

VALENTINE NATIONAL WILDLIFE REFUGE

Valentine, Nebraska

Annual Narrative Report

Calendar Year 2002

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 71,712-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

Drought struck the Great Plains including the Sandhills.

Public access roads to refuge fishing lakes received major repairs.

The biologist position for the refuge was filled by Mel Nenneman.

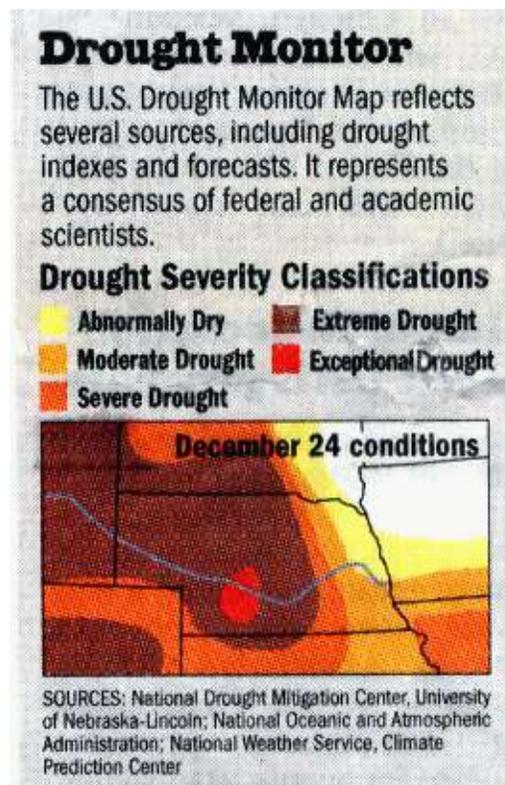
Willow Lake WMA was added to the refuge.

B. CLIMATIC CONDITIONS

Weather data were not collected from the weather station at Hackberry Headquarters during 2002. This weather station should be operational again in 2003. Weather data presented in this narrative report are from the National Weather Service weather station in Valentine, NE. This weather station is approximately 30 miles north of the refuge, and in the past records from this station have shown less rainfall and somewhat different temperatures than records at the Hackberry Headquarters weather station. However, these data provide a general overview of the conditions experienced in this area during 2002. Many refuge wetlands dried up early in the summer, and lakes were at the lowest levels observed in many years. The climatological summary for 2002 indicates 8 of 12 months with above average temperatures and total precipitation at 11.01", a departure from normal of -8.6 inches.

The Sandhills region experience extreme drought conditions during 2002 (Figure B1). Grassland conditions across the region reflected these low moisture conditions. Much of the private rangeland adjacent to the refuge experienced severe grazing pressure as ranchers sought enough grass for their cattle. Hay yields on the refuge were 1/3 to 1/2 of normal

Figure B1. All of Nebraska experienced dry conditions during 2002. The whole Sandhills region fell into the extreme drought category. The figure appeared in the Omaha World-Herald.



C. LAND ACQUISITION

1. Fee Title

The Preliminary Project Proposal Habitat Additions Valentine National Wildlife Refuge was revised based on input from the Regional Office group that reviewed the original proposal. The original proposal is outlined in the 2001 Annual Narrative. Suggested changes to the original proposal are as follows. The acquisition of all tracts in the original and revised PPP would add 6,885 acres to the 71,272 acre Valentine NWR. Figure C1 is a map showing the location of all proposed acquisition in the original proposal and the revised proposal.

Tract A. The original proposal for this tract was for 2,040 acres. As per the review we suggest expanding this tract by 1,120 acres to include all of sections 2 and 3 bringing the new acreage to 3,160. This will further straighten the refuge boundary in this area.

Tract B. This tract of 440 acres was removed from the original PPP and has been acquired via an exchange of lands with the Nebraska Game and Parks Commission.

Tract C. This tract of 60 acres was removed from the original PPP and is close to being transferred from the Nebraska Department of Roads to the Fish and Wildlife Service as mitigation for expansion of the right of way along US Highway 83 through the refuge.

Tracts D (580 acres), F (200 acres), G (60 acres), H (5 acres). Unchanged from the original PPP.

Tract E. The original proposal was for 80 acres. We propose increasing this proposal by 180 acres which is also in private ownership bringing the total to 260 acres for this parcel. The additional area proposed for acquisition includes uplands, wetlands, and the western part of Devil's Punch Bowl Lake. In average or high water years the present boundary fence runs through the lake.

