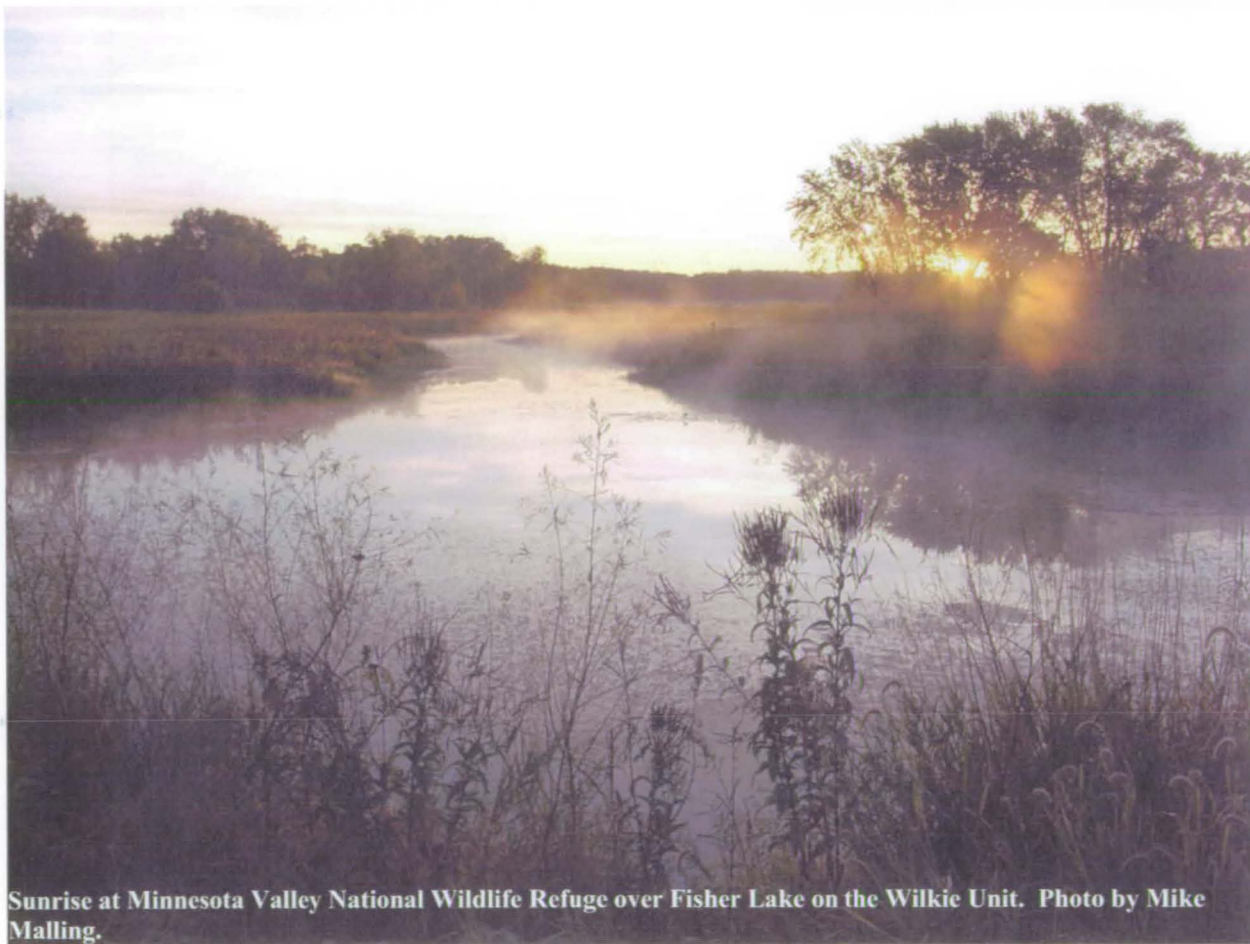




## Minnesota Valley National Wildlife Refuge



Bloomington, Minnesota  
Fiscal Year 2003



Sunrise at Minnesota Valley National Wildlife Refuge over Fisher Lake on the Wilkie Unit. Photo by Mike Malling.

Rick Schuff 4/2/04  
Refuge Manager Date

James T. Flach 4-30-04  
Refuge Supervisor Date

Nita M. Fuld 5.5.2004  
Regional Chief, NWRS Date

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## Introduction

The River, specifically, the Minnesota River (River), has a story to tell and because she has been part of the National Wildlife Refuge System since 1976, listeners will always abound. Her story meanders through time carving out a richly diverse cultural, social, economic, ecological and biological history. Luckily for her, a group of concerned and wizened citizens were in tune to her rhythms and through their efforts preserved thousands of acres of the Lower Minnesota River Valley. Their energy, foresight, and hard work resulted in the creation of the Minnesota Valley National Wildlife Refuge (Refuge) in 1976.

For future generations, the citizenry left behind a myriad of diverse lands for the people to explore and enjoy in the Minneapolis and St. Paul metropolitan area. The Refuge Visitor Center is located in Bloomington and is a short distance from the confluence of the Minnesota and Mississippi rivers. The Visitor Center is ideal for orienting oneself to the Refuge which is divided into eight noncontiguous units. The authorized Refuge boundary encompasses nearly 14,000 acres and currently extends in a linear direction for 34 miles along the Minnesota River from Bloomington to Jordan. In addition, the Refuge manages a fourteen-county Wetland Management District (WMD) from Chisago County in the north to Blue Earth County in the south. Within this district are Waterfowl Production Areas (WPA) and habitat easements as well as Farmers Home Administration easements.

The Minnesota River's flood plain includes marshes, wetlands, seeps, and lakes. Here one finds an array of wetland plants such as water lilies, duckweed, pond weed, sedges, cattail, bulrushes, all of which provide habitat for waterfowl, resident, and migrating songbirds. The River itself is often lined with cottonwood, silver maple, ash, and willow. Bur, white, and red oak, elm, and ash claim ownership to her hillsides with dogwood, chokecherry, and other shrubs lining her understory. The coveted morel mushroom lies in wait for those who seek to discover it.

The bluffs overlooking the river are rich in prairies and oak savannah which provide food and habitat for nesting ducks, wild turkeys, upland birds and a variety of songbirds. In spring and summer, the bluffs are carpeted in pasque flowers, blue-eyed grass, prairie larkspur, prairie smoke, beard's tongue and blazing star *Liatris*, Indian grass, big bluestem, and dropseed. Fall and early winter turn the grasses into a canvas of copper tones. In addition to the floral jewels of the Refuge, the diversity of birding opportunities adds to its richness. Eagle populations continue to increase on the Refuge and can be seen quite frequently along the River. White pelicans, tundra swans, and waterfowl flock to the flood plain lakes. The hillsides are dotted with migrating songbirds and the sighting of the prothonotary and Tennessee warblers are coveted by the serious birders wanting to add them to their list.

The Refuge staff knows that continued stewardship of the River and surrounding lands is an unequivocal need. The River's story needs to be told again and again, for it is the intimacy of the experience which serves to create the stewardship. Refuge staff led canoe trips, birding trips, photo blinds, waterfowl hunting opportunities, and stories of her culture and history, all bring the River to the people. It is this legacy, started with a citizen group in the early 1970's, which the U.S. Fish and Wildlife Service (Service) wishes to preserve into the next century.



# **Fiscal Year 2003 Highlights**

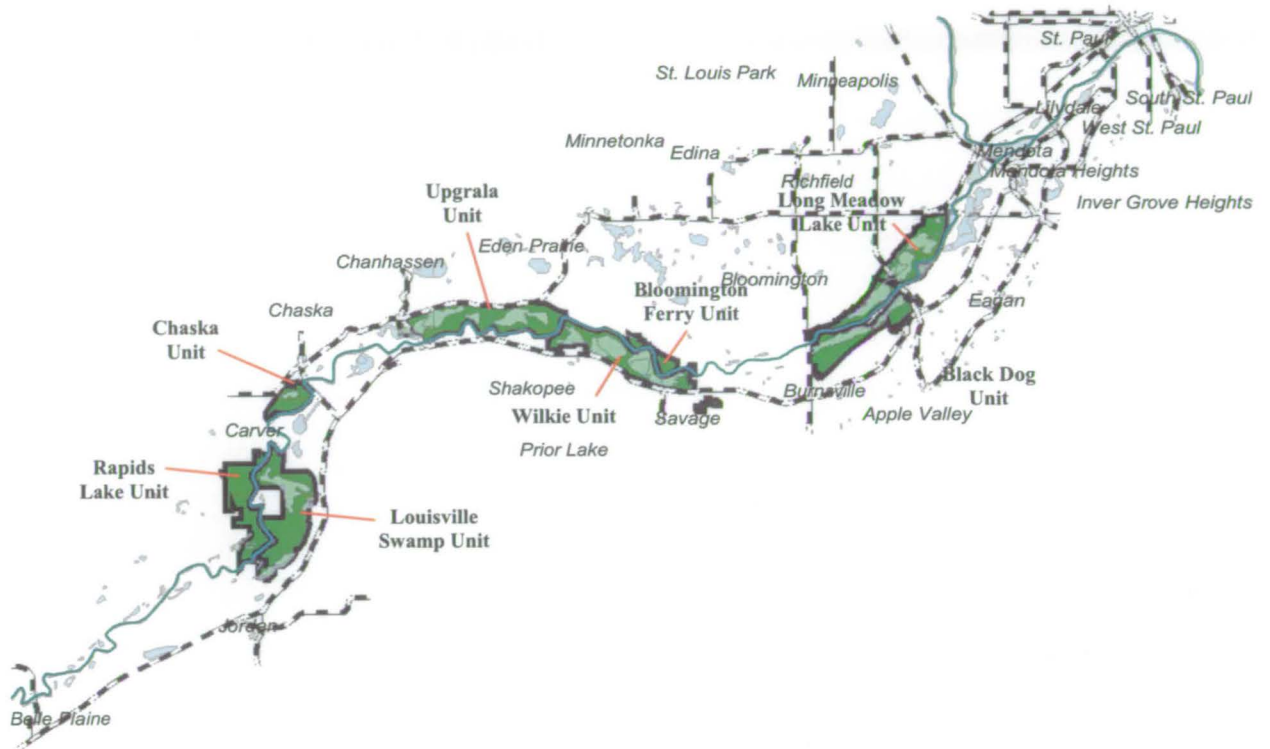
## **At**

### **Minnesota Valley National Wildlife Refuge**

- The Refuge strengthened its biological programs in Fiscal Year 2003. In particular, we implemented a wetland health monitoring program, participated in national amphibian surveys, and continued to support and initiate Refuge-related research. (1.a-b.)
- A rare sighting of a common moorhen occurred at the Old Cedar Avenue boardwalk. In addition four old squaws were found on Pond C. (1.a.)
- Nearly 3,000 trees were planted by Refuge staff and Scott County Sentenced-to-Serve crews on the Louisville Swamp Unit. (2.c.)
- The plant and animal diversity of the Refuge's managed wetlands were excellent due to one of the most successful water level management seasons on record. (3.a.)
- A total of 19 prescribed burns encompassing 629 acres were achieved this year on Refuge managed lands. There were also 21 wildfires recorded this year which burned a total of 102 acres. (3.f.)
- Refuge staff exceeded their quota by banding more than 100 wood ducks. (4.a.)
- Refuge staff hosted two events celebrating the Centennial of the National Wildlife Refuge System. (7.a.)
- The Blufftop Bookshop experienced a significant increase in sales achieving \$20,000 in revenue. (7.a.)
- The Volunteers contributed 15,300 hours to the Refuge. (8.b.)
- New maintenance and repair projects were initiated during the year. They include: Roof and door replacement on the Visitor Center, a new Refuge maintenance facility, and a design for a new residence on the Rapids Lake Unit.

**U.S. Fish and Wildlife Service**

**Minnesota Valley National Wildlife Refuge**  
**Authorized Boundaries**



0 2.5 5 10 15 20 Miles

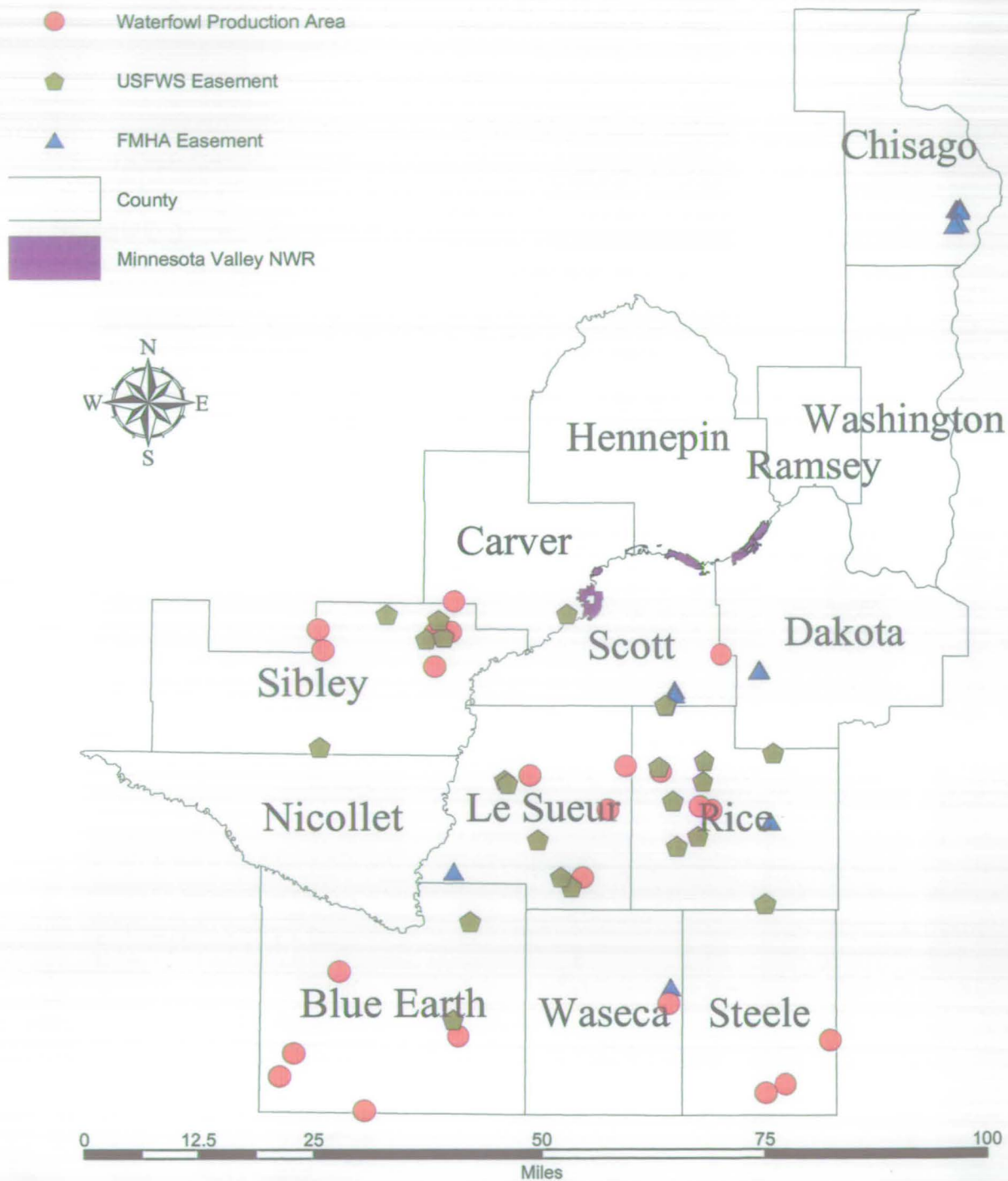
**Legend**

- Authorized Refuge Boundaries
- Lakes/Wetlands
- Minnesota River
- Highways



Created by: Chris Trosen  
Source: GIS 8.3  
17 March 2004

# Minnesota Valley Wetland Management District Waterfowl Production Areas and Easements



Created by: Chris Trosen  
Source: GIS 8.3  
17 March 2004



# Climate

No extreme weather conditions were observed this year, aside from the below average accumulation of annual precipitation (Figure 1.). Overall and daily average high and low temperatures are as follows:

- Average High Temperature (°F) ..... 55.10
- Average Low Temperature (°F)..... 37.6
- Highest Temperature (recorded on 6/30/03 and 7/06/03) (°F) ..... 97
- Lowest Temperature (recorded on 3/3/03) (°F) ..... -14

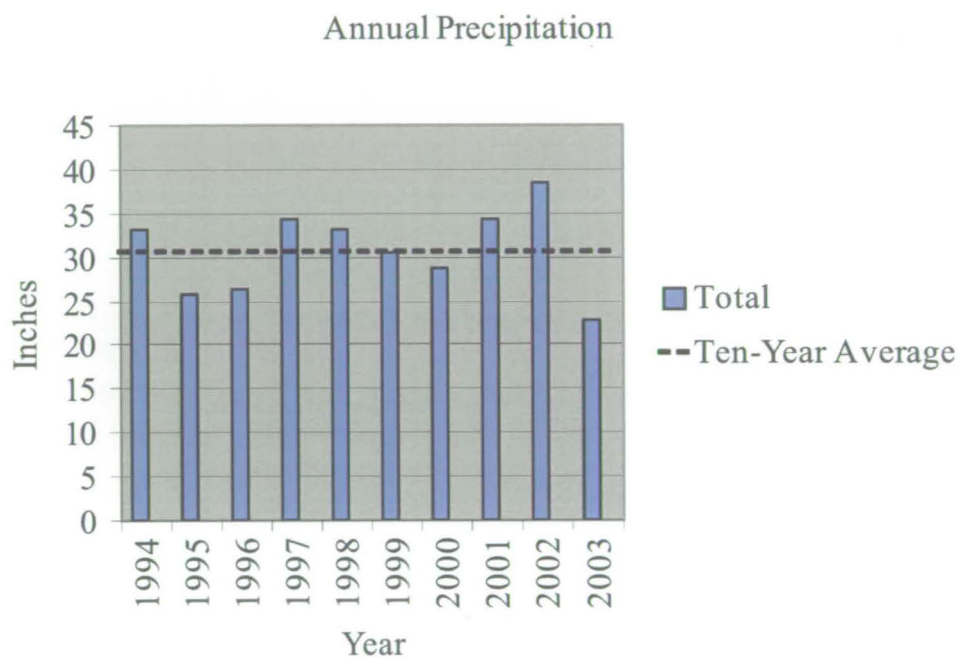


Figure 1. Estimated annual precipitation and ten-year average at the National Weather Service in Chanhassen, Minnesota.





## Monitoring and Studies

### 1.a. Surveys and Censuses

#### Significant Wildlife Occurrences

##### Raptors

Three pairs of bald eagles continue to nest on the Long Meadow Lake, Louisville Swamp and Wilkie Units of the Refuge. The Long Meadow Lake pair utilized a nesting site constructed in 2002 near the Visitor Center and fledged one eaglet. The bald eagle nesting pair at the Louisville Swamp Unit used a nest located near the State Corridor Trail along the Minnesota River and they were also successful with two young. The Wilkie Unit nesting pair was also active this year with three young in this nest. Other raptors nesting on the Refuge included a pair of broad-winged hawks which relocated from a nesting site near the Black Dog Unit in 2002 to a tree located within the Refuge boundary in 2003.

Peregrine falcons also utilized the hacking box located on the smoke stack of the Black Dog Power Plant. Although four young hatched, they were later found dead in the box. The cause of death for these four young falcons is currently being investigated. Raptors usually found on the Refuge during the nesting season are red-tailed hawks, barred owls, kestrels, and northern harriers. Two unusual sightings included a northern saw-whet owl near the Bass Ponds in January and two ospreys on Hogback Marsh in April.

##### Colonial Nesting Birds

The Blue Lake rookery on the Wilkie Unit has experienced many changes over the years in both production and species composition. The estimated production of colonial nesting birds in 2003 was 308 nestlings. This level represents an increase over the 2002 estimate, but is still lower than the numbers seen in the mid to late 1990's (Table 1). This data also correlates well with the changes observed by staff that has visited the colony for the last seven years. They have noticed that the colony seems to be getting quieter and there is minimal sign of birds using the surrounding area (evident by the amount of whitewash on adjacent vegetation). Although these observations are not quantitative, coupling them with the data shows that the nestling population may be leveling off. This change in population could be the result of declines in food availability. We also could be seeing the effects of the 1998 die-off (over 500 nestlings died in a late spring wind storm). In addition, during the past couple of years the number of usable nests has declined



Picture 4. Bald Eagle over the Refuge.  
Picture by volunteer Scott Sharkey.

considerably (1017 in 2001 versus 446 in 2003). This may be attributed to high winds that have blown down some of the more fragile and older nests.

