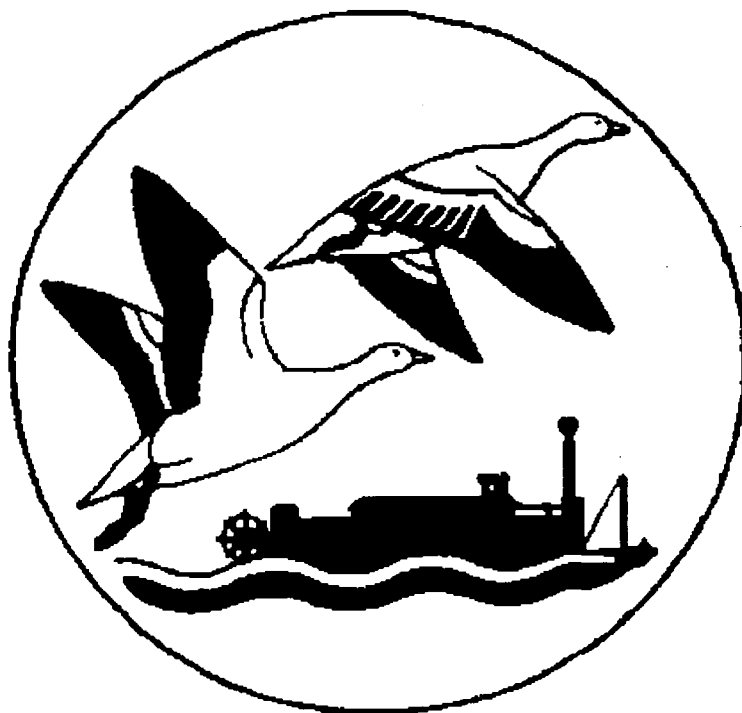


# DeSoto National Wildlife Refuge Annual Narrative Report

Missouri Valley, Iowa  
Fiscal Year 1997



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*George Gage*  
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*Date*

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*Date*

# Table of Contents

## *Introduction*

## *Highlights*

### **Monitoring and Studies**

- 1a. Surveys and Censuses .....
- 1b. Studies and Investigations .....
- 1c. Climate Data .....

### **Habitat Restoration**

- 2a. Wetland Restoration .....
- 2b. Upland Restoration .....

### **Habitat Management**

- 3a. Water Level Management .....
- 3b. Moist Soil Management .....
- 3c. Graze/Mow/Hay .....
- 3d. Farming .....
- 3e. Forest Management .....
- 3f. Fire Management .....
- 3g. Pest Plant Control .....

### **Fish and Wildlife Management**

- 4a. Bird Banding .....
- 4b. Disease Monitoring .....
- 4c. Reintroductions .....
- 4d. Nest Structures .....
- 4e. Pest, Predator, and Exotic Animal Control .....

### **Coordination Activities**

- 5a. Interagency Coordination .....
- 5b. Tribal Coordination .....
- 5c. Private Land Activities .....
- 5e. Cooperating Associations .....

### **Resource Protection**

- 6a. Law Enforcement .....
- 6b. Permits and Economic Use Management .....
- 6c. Contaminant Investigation .....
- 6d. Contaminant Cleanup .....
- 6e. Water Rights Management .....
- 6f. Cultural Resource Management .....
- 6g. Land Acquisition Support .....

### **Public Education and Recreation**

- 7a. Provide Visitor Services .....
- 7b. Outreach .....

### **Planning and Administration**

- 8a. Comprehensive Conservation Planning .....
- 8b. General Administration .....

8c General Maintenance

8d Safety .....

8e Compliance .....

## ***Introduction***

DeSoto National Wildlife Refuge is found south of US Highway 30 midway between the farming communities of Blair, Nebraska and Missouri Valley, Iowa. The refuge is situated astride the Missouri River, 20 miles north of Omaha, Nebraska. It lies in Harrison and Pottawattamie Counties, Iowa and Washington County, Nebraska.

The U.S. Fish and Wildlife Service established the refuge in 1959 to preserve habitats for migratory waterfowl. The Migratory Bird Conservation Act and Migratory Bird Stamp Act authorized acquisition. It serves as a seasonal resting area for up to one-half-million waterfowl, primarily lesser snow geese and mallards.