As per the review, we also looked at adding additional wetlands to the refuge while at the same time trying to keep a relatively straight boundary. We also considered acquisitions of lands where the existing boundary fence runs through a lake or wetland. Fences are difficult to maintain in these areas and cattle often walk around the end of the fence in the lake and enter the refuge. Using these criteria we identified the following 9 additional proposed acquisitions.

Tract I: ~600 acres in private ownership. This tract is along the north shore of Marsh Lake and includes wetlands and uplands. Purchase of this tract would straighten the refuge boundary along a section line and get the boundary fence out of the wetland.

Tract J: ~400 acres in private ownership. This tract includes wetlands and the part of Dew Lake that is not now within refuge boundaries. The present refuge boundary runs

through the lake and wetlands and is impossible to fence.

Tract K: ~480 acres in private ownership. This tract includes wetlands, uplands, and the portion of East Long Lake that is not within the refuge boundary. The present refuge boundary runs through the lake.

Tact L: ~100 acres in private ownership. This tract includes wetlands and the eastern portion of Coleman Lake. The present refuge boundary runs through the lake.

Tract M: ~80 acres in private ownership. This tract includes wetlands and the western edge of West Long Lake. The present boundary runs through the lake.

Tract N: ~80 acres in private ownership. This tract includes uplands and the western edge of Rice Lake. The present boundary fence runs through the lake.

Tract O: ~40 acres in private ownership. This tract includes uplands and wetlands at Roger's Potholes. The present boundary fence is located in the wetland.

Tract P: ~20 acres in private ownership. This tract includes the rest of a small wetland along the refuge boundary north of Watts Lake. The present boundary runs through the wetland.

Tract Q: ~320 acres in private ownership. This tract includes the outlet of Dads Lake and the wetlands east of the lake. The present boundary fence goes through the end of the lake.

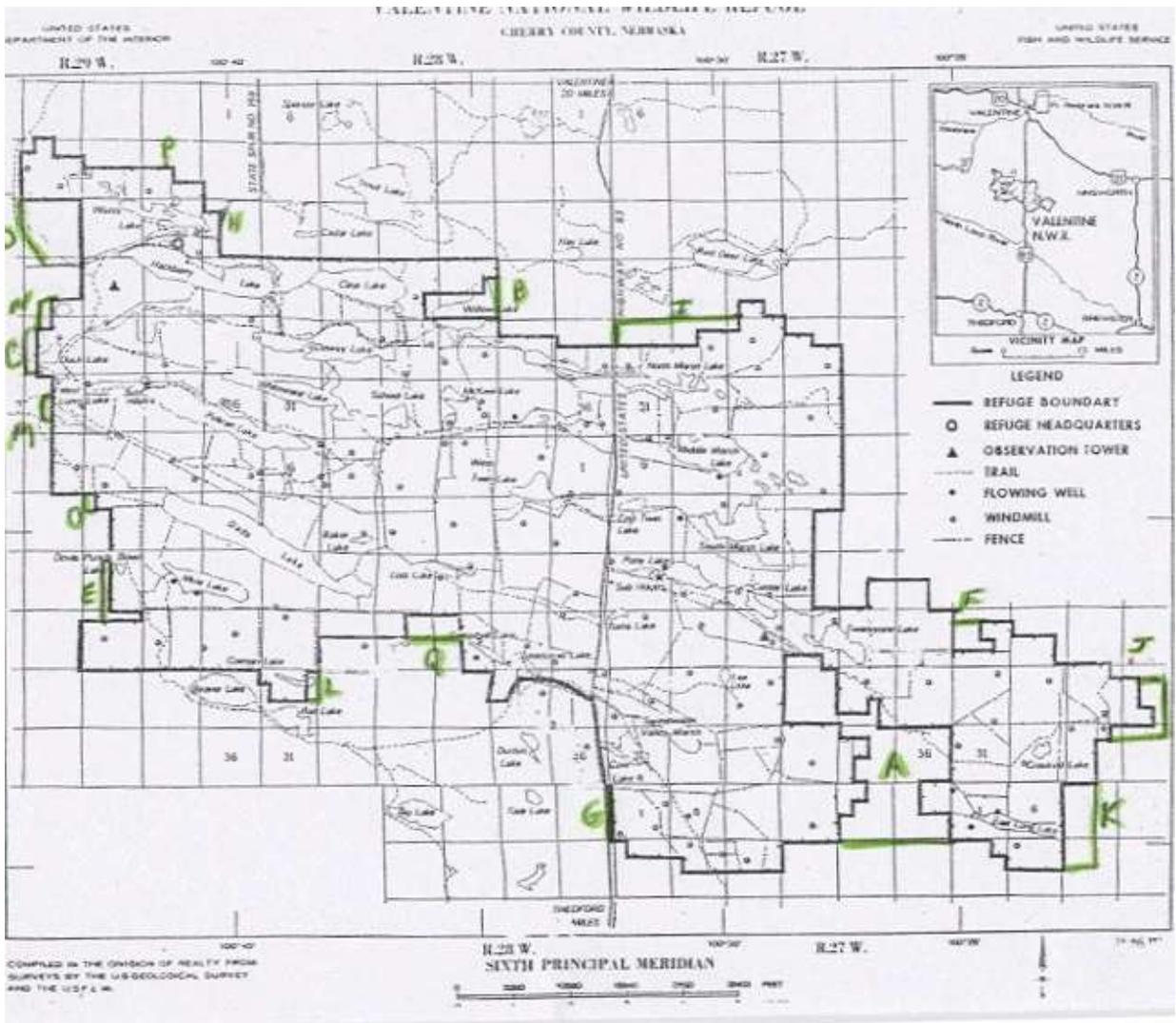
In May John Esperance, RO Planning, and Jim Sinclair, RO Realty inspected lands proposed for acquisition at Valentine NWR and Yellowthroat WMA. A letter of support for the acquisition was received from the Ecoteam. Valentine NWR proposed acquisition is less than 10 percent and can be processed in region.

