U. S. Fish and Wildlife Service

Fort Niobrara

National Wildlife Refuge

Draft Comprehensive Conservation Plan and Environmental Assessment

Fort Niobrara
National Wildlife Refuge

Draft
Comprehensive Conservation Plan
and Environmental Assessment

April 1999

Prepared by
U.S. Fish and Wildlife Service
Ft. Niobrara/Valentine NWR Complex
HC14, Box 67
Valentine, NE 69201

and

U.S. Fish and Wildlife Service
Land Acquisition and Refuge Planning
P.O. Box 25486, DFC
Denver, CO 80215

Table of Contents

Summary

Fort Niobrara National Wildlife Refuge (NWR) is 19,131 acres in size and located along the Niobrara River in north-central Nebraska. The Refuge is a unique and ecologically important component of the National Wildlife Refuge System (System) which includes more than 513 refuges totaling approximately 93 million acres across the United States. Fort Niobrara was established by Executive Order in January, 1912 as a "preserve and breeding ground for native birds." Its purpose was expanded later that same year to include the preservation of bison and elk herds representative of those that once roamed the Great Plains. The unusual assemblage of plant communities (Sandhills Prairie, Mixed Prairie, Rocky Mountain Coniferous Forest, Eastern Deciduous Forest, and Northern Boreal Forest) support a rich diversity of wildlife generally unchanged from historic times.

Comprehensive conservation planning is being done for the Refuge to guide management over the next 15 years to ensure progress is made toward the mission and goals of Fort Niobrara and the Refuge System. This planning effort provides opportunity for interested people, governments, and private organizations to give input on future management of the Refuge. This Plan will provide clear goals and objectives for management of Refuge habitats, wildlife, threatened and endangered species, cultural and paleontological resources, compatible public uses, and partnerships, along with implementation strategies, and recommended staffing and funding. The completed Plan will also meet the planning requirement of the National Wildlife Refuge Improvement Act enacted by Congress in 1997.

This Draft Comprehensive Conservation Plan (CCP) considered four alternatives for management of Fort Niobrara National Wildlife Refuge. Each of the alternatives was evaluated for environmental consequences in accordance with the National Environmental Policy Act (NEPA). The alternatives are summarized below.

Current Management (No Action): This alternative would continue current management programs of the Refuge. Winter population levels of 350 bison, 70 elk, and 250 Texas longhorns would be maintained and receive primary consideration in management. Native bird management actions would be accomplished to the extent possible. Limited flexibility in habitat management programs would continue with approximately 96 percent of the Refuge grazed annually. Approximately 50 miles of interior fence and 50 miles of boundary fence would be maintained to control timing of grazing and access/movement of bison, elk, and longhorns. Less than 3 percent of the Refuge would be managed through prescribed burning each year to control cedars. Other exotic and invading plants would be controlled with beneficial insects, grazing, and herbicides. Management of the Niobrara River, numerous streams, and associated riparian habitat would be minimal. The prairie dog colony would be maintained at 20 acres and not allowed to expand. Limited biological monitoring of Refuge plant communities and animal populations would be accomplished. Protection and interpretation of cultural and paleontological resources would continue to be minimal. Current public use opportunities which include wildlife/wildland observation, photography, interpretation/education, picnicking, hiking, and fishing would be maintained. River floating would continue with the number of outfitters maintained at the current level of 11 and no restriction on the number of launches per outfitter. Cooperative agreements and partnerships in place would continue.

Historical: This alternative would manage Refuge habitats and wildlife to replicate conditions that existed before settlement. Bison and elk herds would be maintained at current management levels. Rocky Mountain bighorn sheep would be reintroduced to the Refuge and allowed to grow to a population of 50. Texas longhorns would no longer be managed on the Refuge. Big game fence would be expanded to enclose nearly the entire Refuge and much of the interior fence would be removed to allow more natural grazing patterns. Prescribed burns would increase to simulate historic fire intervals. Cornell Dam and all tributary impoundments would be removed returning these areas to a natural state. Prairie dogs would be established at a second site and allowed to expand to approximately 380 acres. Exotic and invading plants would continue to be controlled with beneficial insects, prescribed burns, and herbicides. Monitoring of the various habitats and wildlife populations would increase. Management of cultural and paleontological resources would be increased. Wildlife/wildland observation, photography, picnicking, hiking and fishing opportunities would be similar to current management. Environmental education/interpretation would be increased through construction of a new visitor center. Limited, strictly controlled bison, elk, and bighorn sheep hunting opportunities would be made available periodically to the public to assist with population management. River floating would be reduced by continuing the current restriction on number of outfitters and restricting the number of launches by all users to 1993 levels. Existing cooperative agreements and partnerships would continue with the exception of fish rearing in impounded tributaries as they would no longer be impounded. Additional partnerships would be sought.

Clockwise from upper left: Bison have been managed on Fort Niobrara National Wildlife Refuge since 1913 to preserve a population representative of the large herds that once roamed the Great Plains; Fort Niobrara National Wildlife Refuge and the surrounding area is the only place in North America where Rocky Mountain coniferous forest, northern boreal forest, eastern deciduous forest, mixed-prairie and sandhill prairie vegetation communities meet and intermingle; several of the management alternatives at Fort Niobrara call for a change in the longhorn program; river floating is a popular recreational activity on Fort Niobrara; the Fort Falls Nature Trail allows visitors to experience the habitats and wildlife along theFalls and the Niobrara River; elk, especially bulls with growing antlers, can be found near or in Refuge ponds and streams during the hot days of summer; the loud rolling "pulip pulip" call of upland sandpipers signal that spring has come to the prairie; in April, prairie chicken males display on traditional breeding grounds on the Refuge; habitat created by prairie dogs attract a variety of wildlife including burrowing owls which use the underground burrows for nesting.

Intensive Wildlife Management: This alternative would intensify and diversify management of Refuge habitats and wildlife. Native birds would receive greater management emphasis. Approximately 225 bison, 50 elk, and 125 longhorns would be managed on the Refuge. Texas longhorns would be used periodically as a grazing tool on Valentine NWR. Bighorn sheep would be reintroduced and allowed to expand to 50 animals. Prairie dogs would be established at a second site and allowed to expand to approximately 380 acres. Boundary and interior fences would be retained in the current configuration and habitat units managed under a deferred grazing rotation; however, reduced herd levels would increase management options. Prescribed fire would increase and be used to control cedars, invigorate native prairie, and encourage regeneration of woodlands. Use of fenced animals and rest as management tools would increase. Cornell Dam and all functional tributary impoundments would be maintained and breached impoundments restored based on their value to native birds and fish. Control of exotic and invading plants would increase with use of prescribed burns, grazing, beneficial insects and herbicides. Endangered species management would be expanded. Monitoring of various habitats and wildlife populations would increase. Protection and interpretation of cultural and paleontological resources would increase. Wildland/wildlife observation, environmental education/ interpretation, hiking, horseback riding opportunities would be expanded. A new environmental education/ visitor center would be constructed. Limited, strictly controlled elk and bighorn sheep hunting opportunities would be made available periodically to the public to assist with population management. River floating through the Refuge would be reduced after the Service determines acceptable peak use levels and management strategies that fairly distribute reduced floating opportunities among outfitters and the general public. During the interim, River use would be capped at 1998 levels and current restrictions on number of outfitters continued. Current cooperative agreements and partnerships would continue and additional ones sought for bison management and possible acquisition of nondevelopment easements around the Refuge.

Modified Historical (Preferred Alternative): The Modified Historical Alternative was selected as the preferred alternative. This alternative was selected based on an analysis of the environmental consequences, the requirement to manage for the Refuge's enabling legislated purpose of native birds, bison and elk, and the desire to implement a more natural/historic management regime. The bison herd would be maintained at 200-300 animals and elk herd at 70-100. Rocky Mountain bighorn sheep would be reintroduced to the Refuge and allowed to expand to 50. Texas longhorns would no longer be managed on the Refuge. Big game boundary fence would be expanded to enclose nearly the entire Refuge and interior fence would be removed, where possible, to allow more natural grazing patterns. Management actions to improve health and sustainability of the various habitats and meet needs of various native bird populations and herds of bison, elk, and bighorn sheep would be implemented. Prescribed fire would increase and be used to control cedars, invigorate native prairie, encourage regeneration of woodlands, and distribute bison and elk grazing. The Niobrara River, tributaries, and associated riparian habitat would be maintained in their current condition. Exotic/invader plants would continue to be controlled with beneficial insects, prescribed burning, and herbicides. Prairie dogs would be established at a second site and allowed to expand to approximately 380 acres. Sufficient biological monitoring would be accomplished to document diversity, population trends, health, and genetics. Protection and interpretation of cultural and paleontological resources would increase. Wildland/ wildlife observation, environmental education/ interpretation, hiking, and horseback riding opportunities would be expanded. Funds to construct a new environmental education/visitor center would be sought and interpretive displays improved during the interim. Limited, strictly controlled elk and bighorn sheep hunting opportunities would be made available periodically to the public to assist with herd management. Current fishing opportunities would continue. River floating through the Refuge would be reduced after the Service determines acceptable peak use levels and management strategies that fairly distribute reduced floating opportunities among outfitters and the general public. During the interim, River use would be capped at 1998 levels and current restrictions on number of outfitters continued. Current cooperative agreements and partnerships would continue and additional ones sought such as big game management, new environmental education/visitor center, and possible acquisition of nondevelopment easements around the Refuge.

Purpose of and Need for Comprehensive Conservation Plan

The U.S. Fish and Wildlife Service (Service) has recognized the need for strategic planning of the national wildlife refuges of its National Wildlife Refuge System(System). The System now has more than 513 refuges totaling approximately 93 million acres. Fort Niobrara National Wildlife Refuge, located in north-central Nebraska (see Figure 1), is a unique and ecologically important component of the Refuge System. In September 1996, Executive Order 12996 was enacted which gave the System guidance on issues of compatibility and public uses of its land. Congress passed the National Wildlife Refuge System Improvement Act in October 1997. This "organic act," for the first time in the System's history, required that Comprehensive Conservation Plans be prepared for all refuges within 15 years.

The Service was an active participant in this historic legislation and supported the planning requirement. The planning effort will help each station and thus the entire System to meet the changing needs of wildlife species and the public. The planning effort provides the opportunity to meet with our neighbors, our customers, and other agencies to ensure that plans are relevant and truly address natural resource issues and public interests. It is our goal to have the System be an active and vital part of the United States' conservation efforts. This Draft CCP/Environmental Assessment (EA) discusses the planning process, the Refuge's characteristics, and the direction management will take in the next 15 years. It is provided to give the reader a clear understanding of the purposes of the Refuge, the alternatives considered, and the preferred alternative (the CCP).

Planning Process, Planning Time Frame, and Future Revisions

Comprehensive conservation planning efforts for Fort Niobrara NWR began in January 1997 with a meeting of regional management and planning staff and field station employees at Fort Niobrara NWR. At that meeting a core planning team was designated with the major responsibilities of gathering information and writing the plan. A review team was set up to provide guidance and direction to the core planning team. A working group was also organized to provide interchange of information between Service personnel, outside agencies, and interested stakeholders of the Refuge.

On March 20, 1997, an open house scoping session was held in the Cherry County Hall meeting room, Valentine, Nebraska. The open house provided participants an opportunity to learn about the Refuge's purposes, mission and goals, and issues currently facing management. People attending were provided the chance to speak with Service representatives and to share their comments.

A two-day tour was held with the working group and Service management and planning staffs in April 1997. The tour gave participants a chance to view fenced animal management and prominent wildlife species of the Refuge, discuss management aspects of the Refuge, and give planning staff ideas for consideration in the planning process.

On October 28, 1997, a meeting was held with Refuge permittees that are actively involved with canoeing and tubing on the Niobrara River through the Fort Niobrara NWR. The CCP addresses this issue, and the meeting provided an opportunity for Refuge staff and permittees to share information concerning this use.

During the planning process, the review and working groups have had access to information on objectives and alternatives being considered. Written comments have been exchanged and verbal conversations have been held. This Draft CCP/EA is the first opportunity that these groups and the public have had to review the entire planning effort and the Plan. A 60-day comment period is provided.

The CCP will guide management on the Refuge for the next 15 years. Plans are ultimately signed by the Regional Director, Region 6, thus providing Regional direction to the station project leader. A copy of the Plan will be provided to all those interested. The project leader of the station will review the Plan every five years to decide if it needs revision.

Step-Down Management Plans

The Service has traditionally used a Refuge Manual to guide field station management actions. The policy direction provided through the Manual has been used to prepare annual work schedules, budget, land management plans (i.e., prescribed fire, grazing, haying), sale of surplus animals, biological monitoring, public use, safety, and other aspects of public land management. The CCP is intended as a broad umbrella plan that provides general concepts, specific wildlife and habitat objectives, federally listed species, public use, and partnership objectives. Depending on the Refuge needs, these may be very detailed or quite broad. The purpose of step-down management plans is to provide greater detail to managers to implement specific actions authorized by the CCP.

Under this Plan, the Fort Niobrara NWR will revise its current monitoring plan. An overall Habitat Management Plan will be prepared to guide all aspects of habitat management including but not limited to: annual grazing by large animal herds, the use of prescribed fire, prairie dog restoration, and rest required by native birds. A fishing plan will be prepared to provide a basis for special regulations concerning this use on the Niobrara River and Minnichaduza Creek. A cultural resource/paleontological management plan and a public use plan for use on the Niobrara River will also be prepared.

National Wildlife Refuge System Mission and Goals

The Mission of the National Wildlife Refuge System is "to administer a network of lands and waters for the conservation, management, and where appropriate, restoration of the fish, wildlife, and plant resources and their habitats within the United States for the benefit of present and future generations of Americans." The goals of the System are aimed at fulfilling this mission. Some major goals are to provide for specific classes of wildlife species for which the Federal government is ultimately responsible; these "trust resources" are threatened and endangered species, migratory birds, and anadromous fish. Most refuges provide breeding, migration, or wintering habitat for these species. Nearly all refuges also supply habitats for big game species and resident or nonmigratory wildlife as well.

Individual refuges provide specific requirements for the preservation of trust resources. For example, waterfowl breeding refuges in South and North Dakota provide important wetland and grassland habitat to support populations of waterfowl as required by the Migratory Bird Treaty Act and the North American Waterfowl Management Plan. Valentine NWR also supports breeding populations as well as providing migration habitat during spring and fall periods. Sabine NWR and other refuges in Louisiana and Texas provide wintering habitat for these populations. The network of lands is critical to these birds survival. Any deficiency in one location will affect the species and the entire networks ability to maintain adequate populations.

Other refuges may provide habitat for threatened and endangered plants or animals that exist in unique habitats which occur in only very few locations. Refuges in these situations ensure that populations are protected and habitat is suitable for their use. Refuges, by providing a broad network of lands throughout the United States, help to prevent species from being listed by providing secure habitat for their use and provide recovery habitats in portions or all of a species range.

Under the National Wildlife Refuge System Improvement Act of 1997, six wildlife-dependent recreational uses are recognized as priority public uses of refuge lands. These are wildlife observation and photography, environmental education and interpretation, fishing and hunting. These, and other uses, are allowed on refuges after finding that they are compatible with the purpose of the refuge. Uses are allowed through a special regulation process, individual special use permits, and sometimes through normal state fishing and hunting regulations.

Figure 1

Fort Niobrara National Wildlife Refuge History

Fort Niobrara NWR was established by Executive Order 1461 on January 11, 1912, which reserved 13,279 acres from the public domain as a "preserve and breeding ground for native birds." The reserve was established at a time when tremendous concern existed over the exploitation of birds and near extinction of bison.

Two environmental groups, National Association of Audubon Societies and American Bison Society, were very influential in the establishment and determination of purpose of several Federal parks and refuges including Fort Niobrara during the first two decades of the 20th century. The National Association of Audubon Societies was formed in 1905 and its first president, William Dutcher, was a friend of U.S. President Theodore Roosevelt. Numerous correspondence was exchanged between them regarding over-harvest of birds, funding for the Bureau of Biological Survey, and protection of bird sites (refuges), and included a letter dated January 1, 1908, which discussed protection of birds and game on the Fort Niobrara Military Reservation. The American Bison Society, headed by Dr. William Hornaday, was directly responsible for establishing Wichita Mountains NWR in Oklahoma, National Bison Range in Montana, and Wind Cave National Park in South Dakota for the preservation of bison in the early 1900's and was also instrumental in bringing bison to Fort Niobrara. Dr. Palmer, a member of the American Bison Society and 2nd Vice President of the Audubon Society, states in the 1912 Annual Report of the American Bison Society that "on January 12, 1912, the Niobrara Bird Reservation was created by Executive Order. This reservation comprises some 10,000 or 12,000 acres of land along the Niobrara River, near Valentine, including some grazing land, and only needs a fence to make it an ideal reservation for buffalo and other big game of the Great Plains."

A 1913 report from the Chief of the Bureau of Biological Survey to the Secretary of Agriculture summarizes the events leading up to the addition of the big game purpose to Fort Niobrara. The following is an excerpt from that report: "In the early part of the year 1912, Mr. J.W. Gilbert, owner of a small big-game park at Friend, Nebraska, generously offered his herd of buffalo, elk, and deer to the Government for preservation on national territory within the state of Nebraska. The lack of suitable quarters caused some delay in accepting the offer, but on November 14, 1912, an Executive Order was issued setting aside as a game preserve a tract of land additional to the Niobrara bird reservation near Valentine, Nebraska. The herd was then officially accepted by the Secretary of Agriculture and preparations began for establishing it on this very favorable location. Through the cooperation of the National Association of Audubon Societies and the citizens of Valentine, an enclosure was provided at an expense of $1,700. Some of the buildings remaining on the old Fort Niobrara Military Reservation were utilized as headquarters, and a warden was appointed on December 16, 1912."

The Refuge was expanded again by Executive Orders in 1920 and 1936, the Resettlement Administration, subsequent purchases from private individuals, and a donation from the Nebraska Public Power District bringing the Refuge's total acreage to 19,131. Refuge reports state that the 1920 expansion was for protecting/providing winter roost sites for sharp-tailed grouse and prairie chickens, and tracts of land acquired in 1936 were for various purposes including planting of grain crops for migratory birds, pronghorn antelope management, and administrative efficiency (inholdings, straighten boundaries).

Management History

Management efforts from the Refuge's establishment through the early 1940's considered the needs of both birds and big game. Initial work involved a general reconnaissance of the area and its bird life, and a survey of the boundary and big game enclosure. Construction of boundary fences of Refuge lands north of the Niobrara River for use by expanding bison and elk herds was planned in 1915 with the project completed in the early 1920's. Earthen dams were built across various tributary streams beginning in 1922 to improve conditions for waterfowl. In the 1930's, the Civilian Conservation Corps and Work Projects Administration staff rebuilt several original earthen dams, constructed new dams, planted various wetland plants, constructed predator fencing around ponds to improve nesting conditions, and planted shelter belts for birds. Corrals, additional fence, and watering facilities south of the Niobrara River were also constructed during this time. Approximately 150 acres of Refuge lands were planted to various grain crops for grouse and waterfowl in the late 1930's.

Refuge reports and other correspondence suggest a shift in management from a dual purpose (birds, big game) to more of a single purpose (big game) beginning in the early 1940's, although emphasis varied depending upon the viewpoint of management. Numbers of bison, elk, and longhorns maintained on the Refuge fluctuated according to forage availability and genetic management needs. For example, during the 1940's and 1950's up to 10,000 acres of Refuge grasslands were annually hayed or grazed by permittees and not available for use by big game herds. Approved winter herd levels during this time period were 175 bison and 150 longhorns. Following a review of management programs in the mid-1950's, permittee haying and grazing was terminated and more fence and water facilities were constructed to allow areas to be rested, encourage recovery of grasses, better distribute grazing by the bison and longhorns, and enable management to consider the needs of prairie grouse. Herd levels following the review in 1956 and until the mid-1980's varied with approximately 225 bison, 40 elk, and 200-300 longhorns maintained under a deferred grazing rotation. Bison and longhorn herds were allowed to increase in the late 1980's to implement high intensity, short duration grazing, and meet suggested genetic management recommendations. Longhorn numbers peaked in 1991 at 370, and the bison herd reached its Refuge high of 400 animals 1992-1996. Maintenance of bison and longhorns at high herd levels limited habitat management options and raised concern that native bird populations, especially prairie grouse, were not receiving adequate management consideration. A review of the habitat and fenced animal management programs was initiated and included consultation with the U.S. Department of Agriculture (USDA) Natural Resources Conservation Service (NRCS) on grassland condition assessment and grazing program recommendations, consultation with geneticists and review of literature regarding bison and longhorn management, and review of scientific literature as it relates to native bird management.

Water Rights/Management History

Fort Niobrara NWR holds no water rights permits with the State of Nebraska; however, lands reserved from the public domain for creation of the Fort Niobrara NWR carry with them a Federal Reserved Water Right that the United States has not asserted at this time.

The Refuge has 25 windmill driven stock water wells and six domestic wells which do not require groundwater permits. Also, the 12 low level spring-fed impoundments are exempt from special dam construction or water storage permits because of their size and because diversion or withdrawal of water from the reservoirs is nonexistent.

A portion of the Niobrara River was designated as Wild and Scenic in 1991. The National Park Service has asserted, as yet unquantified, a Federal Reserve Water Right to maintain instream flow.

In 1986, the Nebraska Public Power District quitclaimed land to the United States that included the Cornell Dam and Power House.

Bison History

An estimated 30 million bison once roamed the Great Plains; however, by the late 1880's, fewer than 1,000 animals were alive due to loss of habitat and hunting. Free-ranging bison are believed to have been extirpated from Nebraska in 1878 (Jones et al. 1983). Bison were reintroduced to Fort Niobrara in January 1913 as part of the national effort to preserve this native herbivore with the donation of six bison (sex unknown) from J.W. Gilbert of Friend, Nebraska and the transfer of two bulls from Yellowstone National Park. Additional introductions were made in 1935 (4 males, Custer State Park), 1937 (4 males, Custer State Park), and 1952 (5 males, National Bison Range) to minimize inbreeding and maintain the species as closely genetically as possible to those surviving the bottleneck of near extinction. Policy/ philosophy implemented over the years has been to preserve and maintain a representative herd under reasonably natural conditions in numbers sufficient to ensure their continued existence. Management actions have included culling, controlled herd movements, branding, brucellosis vaccination, disease testing, and limited genetic monitoring.

Elk History

Elk were once abundant in the northern Great Plains, including the area of Fort Niobrara. Aughey (1880:118) described the elk herds along the Niobrara River in the late 1860's as magnificent; however, by the early 1880's, elk were extirpated from Nebraska due to hunting and loss of habitat (Jones 1964). Elk were reintroduced to Fort Niobrara in January 1913 with the donation of 17 elk by J.W. Gilbert of Friend, Nebraska. Management policy/philosophy implemented over the years has been to maintain a representative herd under reasonably natural conditions in numbers sufficient to ensure their continued existence. Periodic introductions of elk to the Refuge herd have occurred over the years in an effort to minimize the negative effects of inbreeding. Elk numbers have varied with winter population levels exceeding 100 in the early 1930's and recent population levels averaging 50 to 60.

Longhorn History

Longhorns have been managed at Fort Niobrara since 1936 to assure perpetuation of a historically significant animal. The following information, taken from Dobie (1994) and Halloran (1964), provides insight as to the historical significance of the longhorn and how the government became involved in the preservation effort.