Table 2. Estimated nestling production of all species of colonial birds using the Blue Lake Rookery in the Wilkie Unit of Minnesota Valley National Wildlife Refuge, 1997-2003.

Survey Year	Usable # of Nests	Percentage of Nests Used	Estimated # of Nestlings/Nest	Estimated # of Nests Used	Estimated Production
1997	654	42%	1.36	275	374
1998	776	51%	1.47	Unable to calculate**	277***
1999	610	55%	1.47	336	494
2000	800	45%	1.20	360	432
2001	1017	No Data*	No Data*	No Data*	No Data*
2002	552	32%	1.15	177	203
2003	446	56%	1.23	250	308

\*No access to colony due to prolonged flooding

\*\*A May wind storm caused the loss of many nests making it inappropriate to estimate nests used

\*\*\*High winds caused death of over 500 nestlings and made it difficult to estimate the population

Perhaps the most interesting changes are occurring in the species composition of the colony. In the past, great blue herons made up over 98% of the rookery. In the late 1990's, the colony also became home to great egrets, double-crested cormorants and black-crowned night-herons. The changes were accentuated in 2002 when population estimates were shown to have an equal ratio of great blue herons to great egrets. This year's data from the nestling survey suggests that 86% of the colony was occupied by great blue herons (Figure 2). Although only 14% of the nests were occupied by great egrets, there appeared to be a relatively large number of adults in and around Blue Lake. This was confirmed by a flyover count conducted by the Minnesota Department of Natural Resources (MnDNR) in July, which estimated 300-400 active great blue heron and 250-300 great egret nests. It is difficult to assess what factors may have attributed to the low ground count of egret nestlings. The egrets seemed to nest much later than normal which meant the nestlings were quite small when the survey was conducted. They may have been hidden by the nest and vegetation and missed during the survey.

The estimated production of great blue herons was 255 nestlings. Great egrets produced 49 nestlings and black-crowned night-herons produced four nestlings. There were no double-crested cormorants observed in the colony this year (Figure 3).

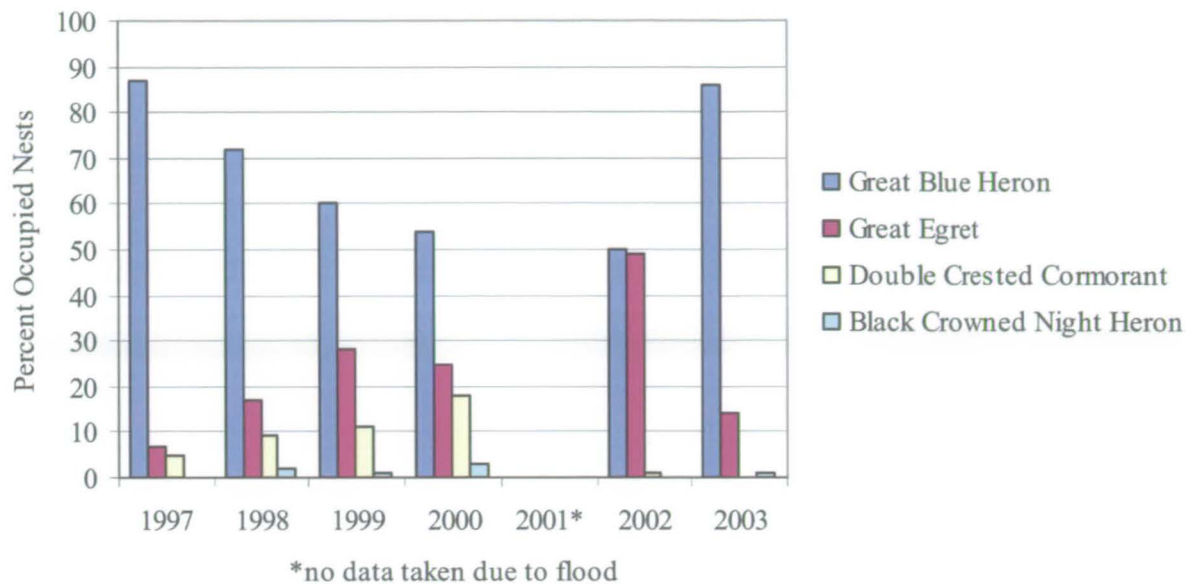


Figure 2. Percent of occupied nests used by each species of colonial bird on the Wilkie Unit of Minnesota Valley National Wildlife Refuge, 1997-2003.

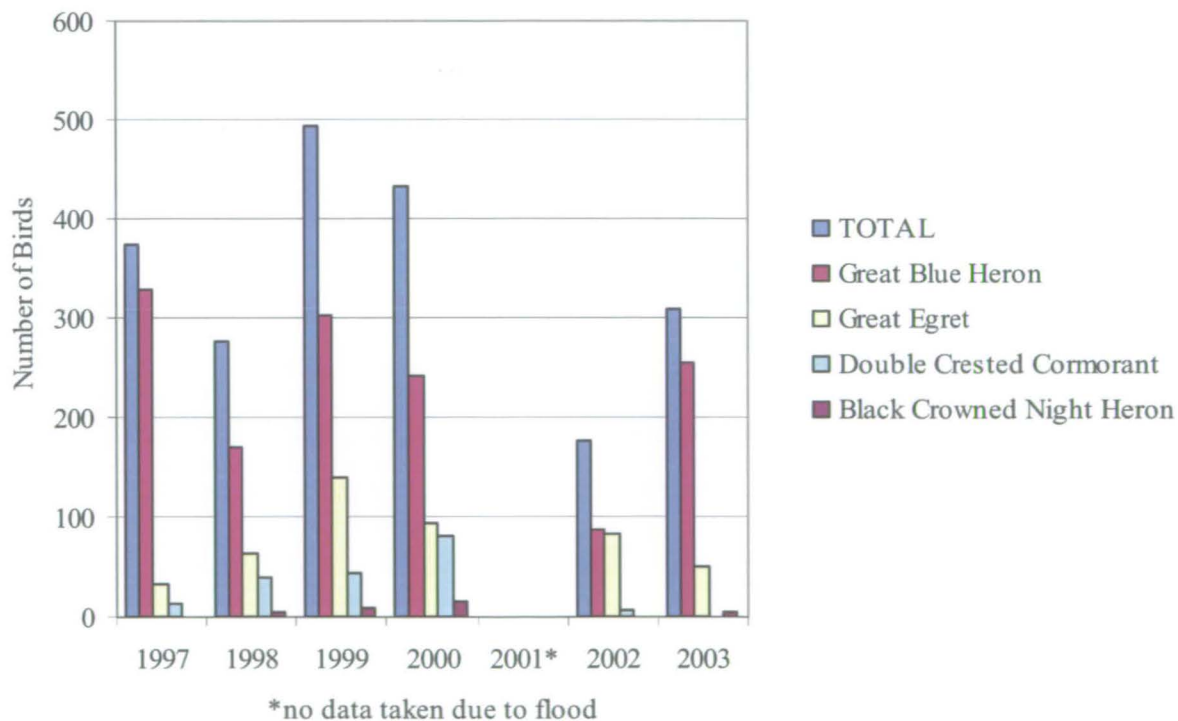


Figure 3. Total estimated individual populations of four colonial bird species and total population in the Blue Lake rookery on the Wilkie Unit of the Refuge, 1997-2003.



Due to population declines in metro area rookeries, Refuge and MnDNR staff are concerned. In some cases, birds are completely abandoning local colonies. We will continue to work with MnDNR staff to help determine why these changes may be occurring. In addition, ground count data and flyover information will be combined in 2004 to further document the population trend within the Blue Lake rookery.



**Picture 5. Wood duck pair. Photo by Volunteer Scott Sharkey.**

### **Waterfowl and Associated Species**

Waterfowl counts are based on monthly or biweekly sampling periods which occur during spring and fall migration. The results produce an index of species using specific areas of the Refuge sampled. The following is a summary of what was observed in the sampled areas, not of what occurred on the entire Refuge.

#### Fall 2002

Fall 2002 temperatures were below normal and many of the marshes were frozen by mid November.

The peak migration occurred the last week of October with 17 species being observed on the 29th and 30th. Waterfowl present included tundra swans, Canada geese, mallards, gadwalls, American wigeon, northern shoveler, northern pintail, wood ducks, redheads, canvasbacks, scaup, ring-necked ducks, common goldeneye, buffleheads, ruddy ducks, hooded mergansers, and American coots. As a comparison, only 13 species were observed during peak fall migration in 2001. Unusual sightings include four oldsquaws, which appeared on Pond C and a common loon that appeared on Long Meadow Lake on November 10.

#### Winter (December 2002 through February 2003)

Wintering waterfowl congregate near the warm waters of the Black Dog Power Plant. Within the last couple of years, however, there has been a decline in the numbers of ducks (mainly mallards) using this area. In January 2001 over 6,000 mallards were observed, but in 2002 only 518 mallards were counted. In 2003, only 368 ducks were observed. These lesser numbers can be attributed to the mild winters that allowed more open water to be available throughout the area including the nearby Minnesota River. In addition to the mallards, twenty-eight common mergansers were observed on Black Dog Lake in January 2003.

#### Spring 2003

Most Refuge marshes were open by April 1. Since there was little snow during the winter, no flooding occurred. Peak waterfowl migration occurred around April 17 when 12 species of waterfowl were using the Refuge. This includes over 1,000 blue-winged teal, plus several thousand mallards, green-winged teal, northern shovelers, scaup, and ring-necked ducks. Over 5,000 American coots were also observed at this time. Due to lower water conditions on Big Rice Lake (Upgrala Unit), over 150 shorebirds and 75 white pelicans were observed the last week of April. Although a few migratory species were seen during the first week of May, spring migration was basically over by early May.



### Summer 2003

Visibility for conducting waterfowl counts on Refuge marshes was poor this summer, due to the lack of spring flooding and the increased vegetation as a result of the water management program. Nesting Canada geese, mallards and wood ducks were observed, along with broods of American coots. Ruddy ducks were common on Refuge lakes and marshes.



**Picture 6. Least bittern. Photo by Volunteer Scott Sharkey.**

### **Marsh Birds**

The Refuge participated in testing the Standardized North American Marsh Bird Monitoring Protocols which were developed by Dr. Courtney J. Conway of the Arizona Cooperative Fish and Wildlife Research Unit. Twelve sites were established in the Long Meadow Lake Unit and were surveyed four times between June 5 and July 17. Callback results were collected for least bitterns, soras, Virginia rails, king rails, American bitterns, common moorhens and pied-billed grebes. Virginia Rails were the most common marsh bird detected. Seven birds found at five sites during the first visit, three birds during the second and third visits, and four birds at the fourth visit. Soras were not detected until the fourth survey (mid-July) with three birds being heard at two different sites. The only other birds to be observed were a pied-billed grebe and a least bittern at the Old Cedar Avenue boardwalk. Least bitterns are not seen very often using local marshes, however, low water conditions this year may have attracted them to the area. The boardwalk was a popular place for sighting Virginia rails, soras, and pied-billed grebes. In addition, a Refuge visitor also observed a common moorhen at

this site.

### **Mammals**

Muskrat hut and beaver lodge surveys were conducted in January and February to determine trends in the local muskrat population and to map the locations of beaver lodges on marshes located in the Wilkie Unit (Figure 4). Although Blue Lake muskrat hut numbers increased this year to 42, this is still well below the 132 seen in 1999-2003. These low numbers may be attributed to inconsistent water levels observed in the lake throughout the year.

The absence of spring flooding the past two years and successful draw downs have helped consolidate the bottom of Fisher Lake and have increased the distribution and diversity of emergent vegetation. The abundance of food and cover has attracted animals to the lake and hut numbers continue to increase. Many of the Refuge trappers note that Fisher Lake seems to have a higher number of muskrats than any of the Wilkie marshes. In fact, approximately 80% of the muskrats taken from the Refuge by trappers in 2003 were from Fisher Lake.

Water levels in Rice Lake have remained fairly consistent the last few years as have hut numbers. Emergent vegetation exists only on the outer ring of the lake with open water in the middle of the basin. Due to the limited habitat, huts are only interspersed in the outer ring of vegetation.

Continental Grain Marsh muskrat hut numbers increased slightly this year but still were only about half the number seen in each of the last five years. Although water levels remained low during the year, no major vegetation changes were observed. In 2004, more attention will be given to Continental Grain to help determine why muskrats are not using this area like they have in the past.

Large beaver lodges were noted on many Refuge wetlands and the persistent dam building activity compromised our water management program. Although counts were not made throughout the Refuge, three beaver lodges were observed in the Wilkie Unit and documented during the muskrat hut survey. Although there were some dams observed on Continental Grain, the only marsh with noticeable lodges was Rice Lake.

Cougars continue to be seen near the Long Meadow Lake and Wilkie Units. Although the sightings are difficult to verify, MnDNR biologists have confirmed cougars in the area in the past and it is probable that cougars do inhabit the Minnesota River Valley. Sightings of river otters continue to increase with most animals being observed near Long Meadow Lake (Old Cedar Avenue) and on the Wilkie Unit marshes.

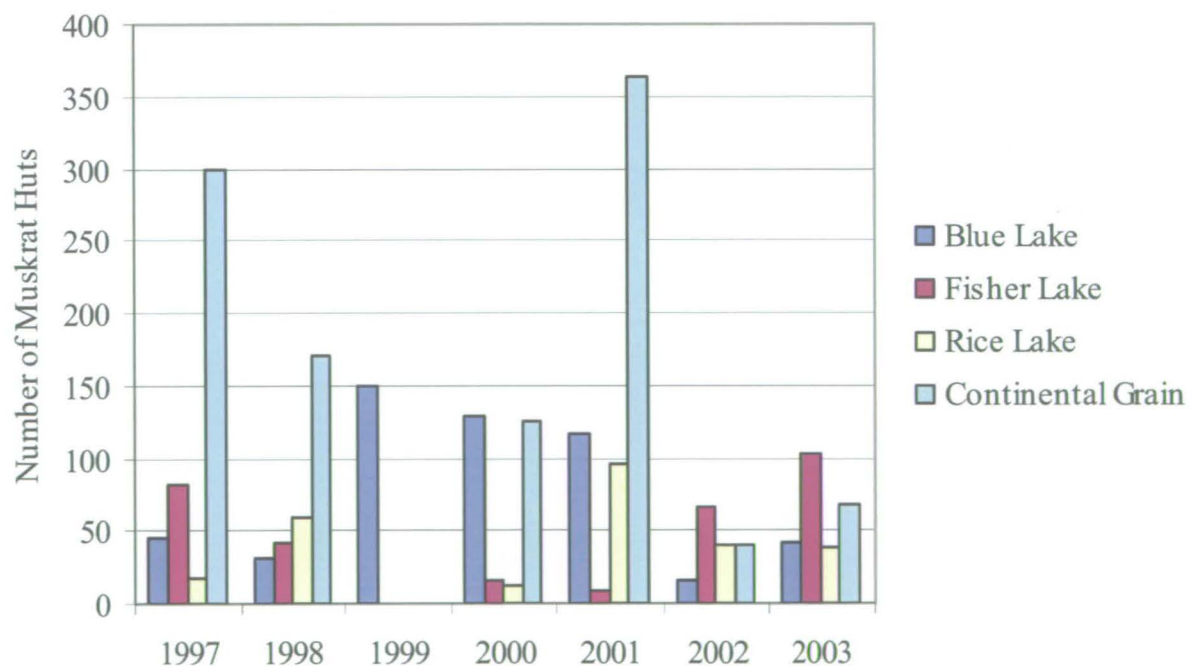


Figure 4. Number of muskrat huts observed on Wilkie Unit marshes, 1997-2003.

## Amphibians

The North American Amphibian Monitoring Program (NAAMP) frog calling survey is an international effort to track the health of frog populations in Canada and the United States. Although data was collected in the past, the Refuge routes were modified this year to fit the criteria of the NAAMP, as well as the Minnesota Frog and Toad Survey. The Refuge route consisted of ten wetland (breeding) sites which were visited three times annually (early spring, late spring and summer). Data was collected by listening for five minutes to identify calling frogs at each of the ten route stops utilizing the National Wildlife Federation 2003 Intensity Index (Table 2).

Table 2. Results of the 2003 Frog/Toad Call Survey at Minnesota Valley National Wildlife Refuge utilizing National Wildlife Federation 2003 Intensity Values

Site	Date														
	17 April 2003					29 May 2003					26 June 2003				
	Leopard Frog	Chorus Frog	Gray Treefrog	American Toad	Green Frog	Leopard Frog	Chorus Frog	Gray Treefrog	American Toad	Green Frog	Leopard Frog	Chorus Frog	Gray Treefrog	American Toad	Green Frog
Vernal Pool	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Peterson Pond	0	0	0	0	0	0	0	2	0	1	0	0	0	0	0
Big Bass Pond	2	0	0	0	0	0	0	3	0	1	0	0	1	0	0
Hog Back Marsh	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0
Kidder Marsh	0	2	0	0	0	0	0	0	3	1	0	0	0	0	0
Lyndale Pond	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Continental Grain	0	2	0	0	0	0	0	0	0	3	0	0	0	0	0
Fisher Pond	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0
Rice Lake State Pond	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0
Blue Lake	0	0	0	0	0	0	0	1	2	0	0	0	0	0	0

0= No frogs or toads can be heard calling

1 = Individuals can be counted; there is space between calls

2 = Calls of individuals can be distinguished but there is some overlapping of calls

3 = Full chorus, calls are constant, continuous and overlapping

Due to a cool spring, results of the April 17 survey revealed only the presence of chorus and northern leopard frogs. Chorus frogs, which are generally tolerant of development, were found in several locations.

Although leopard frogs are common in most Minnesota counties, they were only observed at one Refuge site. Since they are considered a grassland frog, it may be that the habitat surrounding our wetlands was too forested for this species.



By May 29, the temperatures increased and the gray treefrog and green frog, and summer calling American toad appeared in our survey. The gray treefrog is found statewide among woodland habitats such as Refuge floodplain forests. American toads inhabit a variety of areas and are widely-distributed. Green frogs, which are considered sensitive to lakeshore development, are usually the first species to disappear from lakes under development pressure. They were present at four of the ten survey areas. By the end of June most of the calling activity had subsided with only a few individual chorus frogs and gray treefrogs being heard.

### Habitat Monitoring

The Upgrala Unit contains one of the largest unbroken native prairie communities within the Refuge. Although the prairie community contains a valuable diversity of native species, leafy spurge is also abundant in this area. The native prairie community was prescribed burned in May 2002 for the first time in Refuge history. Preburn monitoring began in 2001 while post burn monitoring occurred in 2002 and 2003. The data summarized in Figure 5 suggests general changes that have occurred to the native and nonnative plant community in response to this prescribed burn.



Picture 7. Leopard frog. Photo by Volunteer Scott Sharkey.