Refuge neighbor Blaine Sherman may be interested in trading a small parcel of his land along Punch Bowl Lake in exchange for us putting up a windmill and tank on his land. This is part of tract O. The refuge boundary fence goes through the lake and is the only water in Blaine's pasture. His cattle often get on the refuge by going around the fenced water gaps. We requested he write a letter outlining his ideas but have not received anything.

In September Nebraska Department of Roads purchased 60 acres of land adjacent to Valentine NWR that will be deeded to the refuge in the near future. This is tract G. The land is in mitigation for the expanded right-of-way for Highway 83 improvements. The land also has had prairie white-fringed orchids on it. Highway crews fenced the boundary and removed interior fence in preparation for the transfer. The land trade between FWS and Nebraska Game and Parks was completed. The 440 acre state owned Willow Lake WMA was added to Valentine NWR. This is tract B.

This property is bordered on three sides by the refuge and we have managed grazing and public use on it for years. The only public access is across the refuge. The state received our 160- acre Holt Creek WMA in Keya Paha County and will manage it as a state WMA. This was a good trade for both parties involved. Boundary signs were changed on both areas prior to the deer season.

Figure C1. Proposed Acquisitions for Valentine NWR



D. PLANNING

1. Master Plan

We have yet to receive a final copy of the refuge site plan that is being prepared under contract. We had a draft at the end of 2001 and that is still what we had at the end of 2002. The draft is described in the 2001 Annual Narrative.

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

In 2001 an environmental compliance audit was conducted by Environmental Compliance Auditor Jim Behrman. This year the well water at the Pelican Lake residence was tested for a multitude of factors and passed. Open items at the end of 2002 are water testing at Pony Lake residence, removal of junk at Pony Lake and Hackberry Lake store yards, and disposal of old paints stored in the tuber cellar at Hackberry Lake. Funding has been requested for all items.

The bomb squad visited Valentine NWR. Gerald Schwalbe, Project Manger; George Sloan, Site Safety Office; and David Tajkowski, Historian; from the US Army Corps of Engineers St. Louis Office came to survey the old bombing range that was here during World War Two. The site visit was required under the Defense Environmental Restoration Program for Formerly Used Defense Sites. The practice range was located south of School Lake on Sawyer Meadow in Sections 3,4,9, and 10 of T 29N and R 28W.

We have found parts of practice bombs here in the past. They provided us a copy of the agreement with the refuge to have the range here, visited the range, and indicated they would provide us with a report of what they found. We have not yet received any report.

Figure D4. Practice bomb found on the refuge.



In September of 2000 the Nebraska Department of Roads completed an environmental assessment for improvements to part of Highway 83 through the refuge. Mitigation measures are outlined in the ea and were described in the 2001 Annual Narrative. This year the first year of a 2 year study paid for by Nebraska Department of Roads was completed. NDOR also purchased 60 acres of land adjacent to the refuge on

Duck lake and is in the process of transferring the land to FWS. When the study and land transfer is complete, all the mitigation measures outlined will be completed.

5. **Research and Investigation**

a. Research papers based on studies conducted wholly or in part on Valentine NWR. Brief summaries are provided for research providing management implications.