Longhorn cattle originate from Spanish cattle that were brought to the New World in about 1521 by Gregorio Villalobos. Early explorers, including Coronado, brought these cattle from Mexico into what is now Arizona, New Mexico, and Texas. The herds eventually spread from Louisiana to California. Although utilized by Native Americans and settlers, the Spanish cattle roamed more or less uncontrolled for over 300 years gradually evolving into the "longhorn." Longhorns were the first major beef supply in the United States and were the cattle that made famous the Chisolm, Dodge, and Boseman Trails. Beginning in the mid 1860s and ending by 1895, an estimated 5 million head of longhorns were trailed from Texas to Kansas, Nebraska, the Dakotas, Wyoming, Montana, and Colorado, some walking approximately 2,000 miles. The attributes which helped the longhorn to survive heat, drought, flies, predators, limited forage, and travel great distances were a liability in the late 1800s, and by the early 1920s, the longhorn was threatened with extinction. Through a special Congressional appropriation, funds were made available to locate and manage representative, true-to-type longhorns at Wichita Mountains National Wildlife Refuge. Over 30,000 head of cattle were inspected, and in 1927, a herd of 20 cows, 3 bulls, 3 steers, and 4 calves were shipped to Wichita Mountains. A second gene pool of this founding herd was established at Fort Niobrara with the transfer of 4 cows, 1 bull, and 1 steer in May of 1936.

The decision to establish a second gene pool of this founding herd at Fort Niobrara is considered departmental or internal as no record of an Executive Order, Congressional legislation, or Congressional intent exists. Longhorn management over the years has attempted to allow natural factors to influence and maintain historic herd traits such as foraging ability, milk production, calving ease, hardiness and protection of young from predators. In addition, animals selected/ perpetuated by management have exhibited representative conformation, horn structure, color variability, and genetic diversity.

Pronghorn Antelope History

Pronghorn antelope were historically common on the open prairies of the Sandhills through the late 1800's; however, by 1908, they were on the decline and observed only in the western and northern portions of Nebraska. Efforts to reintroduce pronghorn antelope to Fort Niobrara NWR began in 1924 with the transfer of 10 animals from Nevada. The herd gradually increased to 17 animals in 1932, but then steadily decreased in numbers. Attempts to establish a second herd of antelope with the transfer of 34 animals in 1936 also failed. Coyote predation is the primary factor influencing the survival of pronghorn on Fort Niobrara. Pronghorn have not been actively managed for in recent years.

Bighorn Sheep History

Bighorn sheep formerly occurred in Nebraska on the Pine Ridge and adjacent badlands in the northwest part of the state; in breaks along the Niobrara River east to near Long Pine, Wildcat and Bighorn Ridges, and among the rough buttes and canyons along the North Platte River (Jones 1964). The species was extirpated on the northern Great Plains in the 1920's (Jones et al. 1983).

A feasibility study of reintroducing bighorn sheep to the Refuge was completed in 1979; however, no action was taken.

Native Birds and Other Wildlife History

Management of native birds and other wildlife has varied in intensity over the years with the greatest impact indirectly or directly due to habitat management practices. Prairie grouse, a term used to describe sharp-tailed grouse and prairie chicken, were once plentiful on the Great Plains, but by the late 1800's, demand for birds in eastern markets, development of efficient railway shipping, and willingness of individuals to exploit a seemingly unlimited resource, combined to dramatically reduce prairie grouse populations. Extirpated in many parts of their ranges, remnant populations of sharp-tailed grouse and prairie chicken populations survived in the Sandhills of Nebraska due to lack of intensive agriculture altered habitat (Mitchell et al. 1984). Prairie grouse were identified in one of the first quarterly reports of the Refuge as native birds for management consideration and emphasis. Over the years, management decisions and actions have addressed prairie grouse needs to varying degrees and included enlargement of the Refuge, feeding stations, farming/food plot program, revision of grassland haying and grazing programs in 1956, and population monitoring. Prairie grouse surveys were initiated in 1956 as part of a multiple Refuge research project that studied prairie grouse populations in relation to land use. This study conducted from 1956 to 1965 in grasslands south and east of the Niobrara River suggested that the combination of rapidly increasing amounts of idle grassland (one phase of revised Refuge haying and grazing program) and favorable conditions for reproduction resulted in a rapid increase in grouse numbers on Fort Niobrara between 1956 and 1959.

The substitution of bison grazing for rest in approximately 4,200 acres beginning in 1963 did not depress the grouse population; however, researchers questioned what levels grouse populations would have reached if this grassland block had been left idle. They believed that habitat conditions (structure, species composition) which is correlated to use (grazing, haying) determined the average population size, but other factors (i.e., weather) operated equally in good and poor habitat to cause similar rates of annual population change. Annual counts of displaying sharp-tailed grouse and prairie chicken males conducted since the completion of this research project support that relationship or effect. Prairie grouse numbers have cycled with higher average population levels occurring on the Refuge when forage utilization [represented by Animal Use Months (AUM)] by bison, longhorns, and elk was lower.

Other wildlife management activities completed over the years include reintroduction of Canada geese (1914), turkey (1925), and bobwhite quail (1956) and predator control (coyote, raccoon, skunk, mink, bobcat, badger) in the early years to enhance bird production. Also, periodic control of prairie dogs was conducted. Descriptions in Refuge reports suggest prairie dogs were found in the headquarters area (current location), "east" habitat unit, and possibly on the tableland north of the Niobrara River. Presence/absence and statements of relative abundance have been made for various groups of wildlife species beginning with birds in 1913 and species lists have been compiled and updated as needed.

Public Use History

Since the Refuge's establishment, recreational opportunities on the Refuge have centered around wildlife/wildlands observation and education. Early management emphasized development of a foot trail and motorized tour route to allow Refuge visitors the opportunity to observe bison, elk, and Texas longhorns in a wild setting. A museum constructed in the 1930's was a popular attraction for school groups and Refuge visitors over the years. It contained information and interesting photographs about the old military Fort Niobrara, a collection and explanation of paleontological finds, a collection of mounted birds and museum skins of mammals, and a native grass display. The current visitor center was constructed in the mid 1970's and contains various photographs, text, items, and computer/ interactive program interpreting Refuge history, wildlife, wildlands, management and the military fort. The Fort Niobrara Natural History Association has various books, postcards, posters, and miscellaneous wildlife related items for sale in the center.

Canoeing the Niobrara River was referred to as "increasing in popularity" in 1972. However, the estimated 2,960 activity hours reported in 1972 in the Fort Niobrara Wilderness Study was not considered excessive to prevent inclusion of the River corridor in the area to be designated as wilderness pursuant to criteria under the Wilderness Act. Since then, the number of people canoeing and tubing down the Niobrara River within Fort Niobrara NWR has steadily increased. Beginning in 1993, outfitters and the Service recorded the number of people canoeing and tubing the River through the Refuge. This information showing the increase in floating use is found in Figure 2. Increased River use has raised concerns about disturbance to wildlife, impacts on vegetation, the quality of experience for Refuge visitors, and compatibility with the Wilderness Act. Management began to address River recreation concerns through the Environmental Assessment process in 1994 and efforts are ongoing.

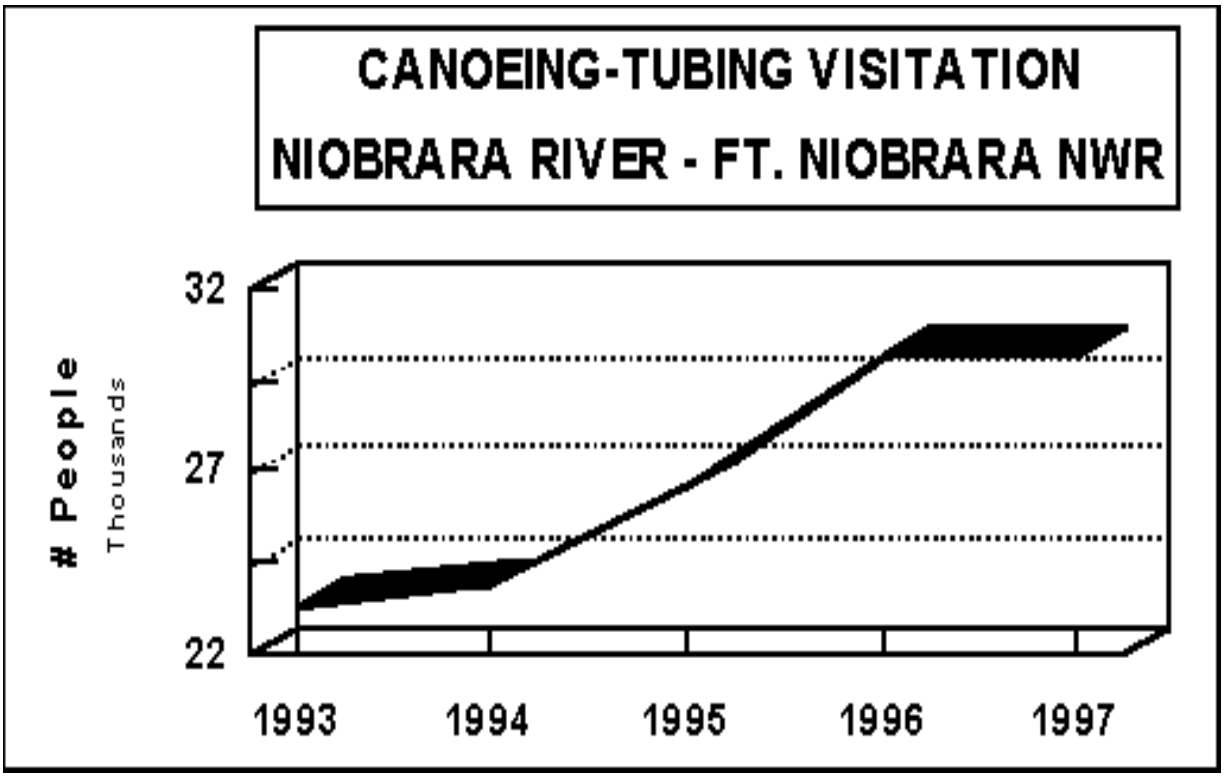

Figure 2

Fort Niobrara National Wildlife Refuge Purpose and Mission

Refuge Purpose

The Fort Niobrara NWR was created by Executive Order 1461, January 11, 1912, (13,279 acres) "...reserved and set apart for the use of the Department of Agriculture as a preserve and breeding ground for native birds." Shortly after the Refuge's establishment, J.W. Gilbert, owner of a private game park at Friend, Nebraska, "offered his buffalo, elk, and deer to the Federal Government for preservation on a national reservation, with the understanding that they would remain in Nebraska. The acceptance of this offer was delayed through lack of a suitable range in the State. On November 14, 1912, however, an Executive Order was issued enlarging the Fort Niobrara Game Preserve (then known as the Niobrara Reservation) by adding thereto the area formerly used as the parade grounds and headquarters for the old military post. This made the total area of the preserve about 14,200 acres. Mr. Gilbert's offer was then formally accepted by the Secretary of Agriculture, and arrangements were made to transfer the animals to Fort Niobrara." (Ruth 1938) As a result, the Refuge is to be managed (1) as a preserve and breeding ground for native birds, and (2) for the preservation of bison and elk herds representative of those that once roamed the Great Plains.

Refuge Mission Statement

Preserve, restore, and enhance the exceptional diversity of native flora and fauna and significant historic resources of the Niobrara River Valley and Sandhills of Nebraska for the benefit of present and future generations.

Refuge Goals and Objectives

The Refuge planning team spent considerable time defining habitat and other objectives to further describe management actions needed to meet Refuge goals. They are presented here to provide a logical step-down from the broad purpose and mission statements to concrete management decisions. They are also useful in this document as a comparison with the following section on alternatives. Ideally, each alternative should meet all these objectives, in practice, some meet them more fully than others. The preferred alternative (the CCP) represents a course of action felt to meet them best.

Interrelationships of Goals and Objectives

The Refuge goals and objectives are presented separately for ease of understanding and reference. They are, however, not independent of each other. The goals and objectives and the resources and activities discussed are completely interrelated in spatial, ecological, and management considerations.

The habitat goals and objectives are the primary criteria which refuge managers will use to guide their efforts and evaluate successes. Goals and objectives for habitat, wildlife, threatened and endangered Species, interpretation and recreation, and ecosystem provides additional information for managers to refine specific actions and to help in evaluating success of habitat management and use of the Refuge by the public. In order for refuge managers to achieve the mission of the refuge fully, these objectives need to be understood holistically and applied in combination, each being a critical part of the Refuge mission.

Habitat Management

Goal: - Preserve, restore, and enhance the unique diversity of upland and riparian plant communities and associated water resources representative of the physiographic regions described as Sandhills Prairie, Mixed Prairie, Rocky Mountain Coniferous Forest, Eastern Deciduous Forest, and Northern Boreal Forest within the Northern Great Plains to ensure their rarity, richness, and representativeness is sustainable into the future.

Grasslands Objective:
Maintain the approximate 14,264 acres of Sandhill Prairie and Mixed Prairie vegetation communities in early through late successional stages to meet nesting, brooding, feeding and/or protective cover requirements of various grassland dependent birds, fenced animals and other wildlife. Species composition on a minimum of 90 percent of the grasslands will be middle-to-late successional stage and consist of 75-85 percent grasses, 5-10 percent grass-like plants, 5-10 percent forbs, and 5 percent shrubs (dominant species as described by Kaul and Rolfsmeier 1993, Schneider et al. 1996, USDA Soil Conservation Service 1983). Vegetation structure will exist in a range of heights and densities with complete visual obstruction to an average height of six inches in the fall on a minimum of 50 percent of the grassland acreage (Prose 1985; Prose 1987). A minimum of 50 percent of the grasslands will not have planned burning or grazing during the native bird breeding season (April 15 - July 15).

Ponderosa Pine Savanna/Woodland Objective:
Manage the approximate 3,022 acres of Rocky Mountain Coniferous Forest community to provide nesting, brooding, feeding and/or protective cover requirements of various native birds, fenced animals, and other wildlife. Approximately 85 percent of the acreage will be maintained as savanna and consist of 70 percent grasses, 10 percent grass-like plants, 5 percent forbs, 5 percent shrubs, and 10 percent trees with the remaining acreage managed as a woodland/forest. Species composition to manage for will be based on descriptions by Kaul and Rolfsmeier 1993, Schneider et al. 1996, USDA Soil Conservation Service 1983. A minimum of 50 percent of this community type will not have planned grazing or burning during the native bird breeding season (April 15 - July 15).

Riparian Eastern Deciduous/Northern Boreal Forest Objective:
Maintain and preserve the approximate 1,296 acres of Eastern Deciduous Forest/Northern Boreal Forest riparian community to provide nesting, brooding, feeding and/or protective cover requirements of various native birds and other wildlife. Species composition to manage for will be based on descriptions by Kaul and Rolfsmeier 1993, and Schneider et al. 1996. Habitat diversity will be enhanced by managing for a mix of trees (size and age classes with a minimum of 10 percent mature trees), and well-developed shrub and herbaceous layers. Strips of woodlands (150 acres) in habitat units utilized by fenced animals will be protected to the extent necessary to ensure regeneration. A minimum of 50 percent of this community type will not have planned grazing or burning during the native bird breeding season (April 15 - July 15).

Niobrara River and Associated Wetlands Objectives:
Restore and maintain the approximate 375 acres of the Niobrara River and associated wetlands with emphasis on maintaining streambed quality, stream bank stability, water flow, water temperature, and quality. Use existing data on the Niobrara River water flow, quality (sediment, nitrate, pollutants) and water temperature as minimum baseline levels and repeat at five year intervals. Ensure vegetation adjacent to the River and streams are adequate to minimize erosion, dissipate water energy and trap sediments.

Invader/Exotic Species Objective:
Prevent additional exotic vegetational species from becoming established and reduce the occurrence, frequency and stand density of existing invader/exotic vegetation. Target level of combined total of invader/ exotics is less than 5 percent of species composition. Invader/exotic species to manage include leafy spurge, purple loosestrife, Canada thistle, Kentucky bluegrass, smooth brome, downy brome, sweet clover, reed canary grass, eastern red cedar, Russian olive, and phragmites.

Wildlife

Goals: Preserve, restore, and enhance the ecological diversity and abundance of migratory and resident wildlife with emphasis on native birds.

Maintain representative breeding herds of nationally significant animals under reasonably natural conditions.

Prairie Grouse Objective:
Maintain a five-year average density of one prairie grouse lek/1.4 sq. mile with an annual target of 100 sharp-tailed grouse and 65 prairie chicken breeding males in the grasslands (approximately 12,271 acres) south and east of the Niobrara River (USFWS, unpublished Refuge data).

Native Bird Objective:
Maintain or increase breeding and migration use on Fort Niobrara by Species of Management Concern, U.S. Fish and Wildlife Service, Region 6, including northern harrier, ferruginous hawk, upland sandpiper, long-billed curlew, burrowing owl, short-eared owl, red-headed woodpecker, loggerhead shrike, dickcissel, lark bunting, grasshopper sparrow, chestnut-collared longspur, eastern meadowlark, and other habitat sensitive migratory birds such as western meadowlark, bobolink, clay-colored sparrow, belted kingfisher, willow flycatcher, and yellow-breasted chat. Use existing data as minimum baseline levels and implement monitoring procedures that provide an index to overall species richness/diversity and document population trends of selected species over a five year period.

Bison and Elk Objective:
Preserve and maintain breeding populations of bison and elk with age and sex composition approximating historic herds. Implement management actions that maintain or increase levels of genetic variability to assure viable, sustainable populations according to accepted standards of conservation biology (Berger 1996, Berger and Cunningham 1994).

Rocky Mountain Bighorn Sheep Objective:
Reintroduce Rocky Mountain bighorn sheep to the Refuge to restore an indigenous species into its historic range.

Prairie Dog Objective: Maintain the existing 20 acre black-tailed prairie dog town in the exhibition habitat unit and establish a colony at another location to enhance Refuge biological diversity. The goal for prairie dog acreage on the Refuge will be at least 400 acres.

Other Indigenous Wildlife Objective: Ensure the diversity and abundance of other indigenous mammals, reptiles, amphibians, fish, and invertebrates continues. Use existing data as minimum baseline levels and monitor periodically to document population trends. (Bogan, 1995)

Threatened and Endangered Species

Goal: Contribute to the preservation and restoration of threatened and endangered flora and fauna that occur or have historically occurred in the area of Fort Niobrara NWR.

Endangered Plant Objective:
Evaluate the Refuge for blowout penstemon habitat. If suitable habitat exists, establish plants in at least two site/

Endangered Wildlife Objective:
Maintain a minimum of 10 percent of the woodlands within the Niobrara River corridor in mature or old-growth timber with an open and discontinuous canopy to provide undisturbed roosting habitat for wintering populations of bald eagles. Monitor and document eagle use on the Refuge and mortality in the area.

Whooping Crane, Piping Plover, Peregrine Falcon, and Least Tern Objective:
Maintain the shallow braided River habitat above Cornell Dam for use by whooping cranes, piping plovers, and least terns during migration. Keep use areas free from human disturbance. Monitor and document migration use by whooping cranes, piping plover, least terns, and peregrine falcons as it occurs.

American Burying Beetle Objective:
Determine if American burying beetles inhabit the Refuge. Implement appropriate management strategies if a population exists.

Interpretation and Recreation

Goal: Provide the public with quality opportunities to learn about and enjoy the ecological diversity, wildlands, wildlife, and history of the Refuge in a largely natural setting and in a manner compatible with the purposes for which the Refuge was established.

Interpretation, Wildlife Observation and Photography, and Environmental Education Objectives:
Provide visitors with quality interpretation, environmental education, wildlife observation and photography opportunities.

Ensure a safe, quality River floating experience on the Wild and Scenic Niobrara River that follows the standards of the National Wild and Scenic Rivers Act, National Wildlife Refuge System and maintains the integrity of the Fort Niobrara Wilderness Area.

Protect and interpret Refuge cultural and paleontological sites.

Fishing Objective:
Provide opportunities for warm water fishing in sections of the Niobrara River and tributaries.

Hunting Objective:
Offer a limited, strictly controlled hunting opportunities for elk and bighorn sheep to facilitate removal of herd excess.

Ecosystem (Partner)

Goal: Promote partnerships to preserve, restore, and enhance a diverse, healthy, and productive ecosystem of which the Fort Niobrara and Valentine NWR's are part.

Ecosystem Objectives/Strategies for the Fort Niobrara/Valentine NWR Complex:
Support the National Scenic River and Niobrara River Council to meet desired future conditions of the Niobrara Scenic River.

Support the Sandhills Management Plan through Partners for Wildlife Program to enhance wildlife habitat on private lands.

Support use of Refuges as research areas for relevant natural resource studies. Conduct applied research on management of threatened and endangered plant and animal populations.

Develop an effective outreach program that results in two wildlife habitat/public use projects completed annually with non-governmental organizations.

Develop greater cooperation with state and local governments that result in completion of at least two projects annually. Projects are to benefit area wildlife resources or enhance public use opportunities such as fish rearing in Refuge ponds.

Use the CCP document to help in marketing Refuge needs through grant writing and networking with other entities.

Alternatives, Including the Proposed Action

This Comprehensive Conservation Plan developed four alternatives for management of Fort Niobrara National Wildlife Refuge which include Current Management (No Action), Historical, Intensive Wildlife Management, and Modified Historical (Preferred Alternative). These alternatives are summarized in a matrix (see Appendix A) and discussed in detail in upcoming pages of the document. Two alternatives, maximization of economic uses and placing the Refuge in custodial status, were briefly considered but discarded because they violate the National Wildlife Refuge System Improvement Act of 1997 and do not meet the mission and goals of Fort Niobrara and the National Wildlife Refuge System.

Alternative A. Current Management (No Action)

Grassland/Fenced Animal Management

Approximately 350 bison, 70 elk, and 250 Texas longhorns are managed under reasonably natural conditions to assure a genetically sound breeding population, provide appropriate viewing opportunities for public enjoyment, and support scientific study feasible within the management of representative herds. Bison and elk herd structures (sex and age ratios) approximate free ranging herds. In accordance with Service policy, bison, elk, and longhorn numbers above sustainable winter population levels are sold or donated annually. Refuge receipts from 1997 excess bison and longhorn auctions totaled $179,510. Introductions to the elk and Texas longhorn herds are accomplished periodically to maintain or improve genetic diversity.

Maintaining long-term population genetic variability of the bison, elk and longhorn herds, which affects population fitness or health, is addressed through population size, sex and age ratio, and addition of animals from other populations. Elk and longhorn herds are maintained below minimum population levels, therefore, periodic introductions of animals from other populations are accomplished to minimize inbreeding. The bison herd at its current level and sex ratio provides the effective population size required for maintaining levels of genetic variability, without induced immigration, that commensurate with accepted standards of conservation biology (Berger 1996, Berger and Cunningham 1994).

Biological monitoring of the grasslands and herds is the minimum required to document current habitat condition and guide management. Range condition surveys and suggested initial stocking rates of the Refuge are completed by the USDA Natural Resources Conservation Service every 5 to 10 years. Visual obstruction reading transects are accomplished periodically to document vegetation structure. Fenced animal monitoring includes monthly population surveys, annual disease testing of excess animals, and infrequent (7 to 10 years) genetic testing. Detailed breeding records of longhorns are also maintained for genetic management purposes.