The 7,823-acre refuge lies in the wide, fertile plain of the Missouri River Valley Basin on the former meanders of the Missouri River. Cottonwood bottom lands characterize portions of the refuge. Approximately 2,000 acres are biologically managed as croplands under eight cooperative farming agreements. Cool- and warm-season native grasses have been reestablished on more than 1200 acres to provide additional diversity.

The focal point for both man and wildlife is a former oxbow of the Missouri river - the 788-acre DeSoto Lake. Recreational demand for its use has remained high since refuge establishment in 1958. The refuge provided active recreation throughout its early history, including fishing, picnicking, boating, waterskiing and swimming. Approximately 16-million-dollars worth of facilities accommodated public demand by up to 500,000 visitors annually. In the 1980s, management emphasis was redirected toward a more balanced program between man and wildlife, emphasizing wildlife-dependent recreation.

The 1968 excavation of the steamboat *Bertrand*, which sank in 1865 on what is now the refuge, adds a major historical emphasis to the refuge program. The 200,000 artifacts in the Bertrand Collection provide one of the most significant assemblages of Civil war-era artifacts in the Missouri River region. This collection is a time capsule of regional and national historical significance.

In 1981, the DeSoto Visitor Center was opened. The visitor center is the permanent home of the Bertrand Collection. The five-million-dollar, 26,000-square-foot building contains exhibits interpreting the importance of the *Bertrand* and the historical development and ecological change that occurred within the Missouri River Basin. In addition to environmentally-controlled artifact storage and museum exhibit areas, the building houses a laboratory for artifact treatment, a collection records area, and reference library.

The visitor center also provides exhibits depicting the natural history of the area and its wildlife. Viewing galleries overlooking DeSoto lake provide excellent opportunities to observe waterfowl and bald eagles during the spring and fall migration periods. A variety of audiovisual equipment provides effective interpretation to an average of 160,000 visitors who pass through the center each year.

## ***Highlights***

### ***Biological***

- ▶ Snow goose numbers reached a peak of 610,000 birds on November 20.
- ▶ Harvest of snow geese from the managed hunt program was again very poor. Hunters averaged more than 11 hours and nine shots to harvest a single bird.
- ▶ Muzzleloader deer hunt had a 56 percent success rate.
- ▶ DeSoto Lake fishery decline continues as gizzard shad population relentlessly increases.
- ▶ White-tail deer telemetry study concludes after seven years.
- ▶ Prescribed burn effects on grassland birds study concluded.
- ▶ Immature golden eagle showed up with fall waterfowl migration.
- ▶ Snow goose management workshop held at DeSoto on September 3 and 4 with Canadian Wildlife Service, USFWS national office, regional office, NWRs in the Central Flyway, state agencies and Ducks Unlimited.
- ▶ Private Lands Program started ten wetland projects (114 acres) of which six projects were finished this year (38 acres).

### ***Maintenance***

- ▶ Visitor Center energy retrofit contract was partially completed with the installation of a cooling tower to the chiller.
- ▶ Water supply system was upgraded with a chlorine injector bringing the system up-to-date with the Safe Drinking Water Act.
- ▶ Specialized HVAC repair services were required routinely throughout the year.
- ▶ Security system at the visitor center was updated.

### ***Museum***

- ▶ Museum staff documented and conserved 14,372 objects.

### ***Public Use***

- ▶ Public visits to the refuge were 237,531 people. A 27% decline from the 10-year average.
- ▶ Entrance fees down 20% from \$90,367 to \$72,126.
- ▶ Environmental Education programs reached 7935 K-12 students from eastern Nebraska and western Iowa.
- ▶ Fishing clinics at DeSoto Lake attract two hundred forty (240) inner-city youth.

### ***Volunteers***

- ▶ Volunteers contributed 3563 hours of service to a variety of refuge activities.

