actually aid the spread of certain non-native plants. As mentioned previously, fires can also be detrimental to some wildlife habitats. Fire is a natural part of the prairie ecosystem, however, and if managed correctly, it will ultimately create a healthier balance.

Knife River partners with the Northern Great Plains Exotic Plant Management Team to control invasive plants, but most of the treatment responsibility falls on park staff. Current treatments of leafy spurge (*Euphorbia esula*), one of the park's most problematic invasive species, have included both chemical and biological

controls. Additional funds are needed to support this work, as controlling invasive plants is an ongoing battle and the cost of control agents increases annually.

Each spring, floods transport invasive species seeds to the park. In response to this, park staff monitor the riverbanks and control new infestations before they spread. Additionally, neighboring landowners are encouraged and mandated by law to use biological and chemical treatments to manage non-native plants on their land.

RIPARIAN COMMUNITIES—SPECIAL HABITAT IMPORTANT FOR BIRDS

Riparian areas provide critical habitat, especially for birds. More than 140 bird species have been recorded at Knife River and 82 other species are suspected to be in the park, a fact largely attributed to the diversity of habitats, including complex, mature, riparian areas.

Some areas of the forest have been cleared to establish a wildland fire barrier and to address public safety concerns. To minimize disturbance of bird habitat, this effort is being completed in small terrestrial tracts using a mosaic approach. As yet, there is very little information about the success of the various restoration efforts at Knife River. In part, this is because many of the activities are recent and there is limited funding for monitoring.

Riverbank erosion is a concern at Knife River, from both a natural resources and a cultural resources perspective. Although the Knife River does not have any dams that would contribute to erosion, it is affected by backflow from the Missouri River when the Garrison Dam power plant is generating at a high volume. A study is currently under way to evaluate riverbank erosion at the park and determine what is natural and what can be attributed to human causes.