

Valentine National Wildlife Refuge
Valentine, Nebraska

**Annual Narrative Report
Calendar Year 2001**

INTRODUCTION

Valentine National Wildlife Refuge (NWR) was established on August 4, 1935 under the Migratory Bird Conservation Act by Executive Order 7142. The purpose of the refuge as stated in the executive order is “as a refuge and breeding ground for migratory birds and other wildlife.”

Acquisition funding came from Duck Stamp sales and the Emergency Conservation Fund Of 1933.

The 71,272-acre Valentine NWR is located in the Sandhills of north-central Nebraska. The Sandhills contain the largest remaining stands of mid and tall grass native prairie left in North America. The refuge is a unique and ecologically important component of the National Wildlife Refuge System. The refuge has about 49,000 acres of grassy, undulating sand dunes, 13,000 acres of sub-irrigated meadows, and 10,000 acres of shallow lakes and marshes. The refuge is home to 270 species of birds, 59 species of mammals, and 22 species of reptiles and amphibians. The refuge is important to nesting and migrating waterfowl and is also one of the few places where good numbers of sharp-tailed grouse and prairie chickens can be found in the same area.. Several threatened or endangered birds stop at the refuge during migration. Two listed plants and one listed insect are also found here. Most of the native flora and fauna found here historically are still present today.

The refuge is part of a complex administered from Fort Niobrara NWR. Valentine NWR is in Cherry County with a subheadquarters located on Hackberry Lake, 17 miles south of the town of Valentine on US 83 then 13 miles west on State Spur 16B.

A. HIGHLIGHTS

Turtle fences were constructed along Hwy 83 in an effort to reduce road kill of Blanding's turtles. A study of this rare and beautiful turtle was also initiated.

A major highlight of this year was the encouraging result of the blowout penstemon transplant process. Prior to 1996 only seven penstemon plants remained on the refuge. However, in 2001 1,334 plants remained after the transplant process.

Len McDaniel retired. Len and his wife Peggy raised three children , Ron, Paul, and Janet in refuge housing along the shores of Hackberry Lake. Over the years family members donated many hours of volunteer service on refuge projects. We're sure the refuge staff has a special place in their thoughts and that their contributions are appreciated.

Len and his knowledge of the Sandhills will be missed at the refuge. Len knows how to hypnotize a frog, when the needle and thread heads out, where the grouse dance in the spring and rest during the day, a redhead egg in a mallard nest, where the orchids bloom, in which blowouts to look for bluebells, and a multitude of other things that only come from years of watching, learning and loving the Sandhills. Len and Peggy plan on retiring in the area and we are sure Len will do some volunteer work at the place he called home for 24 years.

B. CLIMATIC CONDITIONS

Valentine National Wildlife Refuge had maintained a weather station at Hackberry Headquarters for 65 years in cooperation with the National Weather Service. Weather readings were discontinued in October of 2001 due to the retirement of the refuge biologist. There is now no one living near the weather station on station and readings could not be taken on weekends and holidays. The National Weather Service has a weather station in the town of Valentine about 30 miles north of the refuge and the following records are from that station. In the past these records have shown less rainfall and somewhat different temperatures than the records from the refuge.

2001 Climatological Data
Valentine, NE Weather Station

<u>Month</u>	<u>Temperature (degrees F)</u>				<u>Precipitation (inches)</u>		
	<u>High</u>	<u>Low</u>	<u>Average Monthly</u>	<u>Departure Normal*</u>	<u>Snow/Ice Depth</u>	<u>Water Equiv</u>	<u>Departure Normal*</u>
Jan	59	-7	29.4	8.6	8.9	0.5	0.2
Feb	50	-7	22.5	-4.1	6.2	0.23	-0.25
Mar	66	14	37.7	2.4	1.5	0.33	-0.78
Apr	88	16	49.7	3.6	5.1	5.49	3.52
May	96	33	58.2	0.7		3.12	-0.08
June	104	34	67.7	0.1		2.14	-0.87
July	101	51	77	3.3		3.05	-0.32
Aug	104	47	74.6	2.5		1.72	-0.48
Sep	102	29	63.9	2.4		1.92	0.31
Oct	88	14	49.7	1.4		0.5	-0.72
Nov	83	-6	40.1	7.1	15	1.57	0.85
Dec	56	-3	26.5	2.9	T	T	-0.33
					Total	20.57	1.05

* Departure from Normal Averages 1971-2000

The most notable weather event of the year was the relatively dry late summer and fall. Adequate moisture was received in the spring and grass growth was good early. Growth of grasses in the late summer was poor especially in large areas that were burned by wildfires in September of 2000. The weather also caused a tremendous bloom of sunflowers in the hills, especially in burn areas. The sunflowers also used the little available moisture at the expense of grasses.

C. LAND ACQUISITION

1. **Land Acquisition**

The Valentine NWR Comprehensive Management Plan calls for a small amount of land acquisition. Using this direction a land acquisition proposal was prepared and approved by the Platte/Kansas Rivers Ecoteam. The proposed acquisition is to add 3,365 acres in eight tracts to the refuge which is now 71,272 acres. Descriptions of the parcels follow and figure 1 shows their locations.

Tract A: 1 ~ 2,040 acres with ~ 1,400 in private ownership and ~ 640 acres owned by Nebraska Educational Lands and Funds (school section). This tract contains significant wetlands, wetland, sub-irrigated meadow, and sand range sites. Access to the eastern portions of the refuge is through this property.

Tract B: ~ 440 acres owned by Nebraska Game and Parks Commission and called

the Willow Lake Wildlife Management Area.. A trade with the Nebraska Game and Parks Commission for the U.S. Fish and Wildlife Service owned Holt Creek Wildlife Management Area is presently underway. This parcel is surrounded by the refuge on all but the east side. There is no public access to the area other than across refuge lands. The tract is not fenced out from the adjacent refuge lands. In the past the refuge has maintained the boundary fence and windmill, managed grazing, and set fishing regulations on the lake which is half in the refuge and half in the Nebraska Game and Parks WMA. The parcel contains about half of Willow Lake, wetlands, sands, and choppy sands range sites, and a small amount of meadow. The trade would eliminate an in holding, consolidate management, and add valuable habitat to the refuge. Nebraska Game and Parks would receive the Holt Creek WMA which has public access and would better meet their goals for a WMA.

Tract C: ~ 60 acres in private ownership. Nebraska Department of Roads is trying to purchase this property and if successful will transfer it to the USFWS as part of the mitigation for the increased right of way required for the upgrade of US Highway 83 through the refuge. This site also has the endangered prairie white-fringed orchid growing on it and will serve to mitigate road improvement impacts on this species. The parcel contains wetlands, wetland, sub-irrigated meadow, and sands, and choppy sands range sites. The grassland in the meadow areas is dominated by smooth brome, a non-native species.

Tract D: ~580 acres with ~60 acres in private ownership and 520 acres owned by Nebraska Educational Lands (school lands). The tract has significant wetland and sub-irrigated meadow plus sand range sites. The tract is located between the county road and the refuge boundary.

Tract E: ~ 80 acres in private ownership. This tract is all sand range sites and surrounded by refuge lands on three sides.

Tract F: ~ 200 acres or if a trade arranged 40 acres, all in private ownership. This tract has wetlands, wetland and sand range sites. It is surrounded on three sides by refuge lands. The entire tract could be purchased or a trade plus a smaller purchase made to straighten the refuge boundary.

Tract G: ~ 60 acres in private ownership. This tract is primarily wetland, wetland and sub-irrigated meadow range sites with a small portion of sands range site. It is a narrow strip between Highway 83 and the refuge boundary.

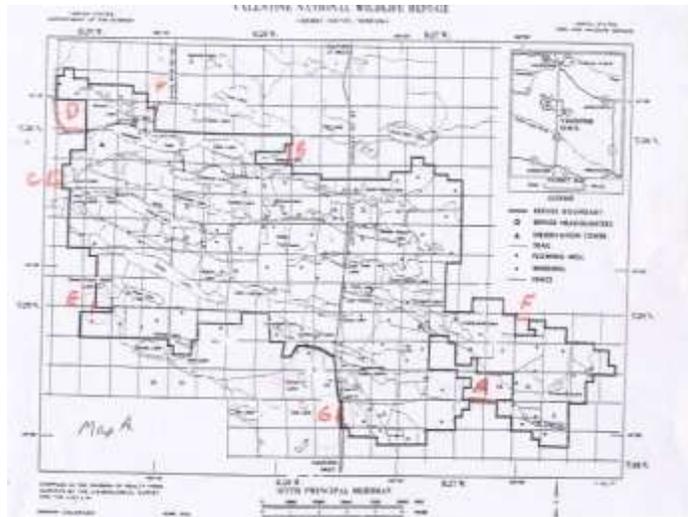
Tract H: ~ Five acres in private ownership. This tract is almost all wetland. Purchase would allow the refuge to move the boundary fence out of the wetland.

Wetland, sub-irrigated meadow, sand, and choppy sand sites as well as wetlands and part of a lake are included in this proposal. These habitats contain mostly

native plant and wildlife species. Acquisition of the proposed tracts would add additional valuable habitat to the refuge which could be managed with prescribed fire, controlled grazing, rest, and weed and invasive plant control to benefit a variety of plants and animals. The proposed acquisition would also prevent possible wetland drainage and protect the lands from possible development. The lands are within the Sandhills focus area of the Ecoteam and the North American Waterfowl Management Plan lists the Sandhills as a habitat of major concern in North America. The lands will also provide habitat for several endangered species.

The proposed expansion would eliminate two significant in-holdings and straighten refuge boundaries. The proposed expansion (tract A) would better link the eastern portion of the refuge with the main area of the refuge. The present access road to the eastern portion of the refuge crosses private land in parcel A in 3 places. The land owner could close the road preventing access by the public.

The acquisition of tract B would consolidate ownership and management of Willow Lake with the refuge. At present the refuge maintains the fence, controls



fishing, maintains public access, and manages grazing on the state owned land. No formal agreement is in place for these activities.

Proposed land acquisition for Valentine NWR

D. PLANNING

1. **Master Plan**

Work continued on a site plan being prepared by a private contractor. Drafts of sections of the report were reviewed and comments provided to the contractor. At year end the contractor had provided a nearly complete draft. This plan outlines what buildings and facilities are needed to move the refuge headquarters to the Pony Lake site as called for in our Comprehensive Conservation Plan. Buildings include a new office, fire building, pole shed, two residences, and a shop/storage building. It is proposed that the present headquarters site be converted to support research. The plan also outlines improvements to visitor facilities including addition of a visitor contact station along Highway 83, a prairie hiking trail, an auto tour route, and a nature trail. The estimate cost for implementing the plan is \$3,500,000. It has been a struggle working with the contractor as they have changed personnel several times, resisted providing any detail in final plans, are late in providing the plan, and only have a fleeting idea of what the refuge is about.

4. **Compliance with Environmental and Cultural Resource Mandates**

An environmental compliance audit was conducted by Environmental Compliance Coordinator Jim Behrman. As a result of the audit a hazardous communication plan was prepared, unlabeled chemicals were disposed of, floor drains were plugged, chemical inventory was completed, spill prevention plans were located, and a log of fuel tank inspections was started. At the end of this year three items were open and included drinking water testing, disposal of a large amount of old paint, and junk yard cleanup. Funds were requested to complete all open projects. The drinking water testing has been scheduled but not completed. The other projects have not been funded.

A request to the State of Nebraska to remove Valentine NWR headquarters from the list of public water supplies and the required testing and standards was approved. Usage of water by staff and the public was below the amount that requires state certification. The testing and standards were also those for a small town and very difficult for us to meet.

Regional Archeologist Rhoda Lewis conducted a survey of the Dad's Lake Recreation Area. The resort complete with cabins, concession stand, boat house, and fish cleaning shack was built by the Civilian Conservation Corps and operated for about ten years after which all the buildings were removed. The large wildfires of 2000 burned all the grass in the area exposing the foundations and other features of the site. Rhoda used this opportunity to map and record what remains.

In September of 2000 the Nebraska Department of Roads completed an

environmental assessment for improvements to part of Highway 83 through the refuge. In 2001 improvements were made to the six miles of highway from Calf Camp Marsh to the south refuge boundary and included new surface, paved shoulders, and new of way. planning in the

the refuge the road alignment to the

barrier road kill



flattening of hills, fence along the right Mitigation and measures included environmental assessment to lessen impact on the included; building on existing rather than adjacent existing road, construction of fences to reduce of Blanding's turtle,

funding a study on Blanding's turtle and highway mortality, purchasing 60 acres of land to replace that taken in additional right of way, wetland restoration adjacent to North Marsh Lake and Highway 83 in mitigation for fill, and narrowing the right of way in Sweetwater Valley to protect prairie-white fringed orchid habitat. At the end of 2001 all but the land acquisition was completed. A parcel adjacent to Duck Lake has been identified and is in the process of being acquired.

Fence built to reduce road kill of Blanding's turtles on Highway 83

5. Research and Investigations

South Dakota State graduate student T.J. DeBates conducted a study entitled *Food Habits of Fish in Nebraska Sandhills Lakes*. He sampled pike, perch, bass, and

bluegill food habits in Pelican and West Long Lakes. Results have not yet been analyzed.

Papers from previous fisheries work conducted on the refuge by South Dakota State students were received and included:

Paukert, Craig P., P.J. Chvala, B. L. Heikes, and M.L. Brown. 2001. *Effects of implanted transmitter size and surgery on survival, growth, and wound healing of bluegill*. *Tran. of American Fisheries Society* 130:975-980.

Harrington, Jennifer C., C.P. Paukert, and D.W. Willis. 2001. *Pumpkinseed population characteristics in Nebraska sandhills lakes*. 2001. *Transactions of the Nebraska Academy of Sciences* 27:25-30.

Paukert Craig P., D.W. Willis, and A.L. Glidden. 2001. *Growth, condition, and mortality of black crappie, bluegill, and yellow perch in Nebraska sandhills lakes*. *Great plain Research* 11:261-74.

Paukert, Craig P. 2001. *Ecology of fish communities in Nebraska sandhills lakes*. PhD Thesis. South Dakota State University, Brookings. 138pp.

Internal organs from about 14 pheasants shot during the hunting season on or near the refuge were provided to Dave Oates with the Nebraska Game and Parks Commission for parasite/nutrition studies.

Student Career Experience Program student Bridgette Flanders worked this summer at the refuge with the refuge biologist on her project entitled *Increasing Prairie Grouse Recruitment on Valentine National Wildlife Refuge by Managing Grasslands for the Enhancement of Residual Cover*. Bridgette is a masters student at Colorado State University. She is using data on prairie chickens and sharptailed grouse and grassland management gathered at Valentine NWR over many years to compare the relationship between recruitment of grouse and grassland management. She will complete her thesis and graduate school work in 2002.

Doctors Gary and Mary Packard from Colorado State University continued studies on hatchling turtles. In 2001 the results of some of their work was published in the following:

Packard, Gary C. and Mary J. Packard. 2001. *The overwintering strategy of hatchling painted turtles, or how to survive in the cold without freezing*. *Bioscience* Vol 51 No. 3 pp199-207.

Sims, Paul A., G. Packard, and P. Chapman. 2001. *The adaptive strategy for overwintering by hatchling snapping turtles (Chelydra serpentina)*. *Journal of*

Herpetology Vol 35. No. 3. pp514-517.

Packard,
2001.
*variation in
hydration
Chrysemys*
15, pp.



Gary C. and Mary J. Packard.
*Environmentally induced
size, energy reserves and
of hatchling painted turtles,
picata.* Functional Ecology
481-489.

E.

- 1. **Personnel**
Valentine
part of the
Complex
assigned to

ADMINISTRATION

National Wildlife Refuge is
Fort Niobrara/Valentine NWR
with three permanent staff
the station. They are:

- | | | |
|------------|---|--|
| Operations | <ul style="list-style-type: none"> 1. Mark
Specialist 2. Len McDaniel Wildlife Biologist 3. David Kime Maintenance Worker 4. Bridgette Flanders Student Career Experience Program | <ul style="list-style-type: none"> Lindvall Refuge
GS-12 PFT GS -11PFT (retired in
October) WG-8 PFT GS -7 |
|------------|---|--|

2001 Staff, Mark Lindvall and David Kime

During 2001 we had four firefighters assigned to the refuge;

Jeff Dion	Fire Program Technician	GS-6 PFT
Billy Cumbow	Range Technician	GS-4 TFT
Kirk Jess	Range Technician	GS-4 TFT
T.J. Rockenbach	Range Technician	GS-4 TFT

Over the years Valentine NWR has lost two biotech positions, a maintenance worker position, and all temporary summer help in maintenance and biology. This steady erosion has left the refuge severely understaffed.

4. **Volunteer**

The local 4-H Club has adopted the refuge nature trail and contributed about 40 hours of work.

Refuge Biologist (retired) McDaniel volunteered about 40 hours compiling data, answering questions on refuge history, and other projects.

Refuge Firefighters Cumbow and Jess volunteered about 230 hours during November and December after being laid off by fire. They lived in the quarters at Pony Lake and completed a variety of maintenance projects.

5. **Funding**

Valentine NWR receives funding as part of the Fort Niobrara/Valentine NWR Complex. Challenge Grants of \$20,000 for boat ramps and \$4,100 for fishery surveys were received during the year. These projects were completed and are described elsewhere.

A fire rehabilitation plan was prepared and funds received used to pay salaries while doing rehabilitation work, purchase fence supplies, and repair facilities damaged in the large fires that occurred in September of 2000.

The refuge received no funding for MMS or RONS projects in FY 2001.