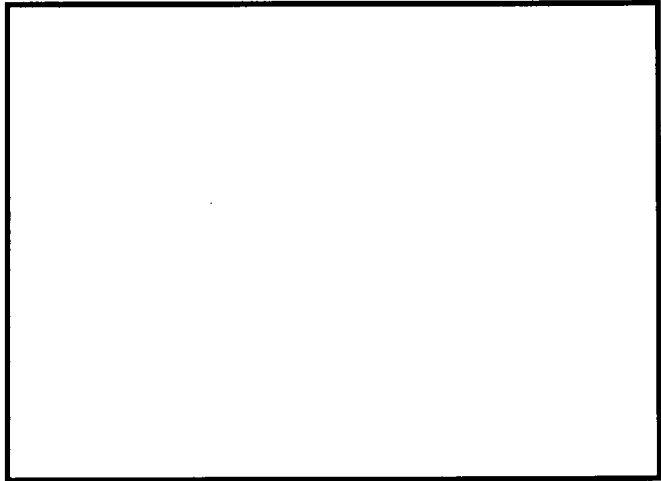
# 1

## MONITORING AND STUDIES

### 1a Surveys and Censuses

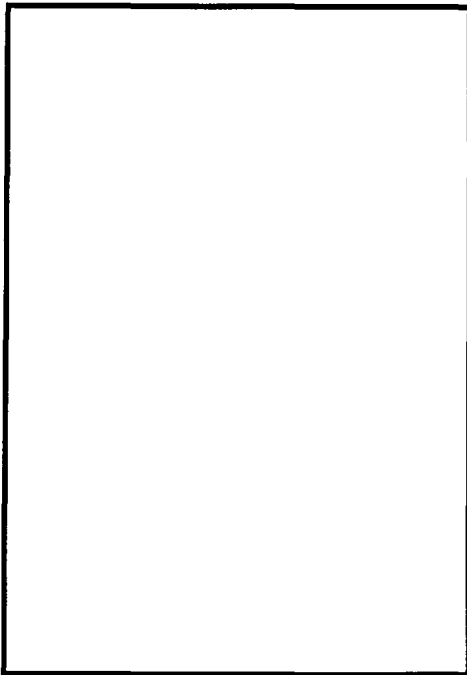
Significant general wildlife occurrences at DeSoto NWR in FY 1997 include:

- A peak of 72 bald eagles occurred on December 4.
- By mid-October 200 Canada geese were using the refuge and the first small flocks of snow geese were seen over the Loess Hills. We also saw white-fronts near the refuge. The 30 of October brought in the first group of snow geese to the refuge. Snow goose numbers peaked at 610,000 on November 20. Duck numbers, mainly mallards, peaked at 47,000. Cold weather and snow drove most of the birds out by late November. Goose use days were 8,241,940, well below the five-year average of 13,587,045. Duck use days were 1,299,351, which was significantly below the five-year average of 3,700,072. Total waterfowl use days for the year was 9,541,291, which was below the thirty-year average of 12,136,392. A tundra swan was observed for several days in early November.
- Pelican numbers reached a high of 480 in early October. More than 300 double-crested cormorants began fishing the lake in late October.
- The most unusual raptor this year was an immature golden eagle. The bird showed up in the fall and preyed upon the snow geese with the bald eagles.
- The Christmas Bird Count was held on December 22. Again, the Omaha Audubon Club volunteered their time and expertise. They counted forty-four species of birds, a low count. It was a cold blustery day, which attributed to the low count.



**Figure 1** Aerial view of snow geese loafing near the Visitor Center. Photo by M. Sheets.

- The annual spotlight deer count on “center island” was conducted on the 26 of November. We observed two hundred forty-nine deer. An aerial deer survey recorded 436 deer on February 5. Given the high counts during the last few years, and an obvious browse line, the refuge increased the number of days for the annual muzzle loader hunt. The hunt was extended to include one additional 3-day weekend increasing the number of hunting days from three to six.
- The annual Spring Bird Count was held on April 26. A total of 102 species were observed.
- Frogs were collected and surveyed on June 24 as part of a national census for amphibian physical deformities. No deformities were seen.



**Figure 2** One of several healthy large-mouth bass electro-shocked during the spring fish survey on DeSoto Lake. Photo by J. Grandy.

Two electroshocking fish surveys were conducted during the year. In May and September, staff from the Columbia Fisheries Resource Office, with assistance from Refuge staff, and Nebraska and Iowa Fisheries biologists surveyed the DeSoto Lake shoreline. Results from these surveys provide estimates of species composition, age class, diversity, size and health indicators.