Habitat management strategies are implemented that maintain or improve grassland health and provide forage for bison, elk, and Texas longhorns. Approximately 50 miles of interior fence and 50 miles of boundary fence (perimeter, river corridor, road right-of-way) are used to control timing of grazing and access/movement of the fenced animals. Grazing strategies (time of year, intensity, length) implemented in the estimated 40 habitat units vary according to species management needs and behavior, natural use patterns/seasonal movements of animals in pre-settlement times, staffing, water, climatic conditions, available Animal Use Months (AUM), range site and condition. Large ungulate herds consume and/or remove by trampling an estimated 8,400 AUMs of forage a year which is approximately 40 percent of the total plant production, leaving approximately 60 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). Texas longhorns, exhibition herds, and government horses are supplemented during the winter as conditions warrant with approximately 600 tons of prairie hay harvested from Valentine NWR. Other annual management actions include one or more years of rest on approximately 4 percent of the acreage, no planned grazing or burning on approximately 30 percent of the acreage during the native bird breeding season, prescribed burning of approximately 100 acres to invigorate native plants or control cedar invasion, and suppression of all wildfires.

Riparian and Woodland Management

Management of the Niobrara River, numerous streams, and associated riparian habitat emphasizes maintenance of current conditions. Nearly all of the Niobrara River and associated riparian habitat are fenced to control access of bison, elk, and Texas longhorns except the tributary streams in the wilderness area. The Cornell Dam is maintained to provide shallow-braided river and sandbar habitat upstream. Twelve ponds formed by damming tributary streams are held at full capacity throughout most of the year for use by waterfowl and other birds, fenced animals, and fish rearing under cooperative agreement with the Nebraska Game and Parks Commission. Periodic drawdowns of these impoundments are accomplished for aquatic vegetation control and structure repair. Breached impoundments in the wilderness area are being allowed to return to a natural state. Several natural impoundments have been created by beavers. Research of historic water rights is ongoing. Limited monitoring of stream flow and contaminants is accomplished periodically.

Woodland management is minimal and includes control of cedars, exclusion of fenced animals, and removal of dead or downed timber presenting a safety or fire hazard or threatening facilities.

Threatened and Endangered Species

Use by bald eagles, whooping cranes, and other federally listed species on the Refuge is documented through periodic surveys. Required habitat conditions are maintained. Protective actions are implemented as needed.

Native Birds and Other Wildlife

Management strives to maintain the existing diversity and abundance of various native birds and other wildlife by providing a mosaic of habitat conditions. A 20-acre prairie dog colony is maintained in the exhibition habitat unit. A maternity colony of big brown bats (estimated 200 individuals) inhabits the historic north barn during the late spring and summer with no management efforts made to alter their occupancy.

Biological monitoring of native birds and other wildlife is carried out to the greatest extent possible with current staffing and management priorities. Prairie grouse lek counts are conducted each spring with data available for comparison dating back to 1956. A breeding bird survey route established in 1992 is conducted by staff or volunteers. Staff cooperate with the Nebraska Game and Parks Commission by completing the annual Spring Coordinated Sandhill Crane Survey, Mid-December Goose Survey, Mid-winter Waterfowl Survey, Winter Turkey Survey, and Summer Turkey Brood Survey. A general wildlife observation log is maintained to document presence/absence and relative numbers of various species.

Exotic and Invading Species

Exotic and invading vegetation species are controlled through an integrated pest management approach. Various biological agents are being used in the ongoing effort to reduce the occurrence of purple loosestrife along the Niobrara River. Four small patches (less than one-eighth acre each) of leafy spurge and two larger patches (one acre each) are controlled through mechanical and limited chemical applications. Small areas of exotic cool season grasses exist at disturbed sites (i.e., road ditch, old farm ground, cattle feed areas) and are being controlled with grazing and prescribed burning. Limited mechanical control and prescribed burning of eastern red cedar is being implemented. Reed canary grass is common along the River, however, no control measures are in place.

Public Use

Based on general observations and data collected in the visitor center and on the River, an estimated 100,000 people visit the Refuge annually for wildlife/wildland observation, photography, interpretation/education, picnicking, hiking, and floating on the Niobrara River. The visitor center, with a variety of over 20-year-old displays interpreting the history of the military fort, area wildlife and habitat, and Refuge management, is open Monday through Friday year-round and weekends Memorial Day to Labor Day with actual use recorded at approximately 6,000 visits. The Fort Falls nature trail is approximately one mile long and educates the hiker through a brochure describing the different vegetation communities and associated wildlife found in this unique, biologically diverse area. The 15-stop self-guiding auto tour route is located in the exhibition habitat unit and provides information on the prairie dog town, bison, elk, Texas longhorns, and other prairie inhabitants. Other interpretive facilities under some phase of development include a kiosk at the canoe launch with education panels titled "Niobrara Valley," "Welcome to Fort Niobrara," "Canoeing the Niobrara River"; the observation deck above Fort Falls includes education panels titled "Prairie Oasis," "Fort Falls," "Sand, Rock & Water"; and an interpretive panel to be located in the exhibition habitat unit providing information on elk and prairie dogs. Interpretation and environmental education services are provided when staff are available and include talks or guided tours for school groups (elementary through college level), scouts, 4-H and special projects (i.e., Old West Days Trail Ride). The public is invited to observe fall roundups and auctions of bison and longhorns, participate in Migratory Bird day activities, and other Refuge programs.

The Niobrara River is open to fishing with a fishing plan expected to be completed in the near future. Angler opportunities are limited with most fishing occurring immediately below Cornell Dam. Kid's Fishing Day is held annually in September and includes trout, catfish, and bluegill fishing in the corral pond, fish identification and casting contests, cleaning, and cooking. The event is a cooperative effort between the Nebraska Game and Parks Commission (NG&PC), Niobrara Natural History Association, volunteers, and the Refuge staff.

The Bur Oak Picnic area is located along the Niobrara River at the Refuge entrance. Tables and rest rooms are used mainly by people visiting the Refuge for River floating or wildlife observation.

The Refuge is closed to hunting.

The Refuge is closed to recreational trapping. Trapping for depredation or damage control purposes is accomplished as necessary through force account or a special use permit in accordance with State and Service regulations.

Floating the Niobrara River with canoes or tubes is a popular recreational activity on the Refuge. Over 18,000 vessels carrying more than 30,000 people were put in the Niobrara River from the Refuge launch facility in 1997. Most of the canoeing and tubing takes place during June (18 percent), July (37 percent), and August (40 percent), with Saturday morning being the most congested period. During an average Saturday in July 1997, approximately 1,200 people launched 684 vessels into the River from 8-11 a.m. which is one vessel launch every 16 seconds. Due to the alarming increase of River use documented in outfitter reports from 1993-1997, crowding and compatibility with wilderness designation and wildlife needs, Refuge management has in place a moratorium on new outfitters. Also, the existing eleven outfitters have been informed that any expansion of their business on the Refuge is at their own risk, and River use on the Refuge should be redistributed to week days. The Refuge has been selected by the Service as a User Fee Demonstration Area due to the volume of River use, increasing cost of maintaining the launch area and public rest rooms, and the need for additional law enforcement. After receiving input from canoe and tube outfitters, National Park Service, Nebraska Game and Parks Commission, Natural Resources District, and other interested parties, the Refuge staff set up a fee and collection system which is thought to be fair and simple. The first year of the user fee program was 1998. Monitoring of public use levels on the Niobrara River and affects to Refuge wildlife/wildlands and wilderness and determination of acceptable use/levels are not being accomplished due to lack of funding and staffing.

Cultural and Paleontological Resources

Limited cultural resource studies have been conducted by the U.S. Fish and Wildlife Service, National Park Service, and various research institutions to locate and describe and evaluate cultural and paleontological resources. Less than 1 percent of the Refuge has been inventoried for these resources. The remains of old Fort Niobrara, including the north barn, have been determined eligible for Nomination to the National Register of Historic Places. Twelve of the 21 Refuge buildings are over 50 years old and need to be evaluated for historic significance. Minimal interpretation of the various cultural resources is available.

Partnerships

The Refuge works with a variety of organizations and individuals on natural resource projects including private landowners (Partners For Wildlife program); Natural Resources Conservation Service (Refuge grazing program, Wetland Reserve Program); Farm Service Agency (easement program); Nebraska Game and Parks Commission (wildlife surveys, fish rearing in Refuge ponds); Cherry County Extension Service (youth programs, research); local law enforcement agencies (enforcement, youth rehabilitation); Inter Tribal Bison Cooperative (bison donations and management); zoos, conservation districts and other non-profit qualifying entities (bison, elk, and longhorn donations); veterinarians for the State of Nebraska, other lower 48 states, and U.S. Department of Agriculture (disease and health issues, tests, research); Rocky Mountain Elk Foundation (interpretative panels, animal transfers); Fort Niobrara Natural History Association (Refuge projects, sale of books, postcards, posters, etc.); Valentine Chamber of Commerce (community projects); Niobrara Council (River management); Texas Longhorn Breeders Association of America and International Texas Longhorn Association (longhorn pedigree, registration); The Nature Conservancy (fire management, research); Rural Fire Protection Districts (wildfire suppression on-and off-Refuge); and various universities (research).

Grassland/Fenced Animal Management

A major feature of the historical alternative is to maintain the bison herd at 350 animals. The herd will be managed as a closed herd with no introductions from other herds in order to maintain specific genetic characteristics of this herd. The existing elk herd would be maintained at 70 animals. Bighorn sheep will be reintroduced and allowed to expand to 50 animals. Herd numbers are after sale or wintering populations (breeding herd size). Bighorn sheep would be restored as a component of the historic assemblage of the resident wildlife formally found on the Refuge area. The present Texas longhorn herd will be removed and longhorn cattle will not be maintained on the Refuge in the future. An attempt will be made to place the herd with other responsible entities that will maintain the herd intact. Large ungulate herds will consume and/or remove by trampling an estimated 5,610 AUMs of forage a year which is approximately 27 percent of total plant production, leaving approximately 73 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). Exhibition herds and government horses will be supplemented during the winter as conditions warrant with approximately 40 tons of prairie hay harvested from Valentine NWR.

The area available for use by wildlife herds will be expanded by the addition of 8-11 miles of fence to enclose nearly the entire Refuge and allow bison, elk, and bighorn sheep access to most of the native prairie and ponderosa pine savannah habitats. It is anticipated that, at least initially, bighorn sheep will require a separate enclosure.

As much interior fence as possible will be removed so that herds will have more natural and open movement patterns. The Service will use prescribed fire, windmills and natural water sources, and salt to direct herd area use. The purpose is to provide a mosaic of heavily used, moderately used, and unused areas which will accommodate native grassland birds and other wildlife adapted to various grassland habitat conditions. The prescribed fire program will increase with up to 2,700 acres treated annually to invigorate native prairie, influence big game use, control cedars, encourage regeneration of unique forest types, and simulate historic fire intervals (Lenhouts 1995). Other annual management actions include one or more years of rest on approximately 10 percent of the acreage and suppression of all wildfires. Winter grazing of the Wilderness Area will be shortened 2-4 weeks to stay under the carrying capacity of the unit. Assured levels of rest will be nonexistent during the native bird breeding season.

Maintaining long-term population genetic variability of the bison, elk, and bighorn sheep herds, which affects population fitness or health, will be addressed through population size, sex, and age ratio, and addition of animals from other populations. Elk and bighorn herds will be maintained below minimum population levels; therefore, periodic introductions of animals from other populations will be accomplished to minimize inbreeding. The bison herd at its current level and sex ratio provides the effective population size required for maintaining levels of genetic variability, without induced immigration, that commensurate with accepted standards of conservation biology (Berger 1996, Berger and Cunningham 1994).

Sufficient monitoring of the herds to maintain current age and sex ratios, herd health, populations levels at or below maximum numbers will be completed. Surplus animals will be disposed of through traditional annual sales and donations and limited control hunts.

Riparian and Woodland Management

Cornell Dam and all man-made tributary impoundments will be removed allowing these areas to return to a natural state. Nearly all of the River and associated habitats will continue to be fenced to control access by bison and elk.

Woodland management will increase and focus on cedar reduction and regeneration of native plant communities through the use of prescribed fire. Mature cottonwoods will be maintained in the River corridor to ensure wintering bald eagles have adequate roosting habitat.

Threatened and Endangered Species

The Refuge will conduct an American burying beetle survey. The Refuge will also continue monitoring bald eagle and peregrine falcon use. It is anticipated that whooping crane and piping plover use will cease to occur as braided habitat associated with the Dam will gradually be lost as the River returns to natural conditions.

Native Birds and Other Wildlife

Native bird and other wildlife management under a historic regime will include increased monitoring and emphasis in planned habitat management. Management actions that favor species of management concern will be implemented to the extent possible. For example, the prairie dog colony will be allowed to expand to 400 acres which will benefit burrowing owls, a species of management concern, and a variety of other birds, mammals, reptiles, and insects. Prairie dogs will be controlled in areas where they present a safety hazard or conflict with management objectives.

Alternative summer habitat will be provided for the bat colony currently using the historic barn and the colony relocated. The barn will then be appropriately sealed to prevent further degradation.

Exotic and Invading Species

The Service will continue its integrated pest management program. A combination of biological, mechanical, and/or chemical control methods will continue to be used to reduce the presence of purple loostrife and leafy spurge. Cedar control efforts will increase through the use of prescribed fire and mechanical methods. Management efforts will be implemented to reduce the presence of invasive cool season grasses, sweet clover, Russian olive, and other exotic/invasive species.

Public Use

River use will be returned to 1993 levels. This will be accomplished by continuing the current restrictions on permittees, and by restricting the number of launches to all users to 1993 levels. In addition, bans on the possession of alcohol, boom boxes, water balloons and water cannons will be implemented. Also, no more than five tubes will be allowed to be tied together.

Fishing will be allowed on the Niobrara River and Minnichaduza Creek. Special events, such as youth fishing day, will continue.

The Service will initiate and periodically conduct limited Refuge hunts. Hunts are to help with herd stabilization and will not replace roundups as the major means of controlling big game populations.

The Service will seek funds to construct and staff a new environmental education/visitor center to improve environmental education and interpretation of wildlife, cultural, and historic resources on the Refuge. A site plan, being developed, will include a concept design for an environmental education/visitor center. The site plan will also contain suggestions for improving the existing visitor center until such time as a new center is constructed.

Cultural and Paleontological Resources

The Service will develop a cultural resource/paleontological management plan. The plan will include a Refuge-wide cultural resource inventory and paleontological resource inventory strategies. It will also include increased interpretation, protection, and education about the cultural and paleontological resources on the Refuge.

Partnerships

The Service will continue all existing cooperative activities with other agencies currently in place, with the exception of fish rearing in impoundments on tributaries of the Niobrara River as these will be removed. The Service will seek to establish additional partnerships and outside funding sources for bison management.

Monitoring

The Service will revise the monitoring plan. At a minimum the following monitoring will be conducted:

P wildlife herd monitoring sufficient to maintain age and sex ratios, health, genetic diversity, and annual excess removal.

P native bird species monitoring to supply trend information on prairie grouse, species of management concern, grassland neotropical migrants, biodiversity trend indexes.

P monitor habitat parameters (i.e., vegetation composition and structure, tree canopy, etc.) sufficient to ensure that habitat objectives are being measured and determined successful according to a Habitat Management Plan and the adaptive management process.

P federally listed species monitoring, American burying beetle survey.

P monitoring fire effects as part of the prescribed burning program.

Alternative C.
Intensive Wildlife Management

Grassland/Fenced Animal Management

A major feature of the intensive wildlife management alternative is to reduce the bison herd to 225 animals. The herd will be managed as an open herd with introductions from other Department of Interior herds in order to maintain genetic diversity within the herd. The existing elk herd would be maintained at 50 animals. Herd numbers are after sale or wintering populations (breeding herd size). Bighorn sheep will be reintroduced and allowed to expand to 50 animals. Bighorn sheep would be restored for the purpose of restoring this species as a component of the historic assemblage of the Refuge. The present Texas longhorn herd will be reduced to 125. Cows will number approximately 100, with 20 bulls and 5 steers. Longhorn introductions/exchanges to maintain genetic diversity of the herd will continue according to Service policy. Sufficient monitoring of herds will be accomplished to maintain herd structures, animal health, and populations at or below maximum levels. Surplus animals will be disposed of through traditional annual sales and donation. Limited, controlled hunts may be used to remove surplus big game.

Maintaining long-term population genetic variability of the bison, elk, bighorn sheep, and longhorn herds, which affects population fitness or health, will be addressed through population size, sex, and age ratio, and addition of animals from other populations. All herds will be maintained below minimum population levels; therefore, periodic introductions of animals from other populations will be accomplished to minimize inbreeding. Induced immigrations along with maintaining historic herd structures will provide the effective population size required for maintaining levels of genetic variability that commensurate with accepted standards of conservation biology (Berger 1996, Berger and Cunningham 1994).

Large ungulate herds will consume and/or remove by trampling an estimated 5,115 AUMs of forage a year which is approximately 24 percent of total plant production, leaving approximately 76 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). Texas longhorns, exhibition herds, and government horses will be supplemented during the winter as conditions warrant with approximately 250 tons of prairie hay harvested from Valentine NWR. Interior fence will be retained in the current configuration and units will be managed under a deferred grazing rotation. Longhorns may be used in the Valentine NWR habitat management program to further increase habitat management flexibility on Fort Niobrara NWR. Some additional big game fence may be needed for initial introduction efforts of bighorn sheep. Other annual habitat management actions will include one or more years of rest on at least 10 percent of the acreage, no planned grazing or burning on approximately 50 percent of the acreage during the native bird breeding season, suppression of all wildfires, and prescribed burning of approximately 500 - 1000 acres to invigorate native plants, reduce cedars, and encourage regeneration of woodlands.

Riparian and Woodland Management

Habitat associated with the Niobrara River and numerous tributary streams will be maintained or enhanced. Cornell Dam will be maintained to provide shallow-braided river and sandbar habitat upstream. Functional tributary impoundments will be maintained and non-functional impoundments that will benefit native birds and fish will be restored. Nearly all of the River and associated habitat will be fenced to control access by bison, elk, and Texas longhorns.

Efforts to improve the woodland community will focus on reduction of cedars and regeneration of native woodland species through the use of prescribed fire and other forest management practices. Management will ensure that an adequate number of mature trees are maintained for winter roosting use by bald eagles.

Threatened and Endangered Species

The Service will conduct an American burying beetle survey and will also continue monitoring bald eagle and peregrine falcon, whooping crane, and piping plover use. Blowout penstemon will be introduced into suitable habitat.

Native Birds and Other Wildlife

Native birds will receive greater management emphasis with actions implemented to meet habitat requirements of various species. Monitoring will increase to document native bird response to habitat management.

The 20-acre prairie dog colony in the exhibition habitat unit will be maintained and a second colony of prairie dogs will be established in suitable habitat and allowed to expand to approximately 380 acres. Prairie dogs will be excluded from areas where their presence creates a safety hazard or conflicts with management objectives.

Alternative roosting habitat will be provided for the bat colony currently located in the historic north barn. The north barn will then be appropriately sealed to prevent further degradation.

Exotic and Invading Species

The Service will continue its integrated pest management program. A combination of biological, mechanical, and/or chemical control methods will continue to be used to reduce the presence of purple loosestrife and leafy spurge. Cedar control efforts will increase through the use of prescribed fire and mechanical methods. Management efforts will be implemented to reduce the presence of invasive cool season grasses, sweet clover, Russian olive, and other exotic/invasive species.

Public Use

The Service recognizes that an overcrowding situation exists on the Niobrara River in the Wilderness Area of the Refuge on summer weekends as a result of people floating the River. River use will be capped at 1998 levels and restrictions on number of outfitters will continue. The Service will address the crowding situation by determining acceptable peak use levels and implementing management strategies that fairly distribute reduced floating opportunities among outfitters and the general public. In addition, bans on the possession of alcohol, boom boxes, water balloons and water cannons will be implemented. No more than five tubes will be allowed to be tied together, and River floating will only be allowed downstream of Cornell Dam.

Wildlife/wildland observation opportunities will be increased with the addition of an access point for hiking and horseback riding in the Wilderness Area, establishment of a concession to take people to view the bison herd, and construction of a trail to a scenic overlook of the Niobrara canyon.

The Service will allow fishing on the Niobrara River and Minnichaduza Creek. Special events, such as youth fishing day, will continue.

The Service will initiate and conduct limited Refuge hunts for elk and bighorn sheep.

The Service will seek funds to construct and staff a new environmental education/visitor center to improve environmental education and interpretation of wildlife, cultural, and paleontological resources on the Refuge. A site plan, being developed, will include a concept design for an environmental education/visitor center. The site plan will also contain suggestions for improving the existing visitor center until such time as a new center is constructed.

Cultural and Paleontological Resources

The Service will develop a cultural resource/paleontological management plan. The plan will include Refuge-wide cultural resource inventory and paleontological resource inventory strategies. It will also include increased interpretation, protection, and education about the cultural and paleontological resources on the Refuge.

Partnerships

The Service will explore partnerships with others concerning bison management. Existing cooperative efforts will be maintained for fire suppression, excess bison for the Inter Tribal Bison Council, participation in the Niobrara council, and other common coordination efforts with other agencies and landowners. The Service will seek to increase partnerships with others.

The Service will seek to develop outside funding sources. Examples would be construction of the environmental education center, big game fence, paleontological inventory, and possible acquisition of nondevelopment easements on the Refuge's north and west borders.

Monitoring

The Service will revise the monitoring plan. At a minimum the following monitoring will be conducted:

P wildlife herd and longhorn herd monitoring sufficient to maintain age and sex ratios, health, genetic diversity, and annual excess removal

P native bird species monitoring to supply trend information on prairie grouse, species of management concern, grassland neotropical migrants, and biodiversity trend indexes

P monitor habitat parameters (i.e., vegetation composition and structure, tree canopy, etc.) sufficient to ensure that habitat objectives are being measured and determined successful according to a Habitat Management Plan and the adaptive management process.

P research/monitoring on Refuge resources and human interactions from River floating will be conducted to determine carrying capacity of the River.

P water quality parameters on the Niobrara River

P federally listed species monitoring, American burying beetle survey

P monitoring fire effects as part of the prescribed burning program

Alternative D.
Modified Historical (Preferred Alternative)

Grassland/Fenced Animal Management

Approximately 200-300 bison and 70-100 elk will be managed on the Refuge under reasonably natural conditions. Bighorn sheep will be reintroduced to the Refuge and allowed to grow to a herd of 50. Texas longhorns will no longer be managed at Fort Niobrara. In accordance with Service policy, animal numbers above winter population levels will be transferred to other refuges, sold, or donated annually. Limited Refuge hunts may be used as a tool periodically to reduce the bighorn sheep and elk populations. Sex and age ratios of the herds will approximate historic free-ranging herds. Bison, elk, and bighorn sheep populations will be managed as "open" herds with introductions or exchanges made periodically to maintain the genetic integrity of the herds and minimize the negative effects of inbreeding. Sufficient monitoring of the herds will be accomplished to ensure genetics and health of the animals are maintained and herd levels are at or below desired numbers.