6. **Safety**

A safety and occupational health review was conducted by Regional Safety and Occupational Health Manager Shirlee Terada. As a result of the review, the hoist was locked out as it has no safety catch, refrigerators were labeled as biological samples - no food, grinder adjusted, new goggles, rubber gloves, and dust masks

purchased, batteries were placed in containers, air cleaning system for welding was purchased, rag disposal can purchased and labeled, cleanup of shop was done, fire extinguisher inspection assigned to fire, updated safety plan and blood borne pathogen plan, and ground rod installed on oil storage building. The first day of the month was also set aside for cleanup day as poor house keeping was one of the main safety hazards identified.

Monthly Staff & Safety meetings were held. The following is a list of specific topics:

(Information for the months of January, February, and March was unavailable due to staff vacancy at the Station.)

April	Anti-lock brakes/air bags
May	ATV safety
June	Firefighting work capacity tests
July	ATV safety
August	Drug awareness
September	Wildland fire fighting
October	Hanta virus
November	Anthrax
December	ATV safety

Firefighter T.J. Rockenbach sprained his ankle when he stepped in a badger hole. He did not require medical attention and did not miss any work.

An ice fishermen fell and broke his leg on Pelican Lake while fishing and drinking alcohol. Refuge staff assisted the Cherry County ambulance crew in getting him to the hospital.

7. **Technical Assistance**

Refuge staff completed state study block grouse lek counts, spring Sandhill crane, fall deer, and mid-winter waterfowl surveys at the request of the Nebraska Game and Parks Commission.

Biologist McDaniel provided information on cover requirements for grouse to the US Forest Service.

Refuge Operations Specialist Lindvall served on the habitat committee for Cherry County Pheasants Forever. The group completed a number of projects that benefit pheasants as well as other wildlife.

8. **Other**

a. **Meetings**

Refuge Biologist (retired) McDaniel and Refuge Operations Specialist Lindvall attended the Nebraska Chapter of the Wildlife Society meeting and part of the Natural Resource Conservation Service grassland

management course held in Aurora, Nebraska in October. Lindvall is on the chapter's public land committee.

Refuge Biologist McDaniel and SCEP Flanders attended the Prairie Grouse Technical Council meeting held in Kansas. Flanders presented preliminary information from her work at the refuge.

b. **Training**

Refuge Officers Kime and Lindvall attended the 40 hour law enforcement refresher held in Marana, AZ during the winter and the mid-year qualification course held in Scottsbluff, NE in August.

Refuge Operations Specialist Lindvall completed waste haulers training and received a permit so the refuge can haul trash to the city landfill.

H. HABITAT MANAGEMENT

1. **General**

Valentine NWR is 71,272 acres in size and lies in the heart of the Nebraska Sandhills, the largest sand dune area in the Western Hemisphere and one of the largest grass-stabilized regions in the world. The Sandhills are characterized by rolling, vegetated sand dunes and interdunal valleys which spread over the landscape. Native grasses predominate. Many shallow lakes and wetlands are interspersed in the lower valleys. Grasslands are managed using permittee grazing, prescribed fire, rest, and weed control. A few of the lakes and one smaller wetland have water control structures.

2. **Wetlands**

There are about 13,000 acres of wetlands on the refuge. Watts, Hackberry, Dewey, Clear, Pelican, and Whitewater Lakes have water control structures located at their outlets. Calf Camp Marsh also has a water control structure that was upgraded last year by Ducks Unlimited. On Watts, Hackberry, and Pelican Lakes the water level is often below the level of the structure so no water flows through or is backed up by the structure except in the spring. Water is usually impounded at Dewey, Clear, and Whitewater Lakes year round. All the structures have water level gauges tied to mean sea level. All structures only impound additional water above the natural level of the lakes. Due to a dry late summer and fall in 2000, refuge lakes and wetlands started the spring of 2001 at lower levels than have been seen in recent years. The Sandhills have had a record a number of about 17 wet years resulting in high water levels that we have now started thinking of as "normal." Adequate spring rains brought the lakes up but the late summer and fall of 2001 were also dry and lake and wetland levels receded. Lakes are now actually more within historical levels.

No boards were put in the structure at Calf Camp Marsh until the late fall of 2001.

This should allow the wetland to fill and provide brood habitat in the spring. Shorebird and waterfowl use was tremendous on the mud flats and newly vegetated areas following the draw down of this wetland in 2000. In the falls of 2000 and 2001 up to 3,000 ducks and geese were using the area. Ground water levels are monitored at 35 ground water wells that were established in the 1950's. Thirty-two of the wells are on the refuge and three on adjacent private land. Refuge staff read the wells and provide the information to the US Geological Survey.

3. **Forests**

The refuge does not have any forests but has small bands of trees along lake shores and in tree lots or windbreaks. The abundance of trees and other woody cover has drastically changed since the refuge was established. Historical photos show few if any trees even along lake shores. The Civilian Conservation Corps planted many shrubs and trees including many introduced species. Since then cedar and to some extent Russian olive have been expanding into grasslands. The large wild fires of 2000 killed a large number of cedar trees including many large trees and some in tree belts. Many of these trees were larger than those that can be killed using prescribed fire.

Cherry County - Hackberry Lake

This photo depicts the northeastern shore of Hackberry Lake in the Valentine National Wildlife Refuge. That isn't snow in the 1911 photograph, because it was taken in July. It is sand. The appearance of the Sandhills in the past was much different than today because wildfires frequently swept across the landscape in late-summer or early-fall, baring the fine sand to the action of the wind during winter. Formerly, areas of active wind erosion, such as blowouts, were many times more common. The current condition of the Sandhills is a testament to the management skills of the ranchers and other land managers. This is one of the few Frank H. Shoemaker images that he did not take from the highest hill in an area.



1911



Vegetation along Hackberry Lake, Valentine NWR, 1911 and 1998.

5. **Grasslands**

The contribution of Valentine NWR in preserving Sandhills Prairie was recognized in 1979 by the USDI Heritage and Recreation Service when the refuge was designating as a Registered Natural Landmark. Sandhills Prairie is a mixed-grass prairie with vegetation determined by range site.

Wetland or low meadow sites are dominated by grasses that thrive in a moisture saturated soil profile. Prairie cordgrass, blue-joint reed grass, sedges, golden rods, saw-toothed sunflower, and willows are found here. The threatened western prairie-fringed orchid is found in wetland range sites.

Sub-irrigated range sites are meadows where the groundwater is very close to the surface. Soil moisture is adequate to support deep rooted, warm season grass species even during drought. Grasses here are tall grass prairie species such as Indian grass and big bluestem that are generally found in areas of higher rainfall. Kentucky bluegrass and smooth brome, exotic grasses, invade these range sites and reduce native grasses.

Sand range sites or low sand sites are found on the lower and gently sloping hills and are vegetated by native cool and warm season grasses. Needle and thread, porcupine, June, western wheat, prairie sandreed, sand bluestem, sand love, little bluestem, and switch grasses grow here. Sunflower, yucca, lead plant, rose and other forbes are found in this range site.

Choppy sand range sites are the characteristic sand dunes for which the Sandhills is named. The hills are generally grass covered but there is some unvegetated soil surface subject to wind and water erosion. Grasses found here include blue gramma, sand bluestem, prairie sandreed, sand love, muhly, little bluestem, and blowout grass. The endangered blowout penstemon grows in and around open sand areas in the choppy range site.

The goal of our grassland management found in the refuge Comprehensive Conservation Plan is to preserve, restore, and enhance the ecological diversity of indigenous flora of Sandhills Prairie. Objectives for species composition, structure, and undisturbed cover are also found in the plan. Refuge grasslands are managed to meet the goals and objectives using permittee grazing, prescribed fire, haying, weed control, and rest. These management actions are described in subsequent sections of this report.

The large wildfires of 2000 and the dry late summer/fall of 2001 greatly impacted grass growth this year. Generally grasses grew well in spring but poorly later in the year. This year also saw a tremendous bloom of sunflowers in the sand and choppy sand range sites. The hills were literally yellow in late summer especially in areas burned in 2000. The sunflowers also probably used what little moisture was present later in the year to the detriment of grass growth. The fires also killed a large number of cedars invading the grasslands including many large trees. The kill was almost complete in the burned areas. Some of the yucca or soap weeds in the burned areas also were killed but many sprouted from the large tap root.

7.

Grazing

In 1985 the refuge habitat management program was changed and short-duration

grazing started. Prior to 1985, much of the refuge grassland was grazed on a six week rotation. Authorized AUMs for each of the permittees have remained about the same when compared to 1997 levels. There are now seven permittees in the program. All have had long time permits with the refuge. Grazing rates were reduced to compensate permittees for the added expense of moving cattle for short duration grazing.

Grazing fees for 2001 were:

spring grazing treatment	\$14.07/AUM
short-duration grazing	
1 day in unit	\$6.74/AUM
2 days in unit	\$12.24AUM
3 days in unit	\$14.07/AUM
4 days in unit	\$14.80/AUM
5 days in unit	\$15.16/AUM
6 days in unit	\$15.53/AUM
7 days in unit	\$15.90/AUM
8 or more days	\$17.36/AUM
in unit	
fall	\$17.36/AUM
winter	\$17.36/AUM

The full rate of \$17.36 is an increase of \$1.00 per AUM (the maximum increase permitted per year by policy) from the 2000 fee and is based on a rate survey conducted by USDA and published in the Nebraska Farm Real Estate Market Developments . The market rate as determined by USDA for this area in 2001 was \$20.00/AUM.

Permittees also had their grazing bills reduced for improvements and repairs to wells, fence, tanks and other facilities needed for the program. In 2001, \$31,438 was spent on improvements and deducted from final billings. Several fence replacement projects were not completed and may be done in 2002 using 2001 funds. Permittees were required to hire a contractor to repair fences in the units they used. Basically two fence contractors were hired and they split the fence repair for the nine permittees. They were paid \$30 per hour for a crew of two, and supplied their own gas, tools, vehicle, and equipment. Total fees for the 2001 grazing season were \$94,545 of which \$31,438 has been spent so far on maintenance and improvements. This total does not include the value of the refuge share of hay.

The methods and expected results for the different grazing strategies are explained below. The acreage of grassland treated with each type of grazing is listed in Table #2.

a. **Spring Grazing Treatment**

Spring grazing treatment (SGT) is done before the end of May on sub-irrigated meadow sites. The cattle are in the unit for greater than two weeks. Cattle eat or trample almost all of the residual cover. They also overgraze and thus reduce undesirable cool season exotic grasses (Kentucky bluegrass and brome). Cattle can be placed in a unit to remove residual and then brought back in later to hit the cool season exotics. In some instances, cattle are brought back in at several later dates for the same purpose. Because much of the feed is in the form of old mat, this treatment is best done by fall calving cows and not by lactating spring calving cows. Meadows that are hayed are also sometimes given this treatment to add fertilizer.

Dramatic results occur with this treatment. Exotic cool seasons, such as Kentucky bluegrass, are suppressed and native warm seasons, such as switch grass, increase in vigor and density. The disadvantage is the loss of the unit for nesting in the year of treatment and a lower waterfowl nesting density in the following year. Often the unit can however be rested for up to five years following treatment.

In 2001, 38 habitat units totaling 7,179 acres received a spring grazing treatment and included some areas that were latter hayed. Where possible meadows that burned in the wildfires of 2000 were given a spring grazing treatment in 2001. This resulted in more of this treatment being used than in most years. This was done to control Kentucky bluegrass which grows well in the spring following a fall burn. In some areas we had sufficient cattle to do a good job. In others, such as Sawyer Meadow, cattle numbers were not sufficient to do what we wanted but were still enough to help. It is difficult to judge the number of cattle to use because weather can greatly affect grass growth in May and there is no residual grass following a fall fire to carry the cattle.

b. **Spring Short-duration Grazing**

Spring short-duration grazing (ES-SD) is grazing a unit for less than two weeks during May. Generally the cattle are in the unit for only three to five days. This type of grazing is generally done in hill units to stimulate growth of grasses, especially cool seasons. The short exposure times eliminate overgrazing. In 2001, five habitat units totaling 1,683 acres had spring short-duration grazing. Where possible units grazed later in summer than previous years are grazed using this treatment. This both varies treatment and reduces disturbance to nesting cover. Most units grazed with ES-SD show excellent growth by fall.

c. **Short-duration Summer Grazing**

Short-duration summer grazing (SD-S) is done from June 1 through September 1. Cattle are in a unit for less than two weeks. Most units are

grazed only three to five days and the cattle moved on to the next unit. Electric fences are used to break up larger units and increase stock density. Most short-duration summer grazing was completed by mid-July. In 2001, 73 habitat units totaling 17,071 acres were short-duration summer grazed. Units grazed in this method show good growth by fall if there is adequate moisture. If little or no late summer rainfall is received regrowth is less, especially in those units grazed in late July or August. Where possible habitat units that were burned in the fall of 2000 were short-duration summer grazed. Exposure days were reduced to move the cattle through the units quickly. This resulted in more units and acres being used for this treatment in 2001. The idea was to prevent the grass from quickly going to seed as it does following fire. It was hoped that the grasses would put the energy into vegetative growth. Units grazed early in June showed good results as moisture was adequate. Later in the summer it was dry and these units did not respond as well. Large numbers of sunflowers also grew this year and took moisture away from grasses. This was especially evident in the areas that burned in 2000.

d. **Summer Grazing**

Summer grazing (S) is done from June 1 through September 1 and cattle are in the unit for two weeks or longer. In 2001, no acres were summer grazed. These are usually larger units which have not been cross fenced.

e. **Fall Grazing**

Fall grazing (F) is done from September through November. Fall grazing can reduce mulch accumulations, add fertilization, and maintain grouse leks. If done at the proper time cattle will also graze out small wetlands and leave the surrounding upland vegetation alone. Generally the wetlands have green in them while the uplands have only cured grasses. Grazing in the wetlands recycles nutrients and provides pair habitat for ducks in the spring. Generally we have moved away from fall grazing except for pothole grazing. Fall grazing eliminates both winter cover and nesting cover in the following year. Some units were fall grazed in 2001 that will be given a spring grazing treatment in 2002. One unit was fall grazed after being hayed. This adds fertilizer to the soil and eventually quality and quantity to the hay harvested. In 2001, five habitat units totaling 889 acres were fall grazed.

f. **Winter Grazing**

Winter grazing (W) is done during the November through April period. In winter grazing, cattle are fed hay on a feed ground in a unit. The hay comes off the refuge. When the weather is harsh the cattle feed on hay but when it is nice they graze away from the hay ground. Winter feeding creates dense weed patches for several years following the treatment. These weed patches provide winter food for deer, pheasants, and other

resident wildlife. Units with a history of winter grazing combined with feeding also have excellent growth of grasses away from the feedlot. This is due to the import of energy in the form of fertilizer. Hay is cut in the meadows. Resident wildlife also utilize waste grain from the feeding operation. Winter feeding can also be used to stabilize blowouts and roads. In 2001, eight habitat units totaling 2,204 acres were winter grazed.

g. **Fire**

Prescribed fire (P) and natural or wildland fire (N) are discussed in the fire section. In 2001 we prescribe burned three units for a total of 172 acres. We cut back on prescribed fire due to the large wildfires in the fall of 2000. There were no wildfires on the refuge in 2001.

Table #12 2001 HABITAT MANAGEMENT SUMMARY

<u>Treatment</u>	<u>units</u>	<u>acres</u>	<u>AUMs</u>
<u>Rest</u>			
rest(R)	185	31,759	-
<u>Spring</u>			
spring grazing treatment SGT	38	7,179	1,608
early spring short duration			
ES-SD 1-6 days	4	1,343	154
ES-SD 7-9 days	1	340	84
subtotal	43	8,862	1,846
<u>Summer</u>			
short duration summer			
SD-S 1-3 days	48	7,002	1,238
SD-S 4-7 days	23	8,882	1,014
SD-S 8-14 days	2	1,247	143
summer S 15-27 days	0	-	-
subtotal	73	17,071	2,395
<u>Fall</u>			
fall F	5	889	
486			
<u>Winter</u>			
(W)	8	2,204	
1,464			
<u>Hayed (H)</u>	15	412	-
<u>Fire</u>			
prescribed fire P	3	172	
natural fire N	0	0	
<u>Misc.</u>			
government horse	1	20	
12			

**note: some habitat units received double treatment, primarily hayed units that we also SGT or

8. Haying

About 412 acres of sandy, sub-irrigated, and wetland range sites were mowed and yielded 1,052 tons of hay. All or part of 15 habitat units were mowed and hayed. Prior to 2001 hay was either 1.) put up on shares with a 60 percent to permittee /40 percent to the refuge delivered to Fort Niobrara NWR for winter longhorn feed or 2) fed on Valentine NWR at the full grazing rate. With the removal of the longhorn herd from Fort Niobrara NWR in 2000 most share hay was no longer needed. One permittee stated that feeding hay back on the refuge was cost prohibitive so the costs were investigated. The cost to the permittee to put up hay (\$21/ton) and feed it back on the refuge (\$49/ton at 3 AUMs/ton at \$16.36/AUM) gives a total cost to the permittee of \$70/ton. The average cost of hay over the past five years was found to be \$40-45/ton. This cost of buying hay and putting up hay was based on interviews with hay contractors, and staffs of the Sandhills Cattle Association and Cherry County Extension.

The method of charging for hay was changed this year. The new method is that hay is put up on a 50/50 split with the permittee taking half home and feeding the other half back on the refuge at the full rate of \$17.36/AUM. The cost to the permittee is now \$21/ton to put up the hay plus \$26/ton (3 AUMS/ton) to feed the hay back for a total of \$47/ton. This is comparable to market rates. Some hay is still needed at Fort Niobrara NWR for the horses and exhibition herd. This hay is cut on a 60%permittee/40% refuge split. The permittee also has to deliver the refuge share to Fort Niobrara NWR.

Most of the meadows hayed are also grazed either in the fall or spring. This adds fertilization to the meadows and improves the quality and quantity of hay produced. In general we try to mow low sites with mostly reed and cordgrasses. This year we had a dry period that allowed some of the lower sites to be mowed..