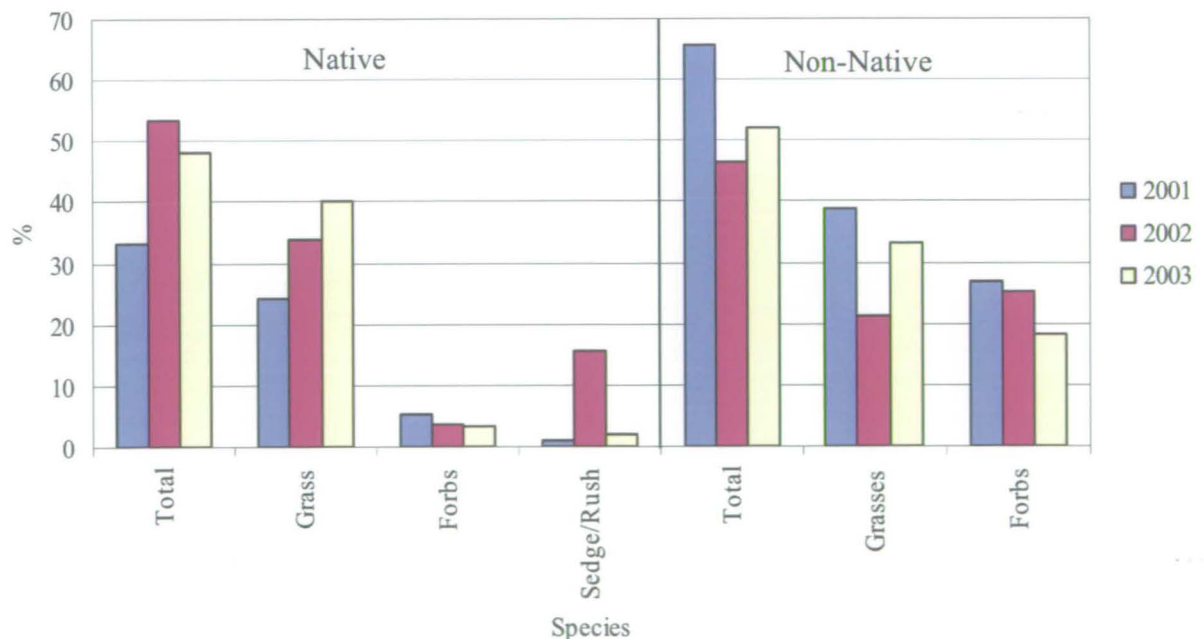


Figure 5. Percent Cover of Vegetative Species on the Upgrala Bluff Prairie, 2001-2003

Percent cover of native grasses increased considerably in 2002. Indian grass, side-oats grama, and prairie sand reed appeared to show the largest increases (Table 3). Although their densities appear to remain consistent between 2002 and 2003, the coverage of native grasses in general continued to increase with the addition of porcupine grass to the list of contributing species. These results were expected based on the theory that decreasing the density of the litter layer promotes both germination of seeds in the seed bank and rhizomatous action from fire tolerant species.

Nonnative grasses, mainly Kentucky bluegrass and smooth brome, decreased considerably in 2002. This most likely occurred due to the timing of the prescribed burn which stressed the nonnative cool-season species. In 2003, the cover of nonnative grasses did slightly increase but not to the level that was measured in the baseline data of 2001.

Changes in cover of native sedges/rushes also occurred on the Upgrala Bluff Prairie. In 2001, only 1% of the foliar cover was categorized as sedges/rushes. In 2002, the cover of slender flat-sedge alone jumped to 14.7%. This sedge is normally found on sandy, dry or moist prairies and hills, but likely flourished in 2002 as a response to prescribed fire. The timing of the prescribed fire in association with an abnormally wet summer is presumed to be contributing factors to the sudden increase in sedge production on this site. When more normal conditions were present in 2003, sedges/rushes declined back to a more realistic 2%.

Minimal change was observed in native forbs. It has been documented that fire improves production of leadplant. Our data shows that this was the case in 2003 one year after the prescribed burn. Stiff goldenrod was also positively affected by fire activity with a two fold increase from the baseline year in 2001. Stiff goldenrod remained unchanged from 2002 to 2003.

Table 3. Percent cover of herbaceous species found at the Upgrala Bluff Prairie, 2001-2003.

Scientific Name	Common Name	Native Yes=Y No=N	% Cover 2001	% Cover 2002	% Cover 2003
<i>Poa pratensis</i>	Blue grass	N	34.7	12.6	28.9
<i>Euphorbia esula</i>	Leafy spurge	N	21.7	14.8	11.4
<i>Bromis inermis</i>	Smooth brome	N	11.3	9.3	7.1
<i>Andropogon gerardii</i>	Big bluestem	Y	7.8	2.1	4.0
<i>Sorghastrum nutans</i>	Indian grass	Y	0	10.1	9.9
<i>Stipa spartea</i>	Porcupine grass	Y	6.5	4.6	10.0
<i>Bouteloua curtipendula</i>	Side-oats gramma	Y	0	2.9	2.0
<i>Dichanthelium oligosanthos</i>	Panic grass	Y	3.6	2.8	2.6
<i>Schizachyrium scoparium</i>	Little bluestem	Y	3.2	3.0	2.2
<i>Ambrosia psilostachya</i>	Western ragweed	N	1.3	5.1	3.4
<i>Amorpha canescens</i>	Leadplant	Y	1.3	1.0	1.6
<i>Equisetum hyemale</i>	Horsetail	Y	1.1	0.9	0.2
<i>Comandra umbellata</i>	Bastard toadflax	Y	0.8	0.2	1.1
<i>Cyperus lupululinus</i>	Slender flat-sedge	Y	0	14.7	1.3
<i>Calamovilfa longifolia</i>	Prairie sand reed	Y	0	2.4	2.1
<i>Elytrigia repens</i>	Quackgrass	N	0	1.8	0
<i>Juncus tenuis</i>	Slender rush	Y	0	1.7	1.4
<i>Elymus canadensis</i>	Canada wild rye	Y	0	1.0	1.6
<i>Physalis heterophylla</i>	Ground cherry	Y	0.6	2.0	1.4
<i>Solidago rigida</i>	Stiff goldenrod	Y	0.6	1.2	1.3
<i>Sporobolus cryptandrus</i>	Sand drop-seed	Y	0	0.4	1.8

Cover of nonnative forbs decreased slightly in 2002 and then continued to decline in 2003. Overall, leafy spurge cover was 21.7, 14.8, and 11.4% in 2001, 2002, and 2003, respectively. The decline in species abundance may have been attributed to a combination of factors involving the effects of prescribed fire, wet growing conditions in 2002, and the effect the biocontrol (*Apthona* sp.) had on target plants (Figure 6).

Plants found on the Upgrala Prairie with coverages less than 1% include:

- black-eyed susan
- red fescue
- Virginia creeper
- blue lettuce
- white and yellow sweetclover
- red cedar
- bush clover
- Canada tick-trefoil
- switch grass
- wormwood
- western yarrow
- false boneset
- purple prairie clover
- junegrass
- staghorn sumac
- wild prairie rose
- spiderwort (2 species)
- hopclover
- false buckwheat
- sunflower
- purple love grass
- prickly lettuce



- turtlehead
- hoary alyssum
- white sage
- lamb's quarters
- tall goldenrod

- sedge
- woolly bean
- yellow pigeon grass
- red clover and ox-eye

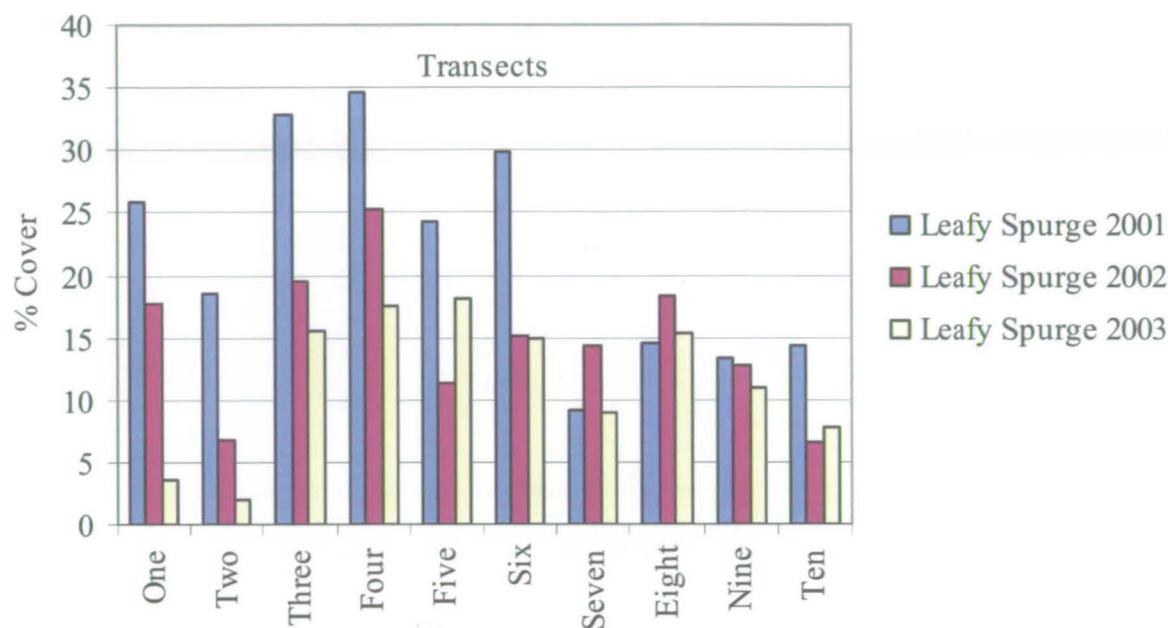


Figure 6. Percent cover of leafy spurge on the Upgrala Bluff Prairie, 2001-2003.

The Upgrala Bluff Prairie has been host to a successful population of leafy spurge biocontrol agents. The Minnesota Department of Agriculture monitored the insects in 2001 (baseline) and just after in the burn (2002) to see if there were any changes in the insect population. Although the data is still being analyzed, no adverse affects have been found on insect quantity and diversity throughout the study area. In fact, biocontrol agents *Apthona* sp. significantly increased in 2002 following the burn. The blackened ground may have increased soil temperature and caused the larvae to thrive in the favorable conditions. From what we can tell, the prescribed burn conducted on May 17, 2002 did not harm the spurge beetle population on the Upgrala Unit (Figure 7).

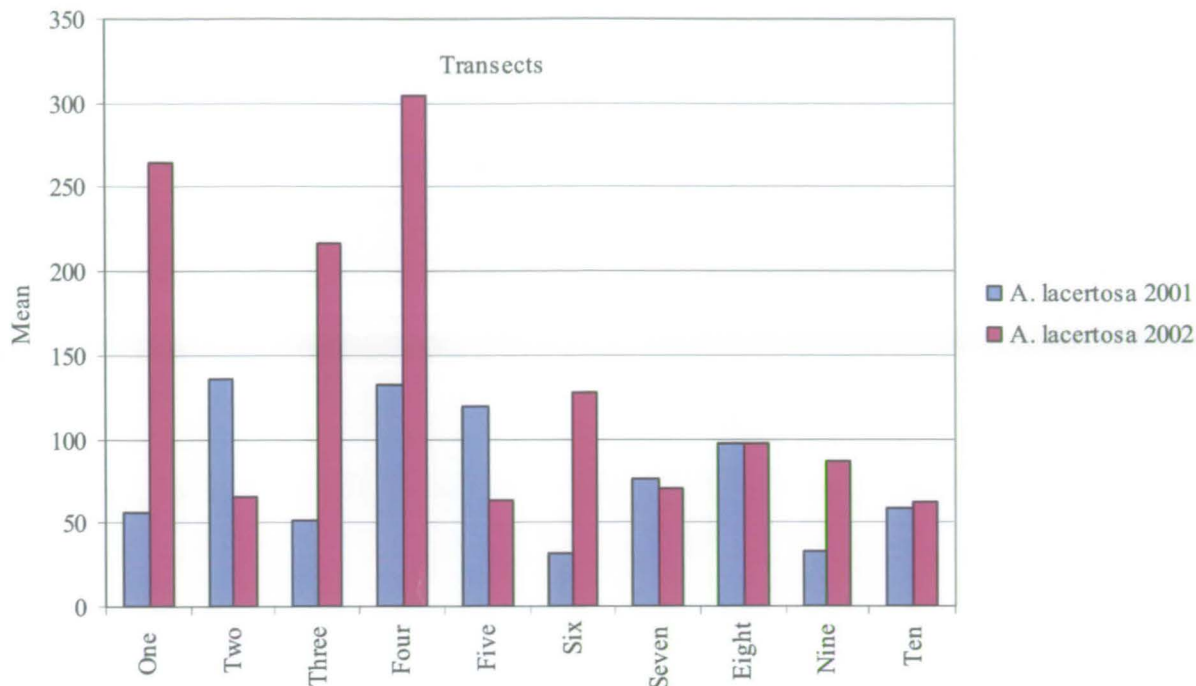


Figure 7. Mean population of leafy spurge insects, *Aphthona lacertosa*, at the Upgrala Bluff Prairie, 2001-2003.

Many variables may have attributed to the leafy spurge and biocontrol agent response to the prescribed burn. It appears that timing played a major role in the short term success. The leafy spurge plants were initially stressed by the prescribed fire followed by the explosion of insects inflicting further damage on this undesirable exotic species. Monitoring will continue to mark changing trends in both the vegetative and invertebrate communities in order to track any long term changes.

### Wetland Health Monitoring

The Refuge is located in a metropolitan area, so there are many concerns about water quality and the overall health of wetland communities. Since stormwater intake and increased development continues to threaten water quality, a monitoring protocol was initiated to evaluate trends in wetland health.

The Wetland Health Evaluation Program (WHEP) was developed locally by Dr. Judy



Picture 8. Jim Gonsocki and Lindsey Becker checking invertebrate bottle traps on Continental Grain Marsh. Photo by Vicki Sherry.

Helgen and Mark Gernes of the Minnesota Pollution Control Agency in cooperation with the Environmental Protection Agency. WHEP uses sampling methods and metrics to evaluate wetland health. The metrics are based on species diversity and species richness. It includes both vegetation and invertebrate Indexes of Biological Integrity (IBI) that were calibrated for use on depressional wetlands. Their work has found significant relationships between IBI scores and measures of water and sediment chemistry data. Each metric is evaluated based on the specimens identified and given a score of one, three or five points. The score for each metric is then combined to get a total score for the IBI. Table 4 illustrates the scoring range for each IBI, the corresponding quality rating, and the score in percent form.

The ratings (poor, moderate and excellent) are useful in describing the overall quality of the wetland. A wetland described as having poor quality would have minimal species richness and diversity. A wetland of excellent quality would have high diversity and species richness.

It is important to note that the IBI ratings for invertebrates and vegetation are slightly different. This is due, in part, to the number of metrics evaluated in each IBI (i.e. six for the invertebrate IBI and seven for the vegetation IBI). Converting IBI scores to percentages allows the sites to be compared within a given year or over a period of several years. It also helps determine if the scores are consistent.

Table 4. Interpretation of WHEP IBI Score, Quality Rating and Percent Score for 2003.

INVERTEBRATE IBI SCORE INTERPRETATION			VEGETATION IBI SCORE INTERPRETATION		
Scoring Range	Quality Rating	Percent Score	Scoring Range	Quality Rating	Percent Score
6 – 14	Poor	< 50%	7 - 15	Poor	< 46%
15 – 22	Moderate	50 – 76%	16 - 24	Moderate	46 – 71%
23 – 30	Excellent	> 76%	25 - 35	Excellent	> 71%

In 2003, WHEP was used on six Refuge wetlands including Continental Grain Marsh, Fisher Lake, Hogback Marsh, Kidder Marsh, Peterson Pond and Rapids Lake. The data summary for both invertebrates and vegetation is in Table 5.



Table 5. 2003 Wetland Health Metrics and Quality Scores for Six Refuge Wetlands.

	Cont. Grain Marsh	Fisher Lake	Hogback Marsh	Kidder Marsh	Peterson Pond	Rapids Lake
<b>Invertebrate Metric</b>						
# of Taxa	13	15	16	16	12	15
Site Score (Max. 30)	18	18	24	22	18	24
Quality Rating	Moderate	Moderate	Excellent	Moderate	Moderate	Excellent
Percent Score (%)	60	60	80	73	60	73
<b>Vegetation Metric</b>						
# of Plant Types	19	19	18	23	20	12
Site Score (Max. 35)	23	19	23	29	25	17
Quality Rating	Moderate	Moderate	Moderate	Excellent	Excellent	Moderate
Percent Score (%)	66	54	66	83	>71	49
Percent Score Difference (%)	6	6	14	10	11	24

During 2003, all the wetlands sampled rated moderate to excellent based on the invertebrate IBI. Invertebrate scores ranged from 18 to 24 points out of a maximum of 30 points. Two sites, Hogback Marsh and Rapids Lake, rated excellent for invertebrates and Kidder Marsh was only one point short from being rated excellent. The other sites were moderate, but all scores were over 60% which shows both good species diversity and richness.

The wetlands with the best quality rating each had the corixid proportion, mayfly-caddisfly, snail and total taxa metrics which scored the maximum of five points. The most abundant species present in these metrics is reflected in Table 6. Species identified included a small proportion of corixids (water boatman) in relation to all true bugs and beetles. The most common mayfly at the sites was in the family Caenidae, and the most abundant caddisfly was in the Leptoceridae family. Each site had four kinds of snails. Hogback had sixteen total taxa present with fifteen taxa occupying Rapids Lake. Kidder Marsh also had sixteen total taxa, but scored lower in the snail metric. Fisher Lake also had a high number of total taxa (15), but only scored high in one other metric which lowered the overall score.



Picture 10. A water scorpion (*Hemiptera*) found in some of the WHEP sites. Photo by Vicki Sherry.

All wetlands rated moderate to excellent based on the vegetative IBI. The scores ranged from 17 to 29 out of a maximum of 35 points. The best quality wetlands were Kidder Marsh and Peterson Pond, with Continental Grain Marsh and Hogback Marsh not far behind.

Peterson Pond scored high in the vascular genera metric with over fifteen total forbs and grass-like plants being observed. The pond also contained diverse emergent and submergent forbs. It was dominated by two species of arrowhead, greater duckweed, waterweed, pondweed, and coontail. Bladderwort was also present although the coverage was less than one percent. Peterson Pond also scored high in the persistent standing litter category.

Kidder Marsh was even higher in the vascular genera metric with over 18 forbs and grass-like plants present. The highest coverage was cattail, purple loosestrife, lesser duckweed, and greater duckweed. Grass-like plants were abundant and included bulrush, reed canary grass, sedges, and cut grass. Bladderwort coverage was less than five percent.

The most unexpected vegetative data came from Rapids Lake. Even though the marsh attracts abundant wildlife, the diversity of plants was low. This diversity was likely affected by an unexpected late June drawdown that preceded the collection of vegetative data. Consequently, the vegetative IBI may be skewed for 2003.

In WHEP methodology, if the invertebrate and vegetative indicators are within 20% of each other for a given wetland, the data is considered to be consistent. With our 2003 sampling data, all differences between these indicators were less than 20% with the exception of Rapids Lake which was 24% (Table 5). This difference is attributed to the drawdown that took place between the collection of the invertebrate data (pre-drawdown) and the vegetative data (post-drawdown). Since the data for Rapids Lake was found to be inconsistent, the wetland will be sampled again in 2004.

In general, the Refuge wetlands sampled in 2003 were of good to excellent quality. These sites receive little stormwater input and were expected to be in good condition. WHEP data collected by volunteers in adjacent communities shows that in most cases, wetlands impacted by stormwater reflect poor water quality. In 2004, we will include some Refuge wetlands that receive stormwater inputs in order to document the extent that wetland communities are impacted.

Table 6. Types and relative abundance of the most common invertebrates found in Refuge Wetlands.

Metrics and Taxa (Common Name)	Hogback Marsh	Kidder Marsh	Rapids Lake
<b>Corixid Proportion Metric</b>			
Corixid bugs			
Corixidae (water boatmen)	2	14	15
Non-corixid bugs			
Belostomatidae (giant water bugs)	1	1	3
Gerridae (water striders)	8	6	3
Mesovelidae (water treaders)	0	55	5
Nonectidae (backswimmers)	4	2	35
Pleidae (pigmy backswimmers)	17	1	60
Beetles			
Dysticidae (predaceous diving beetles)	2	73	17
Halipidae (crawling water beetles)	10	33	62
Hydrophilidae (water scavenger beetles)	6	51	0
<b>Mayfly-Caddisfly Metric</b>			
Ephemeroptera (mayflies)			
Caenidae	4	5	27
Trichoptera (caddisflies)			
Leptoceridae	10	0	13
<b>Snail Metric</b>			
Gyraulus	104	0	9
Helisoma	2	29	4
Lymnaea	0	43	0
Physa	75	14	9
Stagnicola	2	0	2
<b>*Total Taxa Metric</b>			
Hirundinea (leeches)			
Erpobdella	3	42	0
Anisoptera (dragonflies)			
Aeshnidae (darner dragonflies)	5	16	2
Libellulidae (skimmer dragonflies)	0	4	2
Zygoptera (damselflies)			
Coenagrionidae	2	6	4
Lestidae	2	21	0
Crustacea			
Amphipoda (scuds)	74	104	2000+
Diptera			
Ceratopogonidae (biting midges)	2	2	0
Chironomidae (non-biting midges)	22	25	84
Stratiomyidae (soldier flies)	3	3	1
Tipulidae (crane flies)	3	1	0
Sphaeriidae (fingernail clams)	4	0	0

\*Includes the number of invertebrates of various taxonomic types represented in the samples.