Bison, elk, and bighorn sheep herds will have access to nearly all of the grasslands and ponderosa pine savannah habitats with the addition of 8-11 miles of big game fence. As much interior fence as possible will be removed so that herds have a more natural and open movement pattern. Prescribed fire, water, and salt will be used to influence habitat use. The prescribed fire program will increase with up to 1,000 acres treated annually to invigorate native prairie, influence big game use, control cedars, and encourage regeneration of unique forest types. Other annual management actions will include one or more years of rest on approximately 10 percent of the acreage and suppression of all wildfires. A Habitat Management Plan will be developed and an adaptive management approach will be used to measure achievement toward the grassland habitat objectives.

Large ungulate herds will consume and/or remove by trampling an estimated 3,500 - 5,000 AUMs of forage a year which is approximately 17 to 24 percent of total plant production, leaving approximately 76 to 83 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). Exhibition herds and government horses will be supplemented during the winter as conditions warrant with approximately 40 tons of prairie hay harvested from Valentine NWR.

Maintaining long-term population genetic variability of the bison, elk, and bighorn sheep herds, which affects population fitness or health, will be addressed through population size, sex, and age ratio and addition of animals from other populations. All herds will be maintained below minimum population levels; therefore, periodic introductions of animals from other populations will be accomplished to minimize inbreeding. Induced immigrations along with maintaining historic herd structures will provide the effective population size required for maintaining levels of genetic variability that commensurate with accepted standards of conservation biology (Berger 1996, Berger and Cunningham 1994).

Riparian and Woodland Management

The Niobrara River, numerous tributary streams, and associated riparian habitat will be maintained. Cornell Dam will be maintained to provide shallow-braided river and sandbar habitat upstream. Twelve ponds formed by damming tributary streams will continue to be held at full capacity throughout most of the year for use by waterfowl and other birds, bison and elk, and fish rearing under cooperative agreement with the Nebraska Game and Parks Commission. Breached impoundments in the wilderness area will be returned to their natural state. Nearly all of the River and associated habitat will continue to be fenced to control access by bison, elk and bighorn sheep.

Efforts to improve the woodland community will focus on reduction of cedars and regeneration of native woodland species through the use of prescribed fire and other forest management practices. Management will ensure that an adequate number of mature trees are maintained for winter roosting use by bald eagles.

Threatened and Endangered Species

In addition to continuing to provide for wintering bald eagle use as mentioned above, the Service will conduct an American burying beetle survey, introduce blowout penstemon into suitable habitat for this species, and continue to provide periodic migration habitat for whooping cranes, plovers, and terns in the braided River channel habitat upstream of Cornell Dam.

Native Birds and Other Wildlife

In addition to implementing habitat management actions that improve and maintain the diverse native plant communities, the Service will consider and implement management regimes that meet various native bird requirements. Biological monitoring of native birds and other wildlife will increase to better document population trends and effects of management.

Refuge acreage inhabited by prairie dogs will increase to at least 400 acres with the establishment of a second colony in suitable habitat. Prairie dogs will be excluded from areas where their presence creates a safety hazard or conflicts with management objectives.

Alternative summer roosting habitat will be provided for the maternity colony of big brown bats currently using the historic barn. The barn will then be appropriately sealed to prevent further degradation.

Exotic and Invading Species

The Service will continue its integrated pest management program. A combination of biological, mechanical, and/or chemical control methods will continue to be used to reduce the presence of purple loosestrife and leafy spurge. Cedar control efforts will increase through the use of prescribed fire and mechanical methods. Management efforts will be implemented to reduce the presence invasive cool season grasses, sweet clover, Russian olive, and other exotic/invasive species.

Public Use

River Use

The Service recognizes that an overcrowding situation exists on the Niobrara River, in the Wilderness Area of the Refuge, on summer weekends as a result of people floating the River. The Service will alleviate this using the following processes:

Interim Strategy. Following completion of this Comprehensive Conservation Plan, a detailed River Management Plan will be prepared using one of the strategies that follow. In the interim, no new outfitters will be issued permits to launch canoes or tubes on the Refuge. River use on weekends in the summer will be capped at 1998 levels.

A social carrying capacity study of the River was started in 1998. Visitors to the Refuge were interviewed and asked to rate a series of photographs with varying numbers of canoes and tubes in them. The study results will be used to set upper limits of use for summer weekends, weekdays during the summer, and the remainder of the year. Once peak use levels have been determined, one of the following strategies will be used to distribute use among outfitters and the general public.

Strategy A. A reservation system would be implemented to regulate the number of floaters on the River. The reservation system would function similarly to other high public use areas where an individual applies for a limited number of opportunities on a first-come, first-serve basis. Applications would be accepted 60 days in advance of the desired floating date. This would allow the Service to regulate the number of floaters during any particular time period. For the past few years, the Service has monitored floaters and determined reoccurring time periods when the number of floaters exceed what the Service deems as acceptable levels. Initially, the reservation system would be employed during times that float-use exceeds acceptable levels. As use continues to expand and/or is redistributed from peak times, the reservation system would be expanded. For time periods that remain below the maximum number of floaters, no reservation would be required and open floating would be available. Since reservations would be secured by individuals and not outfitters, the Service would not have to regulate the number of outfitters using the Refuge. Outfitters using the Refuge would be required to obtain Service special use permits. Once individuals obtained a floating reservation, they would be at liberty to make floating arrangements with any outfitter working the River or use their own equipment.

Strategy B. A concession contract would be negotiated between the Service and a private company or individual to implement the reservation system as outlined in Strategy A. The contractor would run the reservation system and maintain the canoe launch area and also possibly operate the visitor center, give tours to the main bison herd, and offer hiking/horseback trips to the Wilderness Area. The contractor would receive a percentage of the income from reservation and/or user fees charged to visitors. Canoe outfitters would operate under the guidelines outlined in Strategy A, with individuals getting a reservation and then choosing an outfitter.

Strategy C. The current number (11) of outfitters would be maintained; however, measures would be taken to limit the number of floaters they serve and provide longer term permits for use of the Refuge. Currently, the Service issues one-year special use permits to the outfitters holding permits the preceding year. Special use permits for new outfitters wishing to establish a float business on the Refuge have not been made available. In order to treat all current and prospective outfitters equally, a lottery system would be employed that when fully implemented, each outfitter using the Refuge would have a 10-year permit.

This strategy would require all existing outfitters (11) to draw for a special use permit. These permits would vary in length times of one, three, five, and ten years. Outfitters drawing one-year permits would immediately be placed in a new lottery with all interested outfitters that do not hold Refuge permits. Successful drawers would receive 10-year permits that are effective the year following expiration of the one-year permits. Subsequent drawings would be held in 3, 5, and 10 years resulting in all outfitters possessing 10-year permits that expire at varying years.

A user fee of $2.00 per vessel per day or $25.00 per year was implemented in 1998. Monies collected will be used to maintain and improve the canoe launch area and add additional law enforcement officers. Fees will be reviewed periodically and adjusted to cover expenses.

Bans on the possession of alcohol, boom boxes, water balloons and water cannons will be implemented. No more than five tubes will be allowed to be tied together, and River floating will only be allowed downstream of Cornell Dam.

River floaters will be encouraged to follow the code of ethics developed by the Niobrara Scenic River Council.

Hunting and Fishing

The Service will conduct periodic hunts to control populations of elk and bighorn sheep. Hunts will be used only when other means of excess disposal such as roundup and donation are not feasible. The Refuge will continue to be closed to all other hunting.

The Service will allow fishing on the Niobrara River and Minnichaduza Creek. Special events, such as youth fishing day, will continue.

Other Public Uses

The Service will seek funds to construct and staff a new environmental education/visitor center to improve environmental education and interpretation of wildlife, cultural, and historic resources on the Refuge. A site plan being developed will include a concept design for an environmental education/visitor center. The site plan will also contain suggestions for improving the existing visitor center until such time as a new center is constructed.

Wildlife/wildland observation opportunities will be expanded and include an access point for hiking and horseback riding in the Wilderness Area and construction of a trail to a scenic overlook of the Niobrara river canyon.

Viewing of bison and elk will continue to be available year round in an exhibition habitat unit. Current facilities and wildlife observation and photography uses will remain open. Access to the main herds will be allowed through a concessionaire during peak public use periods, mainly the summer months.

No additional roads or trails will be built; sufficient connections currently exist with county and Refuge roads.

Cultural and Paleontological Resources

The Service will develop a cultural resource/paleontological management plan. The plan will include Refuge-wide cultural resource inventory and paleontological resource inventory strategies. It will also include increased interpretation, protection, and education about the cultural and paleontological resources on the Refuge. The historic hay shed will be protected from further degradation by sealing the building and relocating the bat colony.

Partnerships

The Service will continue to cooperate with Nebraska Game and Parks Commission for rearing of brood fish in tributary impoundments. Agreements in place for wildlands wildfire suppression efforts, excess bison for the Inter Tribal Bison Council, participation in the Niobrara Council, and other common coordination efforts with other agencies and landowners will continue. The Service will seek to increase partnerships with others.

The Service will seek to develop outside funding sources and support for implementing some aspects of this preferred alternative. Examples would be construction of the environmental education center, big game fence, and possible acquisition of nondevelopment easements on the Refuge's north and west borders.

Monitoring

The Service will write a Habitat Management Plan that will be stepped down from the CCP. At a minimum the following monitoring will be conducted :

P wildlife herd monitoring sufficient to maintain age and sex ratios, health, genetic diversity, and annual excess removal.

P native bird species monitoring to supply trend information on prairie grouse, species of management concern, grassland neotropical migrants, biodiversity trend indexes.

P monitor habitat parameters (i.e., vegetation composition and structure, tree canopy, etc.) sufficient to ensure that habitat objectives are being measured and determined successful according to a Habitat Management Plan and the adaptive management process.

P water quality parameters on the Niobrara River.

P federally listed species monitoring, American burying beetle survey.

P monitoring/research on River use through the Wilderness Area and it's wildlife and social impacts.

P monitoring fire effects as part of the prescribed burning program.

Implementing the Plan (Preferred Alternative)

This section is intended to provide additional information to the preferred alternative section above. Where possible, time frames are delineated, specific strategies and actions are stated, and a list of projects is presented.

Habitat

Develop a Habitat Management Plan. Consider the requirements of various native birds and other wildlife (i.e., bison, elk, bighorn sheep).

Incrementally reduce the bison herd from its current winter population level of 350 animals. Winter population levels will vary from 200-300 animals and based on habitat, native bird, and bison herd genetic objectives. Surplus bison will be reintroduced to Valentine NWR. Fort Niobrara herd reductions will correspond to fencing of the southwest portion of Valentine NWR. Excess bison will first be allocated for the Valentine habitat program with remaining excess disbursed through transfer to other Service herds, donation, and public auction.

Remove Texas longhorn cattle from the Refuge within 1-2 years of completion of the Final Comprehensive Conservation Plan and Environmental Assessment. Wichita Mountains NWR will have priority in receiving all or part of the herd. The Service will then attempt to place the remaining longhorns with an entity willing to manage the herd for genetic purposes. The last option for disbursing the herd will be through public auction.

Incrementally remove interior fence where feasible and construct 8-11 miles of big game boundary fence.

Reduce vehicle trails on the Refuge. Identify main access trails to be maintained and discontinue use of other trails. Complete minimum trail maintenance required for Refuge vehicle access (i.e., mulch with native prairie hay).

Stabilize and encourage revegetation of blowouts located on or adjacent to boundary fence, main access trails, etc. Allow other blowouts to exist in a natural state if they provide suitable habitat for blowout penstemon.

Reduce the presence of nonnative tree species in Refuge plantations by allowing natural degeneration to occur. Future replantings/plantings will include only native tree and shrub species.

The Service's Regional Dam Safety Officer will continue to inspect Cornell Dam periodically to ensure compliance with applicable laws, policies, directives, and technical recommendations governing Federal safety of dams. Furthermore, this Officer will provide technical assistance should determination be made that the Dam is no longer safe and needs to be removed.

Develop and implement a monitoring program that assesses landscape and individual habitat variables such as vegetation species composition, grassland structure (density, height) and ground cover, woodland structure (percent tree, shrub, herbaceous, bare ground, canopy cover; basal area, diameter and height, age, snags), and utilization by large ungulates. Procedures will be completed annually or at three- to five-year intervals depending upon available staff and technique requirements.

Fire-funded personnel will develop and implement a fire effects monitoring program that integrates with other Refuge biological monitoring activities.

Wildlife

Continue to conduct sharp-tailed grouse and greater prairie chicken lek counts. Obtain prairie grouse lek data from the Nebraska Game and Parks Commission and harvest data from Valentine NWR for general comparison to Fort Niobrara NWR population trends.

Implement nongame bird monitoring techniques in the grasslands and woodlands to document population trends and species richness/diversity.

Conduct a graduate research project that documents native bird response pre- and post-change in management from current habitat management emphasizing fenced animals to a more natural, less-controlled management regime emphasizing native birds.

Conduct a graduate research project that compares native bird use within the River corridor during high and low public use periods.

Continue to maintain a general observation log of bird sightings to document presence/absence, relative abundance, and use areas.

Continue to implement fenced animal management practices that ensure long-term health and survival of the herds. Actions to be taken include periodic animal introductions to minimize inbreeding, disease testing and vaccination, and mineral supplementation. Geneticists and health care professionals will be consulted on a regular basis regarding recommended practices and/or requirements.

Consult with population ecologists and/or bison geneticists regarding genetic management recommendations/ options for the Fort Niobrara NWR bison gene pool maintained in two herds; one herd on Fort Niobrara NWR and the other herd on Valentine NWR. Collect and analyze bison genetic material to establish baseline for future comparison.

Conduct seasonal population surveys of bison, elk, and bighorn sheep to document numbers by age and sex, mortality, natality, and general health/condition. Annually test excess animals for various diseases and ensure that animals introduced to the Refuge meet all health test requirements. Complete genetic testing of the herds at intervals recommended by geneticists to assess if fenced animals are being managed appropriately.

Maintain the black-tailed prairie dog colony in the exhibition habitat unit at approximately 20 acres. Attempt to establish a second, self-sustaining colony of prairie dogs in suitable habitat and allow it to expand to approximately 380 acres. The location and boundary of the second colony will be determined based on Refuge management concerns (i.e., facilities, large ungulate handling areas) and adjacent landowners. Manage predator populations and vegetation to hold prairie dogs to designated acreage with other control measures implemented as necessary.

Construct alternate, artificial bat roosts and locate near water where insect populations are abundant, protected against wind, predators, and direct sunlight. (Greenhall 1982) Maintain old, hollow trees to provide natural bat roost sites. Encourage big brown bat colony to relocate.

Complete surveys of small mammals, reptiles, amphibians, and fish at five year intervals.

Threatened and Endangered Species

Identify habitat suitable for blowout penstemon and, if it exists, introduce plants at a minimum of two sites with assistance from University of Nebraska - Lincoln. Implement management actions that result in a sustainable population of blowout penstemon.

Conduct an American burying beetle survey.

Continue to conduct biweekly eagle surveys October-April. Monitor bald eagle mortality and submit carcasses to the National Health Lab for analysis. Implement appropriate protection measures. Conduct an aerial survey of the Niobrara River every two years to document proximity of or possible nesting activity on the Refuge.

Conduct periodic surveys of the Niobrara River to document use or non-use by whooping cranes, least terns, and piping plovers. Document habitat selection, usage, and distribution. Implement appropriate protection measures.

Public Use

The Service will seek funds to construct and staff a new environmental education/visitor center to improve environmental education and interpretation of wildlife, cultural, and paleontological resources on the Refuge. A site plan, being developed, will include a concept design for the new center and suggestions for improving the existing visitor center until such time as a new center is constructed. Interim projects to complete include updating exhibits and broaden themes to include wildlife and their habitats; unusual ecological diversity; cultural and paleontological resources; and management. Investigate the possibility of a shared environmental education/visitor center with the Nebraska Game and Parks Commission, National Park Service, Forest Service, The Nature Conservancy, Valentine Chamber of Commerce, and others.

Develop and implement a River Management Plan the year following the Final CCP that addresses the various public use issues/concerns and describes/defines in detail management strategies to be implemented.

Bans on the possession of alcohol, boom boxes, water balloons and water cannons will be implemented.

Permits will be required for Scout, church, educational and other such groups floating the River. Reservations will be required and use will be limited to one group with a maximum of 30 people per day.

Fort Falls Nature Trail will be maintained for public enjoyment. The self-guiding interpretative brochure will be updated.

Provide a wilderness access point. Use will be limited to three groups at one time with a maximum group size of five horses or ten people. An outfitter, selected by lottery, will be allowed to guide a maximum of one group per day and will pay a fee and/or a certain percent of gross receipts to the Refuge.

Construct a trail to a scenic overlook of the Niobrara canyon and provide appropriate interpretation.

Establish a concessionaire contract to view and interpret the bison and elk herds during the summer tourist season.

Continue to improve the main auto tour route by resurfacing with gravel and closing/revegetating numerous side trails. Expand the display habitat unit and provide more natural and aesthetic setting by removing and/or relocating fence.

Staff and expand the hours of operation of the visitor/ environmental education center.

Maintain the visitor center, information kiosks/leaflet dispensers, education panels, other signs, picnic tables, and rest rooms in clean, orderly, well cared for condition.

Update Refuge brochures to new Service standards.

Develop a Refuge specific environmental education curricula for teachers to use independently.

Continue to prepare periodic news releases and send to newspapers, radio, and television to inform the public about Refuge events and issues.

Sport fishing regulations will follow those of the Nebraska Game and Parks Commission except that taking of frogs, turtles, and minnows will be prohibited. A sport fishing plan will be prepared.

Cultural and Paleontological Resources

Complete a Refuge-wide cultural resource survey and develop a management plan based on results. The Plan will include management strategies for the historic hay shed based on future objectives and possible uses (i.e., storage, environmental education) for the designated historic site.

Relocate the big brown bat colony and complete appropriate bat proofing and renovations according to future management plans.

Conduct a Refuge-wide paleontological inventory.

Display and interpret cultural and paleontological specimens.

Ecosystem (Partners)

Maintain a contaminant database on the Niobrara River. Cooperate with various entities (i.e., USFWS Ecological Services; State of Nebraska) to collect data on flow, temperature, sediment, nitrates, and other pollutants.

Work with Boy Scouts, Girl Scouts, 4-H, National Audubon Society, Niobrara Outfitters Association, Fort Niobrara Natural History Association, Cherry County Schools, and others to complete at least two wildlife/ public use projects a year.

Contact and seek cooperation/partnership with universities regarding a paleontological inventory of the Refuge.

Consider acquisition of nondevelopment easements from willing adjacent landowners to protect refuge integrity.

Contact and seek cooperation/partnership with International Safari Club, Rocky Mountain Elk Foundation, and others regarding large ungulate projects.

Work with USDA Natural Resources Conservation Service (NRCS), Nebraska Game and Parks Commission, U.S. Forest Service, National Park Service, Middle Niobrara Natural Resource District, and others to complete at least two wildlife habitat and/or public use projects a year.

Continue to cooperate with NRCS on soil mapping and data digitizing of Service lands, review and comment on revised National Range and Pasture Handbook, participation in range judging contests, range condition surveys, and provide technical assistance on wildlife/wildland concerns.

Continue to cooperate with the Nebraska Game and Parks Commission on wildlife surveys and fish rearing in Refuge ponds.

Write a minimum of three grant proposals a year to seek outside funding.

Work with State of Nebraska Veterinarian, Nebraska Game and Parks Commission, National Park Service, and others on management of fenced and free-ranging elk.

Work with veterinarians for the State of Nebraska, neighboring states, USDA-APHIS, and private sector on disease/health issues, regulations, etc.

Staffing Needed to Implement the Fort Niobrara NWR Preferred Alternative (CCP)

The following Staff Chart shows current staff and proposed additional staffing needed to fully implement the preferred alternative. If all positions were filled, the Refuge Complex would be able to carry out all aspects of the preferred alternative to a high standard. If some positions are not filled, all aspects of the Plan may not be able to be completed or those completed may be done over a longer period of time. Staffing and funding are expected to come over the 15 year life of this Plan. Positions marked with an * are shared with Valentine NWR. The new refuge operations specialist position would be responsible for the Partners For Wildlife program, Holt Creek WMA, and Tower WMA. (X = filled; -- = vacant)

Position	**Current**	**Proposed**
Refuge Manager*	X	X
Refuge Operations Specialist	X	X
Refuge Operations Specialist*	–	X
Outdoor Recreation Planner*	–	X
Law Enforcement Officer*	X	X
Administrative Officer*	X	X
Office Automation Clerk*	X	X
Wildlife Biologist	X	X
Bio. Technicians/Seasonal (2)	–	X
Heavy Equipment Operator*	X	X
Maintenance Worker (2)	X	X
Maintenance Laborer/Seasonal (2)	–	X
Asst. Fire Management Officer*	X	X
Range Technician (Fire)	X	X
Firefighters/Seasonal (3)	X	X

Funding Needed to Implement Fort Niobrara NWR Preferred Alternative (CCP)

Currently, a large backlog of maintenance needs exists on the Refuge. The needs are recorded in a national Maintenance Management System (MMS). In 1997, under current management plans, the backlog for Fort Niobrara NWR was $3,830,000. Most of these needs would also need to be met under this preferred alternative. A synopsis of these needs is listed below:

Vehicles and Equipment	$708,000
Fences, Corrals, and Wells	$943,000
Water Control Structures and Dikes	$197,000
Roads and Bridges	$292,000
Public Use Facilities	$709,000
Buildings and Maintenance Facilities	$821,000
Residences	$160,000
TOTAL	$3,830,000

The System uses another database, the Refuge Operating Needs System (RONS), to document proposed new projects that will implement a comprehensive conservation plan, implement ecosystem or federally listed species goals or meet legal mandates. The total cost to implement the preferred alternative is $3,908,000. A synopsis of these needs is listed below:

Biological Monitoring and Studies	$110,000
Habitat Management	$443,000
Reintroduction of Bighorn Sheep	$ 20,000
Resource Protection	$393,000
Public Education and Recreation	$742,000
Environmental Education Center	$2,200,000
TOTAL	$3,908,000

Affected Environment

Geographic/Ecosystem Setting

Fort Niobrara NWR is 19,131 acres in size and located in north-central Nebraska along the Niobrara River. The Refuge and surrounding area is recognized by ecologists for its biogeographic significance due to the co-occurrence of five distinctly different, major vegetation communities within and adjacent to the Niobrara River corridor. The region is the only place in North America where Rocky Mountain Coniferous Forest (eastern limit), Northern Boreal Forest (southern limit), Eastern Deciduous Forest (western limit), Mixed Prairie and Sandhill Prairie meet and intermingle (Kaul and Rolfsmeier 1993)). The unusually diverse plant and animal assemblages found in this area are due to unique surface and subsurface geologic formations, water and soil conditions, current and past climates, and differential sun exposure (Churchill et al. 1988). Additional ecological factors that had significant affect on the biological diversity that evolved in this region prior to Euro-American settlement includes wildfire and the use of fire by aboriginal men (Higgins et al. 1986, Steutter 1991), and the unrestricted grazing and impacts associated with grazing of bison, elk, pronghorn antelope, and prairie dogs (Knopf 1994, Bragg and Steuter 1996). Though changes in composition and density of native flora and fauna have occurred since settlement, Bogan (1995) reported that Fort Niobrara is one of the few areas where the basic components of the 1850 landscape are still present and viable.