Haying is used to provide fire protection for facilities, browse areas for Canada geese, sandhill cranes, prairie grouse, and deer and to provide hay to Fort Niobrara NWR. Mowing can also open up small wetlands for waterfowl pair habitat. Hay is also used in the winter treatment described under the grazing section of this report.

Areas to be hayed, in which we have found the endangered prairie white-fringed orchid in the past, were searched on foot. Searches were done when the plant was in bloom. Plants found were marked with lathe with orange tops and the area not mowed. Haying may be of some benefit to the orchid as most of the plants found on the refuge are in areas that are annually hayed.

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	sums	sum/	permittee
								acre	acre	
"A"	120 R	0	0	0	/	/	0	0.00	0.00	
01A1	105 R	0	0	0	/	/	0	0.00	0.00	
01A2	110 R	0	0	0	/	/	0	0.00	0.00	
01A3	10 R	0	0	0	/	/	0	0.00	0.00	
01A4	115 R	0	0	0	/	/	0	0.00	0.00	
01A5	74 R	0	0	0	/	/	0	0.00	0.00	
01B1(NW)	45 R	0	0	0	/	/	0	0.00	0.00	
01B1(W-E)	63 SGT	12	2	05/12/01	06/05/01	24	13.38	0.21	BALLARD	
01B2	376 SGT	52	2	05/12/01	06/05/01	24	52.72	0.14	BALLARD	
01C	188 R	0	0	/	/	0	0.00	0.00		
02A	506 SGT	80	2	05/12/01	06/04/01	23	76.92	0.15	BALLARD	
02B1	176 R	0	0	/	/	0	0.00	0.00		
02B1(FDL)	5 R	0	0	/	/	0	0.00	0.00		
02B2	45 R	0	0	/	/	0	0.00	0.00		
02B3(A)	140 R	0	0	/	/	0	0.00	0.00		
02B3(B)	129 R	0	0	/	/	0	0.00	0.00		
02B3(C)	150 R	0	0	/	/	0	0.00	0.00		
02B3(D)	65 R	0	0	/	/	0	0.00	0.00		
03A	106 R	0	0	/	/	0	0.00	0.00		
03B	240 R	0	0	/	/	0	0.00	0.00		
03C1	268 SD-S	62	11	08/02/01	08/06/01	4	11.61	0.04	BALLARD	
03C1(W)	21 R	0	0	/	/	0	0.00	0.00		
03C1DIKE	29 R	0	0	/	/	0	0.00	0.00		
03C2	137 SD-S	62	11	08/06/01	08/09/01	3	8.70	0.06	BALLARD	
03D	516 SD-S	62	11	08/22/01	08/27/01	5	14.51	0.03	BALLARD	
04	350 SD-S	62	11	08/17/01	08/22/01	5	14.51	0.04	BALLARD	
05A	666 SD-S	0	310	06/29/01	07/03/01	4	40.66	0.06	REECE	
05B1	527 R	0	0	/	/	0	0.00	0.00		
05B2	30 R	0	0	/	/	0	0.00	0.00		
06	306 R	0	0	/	/	0	0.00	0.00		
07A1(N)	225 R	0	0	/	/	0	0.00	0.00		
07A1(S)	85 R	0	0	/	/	0	0.00	0.00		
07A2	20 R	0	0	/	/	0	0.00	0.00		
07B1	112 R	0	0	/	/	0	0.00	0.00		
07B2	152 SD-S	0	310	06/26/01	06/29/01	3	30.49	0.20	REECE	
07B3(E)	25 R	0	0	/	/	0	0.00	0.00		
07B3(W)	66 R	0	0	/	/	0	0.00	0.00		
07C	105 R	0	0	/	/	0	0.00	0.00		

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	sums	sum/	permittee
								acre	acre	
08A1	166 R		0	0	05/04/01	05/07/01	0	0.00	0.00	
08A2	155 ES-SD		0	310	05/07/01	05/10/01	3	30.49	0.20	REECE
08A3	160 ES-SD		0	310	06/23/01	06/26/01	3	30.49	0.19	REECE
08E1/2	373 SD-S		0	310	06/21/01	06/23/01	2	20.33	0.11	REECE
08E3	185 SD-S		0	310	06/18/01	06/21/01	3	30.49	0.16	REECE
08E4	185 SD-S		0	0			0	0.00	0.00	
08C1	275 R		0	0			0	0.00	0.00	
08C2	175 R		0	0			0	0.00	0.00	
08C3	170 R		0	0			0	0.00	0.00	
08D1	120 SGT		0	20	05/10/01	06/08/01	29	19.02	0.16	REECE
08D2	250 R		0	0			0	0.00	0.00	
08D3	134 SGT		0	20	05/10/01	06/08/01	29	19.02	0.14	REECE
08E1	152 SGT		0	25	05/10/01	06/08/01	29	23.77	0.16	REECE
08E2	137 SGT		0	20	05/10/01	06/08/01	29	19.02	0.14	REECE
08E3(H)	100 SGT		0	50	05/10/01	06/08/01	29	47.54	0.48	REECE
08E3(M)	187 SGT		0	20	05/10/01	06/08/01	29	19.02	0.10	REECE
08E3(N)	29 SGT		0	5	05/10/01	06/08/01	29	4.75	0.16	REECE
08E3(S)	24 SGT		0	3	05/10/01	06/08/01	29	2.85	0.12	REECE
08F1	190 SD-S		0	310	06/15/01	06/18/01	3	30.49	0.16	REECE
08F2	211 SD-S		0	310	06/12/01	06/15/01	3	30.49	0.14	REECE
08G	206 R		0	0			0	0.00	0.00	
09A1	119 R		0	0			0	0.00	0.00	
09A2	133 R		0	0			0	0.00	0.00	
09A3	68 R		0	0			0	0.00	0.00	
09B1	153 R		0	0			0	0.00	0.00	
09B2	123 SGT		0	43	05/10/01	05/31/01	21	29.61	0.24	COLBURN
09C1	75 SD-S		0	190	06/23/01	06/25/01	2	12.46	0.17	COLBURN
09C10	40 SD-S		0	100	06/25/01	06/28/01	3	9.84	0.25	COLBURN
09C2	85 SD-S		0	180	06/23/01	06/25/01	2	11.80	0.14	COLBURN
09C3	80 R		0	0			0	0.00	0.00	
09C4	80 R		0	0			0	0.00	0.00	
09C5	110 SD-S		0	270	06/25/01	06/28/01	3	26.56	0.24	COLBURN
09C6	90 SD-S		0	190	06/30/01	07/03/01	3	18.69	0.21	COLBURN
09C7	90 SD-S		0	180	06/30/01	07/03/01	3	17.70	0.20	COLBURN
09C8	70 SD-S		0	190	06/28/01	06/30/01	2	12.46	0.18	COLBURN
09C9	80 SD-S		0	180	06/28/01	06/30/01	2	11.80	0.15	COLBURN
10A1	640 R		0	0			0	0.00	0.00	
10A2	240 SD-S		0	370	06/18/01	06/21/01	3	36.39	0.15	COLBURN

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	aums	aum/	permittee
								acre		
10A3	160	SD-S	0	370	06/21/01	06/23/01	2	24.26	0.15	COLBURN
10B(C)	260	SD-S	0	370	06/07/01	06/11/01	4	48.52	0.19	COLBURN
10B(E)	275	SD-S	0	370	06/04/01	06/07/01	3	36.39	0.13	COLBURN
10B(W)	929	SD-S	0	370	06/11/01	06/18/01	7	84.92	0.09	COLBURN
11A1	126	R	0	0	/	/	0	0.00	0.00	
11A2	126	SD-S	0	370	07/07/01	07/09/01	2	24.26	0.19	COLBURN
11A3	118	SD-S	0	370	07/09/01	07/11/01	2	24.26	0.21	COLBURN
11A4	110	SGT	0	44	05/10/01	05/31/01	21	30.30	0.28	COLBURN
11A5	126	SGT	0	47	05/10/01	05/31/01	21	32.36	0.26	COLBURN
11A6	126	SD-S	0	370	07/11/01	07/13/01	2	24.26	0.19	COLBURN
11A7	114	SD-S	0	370	07/05/01	07/07/01	2	24.26	0.21	COLBURN
11A8	114	SD-S	0	370	07/03/01	07/05/01	2	24.26	0.21	COLBURN
12A1	83	R	0	0	/	/	0	0.00	0.00	
12A2	82	R	0	0	/	/	0	0.00	0.00	
12A3	83	R	0	0	/	/	0	0.00	0.00	
12A4	110	SD-S	0	370	07/15/01	07/17/01	2	24.26	0.22	COLBURN
12A5	80	R	0	0	/	/	0	0.00	0.00	
12A6	100	R	0	0	/	/	0	0.00	0.00	
12A7	110	R	0	0	/	/	0	0.00	0.00	
12A8	110	SD-S	0	370	07/13/01	07/15/01	2	24.26	0.22	COLBURN
12A9	82	R	0	0	/	/	0	0.00	0.00	
12B	290	R	0	0	/	/	0	0.00	0.00	
12B	290	R	0	0	/	/	0	0.00	0.00	
12B4	0	R	0	0	/	/	0	0.00	0.00	
12B5	0	R	0	0	/	/	0	0.00	0.00	
13A	709	SD-S	0	310	06/08/01	06/12/01	4	40.66	0.06	REECE
13B1	859	SD-S	0	370	05/31/01	06/04/01	4	48.52	0.06	COLBURN
13B2	54	R	0	0	/	/	0	0.00	0.00	
13B3	29	R	0	0	/	/	0	0.00	0.00	
14A1	280	R	0	0	/	/	0	0.00	0.00	
14A2	294	R	0	0	/	/	0	0.00	0.00	
14A3	153	SGT	0	27	05/10/01	06/08/01	29	25.67	0.17	REECE
14A4	200	SGT	0	30	05/10/01	06/08/01	29	28.52	0.14	REECE
14B1	340	R	0	0	/	/	0	0.00	0.00	
14B2	340	R	0	0	/	/	0	0.00	0.00	
14B3	312	R	0	0	/	/	0	0.00	0.00	
14B4	260	R	0	0	/	/	0	0.00	0.00	
14B5	263	R	0	0	/	/	0	0.00	0.00	

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	sum/	permittee
								acre	
15A	398 R		0	0	/	/	/	0	0.00 0.00
15B	273 R		0	0	/	/	/	0	0.00 0.00
15C1	40 SGT		0	5	05/10/01	06/08/01	29	4.75	0.12 REECE
15C2	155 SGT		0	25	05/10/01	06/08/01	29	23.77	0.15 REECE
15C3	175 SGT		0	35	05/10/01	06/08/01	29	33.28	0.19 REECE
15C4	199 SGT		0	25	05/10/01	06/08/01	29	23.77	0.12 REECE
16A1	44 R		0	0	/	/	/	0	0.00 0.00
16A2	95 R		0	0	/	/	/	0	0.00 0.00
16A3	149 R		0	0	/	/	/	0	0.00 0.00
16B1	160 R		0	0	/	/	/	0	0.00 0.00
16B2	317 R		0	0	/	/	/	0	0.00 0.00
16B3	40 R		0	0	/	/	/	0	0.00 0.00
16B4	175 R		0	0	/	/	/	0	0.00 0.00
16C	524 R		0	0	/	/	/	0	0.00 0.00
16E1	145 R		0	0	/	/	/	0	0.00 0.00
16E2	71 R		0	0	/	/	/	0	0.00 0.00
16E3	65 R		0	0	/	/	/	0	0.00 0.00
16E4	266 R		0	0	/	/	/	0	0.00 0.00
17	871 SD-S		62	11	08/09/01	08/17/01	8	23.21	0.03 BALLARD
18A1	339 R		0	0	/	/	/	0	0.00 0.00
18A2	163 R		0	0	/	/	/	0	0.00 0.00
18A3	150 R		0	0	/	/	/	0	0.00 0.00
18A4	220 R		0	0	/	/	/	0	0.00 0.00
18A5	260 R		0	0	/	/	/	0	0.00 0.00
18A6	290 R		0	0	/	/	/	0	0.00 0.00
18B1	81 R		0	0	/	/	/	0	0.00 0.00
18B10	40 R		0	0	/	/	/	0	0.00 0.00
18B2(H)	93 R		0	0	/	/	/	0	0.00 0.00
18B2(M)	83 R		0	0	/	/	/	0	0.00 0.00
18B3(H)	112 R		0	0	/	/	/	0	0.00 0.00
18B3(M)	95 R		0	0	/	/	/	0	0.00 0.00
18B4(H)	103 R		0	0	/	/	/	0	0.00 0.00
18B4(M)	42 R		0	0	/	/	/	0	0.00 0.00
18B5	72 R		0	0	/	/	/	0	0.00 0.00
18B6	69 R		0	0	/	/	/	0	0.00 0.00
18B7(N)	76 R		0	0	/	/	/	0	0.00 0.00
18B7(SE)	33 R		0	0	/	/	/	0	0.00 0.00
18B7(SW)	85 R		0	0	/	/	/	0	0.00 0.00

2001 Habitat Management by Habitat Unit

habitat unit	acres	Treatment	C/C	adult	indate	outdate	days	sums	sum/	permittee
								acre		
18B8	171 R	0	0	0	/	/	0	0.00	0.00	
18B8(W)	36 R	0	0	0	/	/	0	0.00	0.00	
18B9(H)	97 R	0	0	0	/	/	0	0.00	0.00	
18B9(W)	41 R	0	0	0	/	/	0	0.00	0.00	
18C1	216 R	0	0	0	/	/	0	0.00	0.00	
18C2	149 R	0	0	0	/	/	0	0.00	0.00	
19A	173 R	0	0	0	/	/	0	0.00	0.00	
19B	174 R	0	0	0	/	/	0	0.00	0.00	
19C	101 R	0	0	0	/	/	0	0.00	0.00	
20A1	120 R	0	0	0	/	/	0	0.00	0.00	
20A2	175 R	0	0	0	/	/	0	0.00	0.00	
20A3	160 R	0	0	0	/	/	0	0.00	0.00	
20A4	203 R	0	0	0	/	/	0	0.00	0.00	
20B1	340 R	0	0	0	/	/	0	0.00	0.00	
20B2	185 R	0	0	0	/	/	0	0.00	0.00	
20B3(E)	127 R	0	0	0	/	/	0	0.00	0.00	
20B3(W)	112 R	0	0	0	/	/	0	0.00	0.00	
20B4	165 R	0	0	0	/	/	0	0.00	0.00	
20B5	115 R	0	0	0	/	/	0	0.00	0.00	
20B6	155 R	0	0	0	/	/	0	0.00	0.00	
20B7	40 R	0	0	0	/	/	0	0.00	0.00	
21A1(A)	295 R	0	0	0	/	/	0	0.00	0.00	
21A1(B)	285 R	0	0	0	/	/	0	0.00	0.00	
21A1(C)	188 R	0	0	0	/	/	0	0.00	0.00	
21A1(D)	291 R	0	0	0	/	/	0	0.00	0.00	
21A1(E)	120 R	0	0	0	/	/	0	0.00	0.00	
21A2	134 R	0	0	0	/	/	0	0.00	0.00	
21A3(E)	149 H	0	0	0	/	/	0	0.00	0.00	
21A3(E)	149 SGT	0	10	04/16/01	05/31/01	45	14.75	0.10	COLBURN	
21A4	179 H	0	0	0	/	/	0	0.00	0.00	
21A4	179 SGT	0	50	04/16/01	05/31/01	45	73.77	0.41	COLBURN	
21B1	120 R	0	0	0	/	/	0	0.00	0.00	
21B2	106 R	0	0	0	/	/	0	0.00	0.00	
21B3	120 SD-S	0	386	06/17/01	06/20/01	3	37.97	0.32	LEE	
21B4	128 SD-S	0	386	06/14/01	06/17/01	3	37.97	0.30	LEE	
21B5	128 SD-S	0	386	06/12/01	06/14/01	2	25.31	0.20	LEE	
21B6	143 R	0	0	0	/	/	0	0.00	0.00	
21B7	143 R	0	0	0	/	/	0	0.00	0.00	

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	sums	sum/	permittee
								acre	acre	
21C1	120 R	0	0	0	/	/	0	0.00	0.00	
21C2	1170 R	0	0	0	/	/	0	0.00	0.00	
21C3	60 R	0	0	0	/	/	0	0.00	0.00	
21C4	127 R	0	0	0	/	/	0	0.00	0.00	
21C5	189 R	0	0	0	/	/	0	0.00	0.00	
22A1	360 R	0	0	0	/	/	0	0.00	0.00	
22A2	385 R	0	0	0	/	/	0	0.00	0.00	
22A3	372 R	0	0	0	/	/	0	0.00	0.00	
22A4	390 R	0	0	0	/	/	0	0.00	0.00	
22B1	240 SD-S	0	386	06/08/01	06/12/01		4	50.62	0.21	LEE
22B2	421 SD-S	0	386	06/03/01	06/08/01		5	63.28	0.15	LEE
22B3	40 R	0	0	0	/	/	0	0.00	0.00	
22B4	90 R	0	0	0	/	/	0	0.00	0.00	
22B5	171 R	0	0	0	/	/	0	0.00	0.00	
23A1	160 R	0	0	0	/	/	0	0.00	0.00	
23A2	231 R	0	0	0	/	/	0	0.00	0.00	
23A3	211 R	0	0	0	/	/	0	0.00	0.00	
23B1	121 SGT	0	28	04/12/01	05/31/01		49	44.98	0.37	COLBURN
23B2	142 SGT	0	34	04/12/01	05/31/01		49	54.62	0.38	COLBURN
23C	599 R	0	0	0	/	/	0	0.00	0.00	
24A1	96 SGT	0	63	05/10/01	05/31/01		21	43.38	0.45	COLBURN
24A1	96 H	0	0	0	/	/	0	0.00	0.00	COLBURN
24A2	80 R	0	0	0	/	/	0	0.00	0.00	COLBURN
24A3	67 W	0	15	11/19/01	03/19/02		120	59.02	0.88	COLBURN
24A3	67 W	0	48	03/20/02	05/01/02		42	66.10	0.99	COLBURN
24A4	40 W	0	9	11/19/01	03/19/02		120	35.41	0.89	COLBURN
24A4	40 W	0	29	03/20/02	05/01/02		42	39.93	1.00	COLBURN
24A5	40 R	0	0	0	/	/	0	0.00	0.00	COLBURN
24A6	104 R	0	0	0	/	/	0	0.00	0.00	COLBURN
24A7	54 R	0	0	0	/	/	0	0.00	0.00	COLBURN
24A8	80 H	0	0	0	/	/	0	0.00	0.00	COLBURN
24C1	147 W	0	28	11/19/01	03/19/02		120	110.16	0.75	COLBURN
24C1	147 W	0	105	03/20/02	05/01/02		42	144.59	0.98	COLBURN
24C2	97 H	0	0	0	/	/	0	0.00	0.00	COLBURN
24C2	97 SGT	0	33	04/06/01	05/10/01		34	36.79	0.38	COLBURN
24C3	54 R	0	0	0	/	/	0	0.00	0.00	COLBURN
24C4	84 H	0	0	0	/	/	0	0.00	0.00	COLBURN
24C4	82 SGT	0	30	04/06/01	05/10/01		34	33.44	0.41	COLBURN