Flanders, B. L. 2002. Prairie grouse production on Valentine National Wildlife Refuge: the effects of weather and grassland management. M.S. Thesis, Colorado State University, Fort Collins, CO. 116 pages. This thesis examines aspects of prairie grouse (Sharp-tailed grouse and Greater prairie chicken) production as they relate to grassland management and weather conditions. Analysis indicated that vegetation visual obstruction did not increase as a result of specific grazing treatments used on Valentine NWR. However, several reasons were presented that cast doubt as upon this outcome, and it may be necessary to further investigate the relationship between grazing treatments and vegetation growth response. It was recommended that grazing continue to be used as a disturbance tool in maintaining vigorous grasslands with maximum standing crop. Harvest ratios are often used as an index of grouse production. An analysis of the ratio of juveniles to total grouse harvested as the hunting season progressed revealed no change in the ratio through the hunting season. Results also suggested that there is not a differential susceptibility to harvest between adults and juveniles. The author suggests that harvest ratios can be used as an index of relative production, but cautions that these data cannot be used to indicate the health of grouse populations, recruitment into the population, or indicate population size. Finally, an attempt was made to model sharp-tailed grouse production, using harvest ratios as an index of productivity. Weather variables during the nesting and brood rearing period were included, and two levels of vegetation condition (disturbed and 2+ years rest) were included in model building. Analysis indicated that five weather factors (cumulative precipitation as of 31 Jul, Jun total precipitation, Jun average temperature, Jun days with maximum air temperature ≥ 35 C, and May average temperature) were most important in determining sharp-tailed grouse production. Jun days with maximum air temperature ≥ 35 C and June total precipitation were negatively correlated with grouse production. A single best model could not be determined, indicating that data were inadequate to reach strong inference. The model-averaged production indices developed from Valentine NWR data over-predicted grouse production indices at McKelvie National Forest by 0.77 juveniles per adult.

Gibson, R. M., A. S. Aspbury, and L. L. McDaniel. 2002. Active formation of mixed-species grouse leks: a role for predation in lek evolution? *Proceedings of the Royal Society of London B.* 290:2503-2507.

Packard, G. C., and M. J. Packard. 2002. Wetness of the nest environment influences cardiac development in pre- and post-natal snapping turtles (*Chelydra serpentina*). *Comparative Biochemistry and Physiology Part A.* 132:905-912.

Packard, G. C., and M. J. Packard. 2003. Natural freeze-tolerance in hatchling painted turtles? *Comparative Biochemistry and Physiology Part A*. 134:233-246.

Paukert, C. P., D.W. Willis, and J.A. Klammer. 2002. Effects of Predation and Environment of Quality of Yellow Perch and Bluegill Populations in Nebraska Sandhills Lakes. *North American Journal of Fisheries Management* 22:86-95. Data for the study was gathered in several Valentine NWR lakes. The study found that good bass numbers resulted in quality perch and bluegill. Bluegill but not perch were more abundant in lakes with more emergent vegetation.

Wilkins, J. L., T. J. DeDates, and D. W. Willis. 2002. Food habits of yellow perch, *Perca flavescens*, in West Long Lake, Nebraska. *Transactions of the Nebraska Academy of Sciences* 28: 49-56.

b. Ongoing research at Valentine NWR

Dr. Jeff Lang (University of North Dakota) began work on Blanding's turtles at Valentine NWR. Refer to section G. 10 for more on this research.

Drs. Gary and Mary Packard (Colorado State University) continued their research on snapping and painted turtle ecology.

E. ADMINISTRATION

1. Personnel

Figure 4. Refuge Staff, Nenneman, Kime, and Lindvall



Valentine
part of the

National Wildlife Refuge is
Fort Niobrara/Valentine NWR

Complex with three permanent staff assigned to the station. They are:

- | | | |
|-----------------------|-----------------------------------|-----------------------------|
| 1. Mark Lindvall | Refuge Operations Specialist | GS-12 PFT |
| 2. Mel Nenneman | Wildlife Biologist | GS -09PFT (started July 26) |
| 3. David Kime | Maintenance Worker | WG-8 PFT |
| 4. Bridgette Flanders | Student Career Experience Program | GS -7 (finished in spring) |

During 2001 we had three firefighters assigned to the refuge;

- | | | |
|--------------|------------------|----------|
| Billy Cumbow | Range Technician | GS-4 TFT |
| Kirk Jess | Range Technician | GS-4 TFT |
| Scott Burry | 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.

On July 26, Mel Nenneman started as refuge biologist at Valentine NWR. Mel was a Student Career Experience Program student in North Dakota and fills the biologist position that has been vacant since October 2001. Mel has an excellent background and keen interest in prairie and is a welcome addition to the staff.

SCEP Bridgette Flanders completed her master thesis at Colorado State University and went on to a wildlife biologist position at Sand Lake NWR in South Dakota.