The most obvious change from the previous years survey, was the increase in the gizzard shad population. At times, the concentration of shad was dramatic. We expected this and even with the introduction of white bass as a predator, little reduction in gizzard shad is expected. Other than chemical control, which has questionable efficacy, there are few tools available to control the rising gizzard shad population. Refuge managers have considered applying a light dose of rotenone that would affect only the shad. This would possibly knock back the shad population for a few years, but not eliminate the problem. The cost and public concerns may be more than its worth, which managers will need to consult on.

Other electroshocking survey results included:

- Largemouth bass were never found in large numbers. However, a healthy number of adult bass were found on the west side of the lake. Bass in the 2-3 year age class were abundant and concentrated near lily pads on the east side of the lake. First year bass were less than six inches in length and may be hard pressed to survive the winter.
- Crappie, both black and white, in all sizes were found, but not in large numbers. However,

harvests in the spring showed that there are large quantities of 10-12 inch crappies, and that a large growth-rate has occurred in the past 3-4 years.

- Bluegill/Green Sunfish were prevalent but small. They are apparently being out competed by shad and crappie.
- Carp/buffalofish were concentrated on the west side. Large numbers of carp were found, and they continued to look underfed, being skinny and long. Buffalofish were not evident in large numbers, but appear quite healthy.
- Northern pike and white bass were not evident during our shocking survey. Northern pike remain few in numbers. The few observed are fairly large. White bass have only been stocked for two years and are midwater fish that would not normally be sampled. Walleye, catfish, and bullhead are not generally found with shallow water electroshocking.

## 1b Studies and Investigations

### White-tailed Deer Vulnerability and Movement Characteristics in the Missouri Valley

Kurt VerCauteren, University of Nebraska Ph.D. candidate, has collected the last of the data for a comprehensive white-tailed deer telemetry study that has spanned seven years. One hundred seventy-four deer were captured and marked. Ninety-four of the captured deer were fitted with radio collars. The study examined home ranges, movements and vulnerability of deer in this agricultural/riparian landscape relative to different stimuli. Stimuli studied included day length, seasonal change, population density, genetic make up, agricultural activities, hunting activities, and protective cover. Some individual deer were radio-tracked for more than seven years.

Resident deer never leave the refuge, migrators winter on the refuge and summer as far away as 25 miles, and dispersers leave the refuge never to return. By studying individual deer on a landscape scale we learned how different stimuli influenced movement behaviors, shedding light on how population densities and distribution are influenced. Results highlighted the importance of the refuge for maintaining deer populations surrounding areas. Also, we gained insight on how to improve and manage riparian systems throughout the Midwest and Great Plains.

Results of this research have been published in five refereed professional journals, abstracts of seven professional conferences, and 10 lay publications. Also Kurt presented research results at eight professional meetings, 13 meetings with conservation and hunting organizations, seven meetings for adult education groups and one youth education group.

Professional journal abstracts are:

Lovallo, M.J., K.C. VerCauteren, N.M. Hedge, E.M. Anderson, and S.E. Hygnstrom. 1994. An evaluation of electronic versus hand held compasses for telemetry studies. Wildlife Society



Bulletin 22:662-667.

VerCauteren, K.C., and S.E. Hygnstrom. 1998. Effects of agricultural activities and hunting on home ranges of female white-tailed deer. *Journal of Wildlife Management*. 62:280-285.

VerCauteren, K.C., and S.E. Hygnstrom. 1998. Netted-cage traps for white-tailed deer. Pages XX-XX in G. Proulx, ed. *International Mammal Trapping*. Alpha Wildlife, Edmonton, Alberta (accepted).

VerCauteren, K.C., and S.E. Hygnstrom. 1998. White-tailed deer. Pages XX-XX in D. Wishart, ed. *Encyclopedia of the Great Plains*. University of Nebraska, Lincoln, NE (accepted).

VerCauteren, K.C., and S.E. Hygnstrom. 1994. Literature review of white-tailed deer movements in the eastern Great Plains relative to environmental conditions. *Great Plains Research* 4:117-132.