## 1.b. Studies and Investigations

### Habitat Protection and Avian Occurrence

Tom Cooper, a PhD candidate at South Dakota State University, completed the first field season of research for his project entitled "Land Stewardship, Habitat Protection and Avian Occurrence in the Minnesota Valley National Wildlife Refuge and Wetland Management District". This project will provide the Refuge with a geographic information system (GIS) layer showing where lands are currently protected, identify areas where important habitats exist, identify where avian species of concern are located and examine how their distribution is related to current habitat conditions at multiple scales. It will also help determine the importance of short duration habitat programs to species diversity, abundance, and distribution. The status and preliminary results of the first field season are as follows:

#### *Land Stewardship and Habitat Analysis*

All land stewardship GIS layers have been obtained or have been digitized for the Minnesota Valley Wetland Management District. Landsat imagery of land cover has been acquired from the U.S. Fish and Wildlife Service Habitat and Population Evaluation Team (HAPET) in Fergus Falls, Minnesota.

#### *Woodland Surveys*

Woodland surveys were conducted from June 2 to July 14, 2003 within the Minnesota Valley WMD. A total of 100 woodlands were surveyed during the 2003 field season. Survey point locations have been brought into a GIS layers and woodland patches have been digitized. Sixty of the woodlands were on private land, six were on federal land, 23 on state land, five on local government land, and six on other land classes. Woodlands surveyed ranged from 5 to 793 acres in size with an average size of 67.3 acres. Canopy closure of the woodlands varied from 44% to 100%, while ground cover ranged from 8% to 98%. Dominant tree species included a variety of oaks, sugar maple, and American basswood.

Sixty-two species of birds were recorded in the surveyed woodlands. The number of species surveyed per woodland ranged from 6 to 21 species with an average of 14.0. Twenty-two species were found in greater than 25% of the woodlands surveyed. The most common species recorded included the eastern wood pewee, great-crested flycatcher, black-capped chickadee, northern cardinal, American goldfinch, house wren, white-breasted nuthatch, blue jay, American crow, indigo bunting, downy woodpecker, and the rose-breasted grosbeak.



**Picture 10. Yellow-headed black bird. Photo by Volunteer Scott Sharkey.**



### *Grassland Surveys*

In 2003, grassland surveys were conducted from June 2 to July 14. A total of 104 grasslands were surveyed during the 2003 field season. Survey point locations have been brought into a GIS and grassland patches have been digitized. Forty-one of the grasslands were on private land, 23 on federal land, 38 on state land, and two on other land. Forty-four of the sites were warm season grasslands, 48 were cool season grasses, and 13 were mixed grass sites. Grasslands surveyed varied in size from 3.0 to 460.9 acres with an average size of 64.0 acres. The dominant grasses in the warm season sites were big bluestem, Indian grass, and switch grass. The dominant cool season grass was smooth brome.

Sixty-two species of birds were recorded during the grassland surveys in 2003. The numbers of species recorded per grassland ranged from 3 to 14 with a mean of 8.4. Ten species were found in greater than 25% of the grasslands surveyed. The most common species recorded included the common yellowthroat, song sparrow, sedge wren, bobolink, tree swallow, and red-winged blackbird.

### *Data Entry and Analysis*

Data from the 2003 field season is currently being entered into a computer spreadsheet. The data will be analyzed over the next six months including building habitat models and mapping results in a geographic information system. Habitat models will be tested during the 2004 field season.

### **Effects of Prescribed Fire on Prairie Insect Populations**

Minnesota Department of Agriculture Weed biocontrol experts and the Refuge staff jointly worked on a project to assess the effects of fire on the insect component of the Upgrala Bluff Prairie. Pre-burn and post-burn collections were made along vegetation transects established by the Refuge. Preliminary results of this study are included in the habitat monitoring section of this report.

### **Evolution of Storm Water Management**

A proposal was submitted to the Environmental Contaminants Program for an On-Refuge Investigation for funding of *An Evaluation of Storm Water Management in a Watershed of Minnesota Valley National Wildlife Refuge*. The proposed investigation is intended to collect actual pollutant loading data to identify specific areas with elevated contaminant levels within the Smith-Wright/Airport South sub-watersheds. The data will be used to verify select stormwater management model assumptions to ensure that stormwater management decisions in key sub-watersheds of the Refuge are adequately protective of Refuge resources. This study will be initiated in Spring 2004 by the University of Minnesota.

### **Accuracy of Storm Water Models on Refuge Watersheds**

Todd Schmidt, a graduate student from the University of Minnesota Water Resources Science Department, began his Master's thesis project evaluating the accuracy of storm water models in the Smith-Wright/Airport South sub-watersheds which involve Refuge land. The results of this project will be released in December 2004.

### **Pre-drawdown Evaluation of Long Meadow Lake**

Lindsey Becker, a SCEP student enrolled at the University of Wisconsin-Stevens Point, proposed a research project to investigate the vegetative, fish and invertebrate components of Long Meadow Lake inclusive of basic water chemistry analyses as well. This information will serve as baseline data for the Refuge as it begins to manage the lake's water level in the near future. This project is currently being developed and will be initiated in the summer of 2004.



## Habitat Restoration

### 2.a. Wetland Restoration

#### On-Refuge

Wetland restoration efforts on Refuge lands were somewhat nominal during 2003, with only two wetlands restored totaling 12 acres. Although nominal in number, the importance of these two restored wetland basins cannot be understated due, in part, to their location and proximity to a historically important waterfowl brood and migratory basin; Rice Lake basin in LeSueur County, Mn. These wetlands, located on Rice Lake WPA, exhibit important characteristics which will help buffer Rice Lake from agricultural runoff and also provide critical food resources for waterfowl during brooding and migration. The restoration of these basins add diversity to the wetland complexes already established on these and nearby sites while providing critical habitat for a myriad of wildlife species. These two wetlands have shown significant changes in the first growing season. Due to the fact that they were never fully drained for agricultural use, residual native plant species found in seed banks have contributed to the overall diversity of these sites. Following the first year of production post restoration, the wetland species present were *Sagittaria spp.*, *Sparganium spp.*, *Lemna spp.*, *Polygonum spp.*, *Scirpus spp.*, and *Typha spp.* Wildlife use increased dramatically with an increased presence in waterfowl, colonial waterbirds, bitterns, terns, and amphibians found on both sites. These wetlands would not have been restored this past year without the financial support of the Minnesota Waterfowl Association and LeSueur County Habitat Sportsman Clubs.



Picture 11. Swamp milkweed prevalent one year after restoration in wet meadow zone at Rice Lake Waterfowl Production Area in LeSueur County. Photo by Mike Mallings.

#### Off-Refuge

Through the Partners for Fish and Wildlife program (PFW), off-refuge wetland restorations were completed on 20 private land tracts. The product of these restoration efforts yielded 43 basins totaling 210 wetland acres. Projects were completed in nine of the 14 counties within the WMD. Restored basins varied in size from a one-acre palustrine emergent, temporary basin at the Rinehart tract in Nicollet County to the 34-acre palustrine emergent, semi permanent marsh at the Hoffman site in Waseca County. Other wetland complexes restored include the Minnesota Pheasants, Inc. tract in Blue Earth County; Trnka tract in Rice County located within one mile of Hurley WPA; and the Menke tract in LeSueur County. Approximately 70% of PFW projects



completed this year were located on tributaries of the Minnesota River Watershed while the remaining 30% were completed on the Mississippi River Watershed.

Restoration projects were aided through partnerships with more than 20 conservation clubs, non-governmental organizations, private landowners, the Natural Resource Conservation Service (NRCS), private corporations, and various Soil and Water Conservation Districts (SWCD). These collaborations continue to be the impetus that drives the PFW program. Funds from partners were matched through several different grant sources including Metropolitan Council (MET), Legislative Commission for Minnesota Resources (LCMR), Challenge Cost Share, Clean Water Action Plan, MnDNR Conservation Partners, Prairie Pothole Joint Venture, Ducks Unlimited, and North American Wetland Conservation Act Grants (NAWCA). These contributed funds matched with grant dollars provided approximately 60% of the total funds needed to restore these wetlands.

Highlights of the PFW program on private lands in 2003 included:

- Restoration of five wetlands totaling 15 acres at the James site in Carver County
- Restoration of a five basin complex encompassing 22 acres on the Minnesota Pheasants tract in Blue Earth County
- Restoration of a 34-acre brood basin at the Hoffman parcel in Waseca County.

Restoration of these wetlands provides critical wildlife habitat and water quality benefits while providing important partnership aspects.



**Picture 12. Hoffman wetland restoration after one year in Waseca County. Photo by Ron Knopik**



**Picture 13. Seasonal wetland restoration located at the Pint Tract in Scott County. Photo by Ron Knopik**

## 2.b. Upland Restoration

### On-Refuge

Approximately 130 acres of prairie were restored or enhanced on Refuge tracts during 2003. Restoration was completed on both WPAs and Service easements. The highlights of this past season included restoration of the 160 acre Hillard Dehning WPA in Sibley County and the restoration of 35 acres at the St. Olaf College easement in Rice County.

Seeding was completed by Refuge staff and sportsman club volunteers. The species of grass utilized in the native seed mix for restoration practices were as follows:

- big bluestem
- Canada wild rye
- Indian grass
- switch grass
- little bluestem
- side oats grama
- blue-joint grass
- kalm's brome
- prairie dropseed
- prairie cord grass
- porcupine grass

The aforementioned species were seeded in conjunction with more than 30 species of forbs which included:

- boneset
- joe pye weed
- compass plant
- New England aster
- wild bergamot
- leadplant
- coneflower
- purple prairie clover
- butterfly weed
- vervain
- prairie blazing star

Plant diversity provides critical cover during migration, breeding, and nesting seasons of both wetland and upland birds while at the same time establishing habitat for feeding waterfowl, shorebirds, and other non-avian wildlife.

Seeding this year was accomplished utilizing a broadcast seeder (Vicon Granular Spreader) instead of utilizing a Truax grass drill as done in the past. The seed was spread with the Vicon followed by a cultipacker which firmly packs the seed into the ground for maximum seed to soil contact. Research has shown that broadcast seeding provides greater long term wildlife benefits than by seeding with a grass drill. Vicon seeding is the preferred method for reasons such as:



**Picture 14. Broadcast seeding at the Hillard Dehning WPA in Sibley County. Photo by Ron Knopik.**



- leaves no plant rows that may hamper plant development
- simulates the natural process of seed dispersal
- broad leaved species such as forbs seem to respond more favorably
- tends to crowd out noxious weeds such as thistle by eliminating rows
- is more aesthetically pleasing
- can be seeded in many different weather and field conditions
- can be seeded three times faster than grass drills
- provides better wildlife cover and food due to an increase in broad leaved plants



**Picture 15. Minnesota Pheasants volunteer completing seeding on the Minnesota Pheasants tract in Blue Earth County. Photo by Mike Malling.**

The initial post seed monitoring of the 160-acre Hillard Dehning WPA showed remarkable results especially following the drought season encountered this summer in Sibley County. Many plants had germinated and headed to seed after the first growing season. Continued monitoring of this site will be performed for the next few years to determine how grasses and forbs respond after Vicon seeding. Refuge staff will also continue to experiment with different seeding techniques such as forb plug planting and over-snow seeding.

## Off-Refuge

Refuge staff, through the PFW program, provided technical assistance to more than 30 private landowners this past year. Over 280 acres of native grasses were restored on private land in Scott, Carver, Rice, Blue Earth, LeSueur, Sibley, and Dakota counties. Planting was accomplished utilizing a Truax drill for direct seeding and a Vicon seeder for broadcast seeding. Species diversity, abundance, and grass to forb ratio are all important aspects of designing and planting native grasses and forbs. These ratios affect the long term benefits for wildlife and may affect post emergence maintenance of the fields.



**Picture 16. Ron Knopik (Technician) pilots Vicon seed spreader while seeding. Photo by Mike Malling.**



Partners provided approximately \$40,000 in cash and in-kind donations for prairie restoration this year. Seeding was accomplished by utilizing a host of partners including SWCD staff, private landowners, Pheasants Forever, St. Olaf College, and private vendors. Highlights of this past year included the restoration of the 60-acre James tract in Carver County; restoration of a seven-acre Neighborhood Wilds and Friends of the Minnesota Valley Heritage Registry tract at Seminary Fen; and restoration of a 68-acre Wetlands Reserve Program parcel owned by Minnesota Pheasants in Blue Earth County. These tracts provide important water quality benefits, critical wildlife habitat for a host of species, and strengthen and have fostered new partnerships with local communities.



**Picture 17.** A hard working crew planting forb plugs at Seminary Fen. Photo by Mike Mallings.

The most unusual restoration this year occurred at Seminary Fen in Carver County. Restoration was initiated after several herbicide applications on the old field site. The site contained heavy infestations of brome with several colonies of thistle and leafy spurge. After staff was confident that the existing seed bank was exhausted, seeding of nine species of grasses using a Truax grass drill was initiated. Then a delivery of 1,000 forb plugs came. Plugs were planted by hand with the aid of Refuge staff, Friends of the Minnesota Valley, and six neighbors which co-own the site. All forb plugs were planted over a period of four days. The site will be monitored for several years to ensure that forb and grass species planted become established and managed appropriately to reduce any weed encroachment.

## **2.c. Deepwater/Riverine Restoration**

Through the hard work of temporary summer employees and Scott County Sentenced to Serve crews, 2,800 tree seedlings, comprised of silver maple, green ash and bur oak, were planted and matted during late May and June on the southern part of the Louisville Swamp Unit. An additional 160 root propagation method (RPM) grown bur oak trees were planted, fertilized, and equipped with a plastic spiral trunk protector. The plants were part of an on-going floodplain forest restoration program in former agricultural fields in the Refuge.

### **Vernal Pool**

Refuge staff worked closely with staff from the Izaak Walton League and the U.S. Forest Service to host a group of people who attended the National Wetlands Conference held in Bloomington. Two vernal ponds were constructed adjacent to the Visitor Center as a "hands on" activity for participants in the conference. As well as providing habitat for amphibians and other aquatic wildlife, the vernal pools will be used as demonstration sites and incorporated into the Refuge's environmental education curriculum. Construction costs were shared between the Lower



Minnesota Watershed District and the Refuge. Coordination and planning were provided by Izaak Walton League Staff.



**Picture 18. Vernal pool site prior to construction. Photo by Vicki Sherry.**



**Picture 19. Vernal pool constructed near Visitor Center. Photo by Vicki Sherry.**



## Habitat Management

### 3.a. Water Level Management

The water level management program in 2003 can be considered to have had one of the most successful seasons on record. With the aid of a large crew of seasonal technicians and volunteers, and with the drought conditions that prevailed throughout the summer and early fall, draw-downs were accomplished.

For the first time since the Corps of Engineers implemented the Habitat Rehabilitation and Enhancement Program on Rice Lake in 1997, a late summer drawdown was achieved. Consolidation of the basin was accomplished with an increase in diversity of plant-life, already evident in the fall of the year. Next year's growing season should, once again, restore Rice Lake to a level of plant productivity that hasn't been present for many years.



**Picture 20. Water level management on Fisher Lake. Photo by Tom Kerr.**

A near complete drawdown was also achieved on Chaska Lake. Like Rice Lake, this basin has gone for many years without consolidation of the bottom and should respond well next summer.

A partial drawdown was implemented on Blue Lake and water levels achieved were well suited to the production of wild rice. It has been many years since Blue Lake produced the abundance of wild rice that was present in 2003. Water depth at Fisher Lake was in a highly productive state with good plant interspersion. Rapids Lake was also maintained at normal pool depth.

The Long Meadow Lake Habitat Rehabilitation and Enhancement Program under the Environmental Management Program came close to finalization this year with the creation of a preliminary draft project plan and a tentative construction date scheduled for late Summer, 2004. The Corps of Engineers project will include a new water control structure and restoration of the floodplain forest on the Long Meadow Lake Unit.

### 3.b. Moist Soil Management

No management was conducted on moist soil units during this fiscal year. However, units were re-evaluated and plans are under way to rehabilitate Fisher, Old Cedar and Chaska Moist Soil Units next year. With the drought that occurred this summer, Louisville Swamp water levels favored the growth of moist soil plants. These were conditions that have not been seen in many years and provided the opportunity to re-flood the basin as a moist soil unit. Canada goose and

mallard numbers reached unprecedented levels at Louisville Swamp of 1,500 and 15,000 birds, respectively.

### **3.c. Graze/Mow/Haying**

Fifty-six acres of native grass were harvested on the Rapids Lake Unit in an attempt to stimulate the growth of forbs on this planted native grass stand. The haying occurred in late August. Five acres of grass were harvested on the Chaska Unit of the Refuge in order to prepare a floodplain field for tree planting.

### **3.d. Farming**

The 160-acre Shelby WPA was cooperatively farmed this year in preparation for native grass restoration in 2004.

### **3.e. Forest Management**

As part of a Wildland Urban Interface fire project, selective cutting was done on approximately five acres of bluff near the Refuge Visitor Center. Some of the trees were piled for burning and others were sold as firewood.

### **3.f. Fire Management**

Refuge staff with the assistance of Administratively Determined (AD) hires, Minnesota Conservation Corps and Federal Job Corps conducted 19 prescribed burns on Refuge and WPA units totaling 629 acres. The highlight of the season was a prescribed burn of new oak savanna restoration units in the Louisville Swamp Unit. This was the culmination of an effort that began the previous fall with buckthorn/cedar removal followed by slash pile burning. The remaining oak savanna restoration units were also burned this year perhaps under the best possible conditions since the project began in the early 1990's. Preliminary vegetative response has been favorable. The Visitor Center units were also burned this spring.

Once again, wildfire reached a record level with 21 fires suppressed totaling 102 acres. Both the Wilkie Unit Fire and the Nichols Fen Fire required a multi-agency response. All of these fires were in wildland urban interface units where the threat to structures and public safety was high. In all cases, wildfires were a result of illegal campfires or arson. Numerous public use structures were damaged by arson fires and several fishing piers were damaged by fires which burned through the decking material.

Staff was on alert for Refuge wildfire throughout the spring and fall as dry conditions prevailed. In addition, several staff members participated in interagency wildfire assignments on major incidents in the western states.



During 2003, the Refuge completed 169 acres of mechanical control of vegetation to maintain fire breaks, thin fuel stands, or maintain fire break access trails. The Refuge also completed two Wildland Urban Interface projects on the Long Meadow Lake Unit to improve established fire breaks, reduce fuels, and improve wildfire suppression access.

The Refuge cooperated with the Carver, Green Isle, Hamburg, Lake Crystal and New Auburn fire Departments to submit five Rural Fire Assistance Program grant requests. All five were funded for a total of \$25,822. In addition, 22 fire departments signed Cooperative Fire Protection Agreements with the Refuge during the year. The Refuge has 32 cooperative agreements with local fire departments which cover fire suppression activities on all Refuge and WMD lands.

### **3.g. Pest Plant Control**

This was a record year for buckthorn control. Volunteers, Federal Job Corps and Minnesota Conservation Corps succeeded in treating 533 acres of buckthorn through chemical and mechanical means. Most of the restoration occurred in the Long Meadow Lake Unit. The degraded oak savanna hillside below the Visitor Center was one area of this 2,400-acre unit which received intensive management. In an effort to restore the savanna and prepare the unit for prescribed fire, buckthorn, other exotics and encroaching woody species were cut, stump treated with herbicide and piled for winter burning. Other units were treated as well, including Louisville Swamp where a partnership with Great River Greening helped to restore five acres of oak savanna. The work was conducted under a National Fish and Wildlife Foundation grant.