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 during January, February, March, November and December during the time they were 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 \$15,000 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 in RONS projects in FY 2002 or any year for that matter. We did get MMS funding for the Dewey Lake Water Control Structure, \$44,230; a metal roof for the shop/office building at Hackberry Lake Headquarters \$49,975; and a big chunk of Refuge Roads money, \$451,799; for the Clear, Watts, and Duck Lake access roads and Little Hay Road.

6. **Safety**

Maintenance Worker Mark Purdy taught an ATV safety course to new refuge firefighters and the Blanding's turtle research team.. The course included videos, workbooks, and riding.

ROS Lindvall was involved in a minor vehicle accident that resulted in a tort claim of \$185 being filed against the refuge.

Monthly safety meetings were held for the Complex. Their content is listed in the Fort Niobrara NWR Annual Narrative.

7. **Other**

a. **Meetings**

Len McDaniel, refuge biologist retired, and Bridget Flanders, SCEP student, presented papers on grouse recruitment at Valentine NWR at the annual meeting of The Wildlife Society held in Bismark, ND.

ROS Lindvall and Biologist Neneman attended the joint meeting of the Nebraska Chapter of TWS, Society for Range Management, and Grazing Lands Coalition held in Lexington. The meeting highlighted cooperative efforts of private land owners, government agencies, and non-profits working together for wildlife conservation.

b. **Training**

ROS Lindvall completed IT Security, and Charge Card Training.

Maintenance Worker Kime and ROS Lindvall completed required fire refresher training

Maintenance Worker Kime and ROS Lindvall completed the fall LE Refresher held in Scottsbluff, NE and the Annual Refresher held in Marrana, AZ.

F. HABITAT MANAGEMENT

1. **General**

The 72,272 acre Valentine NWR lies at the heart of the Nebraska Sandhills. These grass-stabilized sand dunes provide some of the best native mixed- and tallgrass prairie remaining in the U. S. The refuge contains rolling, vegetated sand dunes and interdunal valleys that characterize the Sandhills region. Shallow lakes and wetlands are interspersed throughout the valleys, grading into subirrigated meadows. Sandhills and choppy sandhills range cover about 49,000 acres. Native grasses provide the dominant vegetation cover, although small areas have been invaded by Kentucky bluegrass and smooth brome. Other exotic plants of concern include small areas of leafy spurge, Canada thistle, and spotted knapweed. Grassland management is accomplished using permittee grazing and haying, prescribed fire, rest, and weed control.

Figure F1. Wind caused blowout in choppy range site.



2. **Wetlands**

There are 37 major wetland/lake areas on Valentine NWR that comprise about 13,000 acres. Lake elevation has been recorded at seven refuge lakes since 1988, and readings from Aug 2002 indicate that lake levels are down across the refuge when compared to fall (Aug-Sept) averages and yearly averages (Table F 2). At Watts and Pelican lakes, the water was away from the control structure 30-40 m, leaving exposed mudflat and emergent vegetation between the water gauge and the lake.

learDeweyHackberryPelicanWattsWhitewaterWillowTable F2. Lake elevations on Valentine NWR in 2002.

<u>Lake</u>	<u>Aug 2002</u>	<u>Fall Average 1988-2002</u>	<u>Lake Elevation 1988-2002</u>
Clear	2914.42	2916.46	2917.29
Dewey	2922.60	2923.61	2923.91
Hackberry	2922.74	2924.77	2924.84
Pelican	2943.3	2942.57	2942.76
Watts	2920.74	2923.53	2923.92
Whitewater	2927.24	2927.64	2928.24
Willow	2909.27	2913.78	2914.84

Figure F1. Watts Lake, low water levels due to drought.



There are 32 ground water monitoring wells located on and adjacent to Valentine NWR. These wells were established in the 1950's by the USDI-Geological Survey, and have been monitored twice annually by refuge staff since 1970. In 2002, only fall monitoring was completed (Table F 2). Groundwater levels in 2002 were an average of 1.4 feet lower than the fall average levels measured from 1970-2002.

Table F 2. USGS groundwater monitoring well readings for 2002, and average values from 1970-2002. No data were available for spring 2002. Data are groundwater elevation above sea level (ft), except for wells 17, 31, and 35; baseline elevations of these wells are unknown. For these wells, measured depth to groundwater was subtracted from 100 ft as an index of groundwater elevation.