Climate

The climate of the region is highly variable and characterized by cold winters and hot summers. Total annual precipitation averages 18 inches with approximately 65 percent occurring during the May-to-September growing season (National Oceanic and Atmospheric Administration's National Climatic Data Center 1996). Winter precipitation is usually in the form of snow with the annual accumulation averaging 37 inches. Temperatures range from -39° F to 114° F with July and August being the warmest months (average high temperature 85-87° F) and January and February the coldest months (average low temperature 8-12° F). The average frost free period is approximately 150 days. Winds ranging from 5-15 mph are common throughout the year and are generally out of the north, west, or northwest direction in the winter and out of the south, west, or southwest direction during the summer. Low humidity, high temperatures and moderate to strong winds cause a rapid loss of soil moisture by evapo-transpiration during the summer.

Air Quality

Air quality is good due to the absence of significant air pollution sources. The Fort Niobrara Wilderness is a Class 2 Status Area under the Clean Water Act.

Topography

The Refuge topography is varied and well-defined. The Niobrara River valley extends from east to west across the Refuge and is entrenched 150 to 350 feet below the general upland level. High terraces, or benches, lie at different levels from 175 to 275 feet above the present River channel and from 30 to 250 feet below the general level of the uplands (Layton 1956). Most benches are discontinuous strips 1/4 to 3/4 of a mile wide with level to rolling or hummocky relief. Steep valley sides, or breaks, are on both sides of the River and along lower courses of its major tributaries. Table land north of the River valley is nearly level to gently rolling with several surface areas modified by narrow, steep-sided and shallow drainage ways, by small areas of typical sandhills, numerous hummocks, and low, elongated sandy ridges. Sandhill terrain south of the River is undulating to hilly with dune tops 10 to 100 feet higher than the surrounding area. The range of hills, with alternating pockets or narrow valleys, usually run parallel in an irregular northwest-southeast direction. Generally, the southerly (leeward) sides of the hills are steeper than the northerly (windward) sides. Elevations on the Refuge range from 2,000 feet above sea level to 2,800 feet.

Geology

The geologic framework of the Refuge, as summarized by Osborn 1979, consists of six formations and are as follows (from oldest to youngest): Rosebud Formation "bedrock" makes up the Niobrara River valley walls and lower courses of the major tributaries within the Refuge; Valentine Formation is a sandy, stream-deposited unit unconformably overlying the Rosebud and forming gentle slopes; Ash Hollow Formation is a hard, sandy unit with many ledges and layers of volcanic ash which forms a "caprock" on the north rim of the Refuge; High Terrace Deposits are sand and gravel deposits high above the present Niobrara River that were deposited during the later part of the Pleistocene Ice Age when the River was flowing at a higher elevation and forms the flats upon which the Refuge headquarters is built; Sandhills are stabilized dune sand of the late Pleistocene and Holocene age; Low Terrace and Floodplain Deposits are adjacent to the modern Niobrara River and contain rocks derived from older formations but are not of significant age geologically.

Soils

Soil groups and series found on the Refuge are mapped and described in detail in the 1956 Soil Survey of Cherry County. Dominant soils south of the Niobrara River in the Sandhills portion of the Refuge are Valentine (fine sand, undulating), Valentine-Rosebud (loamy fine sands, undulating) and Dune Sand (stabilized, rolling). Within the Niobrara River valley, Tripp (fine sandy loam) soils are generally found on terraces above streams, Sarpy (loamy fine sand) soils occur on bottom land along the River and streams, and little soil development exists on rough broken land and steep bluffs. Benchland north of the Niobrara River and small areas near River "breaks" consist of mostly Holt (fine sandy loam, gently undulating) and Rosebud (loamy fine sand, gently undulating) soils.

Water Resources and Associated Wetlands

The Niobrara River flows from west to east across the Refuge for approximately nine miles with the channel above Cornell Dam braided and shallow with the downstream portion of the River confined to a single, narrow channel. The River is laden with sand and silt and flows swiftly at about 6-8 miles per hour. River flow is fairly stable throughout the year, averaging close to 1,000 cubic feet per second (Bentall 1990). Numerous streams and seeps along the Niobrara River valley flow intermittently or perennially. Several waterfalls exist on the Refuge where spring creeks flow over hard rock layers. River and stream flows derive almost entirely from steady groundwater seepage from the Ogallala or High Plains aquifer. Floods along the Niobrara River mostly result from winter ice jams with spring and summer floods rare. Tributary creeks, especially on the north bank, flash flood occasionally during severe summer thunderstorms.

Small areas of palustrine wooded wetlands are situated alongside the River channel and consist of various tree species including cottonwood, green ash, peachleaf willow with an understory of shrubs (sandbar willow, western snowberry), grasses, grass-like plants and forbs. Palustrine emergent wetlands vegetated with cattail, bulrush, phragmites, sandbar willow, prairie cord grass and various sedges are present on River and tributary floodplains and channels, isolated catchments and slopes, and at 12 man-made impoundments near the mouth of some feeder streams. Total water/wetland acres on the Refuge are approximately 375. Refuge wetlands are shown on Figure 3.

Ground and surface water quality are generally good. The Nebraska Department of Water Quality rated the Niobrara River as Class A for which quality will be maintained and protected. Fecal coliform counts are generally within standards for water contact recreation; however, samples exceeding health standard levels were obtained at the confluence of a river tributary on the Refuge several years ago. A new wastewater treatment plant for the city of Valentine has improved the quality of water discharged into a Niobrara River tributary.

Vegetation

Churchill et al. (1988) recorded 581 species of vascular plants in this area which represents 1/3 of the total known for Nebraska. Native species equal 519 while 62 are introduced. Preliminary mapping of principal plant communities of the Refuge is found in Figure 4 with general descriptions (Churchill 1988, Kaul 1990, Kantak 1995) summarized below.

Grasslands

Sandhills prairie is found atop sand dunes south and west of the River and is dominated by a mixture of tall-, mid- and short-grasses with their relative abundance differing according to variation in water holding capacity of the sandy soil as influenced by topography. Common grass species include sand and little bluestems, sand lovegrass, prairie sandreed, switchgrass, blue and hairy grama, sand dropseed, sandhill muhly, needle-and-thread, prairie junegrass and western wheatgrass. Shrubs include leadplant, prairie rose, sand cherry, poison ivy, buckbrush, and yucca. Typical forbs are hoary vetchling, purple and silky prairie clovers, sand milkweed, spiderwort, bush morning glory, prairie coneflower, lemon scurfpea and several penstemon species.

Mixed prairie is located most extensively on the flat tableland above the pine-covered slopes north of the Niobrara River where drier, sandy loam soils support shallow-rooted, drought-tolerant species. This vegetation type also occurs south of the River where appropriate soil moisture characteristics exist. Dominant grass species include little bluestem, blue grama, side oats grama, needle and thread grass, and threadleaf sedge. Silver-leaf scurf pea, prickly-pear cactus, yucca, leadplant, prairie rose, and several other forbs and shrubs are present.

Total grassland acreage on the Refuge is approximately 14,264 acres. Included in this total is an estimated 148 acres of restored native prairie.

Woodlands

Ponderosa pine savanna and forest, the eastern extension of Rocky Mountain Coniferous Forest, is located on rocky soils and steep eroding cliffs of the north wall of the River valley and upper slopes of canyons on the south side where there is no shading by deciduous trees. Other native woody species found on these xeric sites include choke cherry, fragrant sumac, prairie rose, sand cherry, and yucca. Herbaceous understory species are typical of adjacent prairie. Total acreage on the Refuge is approximately 3,022 acres.

Eastern Deciduous Forest covers much of the River floodplain, south wall of the River valley, and canyons of larger tributaries where a permanent water supply is accessible via the shallow floodplain water table or from permanent spring seeps. This woodland type is also found in moist slopes and draws. Bur oak are common with ironwood, American elm, green ash, basswood, and hackberry present. The understory is varied and comprised of typical mesic, shade-tolerant species. Paper birch, a characteristic species of the Northern Boreal Forest community, is restricted and clustered around cold springs in sheltered spring branch canyons, or near spring-fed seeps along the steep canyon walls of the south side of the River valley. Understory consists of boreal-type (cold water marsh or bog habitats) grasses, sedges and mosses. Eastern red cedar has invaded these woodland communities and is dominant in some areas. Total Refuge acreage is approximately 1,296 acres.

Tree Plantations established in the 1930's by the Civilian Conservation Corps and later by Refuge staff are located mostly in administrative areas and consist of Eastern red cedar, black and honey locusts, American elm, green and white ash, and/or ponderosa pine Totaling approximately 59 acres.

Invader/Exotic vegetation found on or near the Refuge includes leafy spurge, purple loosestrife, Canada thistle, Kentucky bluegrass, smooth brome, downy brome, sweet clover, reed canary grass, phragmites, Eastern red cedar, Russian olive, black and honey locusts.

fIGURE 3

fIGURE 4

Wildlife

A rich and significant diversity of wildlife species with eastern, western, northern and southern affinities as well as niches specific to the northern Great Plains inhabit the Refuge and surrounding area (Armstrong et al 1986, Labedz 1990, Freeman 1990, Hrabik 1990). Population numbers vary according to amount of suitable habitat and other factors. Species lists for birds, mammals, amphibians, and reptiles are found in Appendix A.

Birds

A tremendous diversity of native birds inhabit Fort Niobrara NWR seasonally or year-round with a total of 227 species recorded since the Refuge's establishment. Approximately 48 percent of avian species have ecological affinities with the woodlands in and adjacent to the Niobrara River valley due to complex and varied habitat stratification. Dominant breeding species in the woody habitats include ovenbird, great crested flycatcher, black-and-white warbler, American redstart, black-capped chickadee, red-eyed vireo, house wren, eastern kingbird, orchard oriole, common yellowthroat, brown thrasher, and rufous-sided towhee (Sedgwick 1995). Wild turkey are common year-round residents of the woodlands while bobwhite quail are rare. Raptors likely to be seen in suitable woody habitat include Cooper's hawk, red-tailed hawk, merlin, kestrel, and rough-legged hawk. Bird species that evolved with ecological niches in grasslands comprise 11 percent of total Refuge species which is typical of the Great Plains. Species that are relatively abundant on Fort Niobrara NWR include grasshopper sparrow, western meadowlark, sharp-tailed grouse, greater prairie chicken, and upland sandpiper. Swainson's hawk, northern harrier, prairie falcon, and ferruginous hawk have grassland affinities and are present periodically in low numbers. Approximately four pair of burrowing owls inhabit the 20 acre prairie dog town and raise young each year. Thirty-two percent of Refuge bird species inhabit the Niobrara River, streams, ponds, and various wetlands. Canada goose, mallard, and wood duck are common breeders and several additional species of waterfowl, shorebirds, gulls, terns, marsh and waterbirds are present for several days or months but not often seen. Species encountered in multiple habitats and common on the Refuge include turkey vulture, mourning dove, belted kingfisher, and cliff swallow with golden eagle and osprey seen occasionally.

Species of management concern by the Service that have been recorded on the Refuge include burrowing owl, ferruginous hawk, northern harrier, long-billed curlew, upland sandpiper, short-eared owl, sedge wren, eastern meadowlark, dickcissel, grasshopper sparrow, Baird's sparrow, McCown's longspur, chestnut-collared longspur, red-headed woodpecker, olive-sided flycatcher, and loggerhead shrike.

Mammals

The mosaic of habitats found in this area of the northern Great Plains support an abundant diversity of native mammals. Approximately 44 of the original 52 native mammalian fauna currently inhabit the Refuge and surrounding area with seven additional species introduced or their ranges extended (Bogan and Ramotnik 1995). Bison and elk, extirpated in Nebraska in the late 1800's, were reintroduced to the Refuge in 1913. Other large native ungulates that are common include white-tailed deer and mule deer with pronghorn antelope being scarce. Black-tailed prairie dogs are found both on and off the Refuge in areas of "harder" ground but their numbers are limited. Smaller native mammals that are abundant include Ord's kangaroo rat, white-footed mouse, deer mouse, prairie vole, and western harvest mouse (Bogan 1995). Less numerous species include northern short-tailed shrew and masked shrew which are found in mesic sites. A maternity colony of big brown bats, estimated 200 individuals, inhabits the historic hay barn during the summer. Coyote are a common, widespread predator with bobcat less numerous and observed periodically in and adjacent to the River corridor. Beaver are widespread and found on the Niobrara River and numerous streams. River otter were historically common along the River but today are rarely sighted and are listed as endangered by the State of Nebraska. Species that extended their range into this area include raccoon, eastern fox squirrel, and black-tailed jackrabbit. Texas longhorn cattle, a non-native species, was introduced to the Refuge in 1936 but had historically been trailed to Fort Niobrara Military Reservation during the late 1800s as a source of meat for Native Americans.

Amphibians and Reptiles

At least 24 species of reptiles and amphibians occur on the Refuge and/or surrounding area which is a significant proportion of the herptofauna of the northern Great Plains. Corn et al., (1995) documented 16 of these species during surveys conducted 1991-1992. Species recorded in the Niobrara River, streams, and associated wetland habitat included Blanchard's cricket frog, western chorus frog, bull frog, northern leopard frog, common snapping turtle, and painted turtle. Species found in association with drier habitats include plains spadefoot, ornate box turtle, pale milk snake, bull snake, rattle snake and prairie racerunner. Woodhouse's toad, eastern yellow-bellied racer, and red-sided garter snake are wide spread in distribution and common on the Refuge. A spiny softshell turtle was documented for the first time in Cherry County just off the Refuge in the Minnichaduza Creek in 1992. Yellow mud turtle, identified by the Service as a species of management concern, probably inhabits the Refuge; however, no recent sightings have been made.

Fishes

Fish communities found in the Niobrara River and its tributaries are unique to Nebraska. According to Hrabik (1990), relict populations of more typical northern, southern, eastern, and western species, as well as fishes common to the northern Great Plains, are found on the Refuge and surrounding area due to repeated glaciation and tectonic activity. The presence and distribution of these has not changed much since historic time due to the stable flows, consistent temperatures, reduced sedimentation, low dissolved solids of the Niobrara River drainage (Bentall 1990; Farrar 1983) and lack of degradation from agriculture (Case 1986). Numerous species of cyprinids, ictalurids, and percids are common. Species of concern (Nebraska List) that may inhabit waters on Fort Niobrara NWR include northern redbellied dace, pearl dace, finescale dace, and blacknose shiner.

Twelve man-made ponds maintained by the Nebraska Game and Parks Commission periodically contain various species of game fish.

Threatened and Endangered Species

Several plant and animal species listed under provisions of the Endangered Species Act have been documented on the Refuge and/or in the surrounding area.

Bald eagles migrate through the area during the spring and fall and also spend the winter (late October - early April) along the Niobrara River. Winter populations average 5-7 with as many as 15 eagles recorded on the Refuge in some years. Wintering eagles depend on suitable night and severe weather roosts in sheltered timber stands located close to food sources (Peterson 1986). Roost trees on Fort Niobrara NWR are mostly mature cottonwoods with open structure and stable limbs located along the shores of the Niobrara River. No eagles nest on the Refuge; however, nesting has been documented several miles east at the confluence of the Niobrara and Keya Paha Rivers since 1996 (J.Dinan pers. comm.). Eagle mortality due to pesticide poisoning (Famphur), gunshot, and electrocution has been documented in the area with actions taken to reduce its occurrence (law enforcement, education, removal or modification of source) annually.

Peregrine falcons migrate through the area in late April and early May and in September and October. Sightings by Refuge staff are rare.

Whooping cranes migrate through the area in April and October. One adult whooping crane was sighted with approximately 100 sandhill cranes resting in native prairie north of Fort Niobrara on October 21, 1997. The most recent sighting of whooping cranes on the Refuge was made in October, 1993 when two adult cranes spent several days roosting and feeding on shallow, sparsely vegetated segments of the Niobrara River above Cornell Dam.

Piping plovers are occasionally sighted on the Refuge during spring and fall migrations. Most of the exposed sandbar habitat on the Refuge is located above Cornell Dam with sandbars downstream usually exposed in July and August.

Threatened and endangered plants and animals documented in the area, but not documented on the Refuge, include blowout penstemon, western prairie fringed orchid, American burying beetle, and the interior population of the least tern.

Cultural and Paleontological Resources

Numerous significant cultural and paleontological, remains exist on the Refuge. The following summaries were taken from Cultural Resource Inventory And Assessment For Selected Areas Within Fort Niobrara National Wildlife Refuge, Valentine, Nebraska: A Final Report by Osborn 1979.

Paleontologic resources of the Niobrara River valley are unusually rich with 17 distinct fossil sites excavated on the Refuge within the wilderness area. Two fossil beds of the lower Pliocene and upper Miocene epochs provided the non-articulated skeletons and bone fragments of more than 20 extinct mammalian species including three-toed horses, camels, antelopes, rhinoceroses, rodents, and rabbits.

Archaeological remains collected in this area suggest short-term occupation by prehistoric and historic aboriginal groups for hunting and gathering. Artifacts date back through several cultures to the Paleo-Indian period of 7,500-11,500 years ago and include scattered flint chips, projectile points, other stone tools, animal bone fragments, charcoal pieces, and pottery pieces. Aboriginal occupation of this region documented in various expeditions of the middle and late 1800's was by the Dakota Sioux, Ponca, and Pawnee.

Military history of the area began in the late 1870's with the restriction of Sioux Indian tribes to the Great Sioux reservation in Dakota Territory (now western South Dakota) and establishment of Fort Niobrara Military Reservation. The Fort was established in 1879 to monitor Sioux activity and control operations of cattle rustlers and horse thieves. "Long-horned" cattle trailed from Texas were distributed to the Sioux, and the Fort served as a market for locally furnished goods and services. Soldiers were dispatched to several skirmishes although no major battles or events occurred. The Fort was closed in 1906 and retained by the War Department as a remount station until 1911 when a portion was transferred to the Department of Agriculture, Bureau of Biological Survey to be used as a preserve and breeding ground for native birds. A hay shed, constructed in 1897 by the Army, remains on the Refuge and is listed on the National Register of Historic Places.

Euro-American settlement of the Sandhills began in the late 1870's and 1880's and corresponded with the strong cattle market provided by the Military Fort. The railroad (Fremont, Elkhorn, and Missouri Valley) reached Fort Niobrara in 1883 resulting in the development of the town of Valentine. Homesteading was further encouraged by the Fort's ready market for local farm produce and labor. Several saw and flour mills were in operation along the Niobrara River by the mid-1880's. Homesteading and farming grew during the 1880's but were challenged by drought and recession in the 1890's. The 1904 Kinkaid Act encouraged more settlement; however, the Sandhills was nearly the last of the Great Plains to be homesteaded. Population in the area increased and peaked during World War I with elevated commodity prices but steadily declined to current levels (Miller 1990).

Special Legislated Designations

Wilderness Area

A 4,635 acre portion of the Refuge was designated as wilderness on October 19, 1976. The area includes a portion of the Niobrara River valley and timbered benchland interspersed with native prairie north of the River. Wilderness is managed according to the Wilderness Act of 1964 which requires wilderness areas to be managed in a natural condition with opportunities for solitude or a primitive and unconfined type of recreation.

Research Natural Area

A relatively dense stand of ponderosa pine, approximately 200 acres located within the Wilderness Area, was established as a Research Natural Area in 1960.

Wild and Scenic River

Seventy-six miles of the Niobrara River which includes the nine mile portion on the Refuge was included in the Wild and Scenic River System in 1991. The Niobrara Scenic River is managed by a 15 member Niobrara Council of which the Refuge manager holds one seat.

National Recreational Trail System

Five miles of the Niobrara River on the Refuge has been included in the National Recreational Trail System since 1982.

National Historic Building

The "hay barn" built in 1897 and the only building remaining of the historic military Fort Niobrara is registered as a National Historic Building.

National Register of Historic Places

Fort Niobrara was nominated to the National Register of Historic Places.

Socio-Economic and Political Environment

The Refuge is located in Cherry County approximately three miles east of the city of Valentine, the county seat and biggest city in the county with a population of approximately 2,800 (see Figure 1). Cherry County is the largest County in Nebraska with a total area of approximately 6,013 square miles. Rural population in the County is very sparse due to large ranch sizes. Predominate land-use in the county is native prairie grazing and haying with less than 10 percent of the acreage cropped or irrigated (Miller 1990). Family-owned ranching is the primary source of income in the county, although income generated from tourism is increasing.

Access to the Refuge is by Nebraska Highway 12 and a county maintained gravel road and bridge. Major highways traversing the county are US Highway 83 (north/south) and US Highway 20 (east/west). The nearest airport with scheduled passenger service is in North Platte located 136 miles south of Valentine.

Neighboring jurisdictions of Fort Niobrara include the National Park Service (Niobrara National Scenic River), Nature Conservancy (Niobrara Valley Preserve), Nebraska Game and Parks Commission (Merritt Reservoir Recreation Area, Smith Falls State Park, Bowring Ranch, Cowboy Trail, Valentine Fish Hatchery, several Wildlife Areas), Middle Niobrara Natural Resource District (Brewer Bridge Recreation Site), U.S. Forest Service (Nebraska National Forest), and Bureau of Land Management (several small tracts).

Public Uses

Public use of the Refuge occurs year-round with the greatest amount of visitation documented from mid-May to mid-October. Activities include wildlife/wildland observation, photography, interpretation/education, picnicking, hiking, floating the Niobrara River, fishing and periodic special events. A more detailed look at current levels of use is found in Alternatives, A. Current Management (No Action).

Environmental Consequences

Alternative A. Current Management (No Action)

Natural Resource Consequences

Continuation of current management would result in bison, elk, and Texas longhorn herds receiving primary consideration in management. Maintaining the bison herd at 350 animals would allow the genetic integrity and variability of the herd to be maintained without introductions. Periodic introductions to the elk herd and longhorn exchanges between Wichita Mountains and Fort Niobrara NWRs would continue to be accomplished for genetic and health management purposes.

Little flexibility would continue in habitat management with emphasis placed on maintaining various habitats in their current condition and meeting the needs of the fenced animals. Bison, elk, and Texas longhorns will continue to consume and/or remove by trampling an estimated 8,400 AUMs of forage a year which is approximately 40 percent of total plant production, leaving approximately 60 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). Texas longhorns, exhibition herds, and government horses will be supplemented during the winter as conditions warrant with approximately 600 tons of prairie hay harvested from Valentine NWR.

Most of Fort Niobrara NWR's habitat management objectives would not be met due to numbers of bison, elk, and longhorns maintained on the Refuge. Refuge habitats rested one or more years would only total 4 percent of the acreage, approximately 30 percent of the Refuge would not be disturbed (no planned grazing or burning) during the native bird breeding season which is less than the desired level, and prescribed burning would have limited opportunity for use in invigorating native plants or control of cedar invasion.

Limited management efforts would be directed toward the Refuge's enabling legislative purpose of native birds. Numbers of birds (species and individuals) would probably remain unchanged because management actions necessary to improve habitat conditions for some of the native bird populations would not be possible. For example, prairie grouse populations would be present but at below optimal levels because residual grassland vegetation on many areas of the Refuge would not meet minimum habitat requirements. Various wildlife species associated with prairie dog habitat would remain at their current minimum population levels because the prairie dog town would be held to its current size of approximately 20 acres. Possible impacts of current management on the various vegetation communities, native bird populations, and other wildlife species would not be known because no additional biological monitoring would be accomplished. Woodland management would be limited and not adequately address concerns that some of the unique forest types are not regenerating, cedars are becoming dominant, and some woodlands are lacking in understory.