**Picture 21. Brush piles from oak savannah restoration event in partnership with Great River Greening. Photo by Tom Kerr.**

It was also a record year for Canada thistle control. In addition to mechanical and chemical control in the summer, we also conducted fall spraying on the Refuge and a few WPAs. Weather conditions made it a particularly favorable year for thistle. Purple loosestrife continues to be controlled at insect release sites, while new infestations of loosestrife were found on the Wilkie Unit.



# 4

## Fish and Wildlife Management



**Picture 22.** Girl Scouts participating in a banding program. Photo by Ron Knopik.

### 4.a. Bird Banding

Once again, the Regional Office established a 100 wood duck (*Aix sponsa*) waterfowl banding quota for the Refuge as our contribution to a much greater sample size for recovery analysis. Beginning on August 12 and continuing through September 13, we implemented the use of swim-in traps to capture ducks on five Refuge sites. The traps were modified occasionally to account for fluctuating water levels and alleviate any site-specific problems. All sites with exception of one had a single trap. Because of the abundance of wood ducks at Continental Grain Marsh, we again utilized three traps spaced within a shallow, slow-moving creek. A crew of summer interns and volunteers augmented by Refuge personnel helped to achieve our banding goals.

This year also marked the beginning of interpretive banding programs for the public as well as for scouting organizations. Four public programs and four scouting programs exposed young and old alike to waterfowl that inhabit the Minnesota River Valley. Boy and Girl Scouts used these experiences to satisfy badge requirements and offered to display what they learned on panels within the Visitor Center.

Our 2003 trapping effort yielded 261 ducks of three species. We surpassed our banding quota for the first time in years even though our personnel resources became limited near the end of the season due to fire assignments and loss of seasonal technicians. We finished with 137 wood ducks, 122 mallards, and 2 hooded mergansers. Table 7 lists the age/sex classes per species for the entire banding season.



**Picture 23.** Scouts that attend a banding program displayed their experiences. Photo by Ron Knopik.



Table 7. Breakdown of age/sex classes for waterfowl species banded at Minnesota Valley NWR.

Species	Sex	Age	
		Adult	Juvenile
Wood Duck	Male	48	36
	Female	26	27
Mallard	Male	14	53
	Female	5	50
Hooded Mergansers	Female	2	0

In addition to waterfowl banding, the Refuge also welcomed Cindy Samples from Upper Mississippi NWR to band songbirds for a group of students from the Winona School District. Mist nets were setup near the Visitor Center and in a very short time downy woodpeckers, gray catbirds, black-capped chickadees, red-bellied woodpeckers, and white-breasted nuthatches were captured, banded, and released. The students were able to view bird's up-close, assist in the banding process, and then release the birds. Data collected was submitted to the Bird Banding Laboratory in Laurel, Maryland for inclusion in their migratory bird database.



Picture 24. A student views the wing of a downy woodpecker. Photo by Ron Knopik.

## 4.b. Disease Monitoring and Structures

Nothing to report



Picture 25. Bluebird box at the Refuge Visitor Center. Photo by Mike Malling.

## 4.c. Reintroductions

Nothing to report

## 4.d. Nest Structures

One component of our private lands program is the distribution of wood duck and bluebird boxes, and mallard nesting cylinders to private land owners. This year an estimated 40 wood duck boxes, 40 bluebird boxes, and five mallard nest cylinders were erected on private and public lands. Participating landowners also received literature describing placement and care of these boxes. Over 300 structures are now maintained on private land and Refuge tracts by Refuge staff and volunteers.

## **4.e. Pest, Predator, and Exotic Animal Control**

### **Trapping**

Special use permits were issued to 15 trappers to trap beaver, mink, muskrat and raccoon within the Black Dog, Long Meadow Lake, Wilkie (Rice Lake), and Chaska Units. A total of 55 beaver, 881 muskrats, 69 raccoon and 17 mink were harvested during the season.



## Coordination Activities

### 5.a. Interagency Coordination

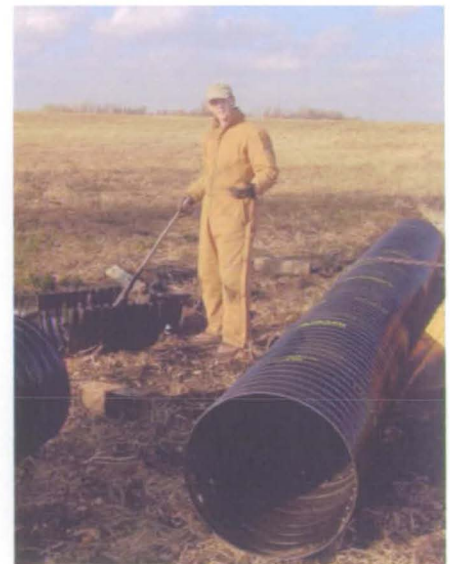
#### On-Refuge

Interagency coordination is the lifeblood of the Refuge as staff go about their daily activities. Due to its urban setting, nearly all aspects of our public use and habitat management programs are coordinated with other organizations and agencies. From public programs completed in cooperation with the National Park Service to our prescribed burning program which is closely coordinated with state and local agencies, a need exists to communicate and coordinate with others. Rather than attempting to list all the interagency coordination that takes place in this section, the reader will discover a high level of coordination that occurs in most sections throughout the document.

#### Off-Refuge

The Refuge continues to work cooperatively with local SWCD, MnDNR, NRCS, local watershed groups, and various other partners to restore and protect our wildlife resources. More specifically, staff plays an active role in working with other agencies participating in screening committees for the State's Reinvest-In-Minnesota program and the Farm Service Agency's Conservation Contract Easement Program. In addition, Refuge staff (private lands biologists) also assists with SWCD and NRCS habitat restoration programs by delineating lands for the Wetland Reserve Program (WRP). Finally, staff continues to attend SWCD annual meetings, township and county meetings, and MnDNR planning sessions where the Service is a major contributor. Refuge staff is most grateful for the help that these agencies have provided and realize that the goals of the Refuge cannot be achieved without input and assistance from these important organizations.

The Refuge staff is honored to have Tom Cooper of the Minnesota Waterfowl Association (MWA) on our team. Tom is currently working towards his PhD while working here at the Refuge. Tom has been instrumental in helping staff achieve GIS mapping objectives. Tom continues to assist in all facets of the PFW program and also plays a major role in coordinating projects with several Metro Area SWCD offices. We are most thankful for our strong partnership with MWA and look forward to the future.



Picture 26. Tom Cooper, of MWA, assembles a water control structure in the field. Photo by Mike Malling.



## **5.b. Tribal Coordination**

Tribal coordination in 2003 was limited primarily to our efforts to organize and host Youth Fishing Day. In completing this event, Refuge staff worked very closely with the Red Lake Band and the 1985 Authority. Our continued success with this event is due in part to the long standing partnership we have established with both organizations.

Other tribal coordination activities during 2003, particularly as they apply to cultural resource issues, were undertaken by our Regional Historic Preservation Officer in the Regional Office.

## **5.c. Private Land Activities**

Private lands activities continue to be an integral component of the conservation community. The following is a list of accomplishments for the Refuge:

- Provided technical assistance to more than 175 landowners regarding restoration and protection
- Signed wildlife management agreements with 50 private landowners resulting in the restoration of more than 620 acres of wildlife habitat through the PFW program
- Assisted landowners with various conservation programs such as Conservation Reserve Program (CRP), Conservation Reserve Enhancement Program (CREP), Reinvest in Minnesota (RIM), Wetland Habitat Incentives Program (WHIP), and Wetland Reserve Program (WRP) leading to an additional 3,000 acres of permanently protected wildlife habitat
- Completed 75 acres of habitat restoration through cooperative agreements with SWCD offices
- Conducted surveys, monitoring programs and restoration activities on more than 20 WRP tracts in partnership with Minnesota Waterfowl Association and the Natural Resource Conservation Service



## **Resource Protection**

### **6.a. Law Enforcement**

Refuge law enforcement officers documented 431 violations this year which included hunting, fishing, trespass, arson, vandalism, vehicle break-ins, theft, drugs and dumping. Dumping was the most common violation and officers were successful in prosecuting several cases. Theft of government property from the Rapids Lake Unit was the most serious offense investigated this season. Stolen items include:

- three Polaris all-terrain vehicles
- three gas powered weed whips
- three electric vehicle winches

Interagency coordination also facilitated the need for an upgrade in communications which brought about the addition of an 800MH radio system to allow officers to communicate with several agencies throughout the Twin Cities Metro Area. Also, two vehicles were upgraded with law enforcement equipment to a degree that meets law enforcement standards.

Refuge Officer Chris Jussila qualified as an Armor and Field Training Officer. Due to this new rating, one officer was detailed to Minnesota Valley for a field training period.

### **6.b. Permits and Economic Use Management**

During the year, 33 special use permits were issued. Most were for trapping, handicapped accessible hunting, scientific studies, and haying of the Chaska Unit in preparation for tree planting.

### **6.c. Contaminant Investigation**

See section 1.b.

### **6.d. Contaminant Cleanup**

Nothing to report.

### **6.e. Water Rights Management**

Nothing to report.

## **6.f. Cultural Resource Management**

A large number of archaeological and cultural sites exist on or near Refuge lands. These sites include historic Native American village sites and burial mounds, early 19<sup>th</sup> century trading posts and ferry crossings, and early 20<sup>th</sup> century bridges and farmsteads.

As part of the airport mitigation (See Section 8 – Planning and Administration, Minnesota Valley National Wildlife Refuge Trust), the Refuge is planning for public use developments on various portions of the Rapids Lake Unit. Preliminary to any development, the Service must meet its obligations under Section 106 of the National Historic Preservation Act.

The Refuge contracted with Loucks Associates in November 2002 for an archaeological survey of the Gehl-Mittelsted farmstead and vicinity to identify archaeological sites and historic properties within the area of potential effect. A substantial amount of the field surveys were completed and a draft report submitted by August 2003. Additional field surveys of the bluff tops overlooking the Gehl-Mittelsted homestead are still needed and will be conducted in 2004. Ten Native American tribes have been notified about the proposed developments and archaeological survey. A final report is expected by summer 2004.

Hess, Roise and Company was contracted in September 2003 to conduct an evaluation of the Gehl-Mittelsted house to determine if it is eligible for listing in the National Register of Historic Places. In addition to this evaluation study, a Historic Structures Report will also be completed. This report will describe the design, evolution, and use of the house prior to Service acquisition. The report will also describe the existing conditions of the house and identify a program for rehabilitation and reuse. Refuge staff met with the contractor in mid-September to conduct an on-site pre-work meeting. The study and report are expected to be finalized by spring 2004.

The Service anticipates no adverse effect on any archaeological or historic properties. In any event, the Section 106 process (National Historic Preservation Act) will be followed to the appropriate conclusion. The Regional Historic Preservation Officer will initiate consultation with the Minnesota State Historic Preservation Officer. The proposed public use developments will not be implemented until the Section 106 process has been completed in accordance with 36 CFR Part 800.

## **6.g. Land Acquisition Support**

During 2003, no new tracts were submitted for purchase on the Refuge or the WMD.



## 6h. Threats and Conflicts

### Resource Protection

Refuge staff continued to monitor and work on a variety of new and on-going development projects that potentially threaten the biological and aesthetic values of Refuge. These projects are summarized below.

#### *Storm Water Discharge*

Storm water discharge into Refuge lands has been a long standing issue between Refuge staff and the City of Bloomington (City). The City views the Refuge as a convenient and relatively inexpensive alternative for the treatment of City storm waters. We obviously do not favor this position and over the years, have encouraged the City to adequately treat storm water before it enters the valley. Our concern was heightened this year when biohazards showed up in the Skimmer Pond/Hogback Ridge wetland complex. Along with a large amount of other debris, a used syringe with a needle plus a discarded prescription pill container found their way in Refuge wetlands through the City's storm sewer system.

In the face of these issues, the City continued their requests to either enhance existing or create new storm water treatment facilities on Refuge lands. More specifically, the City made plans to expand Pond C (Minnesota Department of Transportation facility) which would require the closure of Bass Ponds area to public use for up to nine months. Upon further investigation, we discovered that the City had not addressed some environmental issues associated with the project, including the removal and proper treatment of contaminated soils. Consequently, we denied their request until such time these issues could be addressed.

In April 2003, the City also formed a Technical Advisory Committee whose mandate was to find a comprehensive resolution to the storm water issues in the Airport South District. Although Refuge staff served on this committee, it soon became apparent that the only recommendation that would come forward from this group was to construct at least five additional regional storm water treatment ponds below the bluff and within the Refuge. Once again, we rejected these recommendations.

In the meantime, the Refuge worked with the Friends of the Minnesota Valley and the Lower Minnesota Watershed District to construct water gardens on Refuge parking lots. These water gardens would serve as a model for business and industry in the area for the sustainable treatment of storm water runoff. By year's end, the watershed district committed \$35,000 towards this project. These funds will be combined with \$15,000 the Refuge has already provided to the Friends through a cooperative agreement. Another \$15,000 to \$20,000 is yet needed to turn this concept into reality.

### *Amphitheaters*

The proposed Q-Prime Amphitheater in Scott County gained new life in 2003. By year's end, a Draft Environmental Impact Statement (DEIS) was near completion and would soon be circulated for public review. The Refuge remains opposed to the project since significant amounts of noise will be projected into the Louisville Swamp Unit. This noise has the potential to negatively impact wildlife and the enjoyment of those who visit the Refuge for wildlife dependent activities.

A second proposal to construct an amphitheater within the City of Burnsville near the Black Dog Unit was eventually approved by the Burnsville City Council. The project is currently on hold due to a lawsuit filed by citizen's action groups from both Burnsville and Bloomington. The Refuge remains opposed to the project because the nature of this type of facility is inconsistent with the Aspirit® of the legislation establishing the Refuge, Recreation Area and the associated State Trail.

### *Rivers Edge Development Project (Once Cedar Springs Development)*

Refuge Staff prepared a statement regarding the Rivers Edge Development Project which has been proposed by three separate housing developers within the last four years. This area of concern remains an important recharge site for unique wetlands located immediately down slope of the proposed development site, within the Black Dog Unit. The proposed development site supports a sedge fen, cold water streams, and wet meadow habitat. Refuge Staff believe that the existing rate and volume of infiltration must be maintained on this site and serious considerations should be made for a wide array of low impact development techniques to better treat the City of Burnsville's storm water runoff. The developer and the City of Burnsville agreed to maximize infiltration, however, a wide array of low impact development techniques were not employed.

### *Mosquito Control*

Refuge staff attended the annual Technical Advisory Board meeting of the Metropolitan Mosquito Control District in January. Much discussion at this meeting revolved around the potential 2002 West Nile Virus outbreak in 2003. Later in the year, District and Refuge staff met in order to develop a communication plan in instances where mosquitoes with West Nile Virus were found on or near Refuge land. There were no cases of Encephalitis or West Nile Virus reported on or near the Refuge in 2003.

### *Highway 41 Bridge Replacement*

Refuge staff attended several meetings concerning the rehabilitation of the Highway 41 bridge crossing at Chaska and the selection of a new bridge right-of-way across the Minnesota River in this part of the world. Since the Chaska Unit is located just west of the City of Chaska, any new road development has the potential to affect Refuge lands. During the course of these discussions, we have encouraged MnDOT and others to select those alternatives that have no effect upon the Chaska Unit.



## Public Education and Recreation

### 7.a. Provide Visitor Services

The Refuge received an estimated 211,478 visitors from October 1, 2002 to September 30, 2003. This figure is quite similar to the visitation estimated the previous year. The total number of people who visited the Visitor Center during this time period was 27,256. Approximately 10,500 children participated in educational programs at the Visitor Center, while approximately 4,000 people attended meetings and special events held in the building.

All of the "Big Six" wildlife dependent recreational opportunities were offered on the Refuge: hunting, fishing, wildlife observation, wildlife photography, environmental education and interpretation. Staff efforts in regards to facilitating each of these program areas is discussed in greater detail below.

#### Hunting

Portions of the Refuge are open to public hunting, as are the WPAs. Currently, no system is in place to track the number of hunters using the Refuge or their success rate.

##### *Young Waterfowlers Program*

The Young Waterfowlers Program is conducted cooperatively with the Minnesota Waterfowl Association. This year a total of 18 students and 16 mentors participated during this 20-hour training program, which is provided for youth between 12 and 16 years of age. Other than the actual hunt itself, the highlights for the students are duck and goose calling along with the field day exercises. Fisher, Blue, Long Meadow Lakes and Continental Grain Marsh were opened to participants during the state sponsored Youth Hunt which was on September 14. Long Meadow Lake was open the entire season for youth participants. A total of 71 ducks and six geese were harvested by Young Waterfowlers.

The annual wild game recognition dinner for 2002 was held on January 18, 2003 for participants, mentors, instructor's mentors and their families. Approximately 25 people attended.

##### *Hunting for Sportsmen and Sportswomen with Disabilities*

Another successful year was realized in the hunting programs for people with physical challenges and their able-bodied helpers. A total of ten physically challenged and nine able-bodied hunters participated and harvested 12 ducks and 15 geese. Two able-bodied youth hunted with their physically challenged parents on Youth Day, September 20, 2002.



Capable Partners Organization was granted a special use permit which included guidelines for conducting the hunt. The Refuge provided and maintained the facilities, which includes three blinds and a boat dock. Capable Partners handled reservations and conducted the hunts. The facility is located on the north shore of Rice Lake within the Upgrala Unit.

A total of eight physically challenged hunters and their able-bodied guides hunted turkeys on the Rapids Lake Unit during each of the eight five-day hunt periods during April and May. One 20 lb. tom was harvested.



**Picture 27. Anwatan School students with disabilities learning to fish. Photo by Cheryl Groom**

### **Fishing**

Although not the primary reason most visitors frequent the Refuge, Minnesota Valley NWR continues to be used by a wide diversity of people seeking fishing opportunities. Volunteer Ranger observations of people fishing seem to indicate that the level of fishing on the Refuge has risen slightly over the last year. In addition to bank fishing on the Minnesota River, the Long Meadow Lake Unit and Black Dog Unit continue to be the most popular fishing areas on the Refuge. The Bass Ponds area, located in the Long Meadow Lake Unit, provides the most accessible and convenient fishing on the Refuge. With an accessible dock, the Youth Fishing Pond receives the highest visitation from those looking to fish on the Refuge.

For the second year, Anwatan School's special needs class visited the Bass Ponds for a day of education and enjoyment. Participants were taught to cast and reel, as well as how to tell if a fish was on their line. Only five sunfish were caught during their two hour visit. However, everyone had a wonderful experience.

### *Youth Fishing Day*

Once again, the Refuge and its partners conducted one of the premier Youth Fishing events in celebration of National Boating and Fishing Week. On Saturday, June 7<sup>th</sup>, staff with volunteers from the fifteen partner groups, hosted a day long fishing experience for local youth. The morning portion of the day was dedicated to 150 disadvantaged inner city youth. The kids were bussed in from Minneapolis and St. Paul. Once on site, the kids were given breakfast bars and milk, donated and distributed by General Mills. They were divided



**Picture 28. Open Fishing for the morning groups during the Youth Fishing Day Event. Photo by John Patzman.**

into groups and led to all nine learning stations by volunteers from the Refuge and American Express. The Red Lake Nation, Degree of Honor Life Insurance, Bureau of Indian Affairs, and 1854 Authority provided the kids with a lunch with a choice of hot dogs or fried walleye. Participants were able to fish for 90 minutes using rods donated by the Minneapolis Foundation and Ron Schara's Cast-aways for Kids. Bait was provided by Gander Mountain. All the morning participants went home with a fishing rod, tackle, bait and literature on fishing and the National Wildlife Refuge System.

The afternoon portion of the event was opened up to the public. Families who visited all nine learning stations were given a gift bag which included tackle, bait, coloring books and information on the Refuge and the National Wildlife Refuge System.

Overall, approximately 650 people attended the event. This event would not have been a success without the help of the partner groups and the over 100 volunteers who joined us that day.

### **Wildlife Observation**

The Refuge continues to be one of the best birding areas in the Minneapolis-St. Paul area. During peak migration, the Long Meadow Lake Unit, which includes the Visitor Center, Bass Ponds and Old Cedar Avenue areas, is the most frequented area by birders wishing to add to their "life list".