<u>Well No.</u>	<u>Well Location</u>	<u>Fall 2002</u>	<u>Spring Average</u>	<u>Fall Average</u>
1	N. East Long	2870.83	2874.32	2873.37
2	SE Corner S. Marsh Lake	N.A.	2894.60	2893.33
3	SE Corner Pony Lake	N.A.	2899.47	2897.87
4	SE Cow Lake	2917.39	2919.22	2918.61
5	Calf Camp & Hwy 83	2892.95	2896.42	2895.23
6	Calf Camp West	2912.23	2915.44	2913.77
7	Little Hay West	2915.14	2916.07	2916.09
8	Little Hay & 83	2896.38	2899.45	2898.38
10	W. Pony & 83	2921.01	2922.86	2922.67
13	S. Willow Lake	2915.95	2917.28	2917.26
14	E. McKeel Lake	2918.17	2920.07	2919.16
15	S. East Sweetwater Lake	2923.87	2925.12	2924.71
16	SE Trout Lake	2896.87	2899.02	2898.83
17	E. Crowe Headquarters	94.9	95.27	95.11
18	NE old Harse place	N.A.	2891.7	2890.61
20	S Watts Lake	2923.86	2924.75	2924.23
21	E. Pony Pasture	2924.74	2924.97	2924.56
22	Hackberry-Dewey Canal	2922.49	2923.70	2925.21
23	Badger Bay	2922.99	2923.69	2923.86
25	E. Pelican Lake	2942.42	2943.78	2943.43
26	E. West Long Lake	2963.08	2965.33	2965.34
27	W. Recreation area, Dad's Lake	2954.39	2957.673	2956.61
29	NW Pelican Lake	2948.69	2948.277	2947.42
30	S. Dewey Marsh	2938.64	2940.577	2939.50
31	W. Dewey Marsh	97.6	98.34815	98.61
32	N. Pelican Lake	2939.65	2941.567	2941.03

33	NW West Long	2977.3	2980.57	2979.88
34	83 & W. King Flat	2922.89	2924.04	2923.95
35	SE 21 Lake	94.2	96.17333	95.52
36	W. Sweetwater & 83	2926.47	2927.167	2926.51
38	SE West Twin	2918.24	2920.61	2920.08
39	WS Hassle place	93	94.48696	94.10

5. Grasslands

The native prairie on Valentine NWR was recognized in 1979 with the designation of the refuge as a Registered National Landmark. Four range sites are recognized within the refuge boundaries, each contributing to the diversity of the grassland. Wetland range sites are characterized by prairie cordgrass, blue-joint reed grass, sedges, goldenrods, saw-toothed sunflowers, and willows. The threatened western prairie-fringed orchid also is also found in some of these wetland range sites.

Sub-irrigated range sites are located where the water table is near the soil surface. These areas support grasses more characteristic of the tallgrass prairie. Dominant species found in these areas include switchgrass, Indian grass, and big bluestem. Many of our problem plant species occur in these sub-irrigated range sites. Kentucky bluegrass, smooth brome, leafy spurge, and Canada thistle are all most prevalent here.

Sand range and low sand range sites are on lower and gently sloping hills, and are covered with native cool and warm season grasses characteristic of the mixed-grass prairie. Needle and thread, porcupine, June, western wheat, prairie sandreed, sand bluestem, sand lovegrass, little bluestem, and switch grass are prevalent on these sites. Many forbs are also found here at varying abundance and visibility depending on climatic conditions.

Choppy range sites are the high dunes that gave the Sandhills their name. These hills are generally vegetated, but may be subjected to wind erosion resulting in a blowout. These blowouts are habitat for blowout grass and the endangered blowout penstemon. Predominant grasses in the “choppies” are blue grama, sand bluestem, prairie sandreed, sand lovegrass, sandhills muhly, and little bluestem.

Grassland management goals are to preserve, restore, and enhance the ecological diversity of indigenous flora of the Sandhills prairie. Management to meet this goal is accomplished through disturbance with grazing, haying, and fire, and rest. Approximate acreages allotted for each treatment in 2002 were: rest 37,000 acres, spring grazing treatment 3,500 acres, winter 1,800 acres, short duration grazing 17,000 acres, hay 800 acres, and prescribed fire 500 acres.

Wildfires in the fall of 2000 continued to have an impact on refuge grasslands, and vegetation response in these areas has undoubtedly been slowed by the drought conditions experienced during the year. Vegetation monitoring relating to areas affected by wildfires was conducted in late fall 2002, and the report can be found in F. 9.

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. In 2002 there were seven permittees in the program. All have had permits for many years. Rancher Dick Ballard notified the refuge that he was selling his cows and that 2002 would be his last year as a permittee. Grazing rates were reduced to compensate permittees for the added expense of moving cattle for short duration grazing.