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	aums	aum/	permittee
								acre		
29B2	182	R	0	0	/	/	/	0	0.00	0.00
29B3	69	SD-S	0	368	06/13/01	06/15/01	/	2	24.13	0.35 HANNA
29B4	89	SD-S	0	368	06/11/01	06/13/01	/	2	24.13	0.27 HANNA
29B5	376	SD-S	0	367	06/30/01	07/10/01	/	10	120.33	0.32 HANNA
30A(T)	15	R	0	0	/	/	/	0	0.00	0.00
30A1	458	SD-S	0	386	06/20/01	06/25/01	/	5	63.28	0.14 LEE
30A2	201	SD-S	0	386	06/25/01	06/29/01	/	4	50.62	0.25 LEE
30A3	410	R	0	0	/	/	/	0	0.00	0.00
30A4	312	SD-S	0	386	06/29/01	07/03/01	/	4	50.62	0.16 LEE
30B1(E)	202	SD-S	0	368	06/18/01	06/21/01	/	3	36.20	0.18 HANNA
30B1(W)	146	R	0	0	/	/	/	0	0.00	0.00
30B2	256	SD-S	0	368	06/15/01	06/18/01	/	3	36.20	0.14 HANNA
30B3	128	SD-S	0	368	06/21/01	06/24/01	/	3	36.20	0.28 HANNA
30B4	135	SD-S	0	386	07/13/01	07/16/01	/	3	37.97	0.28 LEE
30C1	328	SD-S	0	386	07/03/01	07/06/01	/	3	37.97	0.12 LEE
30C2	180	SD-S	0	386	07/09/01	07/13/01	/	4	50.62	0.28 LEE
30C3	134	SD-S	0	367	06/24/01	06/27/01	/	3	36.10	0.27 HANNA
30C4	108	SD-S	0	367	06/27/01	06/30/01	/	3	36.10	0.33 HANNA
30C5	188	ES-SD	0	380	05/07/01	05/10/01	/	3	37.38	0.20 LEE
30C6	130	SD-S	0	386	07/06/01	07/09/01	/	3	37.97	0.29 LEE
31A	171	R	0	0	/	/	/	0	0.00	0.00
31A	171	H	0	0	/	/	/	0	0.00	0.00
31A(T)	15	R	0	0	/	/	/	0	0.00	0.00
31B(T)	30	R	0	0	/	/	/	0	0.00	0.00
31B1	555	SGT	0	135	05/10/01	06/03/01	/	24	106.23	0.19 LEE
31B2	469	SGT	0	120	05/10/01	06/03/01	/	24	94.43	0.20 LEE
31C	506	SGT	0	125	05/10/01	06/03/01	/	24	98.36	0.19 LEE
32A	491	R	0	0	/	/	/	0	0.00	0.00
32B1	257	SGT	99	0	05/16/01	05/28/01	/	12	48.69	0.19 GALLINO
32B2	155	H	0	0	/	/	/	0	0.00	0.00
32B2/32C1	15	P	0	0	/	/	/	0	0.00	0.00
32C1	314	SGT	121	0	05/16/01	05/28/01	/	12	59.51	0.19 GALLINO
32C2	83	R	0	0	/	/	/	0	0.00	0.00
33	840	ES-SD	220	0	05/10/01	05/16/01	/	6	55.87	0.07 GALLINO
33	840	H	0	0	/	/	/	0	0.00	0.00
33	840	W	0	0	/	/	/	0	0.00	0.00
34A1	240	SD-S	220	332	12/26/01	01/18/02	/	23	250.36	0.30 GALLINO
34A2	240	SD-S	220	9	06/11/01	06/14/01	/	3	27.93	0.12 GALLINO
34A2	240	SD-S	220	9	06/22/01	06/26/01	/	4	38.13	0.16 GALLINO

2001 Habitat Management by Habitat Unit

habitat unit	acres	treatment	C/C	adult	indate	outdate	days	sums	sum/	permittee	
								acre	acre		
34A3	222 R		0					0	0.00	0.00	
34A4	219 SD-S		220		06/18/01	06/22/01	4	37.25	0.17	GALLINO	
34A5	160 SD-S		220		06/16/01	06/18/01	2	18.62	0.12	GALLINO	
34A6	120 SD-S		220		06/14/01	06/16/01	2	18.62	0.16	GALLINO	
34B1(E)	174 R		0					0	0.00	0.00	
34B1(W)	201 SD-S		220		06/26/01	06/30/01	4	37.25	0.19	GALLINO	
34B2	306 SD-S		220		07/03/01	07/07/01	4	37.11	0.12	GALLINO	
34B3(N)	164 SD-S		220		07/07/01	07/11/01	4	37.11	0.23	GALLINO	
34B3(S)	142 SD-S		220		07/11/01	07/14/01	3	27.84	0.20	GALLINO	
34C(T)	15 R		0					0	0.00	0.00	
34C1	202 F		90		09/10/01	10/12/01	32	118.03	0.58	GALLINO	
34C2	227 R		0					0	0.00	0.00	
34C3	155 F		65		09/10/01	10/12/01	32	85.25	0.55	GALLINO	
34C4	155 F		64		09/10/01	10/12/01	32	83.93	0.54	GALLINO	
34C5	155 R		0					0	0.00	0.00	
34D	231 H		0					0	0.00	0.00	
34E1	222 R		0					0	0.00	0.00	
34E2	310 H		0					0	0.00	0.00	
34E3	290 H		0					0	0.00	0.00	
34F	103 R		0					0	0.00	0.00	
35A(N)	224 SD-S		220		06/30/01	07/03/01	3	27.84	0.12	GALLINO	
35A(S)	400 R		0					0	0.00	0.00	
35B	322 R		0					0	0.00	0.00	
35BCAMP	38 R		0					0	0.00	0.00	
35C	277 R		0					0	0.00	0.00	
36A	229 R		0					0	0.00	0.00	
36B	615 SGT		0					0	0.00	0.00	
37A	340 ES-SD		220		05/10/01	05/31/01	21	252.00	0.41	HAWNA	
37B	340 SD-S		220		05/28/01	06/06/01	9	83.80	0.25	GALLINO	
37C	400 R		0		06/06/01	06/11/01	5	46.56	0.14	GALLINO	
GWNA	922 R		0					0	0.00	0.00	
HACKBERRY	121 S		0					0	0.00	0.00	
NA#2	459 R		0		01/01/01	12/31/01	0	0.00	0.00	Govt horse	
PELICAN	136 R		0					0	0.00	0.00	
PELICAN Y	7 P		0					0	0.00	0.00	
PONY	23 R		0					0	0.00	0.00	
Swgetr	110 H		0					0	0.00	0.00	
			0					0	0.00	0.00	COLBURN

9. Fire Management

The Fort Niobrara/Valentine NWRC Fire Management Program completed several Complex goals in 2001. The most significant event for the program was the completion of the draft of the Fire Management Plan for the Complex. Other significant highlights will be reviewed below to document the major program activities for the year.

Personnel: Six seasonals were hired to support prescribed and wildfire activities. Those individuals were Ryan Cumbow, Billy Cumbow, Tylr Naprstek, Kirk Jess, Lee Jeffers and Trevor Rockenbach. Jeffers and Rockenbach were new employees.

Jeff Dion was promoted from a GS-5 to a GS-6 Fire Program Technician. The Valentine Refuge fire crew relocated from the Hackberry Bunkhouse over to the Pony Lake quarters. The quarters was available due to Dion's move to the town of Valentine.

Training: Fire crew personnel attended several courses to increase their qualification levels to Single Resource Engine Boss and ICT4. New fire crew members worked on training to reach FFT1 certification. Three sessions of basic firefighter, S130/S190, training were administered to local volunteer fire departments to train approximately 40 fire persons. The training sessions were held at Nenzel, Thedford and Valentine. Fourteen members of the Cody/Kilgore department and three members of the Stuart fire department obtained red cards. Fire crew members that served as instructors from the Complex were Ryan Cumbow, Jeff Dion, and Tim Klukas. The Forest Service assisted with the training at Thedford and Nenzel and those instructor were John Baldwin, Jim Cornelius, and Mike Watts.

Equipment: The regional fire program provided funds for a four door crew cab

truck to meet the fire program needs on the Complex. A GMC truck was procured with some savings from a local vendor. A jeep which was procured in 2000 for the fire management program was transferred to the regional fire program office. The type five engine was taken out of service because it became too unreliable to have in a fire environment. General maintenance costs for the fire fleet were approximately \$5,000. Equipment breakdowns during the prescribed burn season continued to show the wear and tear the equipment had been exposed to during the 2000 fire season.

Administration: The fire workload from the 2000 fire season hampered prescribed fire plan preparation efforts. Four smoke jumpers from Boise were detailed in to write burn plans and implement prescribed fires. Those individuals were Matt Bowers, Dennis Terry, Bob Hurley and Mike Haydon.

The item of most significance for the program was the completion of a fire management plan draft. The draft was prepared collaboratively with Tim Klukas, Carl Douhan, Jim Kelton, Jeff Dion, and Ken Kerr. The draft later became an approved plan in the following year with further support from Refuge personnel.

The Valentine Complex Fire Rehabilitation Plan was initiated and coordinated primarily by the Valentine ROS and biologist, the FMO, and the Refuge Manager. The project was supervised by the Valentine ROS. Field work was completed by fencing contractors, the fire crew and the Valentine Refuge maintenance person. The project was carried out on schedule and expenses were under the initial assessment. The project is scheduled to be completed in 2002.

Numerous deadlines were imposed and met due to the National Fire Plan, Wildland Urban Interface Initiatives, and Firebase funding protocols getting synchronized.

The FMO made a transition from Refuge Complex FMO to District FMO and inherited more responsibilities with the following refuges, Crescent Lake/North Platte NWRC, and LaCreek NWR. The new district duties involved a range of duties supporting wildfire and prescribed fire operations, program administration, Firebase, training, and weekly situation reports.

Prescribed Fire Activity: Only one prescribed fire occurred on the Valentine NWR due to the previous impact of the 2000 wildfire season. During that year 30% of the Valentine Refuge burned from wildfires. The prescribed fire activity increased on the Fort Niobrara NWR. In spite of the impacts of the preceding wildfire season, 30% of the Refuges' ten year acreage total was burned in the 2001 burn season. Some acreage that was burned fell under a new category of prescribed fire activity, Wildland Urban Interface (WUI). Burn plans on Fort Niobrara NWR in the river corridor were postponed or altered due to the continuation of a bird study designed to evaluate public use impacts on the various

avian communities in the corridor. The Bison Jump fire was the first fire conducted entirely in the wilderness area. The following table (#6) summarizes information for the prescribed fires on the Complex.

The fire crew and collateral staff provided support to Lacreek NWR during the spring and fall burn seasons. Refuge firefighters were also detailed to Kansas to help Quivira NWR and Rainwater Basin WMD complete prescribed fires. Resources from Rainwater Basin WMD, Huron WMD, Rosebud BIA, Lower Brule BIA, Pine Ridge BIA, and Badlands NP, assisted LaCreek NWR and the Complex complete prescribed burns.

Monitoring plots and photo points were established on units predicted to be completed in 2002. The fire program technician and Fort Niobrara biologist evaluated monitoring techniques to be utilized for first order fire effects. Prescribed fire in the headquarters area shifted the growth of the prairie dog town. Prescribed fire was used to reduce eastern red cedar, control smooth brome and cheat grass, and invigorate native prairie. The results obtained with cheat grass control were successful in some areas south of the headquarters. Native warm season grasses and Forbes were stimulated to compete against Kentucky bluegrass, cheat grass and smooth brome. Cedar reduction on the Valentine Refuge was not effective due to high moisture content in the cedars that were four to eight feet in height.

Wildfire Activity: The firefighters from the Complex completed three tours of duty at the Brown's Park Refuge in CO. Mixed resources from Crescent Lake, Kirwin, Quivira, Rainwater, and FNR/VNR made up the engine crews (Jess, Cumbow, Cumbow, Naprstek, Dion). An initial attack module composed of firefighters from VNR/FNR and CRL/NPL NWRC completed a tour of duty for the Black Hills NF during a period of high fire danger on the Forest (Jeffers, Rockenbach). Two large fires were burning in the Custer area, so the ten person initial attack crew worked in the Mystic Ranger District outside of Rapid City, SD. One firefighter worked on the Hell Canyon Ranger District while the South Hell's Canyon fire burned, Billy Cumbow. A crew composed of firefighters from the KS and NE refuges formed an initial attack squad that was needed to work on a fire use event in Grand Canyon National Park, North Rim. Ryan Cumbow detailed on this event and received training as a fire monitor. Billy Cumbow and Kirk Jess nearly completed engine boss task books. Ryan Cumbow initiated work on a ICT4 taskbook and Jeff Dion completed the ICT4 taskbook. The FMO primarily coordinated district resources for mobilization and initial attack on the Complex. Information on local fires is included in Table #6 below. The support action information is detailed above.

Special Events: The FMO attended the annual Black Hills Interagency Fire Council Meeting in Rapid City, SD. As a representative for the FWS, the FMO reviewed dispatch concerns, local mobilization, an agency coordinating group, and

summarized the fire activity that occurred in SD and NE refuges in 2001. All groups reported on the status of rural fire assistance programs.

A special meeting was held at the Crescent Lake/North Platte NWRC office with Nebraska state and federal staff members of Congressman Tom Osborne, Senator Chuck Hagel, and Senator Ben Nelson. The federal fire agencies were represented by the National Park Service FMO, Bill Gabbert and the Midwest NPS FMO, Fred Bird, Nebraska National Forest FMO, Alan Setzer, Fort Niobrara/Valentine NWRC Manager, Royce Huber and Tim Klukas, North Platte/Crescent Lake Manager, Steve Knode, and USFWS regional office staff Jim Kelton and Ken Kerr. Huber coordinated the meeting with the delegation. Agencies discussed the need for statewide agreements, training, coordination of resources, and communication systems. The Federal Agencies reported on the status of new rural fire assistance programs and the action items in the updated National Fire Plan, and the Federal Wildland Fire Policy of 1995 and NWCG training standards. The Park Service completed a presentation on the use of prescribed fire to reduce hazard fuels and enhance resource management programs. The delegation was particularly interested in communication problems in the field, interagency training, and coordination of resources. The meeting was requested by the delegates due to the interest in wildland fire issues following the large wildland fires that occurred near Chadron, Crawford, and Valentine in 2000.

The Fire Management Program set up a fire information booth at the Cherry County Fair. The booth space was sponsored by the Raine Motel of Valentine. Ryan Cumbow and Tim Klukas used a Prescribed Fire display provided by the national office in Boise. About two hundred persons visited the display. A full array of Service Refuge pamphlets was available for the public. Several fire prevention items (rulers, pens, balloons, key chains, stickers, magnets, posters) were given away. Several persons were interested in urban interface pamphlets that were handed out. Kids were the primary audience. Some younger persons were interested in fire careers and were shown the full compliment of PPE and fire tools. Only a handful of persons were interested in prescribed fire.

Jeff Dion and Tim Klukas attended mutual aid fire meetings with the following associations, Cherry County Mutual Aid, Sandhills Mutual Aid, and Keya Paha, Brown, Rock County Mutual Aid. The Refuge Complex has a membership in both the first Cherry County and Sandhills Associations. The FMO remained the treasurer and secretary for the Cherry County Mutual Aid Association.

The FMO helped obtain \$3,500 for the Cherry County Mutual Aid Assn. by speaking with a representative of the Irvin Eighmy Foundation. The Eighmy Foundation is a non-profit foundation set up to administer aid to agricultural communities in Nebraska. The USFWS rural fire assistance program contributed \$6,000 to the Wood Lake Fire department for radio equipment. The state administered the funding to Wood Lake because they had a grant in place.

The FMO participated in Local Emergency Planning Committee meetings in Cherry County. The Cherry County Mutual aid updated fire directory prepared by Ryan Cumbow was given to the State Emergency Managers attending a meeting. The FWS is not a member of the LEPC, but attends meeting because the personnel and equipment on the Complex may be integrated into a local FEMA operation.