Several volunteers as well as staff continue the tradition of conducting interpretive programs to assist visitors by improving wildlife observation techniques. Numerous birding programs throughout the year teach participants how to find and identify birds. This last year also saw a tracking program added, which instructs visitors on how to tell what animals have been through the area, even if they are not currently visible. The most popular interpretive program continues to be the "Sky Dance", where participants learn about the woodcock and hopefully, get to see the male perform his courting dance.

### *Project Bird Feeder*

Begun in 2002, Project Bird Feeder continued throughout 2003. This project is designed to increase wildlife observation opportunities at the Visitor Center as well as educate visitors about possible environmentally friendly ways to attract birds and other wildlife to their own backyards. In 2003, the landscape design plan was finalized and initiated. The plan calls for native plant species to be used in addition to the actual bird feeders. The Minnesota Native Plant Society purchased the native shrubs and trees that were planted around the first set of feeders. Electrical outlets were installed by the observation areas in preparation for future computers and speakers. A viewing area was created within the Visitor Center with grant money from the MnDNR and Native Plant Society. This addition to the Visitor Center has already made an impact by giving visitors a comfortable area to sit, watch, and learn about the birds using the bird feeding station.



## *Minnesota Valley Birding Trail*

In cooperation with MnDNR and National Audubon Society the Refuge distributed several hundred copies of the *Minnesota River Valley Birding Trail – Your Guide to Great Birding Along the Minnesota River*. This publication was completed in June 2003 and contains detailed information about the best bird watching locations throughout the Minnesota River Basin. Several Refuge bird watching sites are highlighted in this guide.

### **Wildlife Photography**

Two wildlife photography blinds were constructed by Tree Trust during the winter of 2001-2002. They were installed by Refuge staff in 2003 on the Wilkie (Rice Lake) and Chaska Units. With this addition the Refuge photography blinds total four. Blinds on the Refuge are available by the general public for wildlife observation and photography.

### **Environmental Education**

The Environmental Education Program grew tremendously over the last year, despite the public use team being short-staffed for almost one-third of the year. A total of 13,452 students from all parts of the metro area took part in Refuge programs, a 20% increase from 2002.



**Picture 29.** Students from Expo Elementary, a Partner School, recording their "Journey as a Raindrop". Photo by Scott Ford.

### *Partner School Program*

The Partner School Program nearly doubled this year growing from 15 classes in 2002 to 25 in 2003. This program is a partnership between inner city schools and the Refuge. The Refuge provides rangers to lead activities both on-site and in the classroom. The schools provide funding for at least one field trip per class each school year. Several provide enough funding for two field trips. Refuge rangers visited the classrooms three times prior to the first field trips. The ranger visits prepared students for the field trips and gave the students a greater understanding of the topic for the year – watersheds. The classroom visits also allowed for the rangers and students to get to know each other a little better, resulting in greater student participation during the activities.

### *Big River Journey*

The Refuge is a partner in Big River Journey (BRJ), an educational partnership program coordinated by the National Park Service's Mississippi National River and Recreation Area. BRJ provides fourth, fifth, and sixth grade students an opportunity to directly experience and explore

the science and heritage of the Mississippi River during the spring and fall. Students attend learning stations based on the Mississippi River aboard a river boat for a half day. This experience gives the attending students and teachers a personal connection with the Mississippi River, something many have lived close to but few have visited.

During 2003, staff contacted 2,186 students and 121 adults at the wetland bird station led by Refuge Rangers and volunteers. At the station staff discussed various bird adaptations which link them to the Mississippi River such as courtship, nesting, and foraging activities. Students were instructed on how to use binoculars and then spend time looking for birds as the river boat cruises along the Mississippi River.

#### *2003 Metro Children's Water Festival*

On September 24, two refuge rangers attended the Metro Children's Water Festival at the State Fairgrounds. In total, there were approximately 3,000 fifth graders from schools around the metro in attendance. The rangers hosted a station which taught the program "Birds, Beaks, and Adaptations".

#### *Dakota and Scott Counties Outdoor Days*

Over the course of eight days, Refuge staff attended the Dakota County Outdoor Education Field Days and the Scott County Outdoor Days. Both events bus students from the counties to outdoor areas where various stations are setup. The students rotate through the learning stations throughout the day. At Scott County Outdoor Education Field Days, Refuge staff used "Ducks-on-a-Stick" to demonstrate differences in waterfowl. At Dakota County Outdoor Days, staff led a Wildlife Jeopardy game, testing the participant's knowledge of Minnesota wildlife. Daily attendance averaged 240 students.

#### *Scouting*

Nine different interpretive programs were offered to metro area scouts during 2003. Twenty-six programs were presented with a total attendance of 284 scouts and 105 adults. The popularity of the programs has decreased over the last few years, leading the environmental education staff to re-evaluate the programs offered. This evaluation will continue into 2004.

#### **Interpretation**

Refuge staff and Volunteer Refuge Interpreters continued their tradition of offering high-quality interpretive programs to a variety of audiences in many different venues. One hundred thirteen



**Picture 30. The Johnathan Paddleford paddle boat on the Minnesota River Cruise, celebrating the Centennial. Photo by Chris Kane.**



programs attracted 1,640 participants representing a slight decrease from 2002. The shortage of staff for the last five months of the year accounted for fewer programs and decreased visitor attendance.

## Special Events

### *Centennial Events*

In addition to adding a Centennial component to all the annual special events, the Refuge hosted two events which focused on the 100<sup>th</sup> Anniversary of the National Wildlife Refuge System. They were the Time Capsule Internment and the Minnesota River Boat Cruise in October.

The Time Capsule Internment was held on March 14, 2003 in celebration of the National Wildlife Refuge System Centennial. Over 125 people attended the event including students from partner schools and the Hubert H. Humphrey Job Corps. The ceremony began with five learning stations for the students followed by lunch which included a Centennial cake and Blue Goose cookies. Beginning at noon, several speakers shared their perspectives about this important date. Notable essays from students were also recognized and read. Finally, Refuge Manager Rick Schultz read a letter (Appendix B) that he had prepared for the Refuge Manager of 2103. Refuge staff also displayed and explained the significance of the contents of the time capsule (Appendix C). Shortly thereafter, the time capsule was ceremoniously placed into the concrete floor of the Visitor Center.



**Picture 31.** Cap Stone marking the location of the Centennial Time Capsule in the Visitor Center. Photo by Chris Trosen.



**Picture 32.** Young visitors constructing their bird feeders during Earth Day Event. Photo by Sarah Inouye.

The Minnesota River Boat Cruise occurred on October 8, 2003. Celebrating the Centennial, over 150 people took a four hour cruise up the Minnesota River on a "paddle-boat". Several speakers discussed the Refuge, the National Wildlife Refuge System, and the Centennial.

### *Earth Day*

The theme of Earth Day 2003 at the Refuge was "Spring's - a - Poppin'!" This year, Earth Day was utilized to celebrate the re-awakening of life and warmth to Minnesota after a long, cold winter.

To kick-off of the festivities, the Refuge received a grant for \$500 from the Sam's Club Foundation at

the grand opening of their new store in Shakopee. Sam's Club has been a wonderful Earth Day sponsor for the past couple of years.

The Earth Day Art Contest was an activity in which school-aged students could express what spring meant to them. The contest attracted over 200 entries from ten different schools. This year, in particular, there was a fabulous turn out in the high school category.

Celebration of Earth Day 2003 was culminated on April 26 with a festival at the Visitor Center. The festival attracted visitors from all over the Twin Cities including some of the art contest winners. The Earth Day festival was a success, which attracted many new and also some "seasoned" visitors to the Refuge. The interactive Earth Day stations included:



**Picture 33.** Staff Member Ed Moyer greets visitors to the IMBD events at Como Zoo. Photo by Kristin Raveling.

- "plant your own native grass seeds," a bird feeder building station
- face painting
- Underwater Adventures exhibit
- one live kestrel
- spring critters habitat mural
- giant habitat puzzles
- "test your bird I.Q. station."

#### *International Migratory Bird Day*

International Migratory Bird Day was held on May 10, 2003 at Como Zoo and Zoo Conservatory, in partnership with Como Education Department. Four staff and ten volunteers from the Refuge along with two staff and ten volunteers from Como Zoo worked

towards ensuring the success of this event. Although the day was cloudy and threatened rain, a thousand people visited Como Zoo that day and participated in the event. Children became migrating warblers and "flew" around the zoo locating nesting, migratory, and wintering habitat patches. The visitors also enjoyed a day of learning about birds at education stations such as:

- beaks and feet
- avian feeding habits
- eggs
- nests
- bird songs

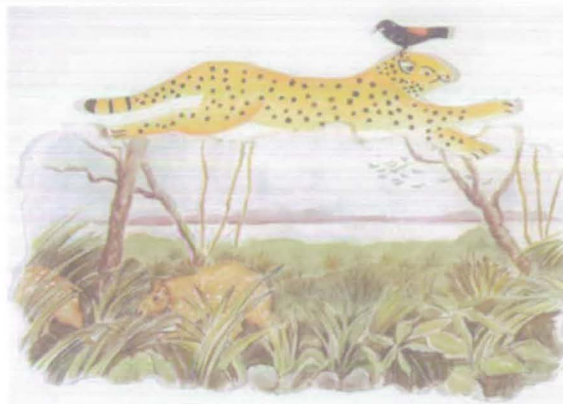
The most popular learning station by far was the "Ducks-on-a-Stick" exhibit. The ducks drew quite a crowd along with many giggles and smiles from children meeting the stuffed birds. Altogether, this was a successful day and many visitors went home with a better appreciation for the conservation of migratory birds and their habitat.



## Art Gallery Exhibits

New lights were added to the gallery this year making it an even more desirable place to exhibit art and photographs. This year the Refuge hosted eight six-week exhibits. The diverse displays have included photography, watercolor, wood burning, and botanical drawings. The artists also hosted receptions which brought many first-time visitors to the Refuge. The exhibits were promoted through various sites including the Refuge web site, in local and daily papers, and through tourism venues. Approximately 200 pieces of conservation art rotated through the gallery for the enjoyment of Refuge visitors. This years' exhibits included:

- "Wildflowers and Weeds", an exhibit by Sandra Muzzy of botanical sketches of common plants of the area
- "Sleeping Beauties of Minnesota Nature", an exhibit of black and white and color photography by Michael A. Rothhoff
- "Alaska Wild" a series of photographys by the Alaska Society of Outdoor Nature Photographers
- "Composition Nature", color photography by Jeffrey Hansen
- "Riparian Images", monoprints by Denise Friesen
- "Celebrate Wildlife" acrylic and watercolor paintings by Karen, Becky, and Bonnie Latham
- "Wild and Wooden" wood burning etchings by William Botsford
- "Viajes al Sur", watercolor images by Mary Norman Hambidge



Picture 34. Collage displayed in gallery.  
Photo by Mary Norman Hambidge.

## Blufftop Bookshop

With improved inventory, the Blufftop Bookshop, had a tremendous year. Total sales nearly reached \$20,000, up \$2,000 from 2002. New lighting, paint, and bookshelves has made the store a brighter and friendlier place.

## Resource Library

With the centennial celebrations occurring throughout the year, usage of the Regional Resource Library increased. "Puddles" and the Centennial Displays were frequently on the road as illustrated in Table 8.

Table 8. Materials utilized from the resource center at Minnesota Valley NWR during FY2003.

	Total	Requests	
		FWS (%)	Other (%)
Library Requests	415	256 (62)	159 (38)
Audio/Visual Materials	137	97 (71)	40 (29)
Trunks	45	17 (40)	28 (60)
Displays	94	93 (99)	1 (1)
Puddles Mascot Costume	39	39 (100)	0 (0)
Information Requests	100	10 (10)	90 (90)

## 7b. PUBLIC OUTREACH

### VIP Visits

On September 16, 2003 Director Steve Williams visited Minnesota Valley NWR. He met with staff members and partners to discuss some of the incredible things being accomplished by both the Service and its partners on the Refuge and in the Wetland Management District. During the afternoon, Mr. Williams met with most of the staff and several reporters for an open discussion.



Picture 35. Director Williams visits with staff of Minnesota Valley NWR. Photo by Scott Ford.



Picture 36. Nicole Lorenz' painting of a pair of Northern Pintails. Picture by Judie Miller.

### Conservation Program Has Another Successful Year

The Minnesota Junior Duck Stamp Program has been administered by the Refuge for several years. It is a conservation program designed to teach students about waterfowl and their habitat through an art and science-based curriculum. The program is available both to school children in grades K-12 and to home school students. The program is modeled after the Federal Duck Stamp Program and gives students an opportunity to create a design for a waterfowl stamp. During the 2002-2003 school year, nearly one thousand Minnesota students from 82 schools participated in the program.

Nicole Lorenz, 18, from Simley High School took Best-of-Show honors with an oil painting of a pair of resting Northern pintails at this year's Minnesota Junior Duck Stamp Competition which was held on March 29 at the Burnsville City Hall in Burnsville. Nicole's painting was selected as



best from a field of 974 entries from talented students throughout Minnesota. The five judges who assembled for the difficult task of selecting this year's winners were Wildlife Artists: John Idstrom, Becky Latham, Carla Knoke, and Barney Anderson, as well as Lance Ness, President of the Fish and Wildlife Legislative Alliance. Steve Kufrin, Regional Office, served as judge advisor.



**Picture 37. The Wanchura family at the Junior Duck Competition. Photo by Judie Miller.**

Nicole's painting represented Minnesota in the National Competition which was held on April 25 in Ocean City, Maryland. The Junior Duck National Competition was held in conjunction with the Ward Museum World Decoy Carving Competition. Nicole Lorenz attends Simley High School in Inver Grove Heights. Her painting was one of the five which made it to the final round of the national competition and Nicole finished overall in the top ten. It was a portrayal of a green-winged teal pair by 18-year-old Nathan Bauman of Jonestown, Pennsylvania which was finally judged the top painting among the winners from 50 states plus the District of Columbia and American Samoa.

### **Public Outreach**

Fifty-four press releases and three public service announcements were distributed this year to announce and promote refuge calendar activities and special events. The Refuge website was maintained and updated throughout the year. The website was also refreshed with new photographs and major changes to the environmental education program and to the Regional Resource Center sections. The "What's New" page was updated frequently to let the public know about happenings at the Refuge. One such item was information on the new photo blinds established on the Refuge.



## Planning and Administration

### 8.a. Comprehensive Conservation Planning

The Comprehensive Conservation Plan (CCP) went through the public comment period and the final version was prepared. Both the CCP and Land Protection Plan have been sent to Washington for approval. The Land Protection Plan identifies an additional 10,090 acres of land for acquisition. The lands would be purchased through the Minnesota Valley National Wildlife Refuge Trust, Inc. which is administering the mitigation projects resulting from the Minneapolis St. Paul Airport expansion.

#### **Minnesota Valley National Wildlife Refuge Trust, Inc. (Trust)**

The Minnesota Valley National Wildlife Refuge Trust, Inc. was established in August 2000 to serve as the mitigation agent for the Metropolitan Airports Commission. The Trust's purpose is to implement projects that will mitigate the impact of the new north-south runway under construction at the Minneapolis-St. Paul International Airport upon the Refuge. The Trust is comprised of five "supporting organizations" – Friends of the Minnesota Valley, Minnesota River Basin Joint Powers Board, Minnesota Department of Natural Resources, Minnesota Waterfowl Association and National Audubon Society, each appointing a representative to serve on the Trust's Board of Directors.

The Service finalized development of the draft Refuge Mitigation Plan in December 2002. The primary purpose of this mitigation plan is to set the general direction for the expenditure of Trust funds. After additional minor modifications, the Refuge Mitigation Plan was approved and accepted by both the Service and the Trust on April 2, 2003. Even though the Comprehensive Conservation Plan for the Refuge has not been finalized, the Trust and the Refuge are beginning to implement mitigation projects. Mitigation activities to be accomplished by the Trust include but are not limited to:

- **Land Acquisition and Habitat Restoration**

Approximately 60% of the Trust assets, and earnings generated thereof, is intended to be spent on acquiring and restoring new lands for the Refuge within the Minnesota River Valley. Additional Refuge units will be identified and of these, no less than 4,090 additional acres will be acquired from willing sellers using these funds.

- **Public Use Facilities**

Approximately 20% of the Trust assets, and earnings generated thereof, is intended to be spent on public use facilities such as an environmental education center, trails, wildlife interpretive sites, and associated support facilities. Some of these facilities will be

constructed on existing Refuge lands and others will be placed on new lands acquired with mitigation funding.

- Planning and Operations

Approximately 20% of the Trust assets, and earnings generated thereof, is intended to be spent on planning for new lands and facilities, the operation of the new environmental education facilities, construction of support facilities, and the maintenance of new Refuge lands. The Mitigation Plan is subject to periodic review, and if deemed necessary, modification. A draft Implementation/Work Plan for the Mitigation Plan was also developed. The purpose of this work plan is to track roles, responsibilities and deadlines for all partners involved.

The Trust, via its continued participation in the Habitat Corridors Partnership, received two grants from the State's LCMR in 2003. The Metro Habitat Corridors Project grant of \$290,000 is for metro land acquisition; while the Wildlife Habitat Corridor Project grant of \$98,300 is for out-state land acquisition. A work program was submitted to the LCMR which identified the Trust's targeted acquisition acreage and proposed restoration and development plans.

In June 2003, the Trust received a preliminary proposal from the Refuge regarding the acquisition of approximately 330 acres of Minnesota River floodplain between the Rapids Lake and Chaska Units. In July the Trust ventured forth in this endeavor by establishing meetings with the three landowners involved. All three landowners responded positively, expressing interest in selling their land to the Trust for the Refuge and a willingness to put WRP easements on their properties. Throughout the remainder of summer, the Trust in collaboration with the Service proceeded to take steps in preparation of acquiring the targeted acreage. The Service completed a Level 1 contaminant review of the properties while the Trust had discussions with the Natural Resource Conservation Service about the enrollment of these lands into WRP easements. The Trust also researched other areas of concern such as appraisals, liability insurance, and cooperative land management agreements with regards to the proposed land acquisition. A Memorandum of Understanding between the Service and the Trust for the management of lands held in fee title by the Trust was drafted since the Trust will acquire the property and hold title until the Service can accept transfer of title.

Preliminary mitigation planning efforts continued throughout the past year in preparation of project implementation. Public use facility planning efforts accomplished to-date include:

- a Section 7 (Endangered Species Act of 1973) Intra-Service Consultation on Listed, Proposed and Candidate species within the Rapids Lake Unit
- a cultural resources/archaeological field survey of proposed development sites on the Rapids Lake unit with draft report
- removal of abandoned septic systems on the Rapids Lake Unit

- preliminary environmental analysis of proposed public use facility development at Rapids Lake
- development of a draft conceptual site plan for public use facility development at Rapids Lake in addition to developing initial narrative descriptions of the conceptual building plans
- field reconnaissance and logistical planning for garbage dump site cleanup at Rapids Lake
- contract development and award for Section 106 (National Historic Preservation Act) Review of the Gehl-Mittelsted house and surrounding area.

Financially the Trust was fully engaged in market investments throughout the entire year. Market investment performance results varied substantially during this time. The Trust's net asset value had dropped to \$24.66 million by the end of the 2002 calendar year. Positive market performance beginning in the second quarter of 2003 and extending through the third quarter resulted in the Trust's net asset value rebounding to \$27.95 million by September 30, 2003.