At the request of several permittees, we had a group meeting at sign up. The ranchers expressed concerns about increasing fees, going to a bid system, low payment in lieu of taxes, low wildlife numbers on the refuge compared to private land, refuge fire fighting abilities, and lack of sufficient grazing. All did however sign up.

Grazing fees for 2002 were:

spring grazing treatment	\$15.07/AUM
short-duration grazing	
1 day in unit	\$7.74/AUM
2 days in unit	\$13.24AUM
3 days in unit	\$15.07/AUM
4 days in unit	\$15.80/AUM
5 days in unit	\$16.16/AUM
6 days in unit	\$16.53/AUM
7 days in unit	\$16.90/AUM
8 or more days	\$18.36/AUM
in unit	
fall	\$18.36/AUM
winter	\$18.36/AUM

The full rate of \$18.36 is an increase of \$1.00 per AUM (the maximum increase permitted per year by policy) from the 2001 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 2002 was \$20.60/AUM.

Permittees also had their grazing bills reduced for improvements and repairs to

wells, fence, tanks and other facilities needed for the program. In 2002, \$39,935 was spent on improvements and deducted from final billings. Several fence replacement projects were not completed and may be done in 2003 using 2002 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 seven 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 2002 grazing season will be about \$31,765. This total does not include the value of the refuge share of hay or fees for winter grazing which was not completed at the time this report was written..

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 F7.

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 over graze 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 2002, 22 habitat units totaling 3,848 acres received a spring grazing treatment and included some areas that were latter hayed. Some meadows that burned in the wildfires of 2000 were given a spring grazing treatment in 2002. . This was done to control Kentucky bluegrass which grows well in the spring following a fall burn. The droughts of 2001 and 2002, plus the fire of 2000 all combined to stimulate a tremendous bloom of sweet clover in meadow areas. This greatly reduced the usual benefits of spring grazing treatments.

- 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 2002, three habitat units totaling 710 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 2002, 64 habitat units totaling 16,492 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, as was the case in 2002, regrowth is less, especially in those units grazed in late July or August.
- 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 2002, 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 2002 that will be given a spring grazing treatment in 2003. One unit was fall grazed after being hayed. This adds fertilizer to the soil and eventually quality and quantity to the hay harvested. In 2002, five habitat units totaling 1,017 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. 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 2002, nine habitat units totaling 1,734 acres were winter grazed.

- g. **Fire**
 Prescribed fire (P) and natural or wildland fire (N) are discussed in the fire section. In 2002 we prescribe burned nine units for a total of 640 acres. There were seven wildfires on the refuge in 2002 that burned 43 acres.

Table F 7 2002 HABITAT MANAGEMENT SUMMARY

<u>Treatment</u>		<u>units</u>	<u>acres</u>	<u>AUMs</u>
<u>Rest</u>	rest(R)	224	38,262	-
<u>Spring</u>	spring grazing treatment SGT	22	3,848	1,351
	early spring short duration			
	ES-SD 1-6 days	3	710	102
	ES-SD 7-9 days	0	-	-
	subtotal	3	710	
	102			
<u>Summer</u>	short duration summer			
	SD-S 1-3 days	26	4,817	717
	SD-S 4-7 days	36	10,107	1,581
	SD-S 8-14 days	2	1,568	203
	summer S 15-27 days	0	-	-
	subtotal	64	16,492	2,501
<u>Fall</u>	fall F	5	1,017	389
<u>Winter</u>	(W)	9	1,734	
<u>Hayed (H)</u>		16	885	-
<u>Fire</u>	prescribed fire P	9	640	
	natural fire N	7	43	

**note: some habitat units received double treatment, primarily hayed units that we also SGT or F or R units that had N or P fires

8. **Haying**

About 885 acres of sandy, sub-irrigated, and wetland range sites were mowed and yielded 780ns of hay. All or part of 16 habitat units were mowed and hayed. Hay production was very low due to the drought.

The method of charging for hay was changed in 2001. Now 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 \$18.36/AUM. 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. This year the permittee putting up the share hay requested that the split on the hay be increased as much of the hay put up was rushes. Ft. Niobrara did not want any rushes, only grass hay. The permittee was given 3 bales of rushes for each bale of grass delivered to Ft. Niobrara. One hundred and twenty six large bales of grass hay and 225 small square bales of hay were delivered to Ft. 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 cord grasses. 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. Very few orchids were found due to the drought.

9. **Fire Management**

Personnel: Six seasonals were hired to support prescribed and wildfire activities. Those individuals were Ryan and Billy Cumbow, Kirk Jess, Lee Jeffers, Scott Burry and Leonard “Jake” Jakubowski. The last two were new employees. Jeff Dion was promoted from a GS-6 to a GS-7 Fire Program Technician. Tim Klukas transferred to Yellowstone National Park in August and is now the Prescribed Fire Specialist for the Park. The Refuge is in the process of filling the FMO and the career seasonal Engine Foreman position.