Prescribed Fire Activity for 2001

Date	Fire Name	Acres	Narrative
4-25-01	HU 32B2/32B1	15	This burn plan was written by Bob Hurley a BLM smoke jumper from Boise, Idaho who was brought in to assist the Refuge with prescribed burn plans. The objectives of this burn was to reduce the cedars that were not burned in the 2000 wildfire. The resource objectives were to maintain and enhance native Sandhills grassland vegetation as wildlife habitat. Improve dense nesting cover for upland birds and waterfowl. The burn was conducted without incident on the Valentine Refuge.
5-2-01	Pelican Y	7	This burn plan was written by Dennis Terry a past Refuge employee who, at the time, was working with the BLM smoke jumpers out of Boise, Idaho. The objectives of the burn was to reduce Smooth Brome by 50%. Reduce Kentucky Blue Grass by 50%. Remove accumulated thatch. The primary resource objective was to enhance the integrity and reinvigorate Sandhills prairie vegetation. The burn was conducted without incident on the Valentine Refuge.
5-8-01	HU 21B2	150	This burn plan was written by Matt Bowers a BLM smoke jumper from Boise, Idaho who was brought in to assist the Refuge with prescribed burn plan writing. The primary resource objectives of the unit are to maintain native Sandhills Prairie vegetation as wildlife habitat and to improve dense nesting cover for upland birds and waterfowl. The objectives of the fire were to burn 100% of the unit, eliminate/reduce Kentucky Blue Grass, and eliminate reduce residual vegetation. The burn was conducted without incident on the Valentine Refuge. One false start occurred due to incoming precipitation.

Table #7 Refuge Responses to Wildfires 2001.

DATE	FIRE NAME	OWNER/ Acres	NARRATIVE
1-12-01	Ramm	Private .1 ac.	On January 12, 2001 a bail fire was reported near the Ramm ranch, which is north of the Valentine NWR. Mark Lindvall and Dave Kime responded, and so did the Valentine Fire Dept. The fire consumed a number of bales and no equipment was lost. Lindvall's and Kime's engine had no water in the unit at that time due to the cold and freezing possibilities.
4-9-01	Higgins	Private 1,500 ac.	On April 9, 2001 a fire was reported on the southeast corner of the Valentine NWR at about 1600. The Smoke could be seen from Fort Niobrara NWR. Engines from Pony Lake, Hackberry Lake, and Fort Niobrara responded. This fire was far south and east of the refuge. It was determined it was near the Higgin's east place. Many other departments from the surrounding area contained the fire at around 1800 acres. A strong storm system had passed through the area a few days before that had lightning, the cause was lightning that had struck an old cottonwood tree. This tree was surrounded by water but the branch that was hit by lightning had eventually burned through and broke off. The end of the burning branch landed on dry land. The weather conditions were hot and dry with a 20-30 mph southwest wind. This caused the fire to be four miles long and only a half a mile wide at its widest point. It was declared out with 1500 acres consumed.
4-24-01	Lenser	Private 350 ac.	On April 24, 2001 a fire north of Valentine was reported on the Lenser place. The fire crew was put on standby. At 1630 the Valentine Fire Dept. asked for our assistance. Three engines were sent from Fort Niobrara to assist. At around 1800, the fire was contained and controlled. The cause of this fire was downed power lines that had been knocked down by the previous weeks ice storm. On the fire, there were still snow drifts that seemed to help in containing some parts of the fire. This fire had burned around 350 acres.

4-28-01	Shermans	Private 30 ac.	<p>On April 28, 2001 a fire call went out for assistance south of Valentine NWR on the Sherman place. This fire was already contained by the time the Fort Niobrara fire engine arrived, but mop-up efforts were needed. Only one engine from both refuges assisted.</p> <p>The fire was caused by downed power lines that an ice storm had caused from a week and a half before. The weather the day of the fire was very windy with gusts up to 35 mph were reported.</p>
5-10-01	Krzyznaowski	Private .1 ac.	<p>On May 10, 2001, a fire was reported near Smith Falls state park. Three engines from Fort Niobrara responded along with three engines from the Valentine Fire Dept. This was around 1100. The fire was in a heavy Ponderosa pine stand. Downed power lines caused the fire. A few dead and downed trees that were completely dry caused some problems.</p> <p>The fire was mopped up by the Fort Niobrara crew and they returned by 1400 to resume prescribed burning activities in the Bull Pasture, 16B4. The fire needed to be put out to put the local department back online as a contingency resource needed for prescribed burns.</p>
7-26-01	Lightning FA	Private	<p>On July 26, 2001, a lightning storm had moved through area north of Fort Niobrara NWR. The refuge staff patrolled the area but no fires were reported. The suspected fire turned out to be water vapor boiling out of the canyons to look like smoke. Lee Simmons reported the suspected smoke.</p>
7-30-01	Rahm Bale	Private .1 ac.	<p>On July 30, 2001 the fire crew returning to Hackberry spotted a bale that was on fire. The Valentine Fire Dept. responded along with the single refuge engine. The fire was quickly contained.</p>
8-2-01	Dump	Private .2 ac.	<p>One engine from Fort Niobrara responded to a fire on August 2, 2001 east of Fort Niobrara. The fire was someone's trash burning that got out of control. With assistance from the Valentine Fire Dept. they contained the fire in a short amount of time.</p>
8-14-01	Lightning FA2	Private	<p>On August 14, 2001 a lightning storm moved through Fort Niobrara NWR area. Two units patrolled for a couple of hours in the night. No fires were reported.</p>
8-21-01	McCloud FA	Private	<p>On August 21, 2001 one engine from Fort Niobrara</p>

		1 ac.	responded to a grass fire west of Hackberry Lake. The engine was called back shortly after being dispatched. The fire was small and was contained and controlled by a rancher.
9-5-01	Bond	Private 50 ac.	On September 5, 2001 a call came in at 1930 from the Valentine fire department requesting assistance on a fire near Anderson Bridge. Jeff Dion, Gary Coleman, and TJ Rockenbach were dispatched to the scene of the fire. At 2000 hours, Jeff Dion called back to the station and requested additional resources be dispatched to the fire. Tim Klukas and Casey McPeak were dispatched at 2000 hours with an additional engine. At 2030 hrs, another engine was dispatched with Chuck Melvin, Mark Lindvall and Gordon Suhr. Upon arrival of the additional Refuge engines the Refuge personnel along with the Cody/Kilgore volunteer fire department and the Valentine volunteer fire department proceeded to direct attack the fire using engines, hand tools and a progressive hose lay. At 2300, a request was made by the Kilgore fire department for a hand crew from the Rose Bud Reservation. At 0300, a ten man hand crew arrived and the Refuge personnel were released. The fire was again patrolled on the 6 th of Sept. and the hose lay that was put in place by the Refuge was retrieved.
9-28-01	Cumbow	Private 175 ac.	On September 28, 2001, at around 1130, a request for the refuge fire staff went out to assist in a wildfire at the Cumbow ranch north of Fort Niobrara. This fire was in South Dakota and was owned by two refuge employee's parents. The weather conditions were dry and south winds at around 20 mph. The fire was started by a bailer in numerous spots. At the end the fire was contained to 175 acres at around 1600. The fire was over a mile long due to high winds. Four refuge engines responded along with a number of local departments. The fire was right on the border of BIA lands, so the request was honoring nearest available federal resource guidelines to suppress fires on Federal lands.
10-28-01	Davis	Private 320 ac.	On October 28, 2001, a fire was spotted by two refuge employee's and they called to see if assistance was needed. The fire was along Highway 20 and

			was moving very quickly due to the high winds. One engine was dispatched from Fort Niobrara but was turned back on arrival to the fire. The fire was determined to be around 320 acres. Resources were requested through CCMA. Wood Lake requested the assistance.
11-13-01	Hammond	Private 3 ac.	On November 13, 2001, a hunter's vehicle started a fire near the Hammond Ranch. Firefighters on the staff were prepared for the possibility of a start from hunting activity. Conditions were very dry and fuels were fully cured. One engine from the Complex was called to assist the local fire department.
Totals		2,429.5 ac	Ten fires and four false alarms were responded to on private lands. No wildfires were detected on the Refuge Complex. A moderate drought occurred during the summer and fall, however lightning patterns did not produce many ignitions.

10. **Pest Control**

Noxious weeds found here are leafy spurge and Canada thistle. Leafy spurge patches in units 31A that were sprayed with Plateau in the fall of 1997 were checked. Only a few small spurge plants were growing in the areas sprayed. Some spots were missed during spraying and spurge is still present. In dryer sites, warm season grasses grew well following treatment. In fact the grass looks better where the spray was applied than in some surrounding areas. In lower sites vegetation has returned after several years..

Some patches of Canada thistle in the Sweetwater Valley area of the refuge were sprayed with 2,4D. Grazing fees were used to pay the contractor who did the spraying. Refuge staff mowed thistle patches along West Long and Hackberry Lakes and by Dewey Marsh to prevent the plants from going to seed.

Spotted knapweed was found along the road near the cattle guard on the west end of habitat unit #6. There were about ten plants. They were dug up and will be checked again next year. This is the first and hopefully last we will see of this plant.

No purple loosestrife was seen on the refuge this year. Several years ago a few plants were found near the boat ramp in habitat unit 3D on Dewey Lake. It probably came in with gravel used on the ramp. The few plants were hand dug.

Various insects have been released in the past for control of leafy spurge and Canada thistle. Patches where insects were released were not checked this year.

Kentucky bluegrass, brome grass, reed canary grass, Russian olive and cedar trees also occur on the refuge and cover more acreage and are indeed a bigger problem than the state listed noxious weeds. The large wildfires in the fall of 2000 burned many cedar trees including many large trees and some in tree lots. Control of the grasses is discussed under the grazing section of the narrative and cedars under the fire section.

11. **Water Rights**

A permit to impound water with the Calf Camp Marsh water control structure and dike was received from the State of Nebraska Department of Natural Resources. The permit is dated July 24, 2001 for application A-17895 and is for 90 acre feet. The permit was required to do the repair work on the existing dike and structure.

12. **Wilderness and Special Areas**

A 16,317 acre portion of the refuge around Dads Lake was proposed for inclusion into the National Wilderness Preservation System in 1973. Congress must approve the change from proposed to designated wilderness but has taken no action. The area, by Service policy, must be managed as a wilderness in the interim. The refuge Comprehensive Conservation Plan (page 49) outlined minimum tools for use in the proposed wilderness. These guidelines include the use of motor vehicles for wildfire control, prescribed fire, weed control, and maintenance. These guidelines were followed. Haying in the proposed wilderness area (habitat units 23B1 and 23B2) was discontinued this year.

Two Research Natural Areas totaling 1,381 acres are found on the refuge. These areas have not been grazed by cattle or burned with prescribed fire. Plans are underway to burn the areas in the future. The George Wiseman Natural Area has a large number of cedar trees starting especially on the west end. They are also closed to all public entry.

In 1979 the special qualities of the Valentine National Wildlife Refuge in preserving Sandhills Prairie was recognized when the refuge was designated a Registered Natural Landmark by the Heritage Conservation and Recreation Service.

On October 21, 2001 the refuge was designated as a *Globally Important Bird Area* by the American Bird Conservancy in association with the Nature Conservancy. A plaque was received and is displayed in the office.

13. **WPA Easement Monitoring**

Information on management of FmHA easements is included in the Fort Niobrara NWR annual narrative.

G. WILDLIFE

1. Wildlife Diversity

The Sandhills of Nebraska is one of the few prairie areas in the United States that has not been converted to farmland. This, plus the abundance of a variety of wetlands, has resulted in most of the native plants and animals historically found in the area still being present today.

There are 270 species of birds on the refuge list including four that are on the endangered species list. Many herons, egrets, shorebirds, and marsh and waterbirds use the Sandhills wetlands for nesting and migration. The North American Waterfowl Management Plan lists the Sandhills as a habitat of major concern and Bellrose lists the area as the most important waterfowl production area outside of the Prairie Pothole Region. The refuge and Sandhills are important for the conservation of both prairie chickens and sharp-tailed grouse. Prairie grouse habitat and populations are being reduced significantly in other areas of the country. The riparian shorelines and native willows provide habitat for many neotropical migrants.

The original native mammalian fauna of the area probably consisted of 59 species. Ten carnivores and large ungulates were extirpated by the turn of the century. An additional ten species have been introduced or expanded their range to include the refuge. The state listed swift fox is on the mammal list but there have been no recent sightings on the refuge.

Twenty-two species of reptiles and amphibians are relatively common on the refuge and include 6 amphibians, 5 turtles, 4 lizards, 7 snake species. Of special note are strong populations of Blanding's and yellow mud turtles, species of management concern. Populations of these two turtles have been reduced in many parts of their range.

Five species of native and eight of introduced fishes are known to occur on the refuge. No complete survey of native fishes has been conducted. Nine refuge lakes are open to and managed for sport fishing. Under cooperative agreement, the Nebraska Game and Parks Commission collects brood stock and eggs from the refuge lakes for hatchery operations. Carp are now found throughout the refuge and impact water quality and vegetation. In some lakes northern pike are managed to produce a large number of big pike that are controlling recruitment of carp through predation.

2. Endangered and/or Threatened Species (includes plants)

a. whooping crane

There were no sightings of whooping crane in 2001. They are sighted on refuge wetlands and meadows about every five years. Due to the remoteness of many parts of the refuge it is likely that they are present but

not sighted on more occasions.

b. **Bald eagle**

About ten bald eagles regularly winter on the refuge. This year two were also present into spring and early summer but no nesting was documented. Nesting bald eagles are becoming more common in Nebraska and it is hoped that they will nest on the refuge at some time in the future.

c. **American burying beetle**

No burying beetles were noted and no surveys conducted in 2001. The last surveys were conducted in 1998 and located seven beetles. Surveys conducted in other parts of Nebraska have located populations in additional areas, especially along sections of the Platte River.

d. **Prairie dogs**

Black-tailed prairie dogs were determined by the Fish and Wildlife Service to be warranted but precluded for inclusion on the endangered species list. The *Valentine National Wildlife Refuge Comprehensive Management Plan* (USFWS 1999) states that the US Fish and Wildlife Service will “ Perform necessary studies and research to determine if the Refuge contains habitats that are suitable and conducive to the successful establishment of black-tailed prairie dog colonies.” To this end we referenced the *Habitat Suitability Index Model:Black-tailed Prairie Dog* (Clippinger 1989) and other papers to assess the suitability of habitat at Valentine National Wildlife Refuge (NWR), Nebraska for introduction of black-tailed prairie dogs (*Cynomys ludovicianus*) to the refuge. Refuge Biologist Leonard McDaniel and Refuge Operations Specialist Lindvall also visited several active and inactive prairie dog colonies in the Sandhills region and nearby to the refuge to compare these sites with habitats found on Valentine NWR. We also consulted with US Natural Resources Conservation Service soil scientists about refuge soils and soils at existing prairie dog colonies in the Sandhills of Nebraska. Our findings are summarized as follows:

The *Habitat Suitability Index Model:Black-tailed Prairie Dog* HSI model (Clippinger 1989) uses four habitat variables to estimate suitability. The variables are slope, soil type, average height of vegetation, and percent herbaceous cover. I added a fifth variable, groundwater elevation, to this analysis for Valentine National Wildlife Refuge.

Slope

The HSI model (Clippinger 1989) states that prairie dogs do not use areas with slope over 20 percent and prefer areas with slopes of less than 10 percent. Reading and Matchett (1997) found most prairie dog colonies on smaller slopes of between two and four percent. Most of the choppy range sites (high sandy hills) on the refuge have slopes that are near to or

greater than ten percent with some areas over 20 percent. Refuge subirrigated range sites (meadows) and sand range sites (low hills) have slopes less than ten percent (NRCS 1999) and would be suitable as far as slope is concerned.

Average Height of Vegetation

Sandhill Prairie is within the wide transitional zone of the Mixed Grass Prairie between Tallgrass Prairie and the Short Grass plains. Annual precipitation is typical of the semiarid Mixed Grass Prairie; however, the Nebraska Sandhills is characterized by a predominance of post climax tallgrass species typical of a greater moisture regime (Oosting 1948, Keeler et. al. 1980). Four basic range sites are located within the Sandhills. These are wetland, sub-irrigated, sand, and choppy sand. Wetland range sites, because of moisture saturated soil, and choppy sand range sites, because of very steep slopes, are definitely not suitable sites for prairie dog colonies.

Sub-irrigated range sites are meadows where the land surface is very close to the groundwater level, usually less than one meter at some time during the year. Sub-irrigated range sites are dominated by Tallgrass Prairie species such as big bluestem, switchgrass, and Indian grass. Soil moisture in the sub-irrigated range site is adequate to support the deep rooted warm season native grasses even during periods of drought.

Visual obstruction readings (the height which a pole is totally obscured) taken in the fall in sub-irrigated range sites average 30 centimeters and range from 10 to 60 centimeters (USFWS 1999). Height of the tallest vegetation is much greater than this. The HSI model (Clippinger 1989) considers vegetation heights from five to 20 cm optimal with a steep decline in habitat suitability for higher vegetation. Black-tailed prairie dogs are generally regarded as a short or mixed grass prairie animal (Koford 1958, Clippinger 1989) not a tall grass species. The sub-irrigated range site is dominated by tall grass species and is most likely not suitable as far as average height of vegetation for introduction of prairie dogs. Height of vegetation could however be reduced with a combination of regular mowing, grazing, and fire. In the absence of such disturbances vegetation would probably grow faster than the prairie dogs could clip it off. In tall grass prairie Osborn and Allen (1949) found that prairie dogs will abandon a town if they and other herbivores cannot keep the vegetation clipped down.

Sand range sites comprise the dry meadows (low sand sites) and the gently undulating Sandhills. Cool season grasses such as needle-and-thread, porcupine grass, prairie June grass and western wheat grass are mixed with the warm season grasses typical of Tall Grass Prairie: prairie sandreed, sand

bluestem, sand love grass, little bluestem, and switchgrass. Visual obstruction readings taken in the fall in sand range sites average 15 centimeters and range from one to 45 centimeters (US FWS 1999). Height of the tallest vegetation is much greater than this. Average height of vegetation in this range site is most likely suitable for prairie dogs or could be easily manipulated using occasional mowing, grazing, or fire to obtain the desired vegetation height. Once the vegetation reached the desired height prairie dogs would most likely be able to keep it cut so further manipulation would not be required.