## 8.b. General Administration

The Refuge FY03 budget is summarized as follows:

DESCRIPTION	SUBACTIVITY	AMOUNT
Base Salaries .....	1261 .....	\$1,270,336
Operating Expenses .....	1261 .....	\$ 257,398
Regional Resource Center.....	1261 .....	\$ 28,765
Challenge Cost Share.....	1261 .....	\$ 12,000
CCI – Bird Viewing Habitat Proj.....	1261 3CCI.....	\$ 3,293
Volunteers.....	1261 .....	\$ 9,875
SCEP Position.....	1261 .....	\$ 7,000
Annual Maintenance-Refuge .....	1262 A3MV .....	\$ 102,916
Annual Maintenance-District.....	1262 A3MW .....	\$ 15,000
Deferred Maint – Roof Repair .....	1262 3302 .....	\$ 256,800
Deferred Maint – Maint. Shop Cons. ....	1262 3306 .....	\$ 470,600
Deferred Maint – Door Cons. @ VC .....	1262 3321 .....	\$ 93,000
Equipment Replacement.....	1262 B3MV .....	\$ 41,000
Heavy Equipment Replacement.....	1262 H3MV .....	\$ 87,000
Private Lands:		
Habitat Restoration .....	1121 03HR.....	\$ 55,000
Clean Water & Watershed .....	1121 03HR.....	\$ 20,000
Technical Assistance.....	1121 03TA .....	\$ 99,091
Admin. Support.....	1121 03TA .....	\$ 4,000
Dehning WPA Restoration .....	1234 .....	\$ 12,000
Fire Funding		
PFS Recruitment Fee .....	9251 .....	\$ 1,785
Fire Equipment .....	9263 .....	\$ 9,000
Wildland Urban Interface .....	9264 .....	\$ 106,500
WUI – Training Costs.....	9264 TNTV.....	\$ 1,870
Rural Fire Assistance.....	9265 .....	\$ 25,822
Regional Resource Library		
	1122 .....	\$ 5,754
	1231 .....	\$ 2,157
	1231 30NG .....	\$ 2,158
	1234 .....	\$ 1,439
	1311 .....	\$ 5,754
	1662 .....	\$ 5,754
Total.....		\$3,013,067
Additional Funding:		
Flood Carryover for water control .....	2972 E3GG .....	\$ 365,544
structures, levees, culverts,		
piers, fences, boat ramps,		
visitor areas, bridges, etc.		
NAWCF – Wetland Conservation .....	3720 0250 .....	\$ 80,000
Recreational Fee Demo Program .....	6351 .....	\$ 6,228

## Staffing

The Refuge gained four new staff members this year and said good-bye to five employees. Dennis Baird joined our maintenance staff; Christine Johnson became our new Administrative Technician; Lindsey Becker is our new SCEP Student; and Christopher Trosen our new Refuge Operations Specialist.

Those departing were Kristi Neilson (FY03), Ed Moyer (FY03), Scott Ford (FY04), Chris Jussila (FY03), and Judie Miller (FY04). Kristi Neilson resigned from government employment to explore the private sector. Scott Ford and Chris Jussila transferred to Neil Smith NWR as Lead Ranger and Sherburne NWR as a new Zone Law Enforcement Officer, respectively. Ed Moyer and Judie Miller retired.

The following is a list of the entire Minnesota Valley staff for Fiscal Year 2003, including titles, current grades and report dates:

Name	Title	Grade	Report Date	Status
Baird, Dennis	Maintenance Worker	WG-08	10/20/02	
Becker, Lindsey	Student Trainee (Biology)	GS-04	01/07/02	
Boyd, Lonnie	Maintenance Worker	WG-8	11/13/94	
Ford, Scott	Park Ranger	GS-12	02/25/01	Transferred
Franke, Dean	Maintenance Worker	WG-10	03/30/97	
Groom, Cheryl	Park Ranger	GS-09	01/28/01	
Inouye, Sarah	Park Ranger	GS-07	01/28/01	
Johnson, Christine	Administrative Technician	GS-06	10/20/02	
Jussila, Chris	Park Ranger - LE	GS-09	12/16/01	Transferred
Kane, Chris	Refuge Operations Specialist	GS-09	07/24/94	
Kane, Jana	Park Ranger	GS-09	12/05/99	
Kerr, Tom	Refuge Operations Specialist	GS-12	04/05/92	
Knopik, Ron	Bio-Science Technician	GS-07	04/24/01	
Lehmann, Jodi	Administrative Officer	GS-09	09/23/01	
Malling, Mike	Wildlife Biologist	GS-11	04/27/97	
Malz, Linda	Park Ranger (Trust)	GS-12	08/26/01	
Miller, Judith	Park Ranger	GS-11	06/28/92	Retired
Moyer, Ed	Park Ranger	GS-07	11/14/82	Retired
Neilson, Kristi	Park Ranger	GS-07	11/18/01	Resigned
Raveling, Kristin	Park Ranger	GS-07	10/1/01	
Schreiner, Terry	Refuge Operations Specialist	GS-12	07/21/85	
Schultz, Richard D.	Refuge Manager	GS-14	10/16/94	
Sherry, Vicki	Wildlife Biologist	GS-11	03/20/94	
Trosen, Christopher	Refuge Operations Specialist	GS-05	08/10/03	
Vacant	Bio-Science Technician	GS-07		
Wassather, Roy	Maintenance Worker	WG-09	07/28/91	

## Minnesota Valley National Wildlife Refuge Staff Photo



By Sutter

**Front Row:** Chris Trosen, DJ Rieger, Christine Johnson, Chris Kane, Jana Kane

**Middle Row:** Dennis Baird, Terry Shreiner, Roy Wassather, Dean Franke, Mara Lundeen,  
Kristin Raveling, Mike Malling, Lonnie Boyd

**Back Row:** Ron Knopik, Jodi Lehmann, Linda Malz, Nicole Rankin, Rick Schultz, Vicki Sherry,  
Tom Kerr, Sarah Inouye, Cheryl Groom

## Summer Biological Technician Program

During the summer of 2003, the Refuge employed eight Student Training Experience Program biological technicians. The biological technicians included:

Name	College
Frenchett, Andi.....	St. Cloud State
Groenjes, Dave .....	St. Cloud State
Lewis, Jumal.....	Carlton
Nuetel, Rechel .....	University of Minnesota
Olson, Annie.....	St. Olaf
Pavelko, Joe.....	St. Olaf
Roeder, Cassie.....	St. Cloud State
Undelhoven, Emily.....	St. Cloud State

Biological technician projects completed on the Refuge included:

- Assistance to maintenance program for gate replacement and installation
- Youth Fishing Day assistance
- Replace faded and vandalized boundary signs on all Refuge units
- Repaint post and rail fencing at Bass Ponds parking lot, Chaska Unit, Louisville Unit, Wilkie Unit, Bloomington Ferry Unit, Black Dog Unit, Rapids Lake Unit
- Clear water control structures on the Refuge
- Cleanup of trash and flood debris on the Chaska Unit
- Install post and rail at the Chaska Unit
- Repaint 37 gates
- Repaint the Shakopee shop fence
- Assist with parking lot and unit sign installation on WPAs
- Assist with leafy spurge beetle collection and dispersal
- Assist with duck banding
- Mow weeds on WPAs and Refuge Units
- Spray thistle on WPAs and Refuge Units
- Trash pickup in 24 parking lots
- Clean visitor center garage stalls
- Assist with environmental education programming
- Assist with Visitor Center desk coverage
- Assistance on the cleanup of the Pahl Tract
- Mowed the Refuge's 24 parking lots

## Volunteers

The Refuge Volunteer Program logged over 15,300 hours donated through partners, interns, volunteers, and community members. This is equivalent to 7.5 full-time employees with a value of \$240,586. Support was provided in all program areas of on-refuge operations as well as in



private lands projects and cooperating programs with the Friends of Minnesota Valley. Total hours reflect true volunteer hours, not including any time from community service or Sentenced-to-Serve programs.

Volunteer activities were focused on habitat management and public education and outreach. Volunteers logged an outstanding 5,000 hours of exotic species removal and control of native pest plants and another 4,726 hours assisting with public programs, outreach, visitor's center operation, and Refuge trail monitoring.

The hours logged in habitat management and restoration were, in large part, due to group service days which included Macalester College, AmeriCorps, Great River Greening, local Girl and Boy Scouts, as well as various other student societies from local colleges and universities. More than 2,000 hours were donated by local Eagle Scouts in the habitat restoration and maintenance programs, the equivalent of one full-time employee. Groups focused their time and talents on buckthorn removal at an oak savanna restoration site, miles of barbed wire fence removal, and hand collecting nearly 30 pounds of native prairie forb seed.

The Refuge continued the program partnership with the Minneapolis Public School systems' P.O.H.I. (Physical and Other Health Impairments) Group. Mr. Jim Christy, P.O.H.I. Program Coordinator, identified four high school students with primary physical impairments that wished to volunteer for workplace experience. They were bussed to the Refuge with crew leader, Bill Cameron, every workday and volunteered for two hours each day throughout the winter and spring months. These great kids and Mr. Cameron performed a variety of volunteer services for staff ranging from Visitor Center maintenance, office assistance, recycling, and data entry. The program was also expanded to include two paid summer students (employed by the City of Minneapolis) to assist the administrative staff with Visitor Center operations. Three staff members attended supervisory training through the City of Minneapolis "School That Works" program in order to supervise the summer youth on-site. At the beginning of the current school year, budget cuts brought about a revised version of the in-school program. P.O.H.I. has lost their highly trained crew leaders and is now placing youth that are high-functioning and physically able in the community. P.O.H.I. students which are currently at the Refuge are Brian Smith-Stroud, who is on his third year at the Refuge and has logged more than 250 hours, Joe Rye, and Nick Brown.

The annual Volunteer Appreciation Brunch was held in May 2003. This event is always a great opportunity to catch up with volunteers, new and old, who have donated their time and talents to make the Refuge a better place. Attendance was high, with more than 50 students from Hubert Humphrey Job Corps in attendance. During this event Craig Mandel's time in service was honored, and Sivert Hendrickson was named Volunteer of the Year for his long-time contributions to our maintenance program. Sivert is known for his carpentry skills, talents for design, and willingness to do whatever task we ask of him.

## **Tree Trust**

Tree Trust continues to good great work for us year after year. This organization has been our sole source for support in the completion of new and the rehabilitation of existing public use projects over the last 17 years. The only cost to the Refuge for these projects is in the materials.

During the year, Tree Trust completed several projects including installation of a unit sign and post and rail fencing on the Rapids Lake Unit. They also installed a unit sign on the Long Meadow Lake and Wilkie Units.

Winter projects consisted of the repair of a vandalized Old Cedar Avenue observation deck. Post and rail was repaired near the Minnow Pond on the Long Meadow Lake Unit.

## **8.c. Major Construction and Maintenance**

Staff remained very busy during the year maintaining the infrastructure on the Refuge. On the Refuge, staff maintains nine buildings, 37 gates, 17 Unit signs, nine information kiosks, 15 public use structures (fishing piers, bridges, boardwalks, and observation decks), 24 parking lots, numerous water control structures, dikes and thirty- five miles of Refuge trails. In addition, staff maintained 15 parking lots which are associated with 23 Waterfowl Production Areas.

Several large construction projects were started on the Refuge during 2003. These included:

### **Replace Visitor Center Roof**

The roof of the Visitor Center has been plagued with leaks for the past five years. After a rainstorm, we usually have 20-25 buckets throughout the exhibit area to catch the leaks. Fortunately, the project was funded through Maintenance Management System and design and bidding occurred during the fiscal year. The work started shortly after in October of 2003 and is on target for a completion before the spring of 2004. Leaky windows will also be replaced and a mold investigation was started on the building. Results of the mold test are due back in December of 2003.

### **Replace the Refuge Maintenance Facility**

Designs and bidding were completed during FY2003 for the replacement of the maintenance shop facility. Construction started in November of 2003. The new facility, located on the Rapids Lake Unit will replace the existing maintenance complex on the Rapids Lake Unit Near Jordan. The old shop was a portion of the Gehl-Mittelsted farm. Once completed, the Refuge will have a vehicle lift for the first time and an indoor facility big enough to work on heavy equipment.

### **Replace Visitor Center Doors**

Designs were completed and a vendor selected for the replacement of doors on the Visitor Center. The new doors will also be handicapped accessible.

### **Paint Visitor Center Parking Lot Light Posts**

All 30 of the light posts in the Visitor Center parking lot were painted this year. Many of the posts had started to peel and looked unsightly.

### **Replace Residence at Rapids Lake Unit**

Design work and surveying was completed for a new residence on the Rapids Lake Unit. Bidding and construction is scheduled for FY2004.

### **Survey and Design for Replacement of Hogback Pond Water Control Structure**

Failure of the existing water control structure caused severe erosion on the Hogback Dike. The hole in the dike is approximately 40' wide by 60' long by 20' deep. Survey and design was completed during the year and hopefully the project will be bid and completed in FY2004. The water control structure failed in 2002 and is a critical part of our Long Meadow Lake trail system. Because of the length of time it is taking to repair the problem, the Refuge installed a chain link fence around the hole to prevent injury to the public.

### **Refuge Unit Sign Installation**

New unit signs were installed on the Black Dog, the Louisville Swamp, the Wilkie, and the Rapids Lake Units. Unit sign panels were also updated on the Long Meadow Lake Unit, Black Dog Unit, and Bloomington Ferry Unit.

### **Replace Lyndale Kiosk**

The Lyndale boat launch kiosk on the Long Meadow Lake Unit was replaced after being vandalized last year.

### **Repair Vandalism**

A large portion of Refuge staff time is spent repairing vandalism to structures and facilities. Numerous arson fires on the Refuge destroyed some public use facilities including post and rail fencing and parts of observation decks and fishing piers. Repair efforts this year focused on upgrading the facilities to reduce vandalism. During the year, staff repaired the following:



### *Bass Ponds Fishing Pier*

Portions of the fishing pier were burned out three times after campfires were illegally started on the wood decking. After the third time the deck was replaced with diamond plated steel. Steel decks were also installed on two other fishing piers.

### *Cedar Avenue Wildlife Observation Deck and Boardwalk*

The deck and the front railings were replaced after being vandalized.

### *Black Dog Observation Lot*

The gate was repaired once and the post and rail in the lot was repaired five times.

### *Refuge Parking Lots*

During the course of the year four gates were repaired that had been vandalized. The gate hinge assembly was changed to reduce the vandalism on the gates.

### *Kiosk Panels*

Several kiosk panels which had been vandalized were replaced.

### *Chaska Unit Post and Rail*

Post and rail fencing was installed on the Chaska Unit. Within nine days it had been vandalized and was subsequently repaired.

\*In addition to vandalism repair, staff spent a large amount of time picking up trash dumped in Refuge parking lots. Highlights included a boat, dump truck loads of wood chips, TVs, a pool (with a ladder and liner), lawn mowers, oil containers, unknown waste liquids (disposed of through a hazardous waste hauler), tires, carpet, toilets, and yes.....even a kitchen sink.

## **Long Meadow Lake Trail Upgrade**

As part of a Wildland Urban Interface fire project, the Long Meadow Lake Trail on the Refuge was graveled and widened. This six mile trail is the only access to the interior of the Long Meadow Lake Unit. The Unit has had numerous arson and wildfires in the last ten years and access has been difficult. With the upgrade of three miles of this trail, a Type VI engine will be able to access at least half of the Unit.

### **Brush Refuge Trails**

During the year, most of the 35 miles of trails on the Refuge were brushed back to accommodate use by Type VI fire engines.

### **Minnow Pond Culvert Replacement**

The trail culvert by the Minnow Ponds was replaced after washing out the trail for the third time in three years.

### **Cleanup of the Pahl Tract on the Long Meadow Lake Unit**

Progress was made in cleaning up the Pahl Tract on the Long Meadow Lake Unit. Two buildings were removed and trash, farm implements, tires, and miscellaneous scrap metal was collected from approximately four acres of floodplain. Job Corps, volunteers and Refuge staff spent many hours collecting and consolidating trash from this home site. Since it is in a remote location along the River, everything has to be moved by pickup trucks and small trailers to a site approximately six miles away where it can be placed in dumpsters. The project should be completed by the end of December 2003.

### **Upgrade Chaska Trail**

The trail through the Chaska Unit was repaired. With the acquisition of the final tract of land in the Chaska Unit, the Refuge was able to gate and post and rail the access points to eliminate all-terrain vehicle trespass. The Refuge also repaired and graveled sections of the old farm road to make it a hiking trail that connects the cities of Chaska and Carver.

### **Repaint and Sign Gates**

Most of the 37 gates on the Refuge were repainted and new regulation signs were installed.

### **Barbed Wire Fence Removal**

In a continuing project, barbed wire fence was removed on the Long Meadow Lake and Louisville Units. Job Corps, Eagle Scouts and other volunteers continue to make progress on this huge project.

### **Equipment Replacement**

During the year, the Refuge replaced a sweeper mower unit, one tractor and two mower units. The addition of a 15 foot flail mower will improve our weed control capability.

## Appendix A

### List of Scientific and Common Names of Species in Document

<u>Scientific Names</u>	<u>Common Names</u>
<b>Fauna .....</b>	<b>Animals</b>
<i>Aegolius acadicus</i> .....	Northern saw-whet owl
<i>Agelaius phoeniceus</i> .....	Red-winged blackbird
<i>Aix sponsa</i> .....	Wood duck
<i>Anas acuta</i> .....	Northern pintail
<i>Anas americana</i> .....	American widgeon
<i>Anas clypeata</i> .....	Northern shoveler
<i>Anas crecca</i> .....	Green-winged teal
<i>Anas discors</i> .....	Blue-winged teal
<i>Anas platyrhynchos</i> .....	Mallard
<i>Anas strepera</i> .....	Gadwall
<i>Aphthona sp.</i> .....	Flea beetle (Leafy spurge beetle)
<i>Ardea herodias</i> .....	Great blue heron
<i>Aythya affinis</i> .....	Lesser scaup
<i>Aythya americana</i> .....	Redhead
<i>Aythya collaris</i> .....	Ring-necked duck
<i>Aythya valisineria</i> .....	Canvas back
<i>Botaurus lentiginosus</i> .....	American bittern
<i>Branta canadensis</i> .....	Canada goose
<i>Bucephala clangula</i> .....	Common goldeneye
<i>Bucephala albeola</i> .....	Bufflehead
<i>Buteo platypterus</i> .....	Broad-winged hawk
<i>Bufo americanus</i> .....	American toad
<i>Cardinalis cardinalis</i> .....	Northern cardinal
<i>Carduelis tristis</i> .....	American goldfinch
<i>Casmerodius albus</i> .....	Great egrets
<i>Castor canadensis</i> .....	Beaver
<i>Chlidonias niger</i> .....	Black terns
<i>Cistothorus platensis</i> .....	Sedge wren
<i>Clangula hyemalis</i> .....	Oldsquaw
<i>Contopus sordidulus</i> .....	Eastern wood pewee
<i>Corvus brachyrhynchos</i> .....	American crow
<i>Cyanocitta cristata</i> .....	Bluejay
<i>Cygnus columbianus</i> .....	Tundra swan
<i>Dolichonyx oryzivorus</i> .....	Bobolink
<i>Falco peregrinus</i> .....	Peregrine falcon
<i>Felis concolor</i> .....	Cougar
<i>Fulica americana</i> .....	American coot

<i>Galerucella</i> sp.	Purple loosestrife beetle
<i>Gallinula chloropus</i>	Common moorhen
<i>Gavia immer</i>	Common loon
<i>Geothlypis trichas</i>	Common yellow throat
<i>Haliaeetus leucocephalus</i>	Bald eagle
<i>Hyla versicolor</i>	Grey treefrog
<i>Ixobrychus exilis</i>	Least bittern
<i>Lutra canadensis</i>	River otter
<i>Meleagris gallopavo</i>	Wild turkey
<i>Melospiza melodia</i>	Song sparrow
<i>Mergus merganser</i>	Common merganser
<i>Mustela vison</i>	American mink
<i>Myiarchus crinitus</i>	Great-crested flycatcher
<i>Nycticorax nycticorax</i>	Black-crowned night-heron
<i>Ondatra zibethicus</i>	Muskrat
<i>Ophodytes cucullatus</i>	Hooded merganser
<i>Oxyura jamaicensis</i>	Ruddy ducks
<i>Pandion haliaetus</i>	Osprey
<i>Passerina cyanea</i>	Indigo bunting
<i>Pelecanus erythrorhynchos</i>	White pelican
<i>Phalacrocorax auritus</i>	Double-crested cormorant
<i>Pheucticus ludovicianus</i>	Rose-breasted grosbeak
<i>Picoides pubescens</i>	Downy woodpecker
<i>Podilymbus podiceps</i>	Pied billed grebes
<i>Porzana Carolina</i>	Soras
<i>Procyon lotor</i>	Raccoon
<i>Pseudacris triseriata</i>	Western chorus frog
<i>Rallus elegans</i>	King rail
<i>Rallus limicola</i>	Virginia rail
<i>Rana clamitans</i>	Green frog
<i>Rana pipiens</i>	Northern leopard frog
<i>Sialia sialis</i>	Eastern Bluebird
<i>Sitta carolinensis</i>	White-breasted nuthatch
<i>Stizostedion vitreum</i>	Walleye
<i>Tachycineta bicolor</i>	Tree swallow
<i>Troglodytes aedon</i>	House wren
<i>Vermivora peregrina</i>	Tennessee warbler