Cultural and Paleontological Resource Consequences

Cultural and paleontological resources would have no additional protection or interpretation under current management. The historic barn, which currently houses the summer bat colony, would continue to deteriorate. The present level of interpretation provided by the existing visitor center would continue. No existing funds are available to improve interpretation of cultural and paleontological resources.

Public Use Consequences

River floating under the current management alternative would continue with the number of outfitters maintained at 11 and no restriction on the number of launches per outfitter. This alternative, however, does not provide adequate measures to control growth, alleviate the crowding situation, nor does it protect the wilderness character and experience of this River section which ultimately could result in River floating through the Refuge being determined incompatible and shut down.

Other public use activities which include wildlife/wildland observation, environmental education/interpretation, and fishing will continue but not be improved or expanded.

Socio-Economic Consequences

This alternative has the least initial consequences to the local area economy. Maintenance of bison herds and longhorn herds and their subsequent sale of excess animals would continue to contribute to Cherry County Revenue Sharing receipts.

The lack of controls on River use on the Refuge initially do not curtail the current growth occurring in the tourism industry of Cherry County. Ultimately, however, this increased growth, if not responsibly managed, could result in enough deterioration of wilderness quality on the Refuge, to force a closure of this use. Should that occur, serious economic consequences could occur for a number of businesses in the Valentine area.

This alternative maintains the other existing public uses. Revenues derived from out-of-town visitors to view animal herds in the exhibition habitat unit or use other facilities on the Refuge would remain unchanged.

Staffing and funding levels for the Refuge under this alternative would also remain unchanged. Expansion of staffs and increased efforts to expand the Refuge infrastructure under other alternatives being considered would not occur with this alternative. The multiplier effect of these changes through the economy would therefore also not occur.

Alternative B. Historical

Natural Resource Consequences

This alternative would attempt to replicate historic ecological conditions to the extent possible on the Refuge. Bison and elk herds would be maintained at their current levels and the genetic integrity of the herds kept intact. Bighorn sheep would be reintroduced to the Refuge. Texas longhorns would no longer be managed on this Refuge. Removal of interior fence will enable bison and elk to establish more natural and historic distribution or habitat use patterns. Although highly mobile, bison show a strong preference for certain areas (influenced by plant growth stage, vegetation type and species, topography) during different seasons and have varying impacts. It is expected that bison will spend less time in the hills and more time on the more level and open areas. Fire, water, and salt will be used to distribute some of the use. Native prairie plant composition, height and density will be affected both positively and negatively by differing amounts and degrees of large ungulate grazing, fire, and rest. Large ungulate herds will consume and/or remove by trampling an estimated 5,610 AUMs of forage a year which is approximately 27 percent of total plant production, leaving approximately 73 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). At this level, forage consumption will be about 33 percent less than the current management regime which should result in increased standing vegetation (height and density) which should favor prairie grouse. Prairie dog acreage will increase providing additional habitat for various birds (i.e., burrowing owl, a species of management concern), mammals, reptiles, and insect species. Fire, a historic ecological force, will be used in various prescriptions to distribute bison grazing, invigorate grasslands, reduce cedar presence, and encourage regeneration of native tree species. Management efforts in the various woodland communities may have short-term negative effects on some species of native birds; however, the long-term effects will be positive after the tree, shrub, and herbaceous layers become more diverse and sustainable. The federally listed Blowout penstemon would be established in suitable habitat which would enhance biological diversity. The Niobrara River would return to a more natural condition by removing Cornell Dam and tributary impoundments within the Refuge. This would allow increased flows into the River and upstream fish migrations would no longer be stopped. Braided sandy river habitat upstream of Cornell Dam would decrease, which would negatively affect the federally listed whooping crane, interior least tern, and piping plover migratory use. Overall, this alternative would result in a more natural mosaic of habitat conditions favoring most native bird species and thus allow the enabling purpose of the Refuge to be achieved.

Cultural and Paleontological Resource Consequences

Management efforts towards cultural and paleontological resources under this alternative would increase with completion of a cultural resource survey and development of a management plan.

This alternative seeks to protect the historic barn from further degradation by supplying alternative bat habitat and preventing bats from re-entering the barn. Interpretation and education would also increase from current management.

Public Use Consequences

The historic alternative returns the Niobrara River to a more natural condition by removing Cornell Dam. This would increase the length of the River on the Refuge that is suitable for canoeing and tubing.

This alternative would result in a reduction of River use to 1993 levels which would be approximately 74 percent of the current level. User fees initiated in 1998 would continue and be adjusted as necessary to assist with funding of law enforcement and maintenance of river recreation.

This alternative would seek to construct a new environmental education/visitor center which would allow increased interpretation of Refuge cultural, paleontological and natural resource programs. It would improve Refuge efforts to educate both school age groups and the general public about wildlife and the natural resources which exist in the Nebraska Sandhills.

This alternative would initiate a limited Refuge hunting program for large animals including bison, elk, deer, and bighorn sheep. The hunts would be primarily used to assist in control of excess animals, not to replace roundups and existing strategies for surplus animal removal.

Socio-Economic Consequences

This alternative would reduce the amount of revenue sharing funds distributed to Cherry County as a result of a loss of annual longhorn cattle sales. Using 1997 levels as an example, it is estimated that the surplus longhorn cattle auction generated approximately $40,000 in Refuge receipts. Cherry County receives a percentage of these proceeds under the Refuge Revenue Sharing Act.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off refuge onto adjacent private land. The refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that are necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

This alternative would reduce the number of people allowed to use the River through the Refuge. It is difficult to determine an actual economic impact from this reduction, because response of the public may be extremely varied. Some of the people that no longer use the River because of human congestion may return. Some of those denied use on the Refuge portion of the River may just put in further downstream or upstream, perhaps causing some additional costs to outfitters, but not a significant reduction in overall profits. Other more significant impacts would occur with those that simply canceled their trips to go elsewhere. The Refuge recognizes this cost and as a result is working with other agencies to provide other facilities for River use outside of the Refuge. This is important so that trip cancellations and opportunities to use the Scenic Niobrara River are present and viable for all concerned.

This alternative would increase Refuge expenditures on infrastructure. Infrastructure investment of this type would provide opportunity for local contractors to complete projects and thus add to the local economy.

Alternative C. Intensive Wildlife Management Alternative

Natural Resource Consequences

Management under this alternative would be very intense but would enable native bird needs to be considered in habitat management decisions as well as continue to provide habitat for bison, elk, and Texas longhorns. Fenced animal numbers would be reduced with the bison herd maintained at 225, elk at 50, and longhorns at 125. Bighorn sheep would be reintroduced to the Refuge. Maintaining lower herd numbers would require periodic introductions to meet genetic and health management needs of the fenced animals. Longhorn management would require increased cooperation with and management assistance from Wichita Mountains Wildlife Refuge. Habitat units would be managed similar to the current management program with herds moved under a deferred grazing rotation. Large ungulate herds will consume and/or remove by trampling an estimated 5,115 AUMs of forage a year which is approximately 24 percent of total plant production, leaving approximately 76 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, USDA Natural Resources Conservation Service 1996). At this level, most habitat objectives should be met because forage consumption will be about 39 percent less than current management, acreage rested for at least one year would increase to 10 percent, and at least 50 percent of the Refuge would be rested during the native bird breeding season. An estimated 250 tons of prairie hay from Valentine NWR would be required for supplemental feeding of longhorns during the winter. Prescribed fire would be used on at least 500 acres a year to reduce cedar invasion, renovate native prairie, and encourage regeneration of native tree species. It is expected that changes in grassland management will result in an increase in mid- and tallgrass abundance which will favor prairie grouse populations and other grassland birds. Species diversity will be enhanced by allowing prairie dog acreage to increase to an estimated 400 acres and by establishing endangered blowout penstemon. Management efforts in the various woodland communities may have short-term negative effects on some species of native birds; however, the long-term effects will be positive after the tree, shrub, and herbaceous layers become more diverse and sustainable. Biological monitoring efforts will increase providing better data to document habitat condition, wildlife populations, and evaluate management. If the longhorns are used by the Valentine NWR habitat program described in Intensive Wildlife Management Alternative of the Valentine NWR CCP, habitat management flexibility on this Refuge would increase; however, costs (labor, equipment, facility maintenance) would increase.

Cultural and Paleontological Resource Consequences

Management of cultural and paleontological resources will increase under this alternative. A cultural and paleontological resource management plan will be developed and include a Refuge-wide cultural resource survey and paleontological resource inventory strategies. It will also include increased interpretation, education, and protection of cultural and paleontological resources of the Refuge.

This alternative seeks to protect the historic barn from further degradation by supplying alternative bat habitat and preventing bats from reentering the barn.

Public Use Consequences

This alternative will initially stabilize River canoeing and tubing use by allowing only the existing 11 outfitters to launch on the Refuge and capping use on weekends during the summer at 1998 levels. The alternative provides for a research/monitoring period of two years to determine River carrying capacities that will preserve wildlife use and wilderness character and values of solitude. It is expected that these final levels will be lower than use today. Ultimately, this alternative will reduce this use on the Refuge. The phased approach will allow River outfitters and recreationists time to adjust to the anticipated change. The Service will work with other entities to develop other take-in and take-out locations off Refuge to more equitably distribute use throughout the Scenic River corridor.

This alternative would seek to construct a new environmental education/visitor center which would allow increased interpretation of Refuge cultural, paleontological and natural resource programs. It would improve Refuge efforts to educate both school age groups and the general public about wildlife and the natural resources which exist in the Nebraska Sandhills.

This alternative would add an access point for hiking and horseback riding in the Wilderness Area, provide for one concessionaire to take people to view large animal herds, and provide a trail to a scenic Niobrara Canyon overlook on the Refuge.

This alternative would initiate a limited Refuge hunting program for elk, deer, and bighorn sheep. The hunts would be primarily used to assist in control of excess animals, not to replace roundups and existing strategies for excess animal removal.

Socio-Economic Consequences

This alternative would have a small negative effect on Refuge Revenue Sharing to Cherry County. By reducing herd sizes of bison and longhorns, smaller numbers of excess animals would be sold, thus reducing Refuge receipts, and eventually County revenues. It is difficult to predict precise levels of reduction. The longhorn herd will be primarily a cow-calf herd with very small numbers of bulls and steers, so potential production and eventual animal turnover will be only slightly less than currently exists. Bison numbers will be reduced, and there will be fewer bison at sales from this herd.

This alternative will have a phased in effect on River use and economic activity associated with that use. Initially, placing a ceiling on Refuge use will not cause reductions in business or tourism activity; it will maintain current levels. Growth of this use over 1998 levels will transfer into other areas of the River. This will expand opportunities for some businesses and landowners. Eventually, Refuge use will decrease. The phased in approach is being made because the Refuge is aware that this will cause loss of tourism and business activity associated with the Refuge. By delaying the reduction, River outfitters and area businesses are given the opportunity to adjust their businesses. Looking long-term, the stabilization of this use on the Refuge to acceptable levels will add security and stability to River outfitters. Without this, the specter of River use becoming incompatible on the Refuge is possible. If this occurred, it could result in a complete shutdown of River use on the Refuge.

This alternative would increase Refuge expenditures on infrastructure. Investment of this type would provide opportunity for local contractors to complete projects and thus add to the local economy. This alternative does not reduce the current work effort required by existing Refuge activities and adds a significant number of new work activities. To address that need, additional staff will be needed. Salary increases for Refuge staff add to the overall local economy.

The provision for a concessionaire to provide tours of the main bison herd would have a slight increase on Refuge receipts, and provide a local entrepreneur the opportunity to start a new business.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off-Refuge onto adjacent private land. The Refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that is necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

Alternative D. Preferred Alternative (Proposed Action)

Natural Resource Consequences

The preferred alternative is a more natural, ecological approach to management of the Refuge. Herds of bison and elk will continue to be managed; however, bison numbers will be less with the winter population totaling 200 to 300 animals. Bighorn sheep will be reintroduced to the Refuge. Management strategies that maintain these animals as wild species to the extent possible will be employed. Animal introductions will be accomplished in accordance with recommendations from geneticists and population ecologists for genetic and health management purposes. Texas longhorns will no longer be managed on the Refuge. Most interior fence will be removed enabling the bison and elk to establish more natural and historic distribution or habitat use patterns. Although highly mobile, bison show a strong preference for certain areas (influenced by plant growth stage, vegetation type and species, as well as topography) during different seasons and have varying impacts. It is expected that bison will spend less time in the hills and more time on the more level and open areas. Fire, a historic ecological force, will be used in various prescriptions to distribute bison grazing, invigorate grasslands, reduce cedar presence, and encourage regeneration of native tree species. Native prairie plant composition, height, and density will be affected both positively and negatively by differing amounts and degrees of large ungulate grazing, fire, and rest. Large ungulate herds will consume and/or remove by trampling an estimated 3,500 - 5,000 AUMs of forage a year which is approximately 17 to 24 percent of the total plant production, leaving approximately 76 to 83 percent of the vegetation for plant vigor and use by other wildlife (Waller et al. 1986, Natural Resources Conservation Service 1996). At these levels, forage consumption will be about 40 to 58 percent less than the current management regime which will increase management flexibility and result in increased standing vegetation (height and density) in the grasslands which will favor prairie grouse and other grassland birds. Species diversity will increase with the establishment of the endangered blowout penstemon and an increase in prairie dog acreage. Prairie dogs and the burrow systems they create provide important habitat for burrowing owls (a species of management concern), other birds, mammals, reptiles, and insects. Prescribed burns in the various woody habitats may have short-term negative effects on native birds; however, the resulting regeneration and regrowth of the understory will be positive in the long-term. Biological monitoring will be increased providing additional information on various vegetation communities and associated wildlife which will improve management strategies. This alternative should result in a more natural mosaic of sustainable habitats that meet the needs of native and migratory birds, mammals, and other wildlife.

Cultural and Paleontological Resource Consequences

Management and subsequent protection of cultural and paleontological resources under this alternative will increase from the current management regime. Completion of a Refuge-wide cultural resource survey will meet legislated requirements and provide more comprehensive information to develop necessary protection/preservation strategies outlined in a cultural resource management plan. Cooperative agreements/partnerships will be sought for completion of a paleontological survey. Interpretation and education will increase with the development of new interpretive displays utilizing information and specimens collected from previous work and new surveys. Future use of the historic barn will be determined with appropriate renovation measures completed after the bat colony is relocated.

Public Use Consequences

This alternative will initially stabilize River canoeing and tubing use by allowing only the existing 11 outfitters to launch on the Refuge and capping use on weekends during the summer at 1998 levels. Two years of research/ monitoring will be completed to determine River carrying capacities that will preserve wildlife habitat, wilderness character and values of solitude. It is expected that these final levels will be lower than use today. Ultimately, this alternative will reduce River use on the Refuge. The phased-in approach will allow River outfitters and recreationists time to adjust to the anticipated change. The Service will work with other entities to develop other take-in and take-out locations off Refuge to more equitably distribute use throughout the scenic river corridor.

Fishing opportunities will remain the same with fishing allowed on the Niobrara river and Minnichaduza creek. Special youth fishing days will continue.

Hunting opportunities will be added to the public use program. Limited, strictly controlled elk and bighorn sheep hunts will be conducted periodically to remove surplus animals. It is expected that a high demand will exist for these limited opportunities.

Wildlife/wildland observation opportunities will be increased under this alternative with the establishment of an access point for hiking and horseback riding in the wilderness area and construction of a trail to a scenic overlook of the Niobrara canyon. Also, this alternative enables a concessionaire to provide guided tours of the main herd of bison during the summer months.

Efforts to educate visitors (i.e., school groups, general public) would increase with implementation of this alternative through construction of a new environmental education/visitor center, and development of new displays, leaflets, and an outdoor education curriculum.

Socio-Economic Consequences

This alternative will initially reduce Refuge revenue sharing to Cherry County. The removal of the Texas longhorn herd will result in a reduction of approximately $40,000 annually from Refuge receipts. Under the existing formula in use, Cherry County would receive a portion of these receipts in revenue sharing.

A reduction in Refuge receipts will occur from bison sales due to fewer bison maintained on the Refuge and the transfer of surplus Fort Niobrara bison to Valentine NWR for its habitat management program. Depending upon the management strategy selected for the Valentine NWR, eventually an increase could occur in revenues generated from sale of surplus bison from both refuges.

This alternative will have a phased in effect on River use and economic activity associated with that use. Initially, placing a ceiling on Refuge use will not cause reductions in business or tourism activity; it will maintain current levels. Growth of this use over 1998 levels will transfer into other areas of the River. This will expand opportunities for some businesses and landowners. Eventually, Refuge use will decrease. The phased in approach is being made because the Refuge is aware that this will cause loss of tourism and business activity associated with the Refuge. By delaying the reduction, River outfitters and area businesses are given the opportunity to adjust their businesses. Looking long-term, the stabilization of this use on the Refuge to acceptable levels will add security and stability to River outfitters. Without this, the specter of River use becoming incompatible on the Refuge is possible. If this occurred, it could result in a complete shutdown of River use on the Refuge.

This alternative would increase Refuge expenditures on infrastructure. Infrastructure investment of these types would provide opportunity for local contractors to complete projects and thus add to the local economy.

This alternative does not reduce the current work effort required by existing Refuge activities and adds a significant number of new work activities. To address that need, the Refuge Complex will have to add staff. Salary increases for Refuge staff add to the overall local economy.

This alternative would have a positive effect through provision for a concessionaire to provide tours to the main herds. This will provide a local entrepreneur the opportunity to start a new business.

The Fort Niobrara/Valentine NWR Complex has long been an important contributor to the economy, recreation, and social atmosphere of Cherry County. Choices made by this alternative recognize that relationship, and the future Refuge activities and programs will continue to contribute in a positive way to the area and its people.

The use of prescribed fire may cause concern for local residents over the consequences of a prescribed burn that escapes containment and becomes a wildfire that burns off the refuge onto adjacent private land. The refuge fire program will continue to minimize the risk of escapes by adhering to Service policy which requires that a prescribed burn plan be approved before any prescribed burning takes place. The burn plan addresses the potential for escape and specifies the personnel and equipment needed, weather requirements, contingency plans, and many other aspects of the burn to ensure it stays within prescription. Additional personnel and equipment that is necessary to conduct prescribed burns will benefit the community by being available to assist local rural fire departments in the suppression of lightning and human caused wildfires that occur in the local area.

List of Preparers

This document is a compilation of efforts by several Service people. The Core Planning Team consisted of Jon Kauffeld (Regional Office Refuge Planner), Kathy McPeak (Wildlife Biologist), Mark Lindvall (Refuge Operations Specialist), Jim Sellers (Refuge Operations Specialist), Jim Kelton (Fire Management Officer), Len McDaniel (Wildlife Biologist), and Doug Staller (Regional Public Use Specialist) and was responsible for gathering and preparing information.

Royce Huber (Refuge Manager), Wayne King (Regional Wildlife Biologist), Bob Nagel (Refuge Supervisor), Larry Shanks (Refuge Supervisor), and Carol Taylor (Regional Office Planning Supervisor) provided guidance and assisted with review and editing.

Rhoda Lewis (Regional Archaeologist), Stephanie Jones (Regional Non-game Bird Biologist), and Cheryl Willis (Water Resource Specialist) provided technical expertise. Jaymee Fojtik (GIS Coordinator) prepared the various maps.

Barb Shupe (Regional Writer/Editor) compiled the document and completed all desktop publishing aspects of the document and Melvie Uhland (Regional Office) produced the cover. Bernardo Garza (Regional Office Refuge Planner) reviewed this document and effected all necessary changes.

Consultation and Coordination with Others

Planning Process, Planning Time Frame and Future Revisions documented the procedure used to involve the public, and the opportunities that were available for participation. This section will generally list the types of comments that plan preparers were made aware of during the process by either written or verbal comment. No attempt is made to quantify the number of people making the comment, or within this document to identify individuals or organizations making specific comment. A list of all persons that commented or requested notification is available at the end of the section.

Comments

Fishing on Fort Niobrara
- keep Refuge closed to fishing
- Nebraska Game and Parks is pleased with partnership efforts on fishing program

River Floating
- keep canoeing as a use
- like what Refuge did with parking lot, could expand it a little
- sometimes too crowded, may need to limit access, quality of recreational experience has deteriorated
- collect fees from outfitters not from individuals, outfitters should handle most of recreationers needs, user fee should be fair and equitable with proceeds going back into river, charge outfitters for annual permits
- need to consider Wild and Scenic Rivers and Wilderness Act, need more interpretation of river
- should be able to canoe at night, trash and partying with tubes is a problem

Grassland Management
- prescribed fire should be increased

Access to Refuge
- we like refuge, bring friends and family, keep tour route open
- put hiking trail in wilderness area
- would like to use CCC cabin for overnights, would like viewing area for eagles

Fenced Animal Management
- we like big game and longhorn cattle, sale is important to county
- longhorns need to be first to be reduced
- increase herd accessibility to public
- reintroduce bighorn sheep to refuge
- maintain bison on Fort Niobrara, herd is unique

Hunting
- keep Fort Niobrara closed to hunting
- would like to hunt buffalo, elk, bighorn sheep

Bird Management
- more needs to be done with native birds on Fort Niobrara

Appendix A.
Summary of Actions Proposed Under Management Alternatives

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
Habitat and Wildlife Management				
Opportunity to manage native habitats with historic processes. Concern that management needs to address ecological diversity and integrity of Refuge.	Habitats would be managed to maintain current diversity and abundance of plants and animals. Use of fire and grazing in a "historic" regime would not be possible.	A Habitat Management Plan would be developed with large ungulate grazing and fire regimes implemented to replicate historic conditions and address ecological diversity and integrity of Refuge.	A Habitat Management Plan would be developed with tools of grazing, fire, and rest utilized to produce specific habitat and wildlife objectives and maintain ecological diversity and integrity of Refuge.	A Habitat Management Plan would be developed with tools of grazing and fire used to simulate "historic" processes to the extent possible, maintain ecological diversity and integrity of Refuge, and meet habitat and wildlife objectives.
Concern that management needs to do more for native birds.	Native bird management actions would be accomplished to the extent possible while managing habitats to meet requirements of bison, elk, and longhorns.	Native bird management actions would be accomplished to the extent possible while managing habitats under historic grazing and fire regimes.	Habitat management actions would be implemented to meet various native bird requirements.	Habitat management actions would be evaluated for their impact on native birds. Management that enhances habitat conditions for native birds, such as prairie grouse, would be implemented to the extent possible.
Concern that forage utilization by bison, elk, and longhorns is too high and limits management options.	Planned forage utilization under a deferred grazing rotation would continue at approximately 8,400 AUMs per year with approximately 96 percent of the Refuge grazed and approximately 100 acres prescribe burned.	Planned forage utilization would be reduced to approximately 5,610 AUMs per year with bison, elk, and bighorn sheep allowed to establish more natural habitat use patterns. Prescribed fire would increase to approximately 2,700 acres. Acres rested during the native bird breeding season and/or 1+ years would increase.	Planned forage utilization under a deferred grazing rotation would be reduced to approximately 5,115 AUMs per year. Prescribed fire acres would increase to approximately 500-1000. Acres rested during the native bird breeding season and/or 1+ years would increase.	Planned forage utilization would range from approximately 3,500 - 5,000 AUMs per year with bison, elk, and bighorn sheep allowed to establish more natural habitat use patterns. Prescribed fire acres would increase to approximately 1,000. Acres rested during the native bird breeding season and/or 1+ years would increase.
Concern that bison and elk management will change.	Bison would continue to be managed as a "closed" herd with 350 animals maintained. Elk would be managed as an "open" herd with 70 animals maintained.	Bison and elk herds would be maintained at current herd levels. Current genetic management efforts would continue.	Bison and elk herds would be reduced with 225 bison and 50 elk maintained. Both herds would be managed as "open" genetic herds.	Bison herd would be maintained at 200-300 animals and the elk herd at 70-100 animals. Both herds would be managed as "open" genetic herds.