Percent Herbaceous Cover

In the HSI model (Clippinger 1989) herbaceous cover between 15 and 90 percent has very high suitability for prairie dogs. Cover of less than 15 percent is unsuitable and above 90 percent only slightly suitable. In sub-irrigated range sites vegetation completely covers the ground and thus would have a low suitability. In sand range sites the percent herbaceous cover generally is between 15 and 90 percent and would thus be highly suitable for prairie dogs.

Soil Type

Much of the refuge has sand soils. The HSI model (Clippinger 1989) lists sandy soil as unsuitable for prairie dogs. Koford (1958) states that prairie dogs were found in any soil that can be dug without immediately caving in. He did find several instances of prairie dogs in sand soils but stated that these towns were restricted to areas of "tight" soils in Texas. To further investigate the suitability of sand soils for prairie dog colonies we visited active and abandoned prairie dog towns in the vicinity of the refuge. On January 14, 2000 we visited three prairie dog towns at the Halsey National Forest. Notes on each town follow.

Whitetail Campground Dog Town

Location: near Whitetail Campground and Dismal River in Section 13, T21N, R 26W Thomas Co. Nebraska

Size: Forest Service estimated at 26 acres

Soil: The soils map lists the area as VaC Valentine fine sand, rolling. Notes obtained from soil surveyors (Downie 1996), however, describe an inclusion in the area of the dog town as "The prairie dog town in the Weggner East allotment is on highly contrasting soil, an Alfisol with a strong argillic horizon (about 42% clay). Clayey soil can be observed in the throws throughout the prairie dog town. The surface horizon contains about 24% clay and is severely compacted." We also

observed the clay in the soil and took a sample from a throw. The dog town is in gently rolling hills with small flats. At the edge of the town and moving up the slope we observed sand soils with no clay. No burrows were located in the sand soils.

Dismal East Allotment

Location: Section 14 T21N, R27W, Thomas Co. Nebraska
Size: Forest Service estimated at 28 acres but active on only estimated four acres now.
Soil: The soil maps list the area as VaC Valentine fine sand, rolling. In the area of the dog town we observed clay in the soil and in the throws around burrows. We took a sample of the soil from a throw. The town is in a small pocket and surrounded by small steep hills with sandy soil. No burrows were located in the sandy soils. There were inactive burrows and it appears the town was larger at one time.

Dismal West Allotment

Location: Section 7, T21N, R27W, Thomas County, Nebraska
Size: Forest Service estimated at 17.5 acres, we estimated at about 35 acres, this is the largest and most active of the three towns we visited at the Forest.
Soil: The soil maps lists the area as VaC Valentine fine sand, rolling. In the area of the dog town we observed clay in the soil and in the throws around burrows. A few burrows at the edge of the town were in more sandy soil but the core area had quite a bit of clay. We took a soil sample from a throw. The town is in a small valley surrounded by high sandy hills. In the soil survey notes (Downie 1996) the surveyors mention visiting two towns in the Dismal West allotment but are not specific as to which town or if both towns were sampled. They state "Slightly finer textured soils were found in parts of the West Dismal allotment, with loamy sand to fine sandy loam textures. In one place, a sandy loam horizon with about 20% clay at about six feet. However, two of three auger descriptions in this dog town were Valentine fine sand to a depth of six feet. Moisture was higher in the dog town than in

most of the surrounding area, so it seems likely that a finer textured horizon deeper than six feet is creating a perched water table in this area.” We noticed inactive burrows and it appears the town was larger at one time. Perhaps some prairie dogs are burrowing in sandy soils at the edge of the town but the core of the colony is located in soils containing clay.

We also visited or obtained soil samples from two active and two inactive prairie dog towns within 30 miles of Valentine NWR. NRCS Soil Scientist David Vine provided analysis of soils. He also recently finished a complete soil survey of Valentine NWR (NRCS 1999) and is very familiar with soils found on the refuge and in the surrounding area. Notes on these observations follow.

J. Lovejoy Ranch

Location: Section 35, T33N, R28W, Cherry County, Nebraska
Size: active but size not estimated.
Soil: loamy fine sand with many small rock fragments, lime associated with rock

Kime Ranch

Location: Section 9, T31N, R30W, Cherry County, Nebraska
Size: active but size not estimated, located near Snake River
Soil: Duda-Fishberry loamy fine sand with shallow lime on 0-3 percent slope.

Powell Ranch

Location: about one mile west of refuge, Cherry County, Nebraska
Size: town has been inactive for many years
Soil: loamy fine sand with lime, the lime binds the sand only if wet, silts and clay give structure to the soil, the ranch mines the soil for road repairs and to seal windmill tanks

Reece Ranch

Location: about five miles north west of refuge, we were unable to locate the exact location of the town which was located along Gordon Creek
Size: town has been inactive for many years

Soil: sandy loam with water/moisture at about four feet, ranch has mined soil for sealing windmill tanks but we were not able to locate the dig area or find clay in the test holes we dug.

From review of the literature and our examination of soils in other locations it was concluded that sand soils found on the refuge are not suitable for prairie dog introduction. It appears that the dog towns located in the Sandhills are either associated with a clay or lime component to the soil. The clay or lime most likely adds sufficient structure to the sand soils to keep burrows from collapsing. NRCS Soil Scientist David Vine recently completed the field work and mapping for the Valentine NWR soil survey and knows of no inclusions of clay or lime soils on the refuge.

Valentine NWR also has areas of fine sandy loam and sandy loam soils (NRCS 1999). These soils are listed as moderately suitable by Clippinger (1989). Reading and Matchett (1997) found prairie dog colonies more prevalent on sandy loam-to-clay loam soils. Koford (1958) found towns mainly in clay and loam soils. On Valentine NWR soils containing loam are found in wetland or wet sub-irrigated range sites. In these areas the water table is at or very near to the ground surface.

Ground Water Elevation

Black-tailed prairie dogs dig burrows from one to four meters deep with an average depth of two meters (Sheets et. al. 1971). Whitehead (1927) found burrows excavated to a depth of just over one meter in an area with a shallow water table.

The refuge monitors ground water levels with a series of test wells in cooperation with the US Geological Survey. In sub-irrigated range sites water levels typically are within .3 to one meter of the ground surface for at least part of each year. Levels vary somewhat with precipitation and season of year with higher levels recorded from fall to spring.

The Els, Elsmere, Loup, Gannet, and Tryon soil associations include sandy loam or fine sandy loam soils. Bleed and Flowerday (1989) gives the seasonal high water table ranges for Els soils as 1.5 feet in wet years to three feet in dry years; Elsmere soils 1.5 feet in most wet years to 2.5 feet in most dry years; Loup soils from a half foot above the surface in most wet years to a depth of 1.5 feet in most dry years; Gannet soils from a half foot above the surface in most wet years to a depth of 1.5 feet in most dry years; and Tryon soils a half foot above the surface in most wet years to a depth of 1.5 feet in most dry years. Marlake soils are also found in marshes on the

refuge.

Most of the refuge soils are in the Valentine soil association which is a fine sand soil. These are the soils found on gently sloping to very steep sand dunes that make up most of the refuge. There are no seasonal water tables above a depth of six feet in these soils (Bleed and Flowerday 1989).

The HSI model (Clippinger 1989) can be used to compute a habitat suitability index for black-tailed prairie dogs using values for slope, soil type, average height of vegetation, and percent herbaceous cover. The index ranges from zero for least suitable to one for most suitable. For the sand and choppy sand range sites on Valentine NWR, the overall habitat suitability index is zero due to the fact that value used in the computation for sandy soils is zero. An overall habitat suitability index could be calculated for both the wetland and sub-irrigated range sites that would yield a result of suitable. This would however be misleading as the model does not include a variable for groundwater elevation. In these range sites the water table is too high to allow prairie dogs to excavate burrows. Table #13 summarizes the suitability of range sites on Valentine NWR for introduction of prairie dogs and includes the variable of groundwater elevation.

Table #14 Suitability of range sites at Valentine NWR for black-tailed prairie dogs

Range Site Elevation	Groundwater Slope	Vegetation	Percent Cover	Height of Soil Type
Wetland	suitable	low suitability	low suitability	moderately suitable not suitable
Sub-Irrigated	suitable	moderately suitable	low suitability	low suitability not suitable
Sand	suitable	suitable	suitable	not suitable suitable
Choppy Sand	not suitable	suitable	suitable	not suitable suitable

In conclusion we do not believe that Valentine NWR contains habitat suitable for the introduction of prairie dogs. This conclusion is based on use of the HSI model (Clippinger 1989), comparison of habitats of existing or abandon prairie dog colonies in other Sandhills locations with refuge habitats, and a review of literature on prairie dog habitats.

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e. **Blowout penstemon**

Blowout penstemon, *Penstemon haydeni*, was listed as an endangered plant in 1987. The species is found only in the Sandhills of Nebraska in and adjacent to blowouts. Blowouts are areas of open sand in choppy sand range sites that result from wind erosion. A good history of naturally occurring plants on the refuge can be found in the 1991 narrative. Beginning in 1996 plants have been transplanted into suitable habitats on the refuge. Dr. James Stubbendieck from the University of Nebraska at

Lincoln has raised and planted the seedlings. Prior to 1996, only seven penstemon plants remained on the refuge.

In 2001 the blowout penstemon transplants were put in the following locations:

23 May 2001- 98 plants; HU 37C; N42*28'17.4"; W100*26'19.3"
30 May 2001 - 392 plants; HU 37C; 42*28'19.6"; W100*26'29.1"
30 May 2001 - 98 plants; HU 19A; N42*31'37.2"; W100*31'49.4
30 May 2001 - 294 plants; HU 19B; N42*31'34.6"; W100*30'32.3"
30 May 2001-98 plants; HU 18B3(H); N42*43'02.1";
W100*32'20.7"
Total of 2001 transplants 980

Success of transplants from past years was also checked. From 1996 through 2000 a total of 5,703 plants has been placed on the refuge. In 2001 there were 401 vegetative plants and 839 flowering plants. The flowering plants had 3,346 flowering stalks. The success of transplants on the Van Der Ploeg Ranch was also checked. As a result of 500 plants transplanted in 2000 there were 63 vegetative plants and one flowering plant with seven flowering stocks. A naturally occurring population on the Crowe Ranch was also checked. Here there were 12 vegetative plants and 15 flowering plants with 113 flowering stalks. From 1996 through 2000 a total of 7,553 plants were placed on the refuge and private lands. In 2001 1,334 plants remained for a survival rate of about 18 percent.

f. **Western prairie fringed orchid**

The western prairie fringed orchid, *Platanthera praeclara*, was listed as threatened in 1989 under the Endangered Species Act. The orchid grows on wet meadows in several locations on the refuge. Most of the orchids are found in areas that are annually mowed. We mark the plants with stakes so they are not cut during haying. This gives the plants a chance to produce seed. The 1991 and 1998 narratives have a good history of plants surveyed from 1990 through 1998.

The orchid grows in the road ditch of Highway 83 in Sweetwater Valley on the refuge. The highway was rebuilt in this area in 2001. Nebraska Department of Roads did the following to mitigate and reduce impacts to the orchid. The right of way was reduced in width in this section of highway to reduce impacts to habitat. Soil in the ditch which might contain seed was stockpiled and then placed back following construction.

They are also negotiating purchase of 60 acres of land adjacent to the refuge near Duck Lake that has orchids growing on it. When purchased this will become an addition to the refuge.

Orchids were counted in known locations in 2001. Both flowering and vegetative plants are counted usually in the second week of July.

Flowering plants are more visible than the vegetative. This year 130 plants were located. This number has ranged from eight to 230 plants in 12 years where relatively complete counts have been done. Orchids were seen in the following habitat units in 2001.

In habitat unit 32B2 there were 21 flowering and one vegetative plant noted in the July survey. Later checks of these plants showed little if any seed production this year. The dry weather later in the summer may have not allowed the plants to produce seed pods. In May there were 16 vegetative plants noted but none were visible in the July survey. Again dry weather probably prevented the plants from flowering. This unit is annually hayed but not all orchids are within the mow line. The number of orchids found in this unit has ranged from one to 105 plants.

In habitat unit 29A1 there were 12 flowering and one vegetative plant. This unit has been rested from 1990 to present in all but 1999 when it received a spring grazing treatment. The number of orchids in this unit has ranged from one to 40 plants.

In habitat 24C2 there were 40 flowering and one vegetative plant located. This unit is annually hayed and sometimes grazed in the spring but cattle removed before May 10, the time when orchids start to grow. Numbers of plants found here range from ten to 92 each year. One flowering plant was also found in the Highway 83 right-of-way adjacent to this unit.

In habitat unit 25B, 30 flowering and no vegetative plants were located. Numbers found in this unit range from one to 30 flowers. This unit has been rested for three years. This is also the location of the one successful transplant made in 2000.

Orchids are also located on some private lands near the refuge. In 2001 there were five flowering plants on the Powell Ranch near Duck Lake. This is on the property that the Nebraska Department of Roads is attempting to buy for the refuge. No plants were observed on the Reece Ranch near Watts Lake or the Highway 83 road side park near Red Deer Lake this year. Only one plant was observed on the Crowe Ranch this year. There have been 18 to 33 plants here in the past. This year however the new manager of the ranch mowed in the first week of July cutting any plants that might have been present. He was contacted by the state and offered a payment for mowing at a later date but was not interested in the offer. One plant was noted on the Churchill Ranch west of the refuge.

Marge From from the Henry Doorly Zoo has been raising orchids in the greenhouse and is working on techniques to establish them in the wild. In 2000 one of the transplants grew and flowered in habitat unit 25B. None

of the 2001 transplants lived.

3. **Waterfowl**

a. **Ducks**

The Sandhills of Nebraska and the refuge are important nesting areas for waterfowl. Large numbers of both ducks and geese also use the wetlands found here during migration. In the past significant effort was made to document the cover requirements of nesting ducks and the effects of predation on nesting success. Studies showed that a combination of predator control and adequate cover could both increase nesting success and density. Predator control, other than on one island in the Marsh Lakes, has been discontinued. Adequate cover is managed by using grazing, prescribed fire, and rest.

Waterfowl nest success and density were monitored this year as part of a long standing study of waterfowl nesting on an island in the Marsh Lakes. The study was started in 1982 and has documented high density and success for waterfowl nesting here. The size of the island has varied during the study as water levels in the lake fluctuated. Predator control effort has varied but has generally been sufficient to assure high success. As the lake rose access to the island for predators has also been more difficult as the distance to the island from shore increased. In some years a barrier fence was installed to deter predators from reaching the island. Table #15 gives results for mallards from the monitoring effort. All nests studied had nest cards filled out and the information is stored in a database at the refuge.

A waterfowl pair count conducted in 2001 on the Marsh Lakes. This area has traditionally been the best waterfowl habitat on the refuge. High water has reduced the amount of emergent vegetation with a negative effect on waterfowl habitat. Carp entered the lake in about 1992 and have reached sufficient numbers that they are affecting vegetation in the lake. This year 774 pairs were recorded and included 732 dabbling pairs and 42 divers. The number of divers is way below historic levels as they are most dependent on emergent vegetation for nesting, most of which is now almost entirely gone. Redheads make up almost all the divers with a few canvasback and ruddy ducks also present. The most common dabblers present are mallard, blue-winged teal, and gadwall. Lesser numbers of pintail, shoveler, and wood duck are present.

No surveys were conducted during the spring and fall migrations. Of note is the large number of ducks that spent a good part of October and November on the refuge and in the Sandhills. Early cold weather in Canada and the Dakotas pushed large numbers of ducks into this area. Mild weather here allowed the birds to linger longer than usual.

ISLAND PROJECT - H.U.18C2 -- VALENTINE NWR

MALLARD

YEAR	TOTAL_NESTS	# HAICHED	Nest Density	Successful		# NESTS	# HAICHED	Nest Density	Successful	
				Nest Density	Nest Density				Nest Density	Nest Density
1982	141	69	2.1	1.0	13	3	0.2	0.05		
1983	141	119	3.4	2.9	18	18	0.4	0.4		
1984	188	97	11.8	6.1	56	40	3.5	2.5		
1985	198	146	16.5	12.2	79	60	6.6	5.0		
1986	180	119	18.0	11.9	114	67	11.4	6.7		
1987	110	66	55.0	33.0	47	36	23.5	18.0		
1988	120	86	60.0	43.0	87	61	43.5	30.5		
1989	163	141	81.5	70.5	109	102	54.5	51.0		
1990	136	83	68.0	41.5	101	61	50.5	30.5		
1991	84	37	33.6	14.8	44	18	17.6	7.2		
1992	132	81	29.3	18.0	87	65	19.3	14.4		
1993	288	164	72.0	41.0	164	109	41.0	27.3		
1994	209	127	52.3	31.8	136	95	34.0	23.8		
1995	229	167	65.4	47.7	160	121	45.7	34.6		
1996	234	172	117.0	86.0	177	130	88.5	65.0		
1997	144	94	96.0	62.7	87	67	58.0	44.7		
1998	181	163	120.7	108.7	122	108	81.3	72.0		
1999	252	224	168.0	149.3	188	167	125.3	111.3		
2000	205	176	117.1	100.6	145	129	82.9	73.7		
2001	164	122	93.7	69.7	97	75	55.4	42.9		

** Nest Density = Nests per area

b. **Geese**

The Sandhills Canada goose restoration effort was successful and they are now a common nester on the refuge and in other areas of the Sandhills. We have also noted larger numbers of Canada geese that are attempting to winter in the area. In mild winters some stay here on the refuge but most winter along the Niobrara River north of here. Occasionally we have small flocks of snow and white-fronted geese that pass through.

c. **Trumpeter swans**

Trumpeter swans are increasing on the refuge and in the Sandhills. We see quite a few pairs in the spring on refuge lakes and wetlands. They have nested successfully on the refuge in the past but no broods were noted in 2001. A pair nested on Center Lake but produced no young. Large numbers, up to 150 birds, winter along the Snake River where it enters Merritt Reservoir about 15 miles west of the refuge.