Training: Fire crew personnel attended several courses to increase their qualification levels to RXB2, RXI2, Single Resource, Engine Boss, and ICT4. New fire crew members worked on training to reach FFT1 certification. One session of basic firefighter, S130/S190, training was administered to local volunteer fire departments to train approximately 20 fire persons. The training sessions was held in Valentine.

Prescribed Fire Activity: Seven prescribed fire were conducted on the Valentine NWR. The total acres burned under prescription was 608. There were only three prescribed fires conducted on Ft. Niobrara NWR totaling 99 acres. The fire staff completed on mechanical hazard fuels reduction project on the Valentine NWR with the assistance of the severity crews that were brought in this year.

The fire crew and colateral staff provided support to Lacreek NWR during the spring and fall burn seasons. Refuge firefighters were also detailed to Kansas to help Quivira NWR complete prescribed fires. Resources from Huron WMD, Balcones NWR RX burn module, Lower Brule BIA, Chadron NF and Black Hills NF, assisted LaCreek NWR, Crescent Lake 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, Valentine and Fort Niobrara biologist evaluated monitoring techniques to be utilized for first order fire effects. This process is still on going hopefully the Refuge monitoring plan will be completed this winter. Prescribed fire was used to reduce eastern red cedar, control smooth brome and cheat grass, and invigorate native prairie.

Wildfire Activity: Two engine crews were sent to Eagle, CO and one to Saguache, CO for severity. One engine crew was sent on assignment to a fire near Glenwood Springs. Two Engines were sent to the Horse Looking fire near St. Francis, SD along with an engine from LaCreek NWR.

There were 21 fires that occurred on the Refuge burning a total 81.1 acres. The Refuge had 26 mutual aid assists totaling 2,978.8 acres.

This year the Refuge submitted a severity request for the months of August and September which was approved. During severity the Refuge received assistance from many different Refuges. Firefighters assigned to the Refuge during severity are as follows:

Bill Waln acting FMO, QUR; Bruce Winter acting FMO, RBR; Todd Schmidt ENGB, QUR; T.J. Rockenbach FFT2, QUR; Brice Krohn ENGB(t), RBR; T.J. Cooper ENGB, FLR; Bill Stahl FFT2, RBR; Aaron Ball FFT2, FLR; Brian Winters ENGB, BOR; Laura Lake FFT2, BOR; Amy Saylor FFT2, BOR; Don Lantz ENGB, BNR; Eric Earhart ENGB(t), BNR; Blake Knisley FFT2, BNR; Mark Parker ENGB, CCR; Sue Grace FFT2, R4R; Sam Vanourney FFT2, RBR; Tim Keller ENGB, QUR; Jeff Dunlap FFT2, QUR; Trevor Weston FFT2, RBR; Gary Lindsay ENGB, DVR; Jeff Meadows FFT2, DVR; Rick Litzinger FFT2, DVR; Shane Martin ENGB, DLR; Jared Ross FFT2, DLR; Josh

Martin FFT2,DLR;Brice Krohn ENGB, RBR;T.J. Rockenbach FFT2, QUR;Bill Stahl FFT2, RBR; Kevin Beck ENGB, NBR; Amy Wilson FFT2, NBR; Lester Peak FFT2, AD; Rick Heinrich ENGB, Spearfish fish hatchery;John Meister ENGB, SHR;Tracy Gingrich FFT2, MZR; Jennifer Brown FFT2, SMR;Todd Schmidt administration, QUR

During severity Refuge Fire staff and severity crews responded to 34 fires, 9 of these were on Refuge and 25 were mutual aid assists. No fires exceeded initial attack capabilities due to the response times and firefighter proficiency.

Special Events: FPT gave Valentine 7th and 8th grade classes a field trip presentation on Rangeland fire ecology. Jeff Dion and Chuck Melvin attended the Ainsworth Fire prevention day held at the Ainsworth school. They gave a presentation on wild land fire and prescribed fire to more than 400 students. The feed back received from the teachers and the Ainsworth Fire Dept. was that presentation was very informative and that the Refuge did a very good job. Several fire prevention items (rulers, pens, bandannas, key chains, stickers, magnets,) were given away. The Kids enjoyed putting on the fire packs and crawling into fire shelters.

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 membership with the first two associations. The FPT was elected treasurer and secretary for the Cherry County Mutual Aid Association.

Table F 9a. Prescribed Fire Activity for 2001