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
Habitat and Wildlife Management cont'd.				
Concern that longhorn management will change.	Longhorn cattle would continue to be managed as currently conducted with 250 animals maintained.	Longhorn cattle would no longer be managed on the Refuge.	Longhorn cattle would be reduced to 125 animals and managed similar to current management.	Longhorn cattle would no longer be managed on the Refuge.
Opportunity to reintroduce bighorn sheep to the Refuge.	Bighorn sheep would not be reintroduced to the Refuge.	Bighorn sheep would be reintroduced to the Refuge and allowed to grow to a herd of 50 animals.	Bighorn sheep would be reintroduced to the Refuge and allowed to grow to a herd of 50 animals.	Bighorn sheep would be reintroduced to the Refuge and allowed to grow to a herd of 50 animals.
Concern over cedar invasion and dominance.	Limited control of cedars with prescribed fire would be accomplished.	Cedar control efforts would increase.	Cedar control efforts would increase.	Cedar control efforts would increase.
Opportunity to enhance management for threatened and endangered species.	Current efforts to protect endangered species and their habitats on the Refuge would continue.	Management efforts would increase with introduction of blowout penstemon and completion of American burying beetle survey. Current management efforts would continue except maintenance of shallow, braided River habitat due to removal of Cornell Dam.	Current management efforts would continue and be expanded with introduction of blowout penstemon and completion of American burying beetle survey.	Current management efforts would continue and be expanded with introduction of blowout penstemon and completion of American burying beetle survey.
Opportunity to improve biological monitoring.	Limited monitoring of grasslands and bison, elk, longhorn, and grouse populations would continue.	Biological monitoring would increase to better document wildlife populations and their habitats.	Biological monitoring would increase to better document wildlife populations and their habitats.	Biological monitoring would increase to better document wildlife populations and their habitats.
Concern that management should increase prairie dogs and the habitat they create for other wildlife species.	Current estimated 20 acre prairie dog town would be maintained.	Current estimated 20 acre prairie dog town would be maintained and a second colony established and allowed to expand to 380 acres on the Refuge.	Current estimated 20 acre prairie dog town would be maintained and a second colony established and allowed to expand to 380 acres on the Refuge.	Current estimated 20 acre prairie dog town would be maintained and a second colony established and allowed to expand to 380 acres on the Refuge.

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
Habitat and Wildlife Management cont'd.				
Concern that Niobrara River and associated riparian habitat be maintained or improved.	Management would be minimum necessary to maintain current water quality, flow, and other parameters and shoreline vegetation protected or enhanced.	Cornell Dam and man-made impoundments on tributaries would be removed returning these areas to a natural state. Water quality, flow, and other parameters would be maintained and shoreline vegetation protected or enhanced.	Cornell Dam and functional tributary impoundments would be maintained and breached impoundments restored based on their value to native birds and fish. Water quality, flow, and other parameters would be maintained and shoreline vegetation protected or enhanced.	Cornell Dam and functional tributary impoundments would be maintained and breached impoundments returned to a natural state. Water quality, flow, and other parameters would be maintained and shoreline vegetation protected or enhanced.
Public Use				
Concern that River floating may be curtailed or changed because not compatible with Refuge purpose and Wilderness designation.	River floating would continue with number of outfitters maintained at current level (11) and no restriction on number of launches per outfitter.	River floating would be reduced by approximately 26 percent to 1993 levels.	River floating would be reduced after the Service determines acceptable peak use levels and management strategies for fair distribution of use among outfitters and the general public. During the interim, River use would be capped at 1998 levels and current restrictions on outfitters continued.	River floating would be reduced after the Service determines acceptable peak use levels and management strategies for fair distribution of use among outfitters and the general public. During the interim, River use would be capped at 1998 levels and current restrictions on outfitters continued.
Increase opportunities for wildlife/ wildland oriented educational and interpretive uses of the Refuge.	Current wildlife/wildland oriented opportunities including nature trail, auto tour route, picnic area, and special events would continue.	Wildlife/wildland oriented opportunities would be similar to current management.	Wildlife/wildland oriented opportunities would be expanded to include a wilderness area access for hiking and horseback riding, guided bison herd tours, and a scenic overlook.	Wildlife/wildland oriented opportunities would be expanded to include a wilderness area access for hiking and horseback riding, guided bison and elk herd tours, and a scenic overlook.
Opportunity to expand environmental education/interpretation capabilities.	Environmental education/ interpretation opportunities would not be expanded.	Funds would be sought to construct a new environmental education / interpretive center, develop new displays, and expand hours of operation.	Funds would be sought to construct a new environmental education / interpretive center, develop new displays, and expand hours of operation.	Funds would be sought to construct a new environmental education/interpretive center, develop new displays, and expand hours of operation.

Issues, Concerns, and Opportunities	Alternative A. Current Management (No Action)	Alternative B. Historical	Alternative C. Intensive Wildlife Management	Alternative D. Modified Historical (Preferred Alternative)
Public Use cont'd				
Opportunity to provide hunting and fishing on the Refuge.	Current fishing opportunities on the Niobrara river and Minnichaduza Creek would continue. The Refuge would remain closed to hunting.	Current fishing opportunities on the Niobrara River and Minnichaduza Creek would continue. Limited hunting opportunities for bison, elk, and bighorn sheep would be provided.	Current fishing opportunities on the Niobrara River and Minnichaduza Creek would continue. Limited hunting opportunities for elk, deer, and bighorn sheep would be provided.	Current fishing opportunities on the Niobrara River and Minnichaduza Creek would continue. Limited hunting opportunities for elk and bighorn sheep would be provided
Cultural And Paleontological Resources				
Concern that preservation and interpretation of cultural and paleontological resources needs to be improved.	Protection and interpretation of cultural and paleontological resources would continue to be minimal.	Management efforts would expand to include completion of a Refuge-wide cultural resource survey, paleontological inventory, development of a management plan, relocation of big brown bat colony from designated historic site, and increased interpretation and display of resources.	Management efforts would expand to include completion of a Refuge-wide cultural resource survey, paleontological inventory, development of a management plan, relocation of big brown bat colony from designated historic site, and increased interpretation and display of resources.	Management efforts would expand to include completion of a Refuge-wide cultural resource survey, paleontological inventory, development of a management plan, relocation of big brown bat colony from designated historic site, and increased interpretation and display of resources.
Ecosystem (Partnerships)				
Opportunity to work with general public, private, and other government organizations on natural resource management issues.	Cooperative agreements and partnerships in place would continue.	Cooperative agreements and partnerships in place would continue with exception of fish rearing in impounded tributaries as they would no longer be impounded. Additional ones will be sought such as bison management, paleontological resource inventory, and research.	Cooperative agreements and partnerships in place would continue and additional ones sought such as bison management, paleontological resource inventory, and research.	Cooperative agreements and partnerships in place would continue and additional ones sought such as bison management, paleontological resource inventory, and research.
Concern over development adjacent to Refuge boundaries.	Current management would not address this concern.	Purchase of nondevelopment easements from willing sellers would be considered.	Purchase of nondevelopment easements from willing sellers would be considered.	Purchase of nondevelopment easements from willing sellers would be considered.

Appendix B.
Fort Niobrara NWR Species List

(* = Species known to nest on the Refuge)

Birds

Grebes	
Pied-billed Grebe	*Podilymbus podiceps*
Horned Grebe	*Podiceps auritus*
Eared Grebe	*Podiceps nigricollis*
Western Grebe	*Aechmophorus occidentalis*
Clark's Grebe	*Aechmophorus clarkii*
Pelicans	
American White Pelican	*Pelecanus erythrorhynchos*
Cormorants	
Double-crested Cormorant	*Phalacrocorax auritus*
Bitterns, Herons	
American Bittern	*Botaurus lentiginosus*
Great Blue Heron	*Ardea herodias*
Cattle Egret	*Bubulcus ibis*
Green Heron	*Butorides virescens*
Black-crowned Night-Heron	*Nycticorax nycticorax*
Vultures	
Turkey Vulture	*Cathartes aura*
Geese	
Greater White-fronted Goose	*Anser albifrons*
Snow Goose	*Chen caerulescens*
Canada Goose*	*Branta canadensis*
Swans	
Trumpeter Swan	*Cygnus buccinator*
Ducks	
Wood Duck*	*Aix sponsa*
Gadwall*	*Anas strepera*
American Wigeon	*Anas americana*
Mallard*	*Anas platyrhynchos*
Blue-winged Teal*	*Anas discors*
Cinnamon Teal	*Anas cyanoptera*
Northern Shoveler*	*Anas clypeata*
Northern Pintail*	*Anas acuta*
Green-winged Teal	*Anas crecca*
Canvasback	*Aythya valisineria*
Redhead*	*Aythya americana*
Ring-necked Duck	*Aythya collaris*
Lesser Scaup	*Aythya affinis*
Bufflehead	*Bucephala albeola*
Common Goldeneye	*Bucephala clangula*
Hooded Merganser	*Lophodytes cucullatus*
Common Merganser	*Mergus merganser*
Red-breasted Merganser	*Mergus serrator*
Ruddy Duck	*Oxyura jamaicensis*
Hawks, Kites, Eagles	
Osprey	*Pandion haliaetus*
Bald Eagle	*Haliaeetus leucocephalus*
Northern Harrier	*Circus cyaneus*
Sharp-shinned Hawk	*Accipiter striatus*
Cooper's Hawk	*Accipiter cooperii*
Northern Goshawk	*Accipiter gentilis*
Red-shouldered Hawk	*Buteo lineatus*
Broad-winged Hawk	*Buteo platypterus*
Swainson's Hawk*	*Buteo swainsoni*
Red-tailed Hawk*	*Buteo jamaicensis*
Ferruginous Hawk	*Buteo regalis*
Rough-legged Hawk	*Buteo lagopus*
Golden Eagle	*Aquila chrysaetos*
Falcons	
American Kestrel*	*Falco sparverius*
Merlin	*Falco columbarius*
Peregrine Falcon	*Falco peregrinus*
Prairie Falcon	*Falco mexicanus*
Gallinaceous Birds	
Gray Partridge	*Perdix perdix*
Ring-necked Pheasant*	*Phasianus colchicus*
Ruffed Grouse	*Bonasa umbellus*
Sharp-tailed Grouse*	*Tympanuchus phasianellus*
Greater Prairie-Chicken*	*Tympanuchus cupido*
Wild Turkey*	*Meleagris gallopavo*
Northern Bobwhite*	*Colinus virginianus*
Rails	
Virginia Rail	*Rallus limicola*
Sora	*Porzana carolina*
American Coot	*Fulica americana*
Cranes	
Sandhill Crane	*Grus canadensis*
Whooping Crane	*Grus americana*
Plovers	
Semipalmated Plover	*Charadrius semipalmatus*
Piping Plover	*Charadrius melodus*
Killdeer*	*Charadrius vociferus*
Stilt, Avocet	
American Avocet	*Recurvirostra american*

Sandpipers

Greater Yellowlegs	*Tringa melanoleuca*
Lesser Yellowlegs	*Tringa flavipes*
Solitary Sandpiper	*Tringa solitaria*
Willet	*Catoptrophorus semipalmatus*
Spotted Sandpiper	*Actitis macularia*
Upland Sandpiper*	*Bartramia longicauda*
Long-billed Curlew*	*Numenius americanus*
Marbled Godwit	*Limosa fedoa*
Western Sandpiper	*Calidris mauri*
Least Sandpiper	*Calidris minutilla*
White-rumped Sandpiper	*Calidris fuscicollis*
Baird's Sandpiper	*Calidris bairdii*
Pectoral Sandpiper	*Calidris melanotos*
Dunlin	*Calidris alphina*
Long-billed Dowitcher	*Limnodromus scolopaceus*
Common Snipe	*Gallinago gallinago*

Phalaropes

Wilson's Phalarope	*Phalaropus tricolor*

Gulls

Franklin's Gull	*Larus pipixcan*
Ring-billed Gull	*Larus delawarensis*
California Gull	*Larus californicus*

Terns

Common Tern	*Sterna hirundo*
Forster's Tern	*Sterna forsteri*
Black Tern	*Chlidonias niger*

Pigeons, Doves, Parakeet

Mourning Dove*	*Zenaida macroura*

Cuckoos

Black-billed Cuckoo*	*Coccyzus erythropthalmus*
Yellow-billed Cuckoo	*Coccyzus americanus*

Owls

Eastern Screech Owl*	*Otus asio*
Great Horned Owl*	*Bubo virginianus*
Snowy Owl	*Nyctea scandiaca*
Burrowing Owl*	*Athene cunicularia*
Long-eared Owl	*Asio otus*
Short-eared Owl	*Asio flammeus*

Goatsuckers

Common Nighthawk*	*Chordeiles minor*
Common Poorwill	*Phalaenoptilus nuttallii*

Swifts

Chimney Swift	*Chaetura pelagica*

Hummingbirds

Ruby-throated Hummingbird	*Archilochus colubris*

Kingfisher

Belted Kingfisher*	*Ceryle alcyon*

Woodpeckers

Red-headed Woodpecker*	*Melanerpes erythrocephalus*
Downy Woodpecker*	*Picoides pubescens*
Hairy Woodpecker*	*Picoides villosus*
Northern Flicker*	*Colaptes auratus*

Flycatchers

Olive-sided Flycatcher	*Contopus cooperi*
Western Wood-Pewee*	*Contopus sordidulus*
Eastern Wood-Pewee	*Contopus virens*
Alder Flycatcher	*Empidonax alnorum*
Willow Flycatcher	*Empidonax traillii*
Eastern Phoebe*	*Sayornis phoebe*
Say's Phoebe*	*Sayornis saya*
Great Crested Flycatcher*	*Myiarchus crinitus*
Western Kingbird*	*Tyrannus verticalis*
Eastern Kingbird*	*Tyrannus tyrannus*
Scissor-tailed Flycatcher	*Tyrannus forficatus*

Shrikes

Loggerhead Shrike	*Lanius ludovicianus*
Northern Shrike	*Lanius excubitor*

Vireo

Bell's Vireo*	*Vireo bellii*
Warbling Vireo*	*Vireo gilvus*
Red-eyed Vireo*	*Vireo olivaceus*

Jays, Magpies, Crows, Ravens

Steller's Jay	*Cyanocitta stelleri*
Blue Jay*	*Cyanocitta cristata*
Clark's Nutcracker	*Nucifraga columbiana*
Black-billed Magpie*	*Pica pica*
American Crow*	*Corvus brachyrhynchos*

Lark

Horned Lark*	*Eremophila alpestris*

Swallows

Purple Martin	*Progne subis*
Tree Swallow*	*Tachycineta bicolor*
Northern Rough-winged Swallow*	*Stelgidopteryx serripennis*
Bank Swallow	*Riparia riparia*
Cliff Swallow*	*Petrochelidon pyrrhonota*
Barn Swallow*	*Hirundo rustica*

Chickadees, Titmice, Verdin, Bushtit

Black-capped Chickadee*	*Poecile atricapillus*

Nuthatches

Red-breasted Nuthatch	*Sitta canadensis*
White-breasted Nuthatch*	*Sitta carolinensis*

Creeper

Brown Creeper	*Certhia americana*

Wrens, Dipper

Rock Wren*	*Salpinctes obsoletus*
House Wren*	*Troglodytes aedon*
Sedge Wren	*Cistothorus platensis*
Marsh Wren	*Cistothorus palustris*

Kinglets

Ruby-crowned Kinglet	*Regulus calendula*

Thrushes, Bluebirds

Eastern Bluebird*	*Sialia sialis*
Mountain Bluebird	*Sialia currucoides*
Townsend's Solitaire	*Myadestes townsendi*
Gray-cheeked Thrush	*Catharus minimus*
Swainson's Thrush	*Catharus ustulatus*
Wood Thrush	*Hylocichla mustelina*
American Robin*	*Turdus migratorius*

Thrashers

Gray Catbird*	*Dumetella carolinensis*
Northern Mockingbird*	*Mimus polyglottos*
Brown Thrasher*	*Toxostoma rufum*

Starling

European Starling*	*Sturnus vulgaris*

Pipits

American (Water) Pipit	*Anthus rubescens*

Waxwings

Bohemian Waxwing	*Bombycilla garrulus*
Cedar Waxwing	*Bombycilla cedrorum*

Warblers

Golden-winged Warbler	*Vermivora chrysoptera*
Tennessee Warbler	*Vermivora peregrina*
Orange-crowned Warbler	*Vermivora celata*
Yellow Warbler*	*Dendrocia petechia*
Chestnut-sided Warbler	*Dendroica pensylvanica*
Yellow-rumped Warbler	*Dendrocia coronata*
Blackburnian Warbler	*Dendrocia fusca*
Palm Warbler	*Dendrocia palmarum*
Blackpoll Warbler	*Dendrocia striata*
Black-and-white Warbler*	*Mniotilta varia*
American Redstart*	*Setophaga ruticilla*
Prothonotary Warbler	*Protonotaria citrea*
Ovenbird*	*Seiurus aurocapillus*
Connecticut Warbler	*Oporornis agilis*
Common Yellowthroat*	*Geothlypis trichas*
Wilson's Warbler	*Wilsonia pusilla*
Yellow-breasted Chat*	*Icteria virens*

Tanagers

Scarlet Tanager*	*Piranga olivacea*
Western Tanager	*Piranga ludoviciana*

Towhee, Sparrows

Eastern Towhee*	*Pipilo erythrophthalmus*
American Tree Sparrow	*Spizella arborea*
Chipping Sparrow*	*Spizella passerina*
Clay-colored Sparrow	*Spizella pallida*
Field Sparrow*	*Spizella pusilla*
Vesper Sparrow*	*Pooecetes gramineus*
Lark Sparrow*	*Chondestes grammacus*
Lark Bunting	*Calamospiza melanocorys*
Savannah Sparrow*	*Passerculus sandwichensis*
Grasshopper Sparrow*	*Ammodramus savannarum*
Baird's Sparrow	*Ammodramus bairdii*
Fox Sparrow	*Passerella iliaca*
Song Sparrow	*Melospiza melodia*
Lincoln's Sparrow	*Melospiza lincolnii*
White-throated Sparrow	*Zonotrichia albicollis*
Harris' Sparrow	*Zonotrichia querula*
White-crowned Sparrow	*Zonotrichia leucophrys*
Dark-eyed Junco	*Junco hyemalis*
McCown's Longspur	*Calcarius mccownii*
Lapland Longspur	*Calcarius lapponicus*
Chestnut-collared Longspur	*Calcarius ornatus*

Grosbeaks, Buntings

Northern Cardinal	*Cardinalis cardinalis*
Rose-breasted Grosbeak	*Pheucticus ludovicianus*
Black-headed Grosbeak*	*Pheucticus melanocephalus*
Blue Grosbeak*	*Guiraca caerulea*
Lazuli Bunting	*Passerina amoena*
Indigo Bunting	*Passerina cyanea*
Dickcissel	*Spiza americana*

Blackbirds, Orioles

Bobolink	*Dolichonyx oryzivorus*
Red-winged Blackbird*	*Agelaius phoeniceus*
Eastern Meadowlark*	*Sturnella magna*
Western Meadowlark*	*Sturnella neglecta*
Yellow-headed Blackbird	*Xanthocephalus xanthocephalus*
Rusty Blackbird	*Euphagus carolinus*
Brewer's Blackbird*	*Euphagus cyanocephalus*
Common Grackle*	*Quiscalus quiscula*
Brown-headed Cowbird*	*Molothrus ater*
Orchard Oriole*	*Icterus spurius*
Baltimore Oriole*	*Icterus galbula*

Finches

House Finch	*Carpodacus mexicanus*
Red Crossbill	*Loxia curvirostra*
Common Redpoll	*Carduelis flammea*
Pine Siskin*	*Carduelis pinus*
American Goldfinch	*Carduelis tristis*
Evening Grosbeak	*Coccothraustes vespertinus*

Old World Sparrow

House Sparrow*	*Passer domesticus*

Mammals

Virginia Opossum	*Didelphis virginiana*
Masked Shrew	*Sorex cinereus*
Northern Short-tailed Shrew	*Blarina brevicauda*
Least Shrew	*Cryptotis parva*
Eastern Mole	*Scalopus aquaticus*
Eastern Red Bat	*Lasiurus borealis*
Silver-haired Bat	*Lasionycteris noctivagans*
Big Brown Bat	*Eptesicus fuscus*
Desert Cottontail	*Sylvilagus audubonii*
Eastern Cottontail	*Sylvilagus floridanus*
Black-tailed Jackrabbit	*Lepus californicus*
White-tailed Jackrabbit	*Lepus townsendii*
Spotted Ground Squirrel	*Spermophilus spilosoma*
Thirteen-lined Ground Squirrel	*Spermophilus tridecemlineatus*
Black-tailed Prairie Dog	*Cynomys ludovicianus*
Eastern Fox Squirrel	*Sciurus niger*
Plains Pocket Gopher	*Geomys bursarius*
Olive-backed Pocket Mouse	*Perognathus fasciatus*
Plains Pocket Mouse	*Perognathus flavescens*
Hispid Pocket Mouse	*Chaetodipus hispidus*
Ord's Kangaroo Rat	*Dipodomys ordii*
Beaver	*Castor canadensis*
Western Harvest Mouse	*Reithrodontomys megalotis*
Plains Harvest Mouse	*Reithrodontomys montanus*
White-footed Mouse	*Peromyscus leucopus*
Deer Mouse	*Peromyscus maniculatus*
Northern Grasshopper Mouse	*Onychomys leucogaster*
Eastern Woodrat	*Neotoma floridana*
House Mouse	*Mus musculus*
Prairie Vole	*Microtus ochrogaster*
Meadow Vole	*Microtus pennsylvanicus*
Common Muskrat	*Ondatra zibethicus*
Southern Bog Lemming	*Synaptomys cooperi*
Meadow Jumping Mouse	*Zapus hudsonius*
Common Porcupine	*Erethizon dorsatum*
Coyote	*Canis latrans*
Common Raccoon	*Procyon lotor*
Long-tailed Weasel	*Mustela frenata*
Least Weasel	*Mustela nivalis*
Mink	*Mustela vison*
American Badger	*Taxidea taxus*
Eastern Spotted Skunk	*Spilogale putorius*
Striped Skunk	*Mephitis mephitis*
Northern River Otter	*Lutra canadensis*
Bobcat	*Lynx rufus*
Elk	*Cervus elaphus*
Mule Deer	*Odocoileus hemionus*
White-tailed Deer	*Odocoileus virginianus*
Pronghorn	*Antilocapra americana*
American Bison	*Bison bison*
Texas Longhorn	*Bos indicus*

Amphibians and Reptiles

Tiger Salamander	*Ambystoma tigrinum*
Woodhouse's Toad	*Bufo woodhousii*
Plains Spadefoot	*Spea bombifrons*
Blanchard's Cricket Frog	*Acris crepitans*
Western Chorus Frog	*Pseudacris triseriata*
Bullfrog	*Rana catesbeiana*
Northern Leopard Frog	*Rana pipiens*
Western Spiny Softshell	*Apalone spinifera*
Common Snapping Turtle	*Chelydra serpentina*
Painted Turtle	*Chrysemys picta*
Blanding's Turtle	*Emydoidea blandingii*
Yellow Mud Turtle	*Kinosternon flavescens*
Ornate Box Turtle	*Terrapene ornata*
Prairie Racerunner	*Cnemidophorus sexlineatus*
Lesser Earless Lizard	*Holbrookia maculata*
Northern Prairie Lizard	*Sceloporus undulatus*
Eastern Yellow-bellied Racer	*Coluber constrictor*
Eastern Hognose Snake	*Heterodon platyrhinos*
Pale milk Snake	*Lampropeltis triangulum*
Northern Water Snake	*Nerodia sipedon*
Bullsnake	*Pituophis catenifer*
Plains Garter Snake	*Thamnophis radix*
Red-sided Garter Snake	*Thamnophis sirtalis*
Prairie Rattlesnake	*Crotalus viridis*

Appendix C.
References

Armstrong, D.M., Choate, J.R., and Jones, J.K., Jr. 1986. Distributional patterns of mammals in the plains states. Occasional Papers of Museum of Texas Tech Univ., v.105, pp 1-27.