6. **Raptors**

Great horned owls, harriers, American kestrels, red-tailed and Swainson's hawks are the main raptors that nest on the refuge. Osprey, sharp-shinned, Merlin, and ferruginous migrate through. Bald eagle and large number of rough legged hawks winter here.

A raptor electrocution questionnaire was completed for the refuge. We have several power lines that cross the refuge but have not noted much mortality due to electrocution.

7. **Other Migratory Birds**

No new species were added to the refuge bird list in 2001. Records were kept of the first sighting in spring for all birds. The refuge was declared a *Globally Important Bird Area* (see section F-12).

8. **Game Mammals**

a. **Deer**

Records for deer harvest for the refuge were obtained from the Nebraska Game and Parks Commission. All hunters are required to check deer and are asked whether they got the deer on public or private land and the name of the public land area if applicable. For the past two years hunters could check deer in at any check station in the state. Prior to this they were required to check in at the nearest station on route home. This change has resulted in less accurate data for the refuge as the further you get from the refuge the less likely that the deer checkers will request or record correct information on Valentine NWR. This year refuge staff checked and recorded permit numbers on 12 deer. Nine of the 12 were on the list provided to us by the state at the end of the season. This indicates that

perhaps as high as 25 percent of the deer taken on the refuge are not recorded as shot here. The muzzle loader harvest is also surely greater than the four deer reported by the state as we know of a minimum of eight deer shot during this season. Again hunters are either not checking in the deer or the deer are not being credited to the refuge. Next year we plan on recording the permit numbers from a larger number of harvested deer to get a better idea of the reporting rate. The following table includes rifle (101 deer) , muzzle loader (8), and archery (0) deer that were on the state provided list plus those we know of that were not on the list.

Table #16 2001 deer harvest for Valentine NWR

	Fawn	1 ½ Years Old	1 ½ + Years Old	Adult Unaged	Total
White-tailed Buck	4	13	40	22	79
White-tailed Doe	3	6	4	2	15
Mule Deer Buck	0	2	4	5	11
Mule Deer Doe	0	1	3	0	4

10. **Other Resident Wildlife**

a. **Prairie grouse**

Greater prairie chickens and sharp-tailed grouse both occur in Nebraska in nearly equal numbers. The sharp-tail is the more abundant species on Valentine NWR and in the Sandhills. Prairie chickens are more common in central and eastern grasslands in Nebraska. Prairie grouse are good indicators of grassland health and are declining in many parts of their range. Valentine NWR is one of the few places where good numbers of both species occur. We use lek counts and harvest surveys to both monitor the population and as a gauge to the success of our grassland management program.

Nebraska prairie grouse breeding populations are monitored by Nebraska Game and Parks through 15 lek survey routes. One of the areas is located on Valentine NWR and referred to as the state study block. We do this count and forward the information to the state. A complete count of both sharp-tails and prairie chickens is obtained in the state study block. The rest of the refuge is also surveyed but less intensively. Locating sharp-tail leks has become difficult because the booming of the prairie chickens overrides the sharp-tails vocalizations. Also, as the acreage mowed on the refuge has decreased, sharp-tails have moved their leks to different sites where they are less visible. For the refuge wide survey in 2001 a total of 520 prairie grouse was counted on leks and included 346 prairie chicken males, 172 sharp-tail males, and two hybrid males. In areas that burned in

September of 2000, especially the proposed wilderness area, there were very few grouse seen on historic leks. The refuge wide survey has been conducted since 1969 and total grouse counted on the leks ranges from a low of 183 in 1972 to a high of 669 in 1992.

Grouse harvest is monitored through a voluntary wing survey. Five collection boxes with signs to direct hunters to the boxes are placed at the following locations; N. and S. kiosks along Highway 83, kiosk on 16B by Watts Lake, Duck Lake access road, and end of West Long Lake access road. Envelopes in the box request that hunters place one wing from each grouse harvested inside. Hunters are requested to write the following information on the envelope; date, hours hunted, location, number of resident and non-resident hunters, number of birds harvested by pass shooting or walk up and name and address (optional). It is not known what percentage of hunters provide wings or complete the survey.

This year was the poorest year on record for grouse hunting. Total harvest was 101 grouse which included 79 sharp-tails, 20 prairie chickens, and three unknown. The wing survey has been done since 1980 and the 1980 through 2001 average is 427 birds per year with the low of 101 this year and a high of 730 in 1987. Both the highs and lows may be accentuated by hunter effort. In high bird years the word gets out, hunting pressure increases, and people return for repeat hunts. In low bird years, like this year, hunter effort decreases as the word gets out and unsuccessful hunters do not return for repeat hunts. Other areas participating in the wing survey also saw historic low harvests. State road side checks also indicated a very poor year.

A juvenile to adult ratio is also obtained by examining the wings collected. This ratio gives an indication of production for the year. In 2001 the juvenile/adult ration for sharp-tailed grouse was 1.47. This is low for the refuge. The lowest on record was in 2000 when it was 1.41 and the high was 4.22 in 1987. Valentine NWR typically has the highest juvenile/adult ratio in the four areas in Nebraska that are collecting wings. It is suspected that cool, wet weather in the spring is responsible for the poor production of grouse here and at other locations.

Valentine NWR grouse lek counts

YEAR	PC-MALE	ST-MALE	HYBRID	TOTAL
1969	53	242	0	295
1970	44	231	0	275
1971	47	302	2	351

1972	56	126	1	183
1973	64	374	3	441
1974	47	297	0	344
1975	41	304	0	345
1976	34	161	0	195
1977	67	331	0	398
1978	66	411	6	483
1979	80	498	2	580
1980	118	348	0	466
1981	125	414	0	539
1982	122	288	0	410
1983	98	326	0	424
1984	103	208	1	312
1985	138	197	0	335
1986	153	221	0	374
1987	285	291	0	576
1988	342	252	0	594
1989	313	168	0	481
1990	392	198	0	590
1991	422	190	0	612
1992	430	237	2	669
1993	321	212	1	534
1994	387	263	1	651
1995	336	210	0	546
1996	271	191	0	462
1997	222	192	1	415
1998	283	251	1	535

1999	283	289	2	574
2000	369	298	3	670
2001	346	172	2	520

Valentine NWR grouse harvest 1980-2001.

Year	Prairie Chicken	Sharptail Grouse	Unknown	Total	Sharptail juvenile/adult ratio
1980	8	262	41	311	2.28
1981	7	402	0	409	2.47
1982	6	260	0	266	3.19
1983	14	396	0	410	2.48
1984	22	449	1	472	2.73
1985	28	323	0	351	2.05
1986	60	524	0	584	3.26
1987	137	593	0	730	4.22
1988	159	419	64	642	2.05
1989	98	336	25	459	1.96
1990	57	202	15	275	2.17
1991	136	291	7	434	3.68
1992	86	346	10	442	1.56
1993	42	230	4	276	3.65
1994	84	485	11	580	3.19
1995	75	355	28	458	2.40
1996	35	167	6	208	2.26
1997	41	325	9	375	2.89

1998	63	524	14	601	2.78
1999	57	554	2	613	2.36
2000	62	328	4	394	1.41
2001	20	79	3	101	1.47

b. **Frogs**

Two sites were sampled for frog malformations in July 2001 as part of the National Amphibian Malformation Monitoring on Refuges.. Valentine NWR does not have a history of contaminant issues; therefore, both sites were considered to be non-contaminated sites. The Headquarters site is a semi-permanent wetland that was initially created from blasted potholes. The wetland is less than 0.1 acre and had a maximum depth of two feet during the time of sampling. This depth was approximately 1.5 feet lower than normal due to drought conditions at the refuge. This site is located on the east side of Valentine NWR headquarters and is occasionally used as a pony pasture. The legal description is Township 30 N, Range 29 W, Section 14, south-center.

The second sampling site was the Pelican Lake Control Structure. This site is approximately 100 yards SE of the Pelican Lake Control Structure, and is a semi-permanent wetland with additionally created potholes (blasted). The size and depth are the same as the Headquarters site, with drought conditions also affecting the maximum depth. The legal description is Township 29 N, Range 28 W, Section 6, NE 1/4.

Sampling was conducted over a two day period (July 2-3, 2001) with frogs kept in a large, lidded container in a cool location overnight. The Headquarters site was sampled in early afternoon on 7/2/01 and in the morning on 7/3/01. The Pelican Lake Control Structure site was sampled in the afternoon on both days. Temperatures reached a high of 93° and 80° on 7/2 and 7/3, respectively. Both days were clear and sunny, with the early morning hours foggy and cool.

Unfortunately, tadpoles at the Headquarters site completed metamorphosis over the weekend, so the majority of the frogs were gone by the time sampling efforts could begin. As a result, only 25 northern leopard frogs (*Rana pipiens*) were captured at the Headquarters site. The size and development stage of frogs that were captured indicated that they were a little farther behind than the group of tadpoles that had been monitored by refuge staff. No abnormalities

were found in these northern leopard frogs. Average snout-to-vent length was 3.7 cm. Another factor that may have influenced the number of frogs that were captured was the presence of several garter snakes (*Thamnophis* spp.) at this site.

Fifty-two chorus frogs (*Pseudacris triseriata*) were collected at the Pelican Lake Control Structure. Four abnormal frogs (abnormality rate 7.7%) were found with the majority of the abnormalities consisting of partial or complete missing limbs. Seven frogs were noticeably injured (as indicated by the presence of bleeding, torn flesh, or broken bone fragments) and were not included in the abnormality count. Injuries were sustained while collecting and holding the frogs in containers. Chorus frogs have toe pads that allow them to cling to the side of a container no matter how much water is in the container. The chorus frogs tended to migrate to the top of the container, and despite considerable efforts to prevent injury, some frogs still managed to get limbs caught in the container lid. Average snout-to-vent length was 1.4 cm.

c. **Blanding's turtle**

The Blanding's turtle is listed as a species of concern by the Fish and Wildlife Service. Surveys done by Corn in 1991 and 1992 showed that high numbers of the turtle can be found on the refuge. Concern exists that road kill is affecting the population here and in other locations. The Blanding's is a long lived and slow to reproduce species that can be affected by loss of the older, reproducing segment of the population.

The Nebraska Department of Roads (NDOR) agreed to do three things to address our concerns that road kill on Highway 83 might be affecting the population. In the environmental assessment for the upgrade of Highway 83 through part of the refuge they stated that NDOR would fund a study on the effects of road kill; construct turtle fences in three areas, and not place curbs along the refuge stretch of road.

NDOR funded a two year study of Blanding's turtle and the work was contracted to Dr. Jeff Lang, University of North Dakota and John Levell of NorthStar Herpetological Associates. Both have worked extensively on Blanding's turtles in Minnesota. The study will start in 2002 with objectives to 1) determine levels of road mortality along the highway, 2) investigate the effectiveness of turtle fences in conjunction with existing culverts to deter turtle mortality while allowing turtles to move across roadways, 3) assess short and long-term effects of road-related mortality, and 4) develop a comprehensive management plan for the long-term viability of Blanding's turtle inhabiting the wetlands along US 83 on the refuge.

Chain link turtle fences were built on both sides of Highway 83 at Sweetwater Lake, Tom's Lake, and East Twin Lake. The fences were tied

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these
shell
visit.

existing culverts
allow the turtles
cross under the

These locations
wetlands on both
of the highway
we have recorded
kill of Blanding's
Dr. Lang also
recommended
sites based on
fragments located
during a field
NDOR contracted

the construction of the fences and will maintain them in the future. There was some controversy over the construction of a turtle fence, but also some good press in Nebraska and out of state papers. The fence even made Paul Harvey's radio show.

Road curbs were not put on any of the road sections rebuilt on the refuge in 2001. In some other locations curbs have been placed at the edge of the highway to reduce erosion. Tar is then placed at the curb site. The curb and tar prevent turtles that get on the road from getting across in these sections. We have noted turtles caught in the tar.

Blanding's turtle

d. **Turkey**

The refuge hosts a flock of about 30 turkeys which seems unusual for a prairie location. The turkeys concentrate and roost at refuge headquarters during the winter. In the spring they spread out across the refuge.

e. **Pheasant**

Pheasant numbers remain low on the refuge. A severe ice and snow storm in 1992 reduced the population and it has never really recovered. High water has also flooded out some of the dense cattail stands that are important wintering areas for pheasants. Our Comprehensive Management Plan states pheasants are an exotic species and no emphasis will be placed on pheasant management.

11. **Fisheries Resources**

Some of the refuge lakes open to sport fishing are surveyed each year by the USFWS Great Plains Fish and Wildlife Management Assistance Office in Pierre, South Dakota.

Complete results are contained in their report to the refuge entitled *Results from the 2001 Fishery Survey Conducted on the Valentine National Wildlife Refuge*. A summary of the 2001 surveys done on Clear, Dewey, Hackberry, Pelican, Duck, and Watts lakes follows. Surveys were done using night electrofishing, trap and gill nets.

Clear Lake

Even though carp catch per unit effort increased this year it does appear that northern pike have been controlling carp recruitment. Relative weight for pike improved from previous years, yet there is a decline in the relative weight as pike got larger. Bluegill produced a strong year class in 1999 but few fish recruited to the size needed for angling opportunities. Yellow perch catch per unit effort decreased but showed increase in size to some fish in the quality and preferred size classes. Largemouth bass collected were all stock size and smaller providing limited angling opportunities. Management recommendations are 1.) Continue and evaluate the 28 inch maximum size limit for northern pike 2.) Continue fall surveys but switch to alternate years, and 3.) Evaluate the use of black crappie as an additional game species.

Dewey Lake

Carp are spawning but few appear to recruit. Although 27 sub-stock carp were collected during 2001, where as only one carp was collected in 2000. Bluegill produced a strong year class in 2001 and relative weights indicate above average growth rates. Largemouth bass abundance remains depressed. Our surveys indicate bass spawn and recruit through the first winter. Bluegill and bass are limited by the heavy predation of a large population of big pike. Catch per unit effort for perch was 32 but few were of size acceptable to anglers. It appears there are strong year classes of perch that recruit into larger sizes but year class is highly variable. Management

recommendations are 1.) Maintain current size regulations on pike (all fish larger than 28 inches must be released), 2.) Evaluate the use of black crappie, 3.) Establish goals for pike numbers and size, and 4) improve boat ramps.

Hackberry Lake

Carp were first noted in 1988 surveys and increased substantially in following years. Only two carp were collected in 2001. Carp are spawning but we have not seen high levels of recruitment. Bluegill abundance has increased. Each year sub-stock and stock size are collected but abundance of larger fish is low. The same can be said for yellow perch. Largemouth bass abundance appears low. Stockings have not increased abundance. Northern pike catch per unit effort decreased but there was a significant increase in larger sizes. The northern pike regulations appear to create a size structure that impacts recruitment of bass and perch. Management recommendations 1.) Continue annual fall sampling to evaluate using pike to control carp, 2.) Develop pike number and size goals, 3.) improve boat ramps, and 4.) Conduct creel surveys to gather information on angler harvest.

Pelican Lake

Surveys indicate increased recruitment of stock sized bluegill. It is likely that anglers are harvesting many of the larger bluegill. Restrictive harvest regulations may need to be implemented if the lake is to be managed for trophy bluegill. In 2001, 46 stock size or smaller fish were collected showing that carp are spawning. It is possible that the pike predation is keeping the carp from recruiting to larger sizes. Largemouth bass catch per unit effort decreased with low numbers of stock size. This is probably due to predation. Catch per unit effort for yellow perch has been oscillating with a high in 2001. Perch seldom reach a size preferred by anglers due possibly to predation or angling pressure. There has been an increase in larger sizes of pike presenting excellent angling opportunities. Management recommendations 1.) Conduct creel surveys to measure angler harvest of bluegill and pike, 2.) Conduct public opinion polls on the bluegill fishery, 3.) continue to evaluate pike regulations, and 4.) Improve west boat ramp.

Duck Lake

Largemouth bass appear to have variable recruitment and fingerling stockings do not appear to have contributed to the fishery. There is a moderate abundance of bluegill with above average growth and many fish are reaching sizes preferred by anglers. Yellow perch are not abundant. No saugeye stocked in 1993 were collected in 2001 surveys. Management recommendations 1.) Get your float tube and fish this one in the spring.

Watts Lake

The bluegill fishery is poorly structured and the low abundance results in few fishing opportunities. Largemouth bass abundance is low even though the lake is catch and release for bass. The low abundance of bass and perch is likely related to poor spawning habitat. Low numbers of perch exist and this will continue with the heavy predation by saugey, bass, muskie, and pike. Management recommendations 1.) Evaluate the stocking of sub-adult yellow perch to reestablish population and 2.) Discontinue predator stockings until prey abundance increases.

Section D-5 contains citations for published findings of fishery research conducted on the refuge which were published in 2001. Section H-9 gives information from a winter creel survey conducted on Hackberry and Pelican Lakes.

17. **Disease Prevention and Control**

No botulism in waterfowl was noted on the Marsh Lakes or other areas of the refuge. In some years die offs have occurred in the summer months on the Marsh Lakes. Water levels here are still high and may contribute to a lowered chance of this disease.

It is suspected that some deer on the refuge died from EHD. Several dead deer were noted next to water sources on and adjacent to the refuge. Deer suffering from this disease seek water and are often found dead near it. No fresh specimens or sick deer were collected for a positive indication of the occurrence of EHD.

A survey for malformed amphibians was conducted and is reported on in section G.10.

H. PUBLIC USE

1. **General**

The annual public use report for RMIS was submitted. We have very few accurate counts of visitors and thus the quality of information submitted is poor. For fiscal year 2001 visitation to Valentine NWR is estimated at 20,375 visits with most visits accounted for by fishermen. Increasing numbers of people are coming for bird watching and wildlife observation.