*Effects of Prescribed Burning on the Density and Diversity of Plants and Birds in Fragments of Tallgrass Prairie at DeSoto NWR, IA*

Dr. Fred Van Dyke, professor, and assistant, Jamie Schmeling, from Northwestern College, IA, completed a three-year study documenting changes in populations and communities of vegetation and birds. Burning appeared to increase diversity of avian communities by providing habitat for rarer species such as grasshopper sparrows, lark sparrows and dickcissels, and by reducing populations of more common species. However, the effects are short-lived and burning must be applied frequently to attain such results. If the objective is to maximize species diversity of grassland birds, managers of small (<10 ha) grassland fragments (i.e., DeSoto NWR) should burn at least some areas annually.

*DeSoto Lake Water Quality Monitoring*

Dr. Carla DeLucci, professor at Dana College, NE, and undergraduate biology students started a water quality monitoring study this year of DeSoto Lake. The refuge initiated this investigation in response to concerns over agricultural land application waste by-products from a nearby corn processing plant and sewage sludge from City of Blair, NE waste treatment plant. Use of these materials for agricultural use is increasing within the DeSoto Lake watershed.

Water samples were collected throughout the spring, summer and fall and analyzed for orthophosphate, total phosphate, chlorophyll a, nitrates, ammonia, and organic nitrogen. Total nitrogen to total phosphate ratio varied from 22:1 to 27:1 suggesting a phosphorus limited system. Results from similar studies in 1978 and 1994 reported a ratio of 11:1 which suggests a nitrogen limited system. Nitrogen limited systems are susceptible to blue-green algae blooms. Overall, the 1997 results show an improvement in water quality over conditions reported

### Response of Waterfowl Foraging to Fall Tillage of Corn Residue

The last three years FWB Buske conducted a survey of tillage operations in corn fields near DeSoto NWR, and waterfowl foraging activity in relation to fall tillage has been recorded. The tillage survey was started each fall when snow geese arrived at the refuge and continued until the soil froze. Waterfowl, primarily snow geese, were followed on their daily flights off-refuge to feed. Field selection of the waterfowl was observed and number of tillage operations estimated within these fields.

Results of the tillage survey (1996-97) showed that 18.1% of the fields surveyed had no fall tillage, 42.5% were tilled once and the remainder (39.4%) was tilled two or more times. The following table suggests those fields with two or more tillage operations are not highly attractive to foraging waterfowl. Corn fields not fall tilled or tilled only once are equally attractive. Waterfowl foraging is a complex behavior with many factors influencing selection of agricultural fields. These results suggest excessive fall tillage (two or more field operations) does influence field selection behavior for feeding. However, up to 60% of the corn fields in the river valley within the vicinity of the refuge (five-mile radius) remain attractive for snow goose feeding with fall tillage practices used in 1996 and 1997.

**Fall Waterfowl Use of Corn Fields  
Relative to Fall Tillage**

	All Waterfowl	Snow Geese	Canada Geese	Ducks
Observations	27	19	4	4
No Tillage	10	8	0	2
1 Tillage Pass	13	8	3	2
2 or more Tillage Passes	4	3	1	0

## 1c Climate Data

Table 1. *FY 1997 Precipitation and Temperature Summary*

Month	Precipitation (inches)*			Average Temperature(of)	
	FY 1997	Average**	Snowfall	Maximum	Minimum
October	1.25	2.62		70	43
November	2.30	1.66	1.4	39	24
December	0.50	1.25	5.8	29	12
January	0.45	0.93	5.1	27	7
February	0.96	0.86	8.8	36	20
March	0.93	2.26		57	30
April	3.79	3.02		59	36
May	1.21	4.28		73	47
June	3.68	4.04		87	62
July	2.18	3.74		88	67
August	3.14	3.26		84	63
September	5.93	3.37		79	66
Total	26.32	31.29	21.1		

\*Includes snowfall    \*\*30-year average

### Temperature

High temperature for the year was 100° F on June 20. The low temperature for the year was -13° F on January 11. A new record late freeze occurred May 13 (29° F). Some locations in the area reported mid-twenty degree temperatures. Temperatures during the growing season (May - August) were above normal, particularly nighttime temperatures.