<b>Flora</b>	<b>Plants</b>
<i>Acer negundo</i>	Boxelder
<i>Acer saccharinum</i>	Silver maple
<i>Allium ursinum</i>	Wild garlic
<i>Andropogon gerardii</i>	Big bluestem
<i>Anemone patens</i>	Pasque flower
<i>Asclepias tuberosa</i>	Butterfly weed



<i>Asclepias incarnata</i> .....	Swamp milkweed
<i>Bouteloua curtipendula</i> .....	Side-oats grama
<i>Bromus inermis</i> .....	Smooth brome
<i>Bromus kamii</i> .....	Kalm's brome
<i>Calamagrostis canadensis</i> .....	Bluejoint reedgrass
<i>Calamovilfa longifolia</i> .....	Sand reed
<i>Celtis occidentalis</i> .....	Hackberry
<i>Cirsium arvense</i> .....	Canada thistle
<i>Cornus stolonifera</i> .....	Red-osier dogwood
<i>Delphinium virescens</i> .....	Prairie larkspur
<i>Elymus canadensis</i> .....	Canada wild rye
<i>Elytrigia repens</i> .....	Quack grass
<i>Euphorbia esula</i> .....	Leafy spurge
<i>Fraxinus pennsylvanica</i> .....	Green ash
<i>Geum triflorum</i> .....	Prairie smoke
<i>Juniperus virginiana</i> .....	Red cedar
<i>Lemna minor</i> .....	Duckweed
<i>Liatris pycnostachya</i> .....	Prairie blazing star
<i>Lythrum salicaria</i> .....	Purple loosestrife
<i>Monarda didyma</i> .....	Bergamont
<i>Nuphar lutea</i> .....	Yellow water lily
<i>Nymphaea odorata</i> .....	White water lily
<i>Panicum virgatum</i> .....	Switch grass
<i>Parthenocissus sp.</i> .....	Woodbine
<i>Phalaris arundinacea</i> .....	Reed canary grass
<i>Poa pratensis</i> .....	Bluegrass
<i>Populus deltoides</i> .....	Eastern cottonwood
<i>Potamogeton pectinatus</i> .....	Sago pondweed
<i>Prunus serotina</i> .....	Black cherry
<i>Prunus virginiana</i> .....	Chokecherry
<i>Quercus bicolor</i> .....	Swamp white oak
<i>Quercus ellipsoidalis</i> .....	Pin oak
<i>Quercus macrocarpa</i> .....	Bur oak
<i>Rhamnus cathartica</i> .....	European buckthorn
<i>Rhamnus frangula</i> .....	Glossy buckthorn
<i>Rubus sp.</i> .....	Bramble
<i>Rudbeckia hirta</i> .....	Black eyed susan
<i>Sagittaria longiloba</i> .....	Arrowhead
<i>Scirpus fluviatilis</i> .....	Bulrush
<i>Shizachyrium scoparium</i> .....	Little bluestem
<i>Silphium laciniatum</i> .....	Compass plant
<i>Sisyrinchium campestre</i> .....	Blue-eyed grass
<i>Sorghastrum nutans</i> .....	Indian grass
<i>Sporobolus heterolepis</i> .....	Prairie dropseed
<i>Stipa spartea</i> .....	Porcupine grass

<i>Tilia americana</i> .....	Basswood
<i>Typha latifolia</i> .....	Common cattail
<i>Ulmus americana</i> .....	American elm
<i>Ulmus pumila</i> .....	Siberian elm
<i>Ulmus rubra</i> .....	Slippery elm
<i>Verbena sp.</i> .....	Vervain
<i>Zanthoxylum americanum</i> .....	Prickly-ash
<i>Zizania aquatica</i> .....	Wild rice

## Appendix B

### Letter to Minnesota Valley National Wildlife Refuge Manager in 2103 located in Centennial Time Capsule



IN REPLY REFER TO:

#### United States Department of the Interior

U.S. FISH AND WILDLIFE SERVICE  
Minnesota Valley National Wildlife Refuge  
3815 East 80<sup>th</sup> St.  
Bloomington, MN 55425



*Celebrating a  
Century  
of Conservation!*

FWS/MNV

March 14, 2003

Refuge Manager  
Minnesota Valley National Wildlife Refuge  
3815 East 80<sup>th</sup> Street  
Bloomington, Minnesota 55425

Deer Refuge Manager of 2103:

It is with the greatest honor and privilege that I write this letter to you, a subsequent Refuge Manager of this very unique and special place, and that is Minnesota Valley National Wildlife Refuge. The task before me is different, for I have never put words in to paper to someone I have never known, to someone who will likely be 100 years younger than I, and to someone who will have faced a 100 years of change in this rapidly changing world. While the years may separate us, I am hopeful that we will have one thing in common, and that is a great deal of passion for the conservation of our Nation's fish, wildlife, and plant resources.

Just as our Nation has experienced a great deal of change since President Theodore Roosevelt established Pelican Island National Wildlife Refuge on March 14, 1903, I can only imagine what the world will be in 2103. I can only imagine the complexities you will face as you restore, manage, and protect important habitats for the diversity of species that use this Refuge. I can only imagine how the economic, social, and political pressures will form, reform, and shape this assemblage of lands within a growing and thriving urban environment. I can only imagine how technology will either make your job much easier than mine, or perhaps make your challenges even more insurmountable. Whatever those challenges may be in 2103, I wish you the best of luck in ensuring that these lands continue to provide places for wildlife and places of reflection, thought, and enjoyment for our visiting public far beyond your time.

Within the cylindrical walls of this time capsule, we are providing you a snapshot of the people, the place, the challenges, and the opportunities of Minnesota Valley National Wildlife Refuge as they exist on March 14, 2003. Upon review, you will likely discover an array of staff, volunteers, and citizens who are strongly committed to this place. You will likely discover diverse plant communities inhabited by numerous species of wildlife, many within an urban setting. You will likely discover the importance of this ecological community to the social structure of the Twin cities and surrounding communities. You may also discover unique environmental education and interpretive programs designed to install a conservation ethic within our communities. Perhaps you will uncover some of our ambitious plans for the future. You will also likely discover some of today's threats and challenges that have the potential to alter future tomorrows. Finally, you will find a few trinkets of our trade, some items of today that will become artifacts of tomorrow.

Perhaps our greatest contribution to you, however, and those who love these places as dearly as we do, is to ensure that this Refuge with its diverse plant and animal communities, is in better shape than when we received it. If we are successful in this endeavor, and all subsequent generations of citizens, refuge managers, park rangers, and maintenance and administrative staff do the same, you will inherit an increasingly valuable piece of wild land in a world facing ever increasing pressures.

On the eve of war with Iraq and increasing tensions with North Korea, on the eve of the possible despoilment of Arctic National Wildlife Refuge, on the eve of increasing threats from terrorism, we wonder what will become of these special places. We wonder if the values we hold dearly today will be the same values society holds in 2103. For these ideals to prevail, we need to ensure that fish, wildlife, and plant conservation within and beyond Refuge boundaries, are economically, socially, and politically important for generations to come. We need to make sure that these special places are important to our increasing diverse Nation. We need to improve our ability to reach out to others, stimulate their interest, and provoke them to advocacy. Without question, this is our largest challenge today, tomorrow, and for many years to come.

At Minnesota Valley National Wildlife Refuge, today's citizens, conservationists, bird watchers, hunters, anglers, educators, and students have spoken out on behalf of this important place. Their words and their actions have laid the foundations for continued conservation of wildlife on the Refuge and out into its watershed. Their words and actions have served as a model for others to act on behalf of their strong convictions. My continued hope is that these actions will not be forgotten in the face of local, regional, and perhaps worldly challenges.

Since its establishment on October 8, 1976, this Refuge has been blessed with a variety of groups who made this place possible. Included among our first partners are the Friends of the Minnesota Valley, the Minnesota River Valley Audubon Chapter, and staff from the Minnesota Department of Natural Resources. From Ducks Unlimited to Pheasants Forever, from the Minnesota Waterfowl Association to our Partner Schools, from the Minnesota Valley National Wildlife Refuge Trust, to numerous local conservation organizations, our list of partners have significantly increased over the years. The common thread running through all of these relationships is a strong desire to ensure that wildlife located within wild habitats remains a significant part of our social fabric.



With increasing citizen interest, involvement, and support, I am very enthusiastic about the long term health and vitality of Minnesota Valley National Wildlife Refuge and other units within the National Wildlife Refuge System. With dynamic, innovative, and energetic Refuge staff, we will ensure the value of these places to our Nation's wildlife and people for centuries to come. As you address the challenges and opportunities of Minnesota Valley National Wildlife Refuge on March 14, 2103 and beyond, I wish you Godspeed, good health, and the blessings of Mother Nature.

Sincerely,

A handwritten signature in black ink, appearing to be "RDS" with a large loop at the end.

Rick Schultz  
Refuge Manager

## Appendix C

### Time capsule in honor of the 100<sup>th</sup> anniversary of the National Wildlife Refuge System

List of Items Placed in Capsule

March 14<sup>th</sup>, 2003

Object	Color	Composed of What Material(s)	Contributed By	Significance	Other Comments
1. Minnesota Valley NWR General Brochure	Multi	Paper	Refuge Staff	Public Information	Also available in a one page "mini-bro" format
2. Minnesota Valley NWR Patch	Multi	Fabric & Thread	Refuge Staff	Identity	
3. Minnesota Valley NWR Comprehensive Conservation Plan (CCP)	Black & White	Paper	Refuge Staff	15 year plan for Refuge operations	Completed in 2003
4. Minnesota Valley NWR Post Card	Multi	Paper	Friends of the Minnesota Valley	Correspondence	
5. Hunting Sign	Red & White	Metal	Refuge Staff	Symbol of Public Use	Placed outside of time capsule.
6. Minnesota Valley NWR Volunteer Hat	Khaki & Blue	Fabric	Refuge Volunteer Program	Program Area	
7. Friends of the Minnesota Valley Brochure		Paper	Friends of the Minnesota Valley	Public Information	
8. Friends of the Minnesota Valley Booklet	Multi	Paper	Friends of the Minnesota Valley	25 <sup>th</sup> Anniversary of the Refuge	
9. Friends of the Minnesota Valley 2002 Congressional Briefing	Multi	Paper	Friends of the Minnesota Valley	Lobby Efforts	
10. MN Valley NWR 2003 Calendar	Multi	Paper	Friends of the Minnesota Valley	Centennial edition	Photos by Dr. Scott Sharkey
11. Friends of the Minnesota Valley Pencil	Green with White Lettering	Wood	Friends of the Minnesota Valley	Do you still use these?	
12. Friends of the Minnesota Valley Sticker	Multi	Paper	Friends of the Minnesota Valley	Give-away item	

13. Centennial Refuge Friends Conference Bag	Multi	Fabric	Rick Schultz (Refuge Manager)		
14. Friends of the Minnesota Valley Lanyard	Multi	Fabric & Plastic	Rick Schultz		
15. "Friends" Are Worth It' Button	Blue & White	Metal	Rick Schultz		
16. <i>Fulfilling the Promise</i> – The National Wildlife Refuge System	Multi	Paper	USFWS		
17. National Wildlife Refuge System: <i>A Visitor's Guide</i> Brochure	Multi	Paper	USFWS		
18. U.S. Fish & Wildlife Service Uniform Polo Shirt	Tan with Multi-colored Logo	Fabric	Scott Ford		
19. U.S. Fish & Wildlife Service Uniform Hat	Brown with Multi-colored Logo	Fabric	Rick Schultz		
20. Mini National Wildlife Refuge Boundary Sign	Blue & White	Metal	Chris Kane		
21. U.S. Fish & Wildlife Conservation Easement Boundary	Blue & White	Metal	USFWS		
22. U.S. Fish & Wildlife Bag	Green with Gold Logo	Fabric	Rick Schultz		
23. National Wildlife Refuge System Sign	Blue & White	Metal	USFWS		
24. National Wildlife Refuge System Centennial Button	Multi	Metal	USFWS		
25. National Wildlife Refuge System 1903 – 2003 Sticker	Blue & White	Paper	USFWS		

27. "Blue Goose" Cookie Cutter	Copper	Metal – Copper	USFWS		
28. U.S. Fish & Wildlife Service Minnesota Field Offices	Multi	Paper	USFWS		
29. Sample Autobiography	Multi	Paper	Refuge Staff Friends Volunteers	Our personal stories	Hope you enjoy them!!
30. Ed Moyer's "Calling All Squirrels" Interpretive Program Published in the National Association for Interpretation's Legacy Publication	Black & White	Paper	Ed Moyer – Refuge Interpreter		His favorite program

31. Friends of the Minnesota Valley Pin	Multi	Metal	Friends of the Minnesota Valley		
32. U.S. Fish & Wildlife Service Logo Pin	Multi	Metal	Rick Schultz		
33. National Wildlife Refuge System Pin	Multi	Metal	USFWS		
34. National Wildlife Refuge System 1903 – 2003 Pin	Blue, Gold, White	Metal	Rick Schultz		
35. America's National Wildlife Refuges 1903 – 2003 Pin	Red, White, Blue	Metal	Rick Schultz		
36. Federal Duck Stamp Pin	Multi	Metal	Judie Miller		
37. United States of America Pin	Gold, Red, White, Blue	Metal & Fabric	Rick Schultz		In Honor of those who died on 9/11/2001
38. United States of America Flag Pin	Gold, Red, White, Blue	Metal	Refuge Staff		

39. 1998 – 1999 Minnesota Jr. Duck Stamp Winner Card – Sara Stack	Black & White	Paper	Judie Miller		
40. 1997 – 1998 Minnesota Jr. Duck Stamp Winner Card – Rebecca Latham	Black & White	Paper	Judie Miller		
41. 2002 – 2003 Jr. Duck Stamp	Multi	Paper	Judie Miller		
42. 1997 – 1998 Minnesota Jr. Duck Stamp Pin	Multi	Metal	Judie Miller		
43. Conservation Through the Arts – Jr. Duck Stamp Pin	Multi	Metal	Judie Miller		
44. Minnesota 2000 Junior Duck Stamp Conservation & Design Contest Poster	Multi	Paper	Judie Miller		
45. Minnesota 2002 Junior Duck Stamp Conservation & Design Contest Poster	Multi	Paper	Judie Miller		
47. <u>Critters of Minnesota Pocket Guide</u>	Multi	Paper - Book	Wildlife Forever		Are these critters still here?
48. Juvenile Red Squirrel Distress Call	Silver with Leather Cord	Metal & Leather	Ed Moyer		
49. Minnesota Invasive Non-Native Terrestrial Plants ID Guide	Multi	Paper & Metal Rings	Refuge Staff		
50. European Buckthorn "Tree Cookie"	Wood	Wood	Refuge Staff		



51. PadLock	Bronze	Metal	Ed Crozier	Original Pad Lock for Gate on Kelly Tract	
52. Conserve Our Wetlands Button	Multi	Metal	Rick Schultz		
53. Practice Fire Shelter	Multi	Fabric & Plastic	Refuge Fire Program		Removed from capsule because of lack of space
54. Volunteer Button	Red & White	Metal	Rick Schultz		
55. United States Youth Conservation Corps T-Shirt	White with Blue & Green Logo	Fabric - Cotton	Rick Schultz		
56. Capable Partners Hat	Multi	Fabric	Capable Partners		Symbolizes Partnership with Organization
57. High Adventure Patch	Multi	Fabric & Thread	Boy Scouts	Refuge Partner	
58. 2003 GSA Supply Catalog	Multi	Paper	Refuge Administrative Program	Office supply catalog used to purchase various office supplies.	
59. <u>Dilbert Random Acts of Management</u>	Multi	Paper - Book	Rick Schultz		Management Humor
60. <u>2002 Time</u>	Multi	Paper - Book	Rick Schultz	Annual Book	Year in Review
61. <u>Who Moved My Cheese?</u>	Multi	Paper - Book	Rick Schultz		Managing Change
62. <u>Fish!</u>	Multi	Paper - Book	Rick Schultz		Managing Attitudes
63. 1 <sup>st</sup> Place Centennial Poster Contest Winner – 4 <sup>th</sup> Grade	Multi	Paper	Mang Yang		Expo School, St. Paul MN 2003 Refuge Partner School
64. 1 <sup>st</sup> Place Centennial Poster Contest Winner – 5 <sup>th</sup> Grade	Multi	Paper	Brett Laurents		Expo School, St. Paul MN 2003 Refuge Partner School
65. 1 <sup>st</sup> Place Centennial Poster Contest Winner – 6 <sup>th</sup> Grade	Multi	Paper	Pa Foua Thao		Expo School, St. Paul MN 2003 Refuge Partner School
66. 1 <sup>st</sup> Place Centennial Essay Contest Winner – 4 <sup>th</sup> Grade	Multi	Paper	Xia Lee		Expo School, St. Paul MN 2003 Refuge Partner School

67. 1 <sup>st</sup> Place Centennial Essay Contest Winner – 5 <sup>th</sup> Grade	Multi	Paper	Sarah Alvarado		Expo School, St. Paul MN 2003 Refuge Partner School
68. 1 <sup>st</sup> Place Centennial Essay Contest Winner – 6 <sup>th</sup> Grade	Multi	Paper	Malcolm DeBoer		Expo School, St. Paul MN 2003 Refuge Partner School
69-72. Seed Packets of Native Grasses and Forbs	White Envelopes	Seeds	MN Native Plant Society		See if they grow!
73-76. Boundary/easement signs	White	Metal	Refuge Staff		
77. Conservation Volunteer Magazine	Multit	Paper	Minnesota DNR	Centennial & Articles on MN Refuges	
78-80. Boundary & WPA Signs	Multi	Metal	Refuge Staff		
81-82. Die-cast toys	Green	Metal	Scott Ford		Symbolic of Cooperative Fire Program
83. Friends Recognition Pin	Silver	Metal	Steven Sutter		\$500 Donors
84. Friends Recognition Pin	Gold	Metal	Steven Sutter		\$1,000 Donors
85. Friends Recognition Pin	Bronze	Metal	Steven Sutter		\$250 Donors
86. Friends Recognition Pin	Red	Metal	Steven Sutter	Basic Membership	\$25
87. Friends Recognition Pin	White	Metal	Steven Sutter	Advanced Membership	Committee, Board Service
88. Friends Recognition Pin	Blue	Metal	Steven Sutter	Promotional	Project Attendance
89. Friends Recognition Pin	Green	Metal	Steven Sutter	Sold in Bookstore	\$5
90. CD Case	Black	Fabric	Refuge Staff	Photos & Documents	Add'l information/ Back-ups for capsule items
91-95. Die Cast Toys	Various	Metal & Plastic	USFWS		Symbolizes Restoration and management of Wildlife Habitats and Facility Maintenance
96. Copy of 25 <sup>th</sup> Anniversary Plaque	Purple	Laminated Paper	Friends Staff		Special commemorative event held here on 10/19/2001

97-100. People, Place, Challenges & Opportunities Documents	Black Binders	Paper	Refuge Staff and Others	Our Time Capsule Theme	Great Archival information for you!
101-104. Annual Narratives for 2001 & 2002. 2002 Congressional Briefing Book, Minnesota Valley Trust Information	Brown, Black	Paper	Refuge Staff		Great Archival information for you!
105. Newspaper Dated 3/14/2003	Black & White	Newsprint	Rick Schultz		Events of the day
106. Baseball Hat	Multi	Cloth	Rick Schultz	Refuge Program	Partners for Fish & Wildlife
106. American Flag	RED WHITE & BLUE	Cloth	Refuge Staff	Symbol of the Greatest Nation on Planet Earth	Let FREEDOM Ring!
107. Lower Minnesota River Watershed District Pocket Ice Scraper	Black with Gold Lettering	Plastic	Lower Minnesota River Watershed District		
108. Hubert H. Humphrey Job Corps Jacket	Yellow with Black Lettering	Cloth	Hubert H. Humphrey Job Corps		One of our partners in conservation









U.S. FISH AND WILDLIFE SERVICE  
DEPARTMENT OF THE INTERIOR