New information signs were placed at all major entrances to the refuge. The signs have a map and information on refuge regulations. We plan on putting a copy of the hunt/fish leaflet on each sign in the future.



New information signs put up at refuge entrance points.

A nice article on pike fishing was featured in the October 2001 issue of *Nebraskaland Magazine*. The article was about seven women who completed the Outdoors-Woman Workshop and then got together later for an ice fishing trip at the refuge.

Ice fishing for pike was also featured in a segment of the *Nebraskaland* television show called *Outdoor Nebraska*. The story was about a family who comes up each year one time to fish on the refuge.

Refuge Operations Specialist Lindvall was on KVSH Radio for two spots on muzzle loader hunting and one on spring fishing.

Newspaper articles on the Highway 83 construction and the turtle fence appeared in the September 19 *Valentine Midland News* and the September 11 *Omaha World Herald*. An article on T.J. DeBates fishery study appeared in the August 12 *Omaha World Herald*.

2. **Environmental Education - Students**

Refuge Operations Specialist Lindvall gave the muzzle loader section at the Nebraska Game and Parks Hunter Safety Class to 30 students.

4. **Interpretive Foot Trails**

The CCC Tower Nature Trail goes from a parking area at the west end of Hackberry to

the old fire tower constructed by the Civilian Conservation Corps. An observation deck was constructed inside the legs of the tower. There is a tremendous view of the refuge and Sandhills Prairie from the deck. The local 4-H Club has adopted the trail and constructed resting benches, marked plants, and picked up litter. Interpretive signs for geology, wildlife, plants, and CCC history were received but were not put up by years end.



Observation deck built in old fire tower

8. **Hunting**

Waterfowl hunting is permitted on Watts, Rice, and Duck Lakes. Seasons and limits are the same as for the state. The 2001 seasons were September 29 through December 9 and December 14 through January 6, 2002. A very mild fall, combined with an early freeze in the Dakotas, brought lots of ducks to the Sandhills. The ducks stayed here for a longer than average time. This made for seeing a lot of ducks but hunting was not that good as most ducks just loafed on the lakes and wetlands. No counts were made but it is estimated that about 175 visits were made by duck hunters, including quite a few out of state hunters. We are now getting a regular contingent of duck hunters that come from out of state and stay for a week or so.

The grouse season opened in Nebraska and on Valentine NWR on September 15 and ran through December 31 with a three bird limit. The refuge is a popular place for out of state hunters to come for hunting both prairie chickens and sharptails.. Hunter harvest is reported through wing collection boxes placed at five

locations on the refuge. In 2001 hunters turned in 101 wings to the collection boxes. This year was one of the poorest for grouse hunting since records were kept starting in 1980. In an average year we get 300 to 400 wings and in a good year 600-700. Hunters also reported seeing few birds. The word got around and the number of visits for grouse hunting was also down. Complete information on grouse harvest is found in section G10.a. of this report.

Nebraska pheasant season opened on October 27. In spite of low pheasant numbers a few hunters were out for the opener. The pheasant season ran through January 31, 2002 with a bag limit of three. An estimate of 75 visits by pheasant hunters is made. Some hunters combine a pheasant hunt with grouse, deer, or duck hunt. There are a few pheasants around but numbers are much lower than in the 70's and 80's.

Nebraska rifle deer season was from November 10 through 18. Most of the deer hunting takes place on opening weekend. A total of 101 deer was recorded and included 87 white-tails and 14 mule deer. More complete information on deer harvest can be found in section G8. Numbers come from deer checked by refuge officers and records obtained at Nebraska Game and Parks check stations.

All of the refuge west of Highway 83, in the Sandhills Deer Hunting Management Unit, remained in a trophy management unit. In 1995 Nebraska Game and Parks removed Valentine NWR and McKelvie National Forest from the area where antlerless only deer permits for the Sandhills Unit are valid. This year there was some confusion on this as it remained a regulation but did not show up in the brochure or on the state's web site. The state was contacted and will get the word out next year. Starting in 1997 a statewide bucks only permit was also available. A few of this type of permit were seen being used on the refuge in 2001. The portion of the refuge east of Highway 83 is in the Calamus West Unit.

The refuge probably receives about the heaviest hunting pressure of any location within the units but a quality hunt is possible especially if opening day is avoided. Quite a few hunters commented that they thought there were more hunters this year than in past years. We recorded the vehicle license numbers from rifle deer hunters rigs during the season. Two officers recorded 113 unique numbers. Using 2.5 hunters/vehicle gives an estimate of 283 hunters. The actual number is probably higher as we were not able to record all numbers. For comparison we recorded 92 vehicles in 1993, 91 in 1994, and 117 in 1996. The number of refuge officers working in earlier years was greater so those numbers are probably more accurate than the 2001 figure. As more and more private land is leased for hunting we believe we are seeing an increase on public lands.

The refuge is also open for muzzle loader deer hunting. The season was from December 1 through 31. Permits are not limited and are statewide either sex. Four deer were checked in and recorded as shot on the refuge. This was not a

complete count as staff knew about several other deer taken on the refuge that were either not checked in at all or not recorded as taken on the refuge. Popularity of this hunt on the refuge is growing each year, especially with out of state hunters.

The refuge is also open to archery deer hunting which runs from mid-September through the end of December. Only a few hunters were known to have visited to bow and arrow hunt deer.

Coyotes can be hunted on the refuge from December 1 through March 15. A free permit is required and can be obtained in person or by mail. Use of dogs is not allowed for coyote hunting. The permit is a postcard that the hunter returns at the end of the season and includes harvest information. For the 2000-2001 season 63 permits were issued and 28 returned. Five successful hunters shot 13 coyotes. Seven reported that they did not hunt at all. The other 16 cards were either blank or indicated that they hunted but did not shoot any coyotes.

9. **Fishing**

Nine refuge lakes (Watts, Rice, Duck, West Long, Pelican, Hackberry, Dewey, Clear, and Willow) are open to fishing year round. Fishing, especially ice fishing, accounts for most visits to Valentine NWR. In fiscal year 2001 an estimated 12,000 visits were made for fishing. This figure is based on only five counts of fishermen made throughout the year. The average on weekday counts is multiplied by the number of weekdays and the average of weekend counts multiplied by the number of weekend days in a quarter to arrive at an estimate. Partial counts are adjusted upward if all lakes are not surveyed. Periods where fishermen are not using the refuge, such as thin ice or the lakes mossed over, are adjusted for. In FY 2001 ice was on the lakes and people ice fishing from November 12, 2000 through March 16, 2001. The number of spring fishermen was down from last year as was the fishing success.

Refuge size limits remained the same as last year with a 15-inch minimum on bass and northern pike with a 28-inch maximum size limit (pike greater than 28-inches must be released). The state also has a 15-inch minimum on bass for most public waters including the refuge. Minnows are prohibited on refuge lakes to prevent introduction of exotic fish. Gas powered boats are not allowed. Catch and release for bass and muskie remained in effect on Watts Lake. Saugeye were stocked in Watts and Duck Lakes in previous years and are now up to five pounds. The state 15-inch minimum for this fish for lakes in western Nebraska applies to refuge lakes.

Nebraska Game and Parks conducted creel surveys on Hackberry and Pelican Lakes during the ice fishing season. The survey period for both lakes was December 1, 2000 - March 31, 2001. Pelican Lake was surveyed on 34 randomly selected weekend and week days. The survey of 355 people showed that 2,767 anglers spent 14,478 hours fishing. They caught 3,754 pike, 6,096 bluegill, 709

bass, and 7,270 perch. Anglers came mostly from Nebraska but 9.2 percent were out of state fishermen. Pelican is noted for its large bluegill which are sought after by the out of state trophy bluegill fishermen. The ice fishing world record was caught here (two pounds 11 ounces in 1994). Hackberry Lake was surveyed on 33 days. The survey of 63 people showed that 605 anglers spent 3,216 fishing. They caught 416 pike, 261 bluegill, 41 bass, and 1,153 perch. All anglers surveyed were from Nebraska.

11. **Wildlife Observation**

Only one blind was placed for observation of sharp-tailed grouse this year. Poor road conditions limited access to most of the leks on Valentine NWR. Quite a few people used the blind even though it was difficult to access..

People come to the refuge to bird watch and enjoy the prairie. No counts are made for this type of visit which seems to be on the increase. One request for commercial use of the refuge for bird watching was received. The request was denied as we have no public use plan covering commercial uses.

12. **Trapping**

The refuge has a trapping plan and is open to trapping. Interest remained low this year due to continuing low fur prices. No recreational trapping took place on the refuge in 2001.

17. **Law Enforcement**

The law enforcement(LE) program saw a variety of changes in 2001. The Refuge began the year with a new full time law enforcement officer(LEO). In August, 2000 Refuge Officer Charles (Chuck) Melvin transferred from Wichita Mt. Wildlife Refuge filling the newly acquired LEO position. In the same month collateral officer Jim Sellers transferred to Quivera NWR. The addition and loss of officers brought the complex LE staff to three collateral and one full time LEO. With the addition of a full time LEO considerably more time was spent in the field monitoring public use.

Refuge law enforcement personnel provided law enforcement coverage of all roads and public use areas throughout the year. Officers were involved in search and rescue, vehicle accident investigations, river patrol, and collateral duty firefighters. Countless hours were spent monitoring visitor use on complex.

The Refuge continued with an excellent working relationship with the U.S. Magistrate court in Lincoln, NE. The conviction rate of citations is almost 100%. Refuge officers worked closely throughout year with the U.S. Fish & Wildlife Service special agents, Nebraska Game and Fish, Cherry County sheriff deputies, and Nebraska Highway Patrol. Working agreements with the Cherry County Sheriff's Office allows the Service to deal with LE situations that would normally

become complex due to the lack of a federal holding facility in close proximity to the Refuge complex.

Citations were issued for possession of alcoholic beverages, controlled substances, DUI, littering, collection of animals, unplugged shotgun, hunting in closed area, no hunter orange, hunting out of season, take of illegal turkey, oversize fish, more than five ice fishing lines, illegal fillet fish, no fishing license, possession of lead shot, hunting with antlerless tag, and failure to tag deer. See table's for a summary of all violations and warnings for 2001. A total of 133 citations and 300 warnings were issued in 2001. Full time LEO made 3,554 contacts in 2001. The public keeps the officers very busy!

Ft. Niobrara/Valentine NWR Complex
Violation/Warning Tally Fiscal Year 2001

Violations	Valentine NWR	Ft. Niobrara NWR	Warnings Valentine/Ft. Niobrara Complex
Possession of Alcoholic Beverage	24	49	167
Possession of Narcotics	9	27	
DUI		1	
Littering	1	1	6
Collection of Animals		1	
Unplugged Shotgun	2		
Hunting in Closed Area	2		
No Hunter Orange	1		
Hunting Out of Season	1		
Taking of Illegal Turkey	1		
Take of Oversized Fish	2		
More than five Ice Fishing Lines	3		
Illegal Fillet Fish	2		
No Fishing License	2		
Possession of Lead Shot	1		
Hunting with Antlerless Tag	2		
Failure to Tag Deer	1		
Trespassing			3
Fireworks			2
Fishing Violations			7
Game Violations			50
Off Road Travel			2
Swimming in Closed Area			10

Traffic Violation			2
Weapons Violation			2
Permit Violation			21
Life Jacket Violation			9
Water Canon Use			19
Total	54	79	300

Total Violations for Fiscal Year 2001	133
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18. **Cooperating Associations**

The Fort Niobrara Natural History Association also supports activities at Valentine NWR. A complete report on the association can be found in the Fort Niobrara NWR narrative. In 2001 the refuge coordinator for the association was changed from the refuge operations specialist at Valentine NWR to the deputy refuge manager at Fort Niobrara NWR. This year the association provided funds to the local 4-H Club for work on the nature trail at Valentine NWR.

I. EQUIPMENT AND FACILITIES

2. **Rehabilitation**

Funds were received via a Challenge Cost Share Grant for upgrades of parking lots and boat ramps. The grant of \$20,000 was matched with an equal amount from the Nebraska Game and Parks Commission. All the funds were used to purchase rock needed for the projects. Refuge staff did the dirt work needed to level out the lots, excavated the ramps, and get the required permits. Game and Parks staff from the Valentine Fish Hatchery laid filter cloth where needed and spread and leveled the rock as it was delivered. The west parking lot at Watts Lake and the lots and ramps at Clear and Duck Lakes were done. The ramps and lots are a great improvement as visitors were often getting vehicles stuck while launching boats for fishing.

Watts Lake parking and ramp improvements.

Fire rehab funds were received for repair to refuge facilities damaged in the large wildfires that occurred in September of 2000. These funds were used to purchase materials for repair of both electric and barbed wire fences that were damaged by the fire.

Damage to electric fence was mostly due to melt



ed clips and the fence being hit and dragged by fire engines. Damage to the barbed wire fence was greatest in meadow areas with heavy fuels. Damage included many burned posts and ruined wire. Most of the labor for the repair was done by the regular refuge fence contractors and the cost deducted from grazing bills.

Fence damaged by
September 2000.



wildfires in

3. Major Maintenance

The refuge has one maintenance worker assigned the task of maintaining about 100 windmills, 30 miles of roads and trails, 18 old buildings, and over 20 old vehicles or pieces of equipment. Needless to say the condition of most is poor and getting worse. The refuge also received no MMS funding for repair or replacement in fiscal year 2000.

4. Equipment Utilization and Replacement

We received a 1978 John Deere road grader as surplus from Kirwin National Wildlife Refuge. The grader needed some repairs but is much better than the antique CAT grader we had been using.

A new Polaris ATV was purchased with station funds. Two worn out 1985 Honda ATVs were traded in when the new unit was purchased.

J. OTHER ITEMS

2. Other Economic Uses

The Comprehensive Conservation Plan allows for limited commercial guiding for both hunting and fishing. This year requests were received from people interested in doing

commercial guiding for hunting, fishing, deer retrieval, and bird watching. All requests were denied pending the preparation of a new public use plan which would address fees, guide selection, restrictions on guiding, and the many other things that go into permitting a new commercial use. People who were rumored to be guiding on the refuge were also contacted and informed that it is not permitted. Refuge staffing is also not sufficient to administer another program. Some concern also exists that guiding, especially for hunting, has potential conflicts with other hunters. Some hunters have expressed the concern that the guides have excluded them from private land and are now moving on to the public land. This will be a difficult issue not only here but at other refuges. National policy would be helpful as it appears that some refuges allow guiding and others have banned it entirely.

3. Items of Interest



Refuge Biologist (retired) Len McDaniel received the Hammerstrom Award.

Leonard McDaniel received the Hammerstrom Award from the Prairie Grouse Technical Council. He was recognized for his contributions to grouse

management, conservation, and research. First as a manager and later as a biologist, Len McDaniel worked to manage the grasslands of the Valentine National Wildlife Refuge for the benefit of prairie chickens and sharp-tailed grouse. He argued hard for and was successful in assuring that grazing and haying on the refuge were managed for the conservation of wildlife rather than the production of beef. He guided a reduction of both haying and grazing that resulted in increases in grouse, especially prairie chickens. Timing, intensity, and duration of cattle grazing were altered to benefit refuge grasslands and grouse populations. He documented increases in grouse with long term data sets using both lek counts and harvest surveys. These data sets proved valuable in defending grazing and haying cutbacks from critics of these reductions. He assured that grouse were given top consideration in planning and implementation of grassland management on the refuge. These long term efforts have benefitted grouse populations of the refuge and served as an example to others of how cattle grazing can be used as a tool for grassland management for the benefit of grouse populations.

Len McDaniel has worked cooperatively with the Nebraska Game and Parks Commission in both monitoring and management of prairie grouse. He has conducted lek counts of the state block sample area that includes the refuge for over 20 years. He has monitored hunter harvest using wing collection boxes in conjunction with the state. Len's guidance and these long term data sets have been used by the Nebraska Game and Parks Commission in setting goals for juvenile/adult ratios; comparing production within areas of the state; in developing guidelines for grassland management for grouse; and as a benchmark for potential production of grouse in the Sandhills area of Nebraska. Valentine National Wildlife Refuge is held up as an example of how proper grassland management can benefit grouse production and populations.

Len has both worked with and advised the US Forest Service on grassland management techniques that benefit grouse populations. The US Forest Service manages large prairies in both Nebraska and South Dakota that are significant for prairie chicken and sharp-tailed grouse conservation. Grassland monitoring techniques have been shared and standardized between the Forest Service and Valentine National Wildlife Refuge. Long term production has been compared between the Forest Service and the Refuge and the Forest Service has made the grouse a key indicator species for ecosystem health. Recent Forest Management Plans have been influenced by the work Len has done on the refuge and with the Forest Service. Residual cover is now a key component in grassland planning, partly as a result of Len's efforts.

Over the years Len has facilitated grouse research that has taken place on Valentine National Wildlife Refuge. Len has worked alongside both graduate students and university professors studying grouse behavior, genetics, food habits, and habitat requirements. His intimate knowledge of grouse and the habitats of Valentine National Wildlife Refuge has furthered the scientific knowledge of both prairie

chickens and sharp-tailed grouse. He has also advised both researchers and managers doing research or considering management actions in other parts of the country. Len has passed both his knowledge of and keen interest in grouse on to many people he has come into contact with over the years. Len has been a regular at the Prairie Grouse Technical Council where he has both offered advice on management and brought home ideas that have benefitted grouse conservation.

credits

Fire Management Officer Tim Klukas F.9; Ecological Services Biologist Kristina Kravitz Section G.10a.; Section G.11 was summarized by Mark Lindvall from a report prepared by Wayne Stancil from the USFWS Great Plains Fisheries and Wildlife Office; Refuge Office Chuck Melvin H.17;and Refuge Operations Specialist Mark Lindvall, all other sections.