Aughey, S. 1880. Sketches of the physical geography and geology of Nebraska. Daily Republican Book and Job Office, Omaha. 346 pp.

Bentall, R. 1990. Streams. Pages 93-114 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5a. Conserv. and Survey Div., Inst. Agr. Nat. Res., Univ. Nebraska, Lincoln. 265 pp.

Berger, J. 1996. Scenarios involving genetics and population size of bison in Jackson Hole. Unpublished report to Grand Teton National Park, Moose, Wyoming. 21 pp.

_____, and C. Cunningham. 1994. Bison: mating and conservation in small populations. Columbia Univ. Press, New York. 330 pp.

Bogan, M.A. and C.A. Ramotnik. 1995. Mammals. Pages 140-186 *in* M.A. Bogan, editor. A Biological Survey of Fort Niobrara and Valentine National Wildlife Refuges. U.S. Nat. Biol. Serv., Midcont. Ecol. Sci. Cen. 193 pp.

_____.1995. A Biological Survey of Fort Niobrara and Valentine National Wildlife Refuges. U.S. Nat. Biol. Serv., Midcont. Ecol. Sci. Cen. 193 pp.

Bragg, T.B. and A.A. Steuter. 1996. Prairie ecology - the Mixed Prairie. Pages 53-65 *in* Samson, F.B. and F.L. Knopf, editors. Prairie conservation: preserving North America's most endangered ecosystem. Island Press, Washington, D.C. 339 pp.

Case, R.M. 1986. Wetlands, wildlife part of Sandhills. I.A.N.R. Quart. 32:20-21.

Churchill, S.P., C.C. Freeman and G.E. Kantak. 1988. The vascular flora of the Niobrara Valley Preserve and adjacent areas in Nebraska. Trans. Nebr. Acad. Sci., XVI:1-15.

Corn, P.S., M.L. Jennings and R.B. Bury. 1995. Amphibians and Reptiles. Pages 32-59 *in* M.A. Bogan, editor. A biological survey of Fort Niobrara and Valentine National Wildlife Refuges. U.S. Nat. Biol. Serv., Midcont. Ecol. Sci. Cen. 193 pp.

Dinan, J. 1998. Wildlife biologist, Nebraska Game and Parks Commission. Personal communication.

Dobie, J.F. 1994. The longhorns. Univ. Texas Press, Austin. 388 pp.

Farrar, J. 1983. Nebraska Rivers. NEBRASKALand Magazine, Nebr. G&P Comm. 146 pp.

Freeman, P. 1990. Mammals. Pages 181-188 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5a. Cons. and Sur. Div., Insti. Agr. Nat. Resour., Univ. Nebraska, Lincoln. 265 pp.

_____. 1990. Amphibians and Reptiles. Pages 157-160 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5a. Cons. and Sur. Div., Insti. Agr. Nat. Res., Univ. Nebraska, Lincoln. 265 pp.

Greenhall, A.M. 1982. House bat management. USDI, Fish and Wildl. Serv. Res. Publ. 143. 33 pp.

Halloran, A. 1964. The heritage of the longhorn. Oklahoma Cowman 7(9):18 & 38.

Higgins, K.F., A.D. Kruse and J.L. Piehl. 1986. Effects of fire in the northern Great Plains. SDSU Ext. Circ. EC 761. 47pp.

Hrabik, R.A. 1990. Fishes. Pages 143-154 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5a, Cons. and Sur. Div., Inst. Agr. Nat. Res., Univ. Nebraska, Lincoln. 265 pp.

Jones, J.K., Jr., 1964. Distribution and taxonomy of mammals of Nebraska. Univ. Kansas Publ., Mus. Nat. Hist. 16:1-356.

_____., D.M. Armstrong, R.S. Hoffman, and C. Jones. 1983. Mammals of the northern Great Plains. Univ. Nebraska Press, Lincoln. 379 pp.

Kantak, G.E. 1995. Terrestrial plant communities of the Middle Niobrara Valley, Nebraska. Southwest. Nat. 40 (2):129-138.

Kaul, R.B. and S.B. Rolfsmeier. 1993. Native vegetation of Nebraska. Cons. and Sur. Div., Univ. Nebraska, Lincoln. (map 1:1,000,000).

Kaul, R.B. 1990. Plants. Pages 127-142 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5. Cons. and Sur. Div., Inst. Agr. Nat. Res., Univ. Nebraska, Lincoln. 265 pp.

Knopf, F.L. 1994. Avian assemblages on altered grasslands. Studies in Avian Bio. 15:247-257.

Labedz, T.E. 1990. Birds. Pages 161-180 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5a. Cons. and Sur. Div., Insti. Agr. Nat. Resour., Univ. Nebraska, Lincoln. 265 pp.

Layton, M.H. 1956. Soil survey of Cherry County, Nebraska. USDA Series 1940, No. 21. 91 pp.

Leenhouts, B. 1995. Presettlement fire and emission production estimates: a framework for understanding potential system change. Poster session paper presented at the Environmental Regulation and Prescribed Fire Conference, March 14-17, 1995, Tampa, Florida.

Mitchell, L. and C. Wolfe. 1984. Prairie grouse in Nebraska. NEBRASKAland Magazine, Nebr. G & P Comm. 15 pp.

Miller, S.M. 1990. Land development and use. Pages 207-226 *in* A. Bleed and C. Flowerday, editors. An atlas of the Sand Hills. Resource Atlas No. 5a. Cons. and Sur. Div., Insti. Agr. Nat. Res., Univ. Nebraska, Lincoln. 265 pp.

NOAA National Climatic Data Center. 1996. Local climatological data - annual summary with comparative data for Valentine, Nebraska. 8 pp.

Osborn, A.J. 1979. Cultural resource inventory and assessment for selected areas within the Fort Niobrara National Wildlife Refuge, Valentine, Nebraska: A final report. Univ. Nebraska, Lincoln. Tech. Rep. No. 79-07. 181 pp.

Peterson, A. 1986. Habitat suitability index model: Bald eagle (breeding season). U.S. Fish Wildl. Serv. Biol. Rep. 82 (10.126).

Prose, B.L. 1985. Habitat suitability index models: Greater prairie chicken (multiple levels of resolution). U.S. Fish Wildl. Serv. Biol. Rep. 82(10.102). 33 pp.

_____. 1987. Habitat suitability index models: plains sharp-tailed grouse. U.S. Fish Wildl. Serv. Biol. Rep. 82(10.142). 31 pp.

Ruth, C. 1938. Fort Niobrara Game Preserve, Nebraska. USDA Bur. Biol. Sur. Wildl. Manag. Publ. BS-109. 6 pp.

Schneider, R.E., D. Faber-Langendoen, R.C. Crawford and A.S. Weakley. 1996. The status of biodiversity in the Great Plains: Great Plains vegetation classification. Supplemental Document I *in* W.R. Ostlie, R.E. Schneider, J.M. Aldrich, T.M. Faust, R.L.B. McKim and S.J. Chaplin. The status of biodiversity in the Great Plains. The Nature Conservancy. Arlington, VA.

Sedgwick, J.A. 1995. Occurrence, diversity, and habitat relationships of birds. Pages 60-139 *in* M.A. Bogan, editor. A biological survey of Fort Niobrara and Valentine National Wildlife Refuges. U.S. Nat. Biol. Serv., Midcont. Ecol. Sci. Cen. 193 pp.

Steuter, A.A. 1991. Human impacts on biodiversity in America: Thoughts from the grassland biome. J. Conser. Biol. 5(2):136-137.

USDA Natural Resources Conservation Service. 1996. Range Inventory Summary and Suggestive Initial Stocking Rates Based on Present Range Condition for Fort Niobrara National Wildlife Refuge. 8 pp.

USDA Soil Conservation Service. 1983. Nebraska range site descriptions and guide for determining range condition and suggested initial stocking rates. Lincoln, Nebraska.

Waller, S.S., L.E. Moser, and B. Anderson. 1986. A guide for planning and analyzing a year-round forage program. Univ. Nebraska Coop. Ext. Serv. EC86-113. 19 pp.

Appendix D.
Section 7

Intra-Service Section 7 Consultation has been initiated with the Grand Island Field Office and will be completed prior to final approval of this Plan.

Appendix E.
Glossary

AUM: animal unit month, forage sufficient to sustain a 1,000 pound cow for one month during the normal range season

Prairie Grouse: both sharp-tailed grouse and prairie chickens

Wetland: includes lakes, marshes, temporary wetlands, fens, rivers, and creeks but not subirrigated meadows

Wildland: lands characterized by natural vegetation and landscapes where man-made structures and alterations are not evident

Appendix F.
Key Legislation/Policies

Antiquities Act (1906): Authorizes the scientific investigation of antiquities on Federal land and provides penalties for unauthorized removal of objects taken or collected without a permit.

Migratory Bird Treaty Act (1918): Designates the protection of migratory birds as a Federal responsibility. This Act enables the setting of seasons, and other regulations including the closing of areas, Federal or non-Federal, to the hunting of migratory birds.

Migratory Bird Conservation Act (1929): Establishes procedures for acquisition by purchase, rental, or gift of areas approved by the Migratory Bird Conservation Commission.

Migratory Bird Hunting and Conservation Stamp Act (1934): Authorized the opening of part of a refuge to waterfowl hunting.

Fish and Wildlife Act (1956): Established a comprehensive national fish and wildlife policy and broadened the authority for acquisition and development of refuges.

Fish and Wildlife Coordination Act (1958): Allows the Fish and Wildlife Service to enter into agreements with private landowners for wildlife management purposes.

Refuge Recreation Act (1962): Allows the use of refuges for recreation when such uses are compatible with the refuge's primary purposes and when sufficient funds are available to manage the uses.

Land and Water Conservation Fund Act (1965): Uses the receipts from the sale of surplus Federal land, outer continental shelf oil and gas sales, and other sources for land acquisition under several authorities.

National Wildlife Refuge System Administration Act of 1966 as amended by the National Wildlife Refuge System Improvement Act of 1997, 16 U.S.C. 668dd-668ee. (Refuge Administration Act): Defines the National Wildlife Refuge System and authorizes the Secretary to permit any use of a refuge provided such use is compatible with the major purposes for which the refuge was established. The Refuge Improvement Act clearly defines a unifying mission for the Refuge System; establishes the legitimacy and appropriateness of the six priority public uses (hunting, fishing, wildlife observation and photography, or environmental education and interpretation); establishes a formal process for determining compatibility; established the responsibilities of the Secretary of Interior for managing and protecting the System; and requires a Comprehensive Conservation Plan for each refuge by the year 2012. This Act amended portions of the Refuge Recreation Act and National Wildlife Refuge System Administration Act of 1966.

National Historic Preservation Act (1966) as amended: Establishes as policy that the Federal Government is to provide leadership in the preservation of the nation's prehistoric and historic resources.

Architectural Barriers Act (1968): Requires federally owned, leased, or funded buildings and facilities to be accessible to persons with disabilities.

National Environmental Policy Act (1969): Requires the disclosure of the environmental impacts of any major Federal action significantly affecting the quality of the human environment.

Endangered Species Act (1973): Requires all Federal agencies to carry out programs for the conservation of endangered and threatened species.

Rehabilitation Act (1973): Requires programmatic accessibility in addition to physical accessibility for all facilities and programs funded by the Federal government to ensure that anybody can participate in any program.

Archaeological and Historic Preservation Act (1974): Directs the preservation of historic and archaeological data in Federal construction projects.

Clean Water Act (1977): Requires consultation with the Corps of Engineers (404 permits) for major wetland modifications.

Executive Order 11988 (1977): Each Federal agency shall provide leadership and take action to reduce the risk of flood loss and minimize the impact of floods on human safety, and preserve the natural and beneficial values served by the floodplains.

American Indian Religious Freedom Act (1978): Directs agencies to consult with native traditional religious leaders to determine appropriate policy changes necessary to protect and preserve Native American religious cultural rights and practices.

Archaeological Resources Protection Act (1979) as amended: Protects materials of archaeological interest from unauthorized removal or destruction and requires Federal managers to develop plans and schedules to locate archaeological resources.

Emergency Wetlands Resources Act (1986): The purpose of the Act is "To promote the conservation of migratory waterfowl and to offset or prevent the serious loss of wetlands by the acquisition of wetlands and other essential habitat, and for other purposes."

Federal Noxious Weed Act (1990): Requires the use of integrated management systems to control or contain undesirable plant species; and an interdisciplinary approach with the cooperation of other Federal and State agencies.

Native American Graves Protection and Repatriation Act (1990): Requires Federal agencies and museums to inventory, determine ownership of, and repatriate cultural items under their control or possession.

Americans With Disabilities Act (1992): Prohibits discrimination in public accommodations and services.

Executive Order 12996 Management and General Public Use of the National Wildlife Refuge System (1996): Defines the mission, purpose, and priority public uses of the National Wildlife Refuge System. It also presents four principles to guide management of the System.

Executive Order 13007 Indian Sacred Sites (1996): Directs Federal land management agencies to accommodate access to and ceremonial use of Indian sacred sites by Indian religious practitioners, avoid adversely affecting the physical integrity of such sacred sites, and where appropriate, maintain the confidentiality of sacred sites.

Appendix G.
Mailing List of Agencies and Individuals

Federal Officials

- U.S. Senator Bob Kerry
  Doug Durry, Jr. Leg. Ass't, Omaha, NE
- U.S. Senator Charles Hagel
  Doug Lamude, Leg. Ass't., Omaha, NE
- U.S. Representative Bill Barrett
  Mark Whitacre, Leg. Director, Grand Island, NE
  Greg Beam, Bill Barrett's Office

Federal Agencies

- USDA/APHIS, Dr. Kathleen Akin, Lincoln, NE
- USDA/Forest Service, Gregg Schenbeck
- USDA/Natural Resource Conservation Service
- USDI/Fish and Wildlife Service, Denver, CO; Albuquerque, NM; Portland, OR; Anchorage, AK; Fort Snelling, MN; Atlanta, GA; Hadley, MA; Washington, D.C.
- USDI/Fish and Wildlife Service, Lacreek NWR, Martin, SD; National Bison Range, Moiese, MT; Witchita Mountains NWR, Indiahoma, OK; Crescent Lake NWR, Scottsbluff, NE; Rainwater Basin NWR, Kearney, NE; Ecological Services, Grand Island, NE
- USDI/ NPS, Niobrara/Missouri Natl. Scenic River, Paul Hedren
- USGS/National Wildlife Health Center, Dr. Thomas Raffe, Bozeman, MT

State Officials

- Governor Mike Johanns, Lincoln, NE
- Senator Jim Jones, Lincoln, NE

State Agencies

- Department of Agriculture, Chadron, NE
- Middle Niobrara NRD, Robert F. Hilske
- NE Game & Parks Commission, Bill Vodehnal
- NE Game & Parks Commission, Joel Klammer
- NE Game & Parks, Valentine Fish Hatchery
- Smith Falls State Park, Sparks, NE
- State Historic Preservation Officer, Lawrence Sommer, Lincoln, NE

City/County/Local Governments

- Melvin Christensen, Cherry County Sheriff
- Dean Jacobs, Valentine Chamber of Commerce
- Rick Medena, City Manager-Valentine
- Valentine City Council
- Brown County Commissioners
- Keya Paha County Commmissioners
- Cherry County Commissioners

Libraries

- Valentine Public Library
- Ainsworth Public Library

Organizations

- Audubon Society, Dave Sands
- Central Mountain and Plains Section of the Wildlife Society:
  Jeff Nichols, Ogallala, NE
  Dr. Pat Reece, Scottsbluff, NE
  Tom Rider, Lander, WY
  Dr. Terry Riley, Aberdeen, SD
- Cherry County Pheasants Forever, Valentine, NE
- Coooperative Allicance for Refuge Enhancement (CARE), Washington, D.C.
- Fort Niobrara Natural History Association, Valentine, NE
- Great Plains Buffalo Association
- Intertribal Bison Cooperative, Tony Willman
- Midcontinent Eco. Science Center, Fritz Knopf
- National Bison Association
- National Wildlife Refuge Assc., Washington, D.C.
- The Nature Conservancy, Al Steuter
- Nebraska Branch for Holistic Management
- Nebraska Cattleman, Troy Bredenkamp
- Nebraska Chapter of the American Fisheries Society, Lincoln, NE
- Nebraska Chapter TWS, Carl Wolfe
- Nebraska State Buffalo Assoc, Dave Hutchinson
- Nebraska State Buffalo Assoc, Larry Mason
- Nebraska Wildlife Federation, Lincoln, NE
- Niobrara Canoe Outfitters Assoc., Roy Breuklander
- Niobrara Council:
  Nola Moosman, Recreation Rep, Valentine, NE
  Dwight Sawle, Forestry Rep, Springview, NE
  Brad Arrowsmith, Keya Paha, Bassett, NE
  Harlin Welch, Brown County, Ainsworth, NE
  Paul L. Hedren, National Park Service, O'Neill, NE
  Tom Higgins, Newport, NE
  Warren Arganbright, Valentine, NE
  Jim Van Winkle, Cherry County Commissioner, Valentine, NE
  Bill Mulligan, Middle Niobrara NRD, Valentine, NE
  Jim Harlin, Rock County, Bassett, NE
  Betty Palmer, Keya Paha County Commissioner, Springview, NE
  Lloyd Alderman, Rock County Commiossioner, Newport, NE
  Larry Voecks, Nebraska Game & Parks, Norfolk, NE
  Betty Hermsmeyer, Brown County Commissioner, Ainsworth, NE
- Rocky Mountain Elk Foundation, Pratt, KS
- Sandhills Task Force, Kearney, NE
- Texas Longhorn Breeders Assoc, Tim Miller
- Texas Longhorn Trails, Carolyn Hunter
- Wilderness Society, Washington, D.C.
- Wilderness Watch, Missoula, MT

Newspapers

- P Ainsworth Star-Journal, Ainsworth, NE
- P Associated Press, Omaha, NE
- P The Chadron Record, Chadron, NE
- P Grand Island Daily Independent, Grand Island, NE
- P Journal-Star Printing, Lincoln, NE
- P The Kearney Daily Hub, Kearney, NE
- P Lincoln Star, Lincoln, NE
- P The Midland News, Valentine, NE
- P The Norfolk Daily News, Norfolk, NE
- P North Platte Telegraph, North Platte, NE
- P Omaha-World Herald, Omaha, NE
- P The Outdoorsmen, Hartington, NE
- P Rock County Leader, Bassett, NE
- P Springview Herald, Springview, NE
- P United Press International, Omaha, NE

Universities/Colleges

- P Dr. Tom Bragg, Department of Biology, UNO
- P Dr. James Derr, Dept. of Veterinary Pathobiology, Texas A&M
- P Ken Higgins, SD Coop Unit, SDSU, Brookings
- P Mark Morgan, KSU, Dept of Horticulture, Forestry, & Recreation, Manhattan, KS
- P Dr. James Shaw, Dept. of Zoology, Oklahoma State University
- P Dr. Curtis Strobeck, Dept. of Biological Sciences, University of Alberta
- P Dr. James Stubbendieck, Dept. of Agronomy, University of NE
- P Dr. Joe Templeton, Dept. of Veterinary Pathobiology, Texas A&M

Individuals

Adamson, Mark
Allen, Dave
Badura, Laurel
Ballard, Doug
Ballard, Richard and Jeri
Bennett, Dennis
Bennett, Shane
Birger, Dick
Blome, George
Bredthauer, Marty
Breuklander, Steve
Brown, Greg
Bullock, Ronald
Burge, Russell
Carter, Wayne
Christiansen, Lou
Churchill, Dean
Colburn, Dean
Cook, Georgia
Cornelius, Bob
Coyle, Joseph F.
Crawford, Mary
Damrow, Roger
Davenport, John
Davis, Debbie
Davis, John
DeOrnellas, George
Ducey, Jim
Ellis, Bob
Equhoff , Richard
Fields, Robert
Fishell, Ralph
Frick, Carl
Gallino, Orville
Gass, Bob
Geiger, Steve
Getusan, Bob
Grabher, Bob
Graham, Doug
Graham, Twyla
Graves, Leroy
Grooms, Jerry
Gudden, Andrew
Gunnty, Kent
Hanna, Jeff
Hanson, John
Hartman, Darrel
Hellmund, Paul Cawood
Henry, Dale
Higgins, Tom
Hoehne, Paul
Hollenbeck, Rex
Hunter, Carolyn
Huscher, Nora
Hutchinson, Dave
Isom, Stephen
Jarvi, Guy
Jeffers, Dick
Kasselder, Charles
Kerr, Steve
Kramer, Kaye
Kuhre, Beryl
Kutilek, William R.
Lee, Jim
Leeper, Rick
Lintz, Tom
Lord, Elver
Mathey, Kevin
Mason, Larry
Mattson, Dr. Neil
McPeak, Janet
Mecure, Randy
Mecure, Rich
Metschke, Corey
Miller, Randy
Muller, Gretchen
Murphy, John
Olsen, Dr. Steven
Olson, Ole
Perrett, Brian
Peterson, Kent
Peterson, Sheila
Pierce, Roger
Reimann, K.F.
Robbins, Jr., Dick
Roberts, Jerome
Rogers, Ron
Rosfeld, Otto
Rutten, Ben
Ryschon, Jerry
Scheffler, Delbert
Schneider, Julie
Schroeder, Mr. & Mrs. Don
Searle, Charles
Segar, John
Sharp, Wayne
Sherwood, Greg
Simmons, Carl
Smith, Neil
Soper, Don
Stach, Taylor & Linda
Sterry, Rich
Stoeger, Doug
Stokes, Alan
Stroup, William
Stump, Dr. Bill
Suhr, Jenny
Tegtmeier, Jim
Thortall, Vic
Torgerson
Turner, Bill
VanDerPloegh, Marvin
Vosicky, George
Walkling, Al
Waln, Bill
Walton, Judy
Wescott, Mike
Witthuhn, John
Young, Cork and Mary
Young, Mike

Ft. Niobrara/Valentine National Wildlife Refuge Complex
HC 14, Box 67
Valentine, NE 69201
402/376 3789
r6rw_ftn@fws.gov

U. S. Fish and Wildlife Service
http://www.fws.gov

For Refuge Information
1 800/344 WILD

April 1999