### Rainfall

The growing season (approximately May through August) experienced below normal rainfall (e.g., 67% of normal). May being the shortest on rainfall at 28% of normal. However, September produced 5.93 inches of rain which was largely responsible for the season's precipitation recovery to 86% of normal by year end. Dew points were unusually high producing a tropical feel to this summer's heat, and explains why average temperatures were generally well above normal, notably nighttime temperatures.

# 2

## HABITAT RESTORATION

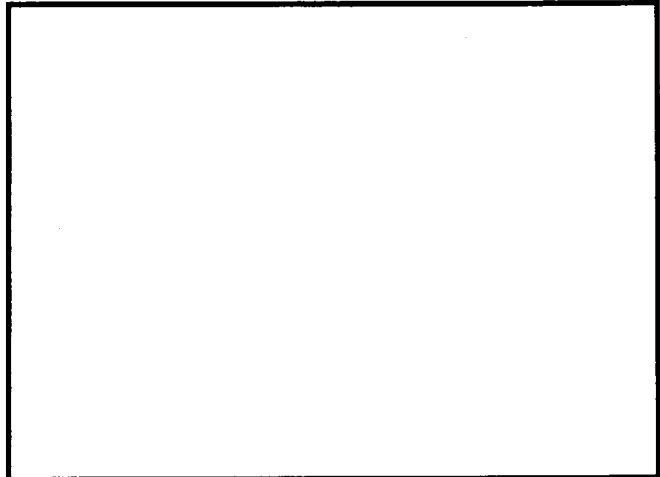
### 2a Wetland Restoration

#### Private Lands Program

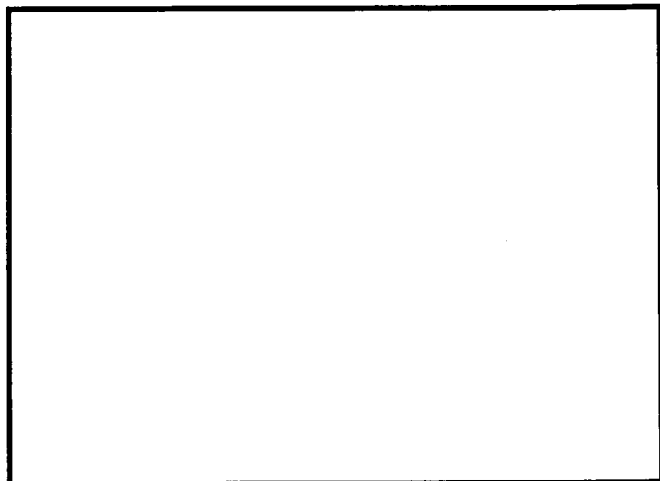
DeSoto's funding allocation for FY 97 for the Private Lands (Partners For Wildlife) program totaled \$21,500. Most of the habitat work accomplished through the Private Lands program is in coordination with one or more organizations. The refuge partnered with Ducks Unlimited, Pheasants Forever, Golden Hills Resource, Conservation and Development-NRCS, the Natural Resource Conservation Service (NRCS), Iowa Department of Natural Resources (IDNR) and other organizations to restore wetland habitat throughout DeSoto's 18-county Private Land's Coordination area. See Section 5a - Interagency Coordination for more information.

During the year ten wetland projects in four different counties totaling 114 acres were started. Six projects were completed in three different counties totaling 38 acres.

One project completed was a 21.5-acre wetland with a nesting island on land owned by Anthony Smith of rural Harrison County, Iowa. Partnering with the Natural Resource Conservation Service, the Service's Partners For Wildlife Program cost-shared the restoration and building of the nesting island. A brood of Canada geese successfully used the island the first



**Figure 3** Aerial view of the restored Higman Wetland (Akron EWRP) in Plymouth County. NRCS photo.



**Figure 4** This restored wetland, with nesting island, in Harrison County was successful its 1st year! Photo by S. Van Riper.

year. Force-account resources restored another wetland in Harrison County. The Greenhead Wetland was completed in less than a week by Heavy Equipment operator Mark Cunard and Automotive Mechanic Monty Storm, using our front-end loader/backhoe.

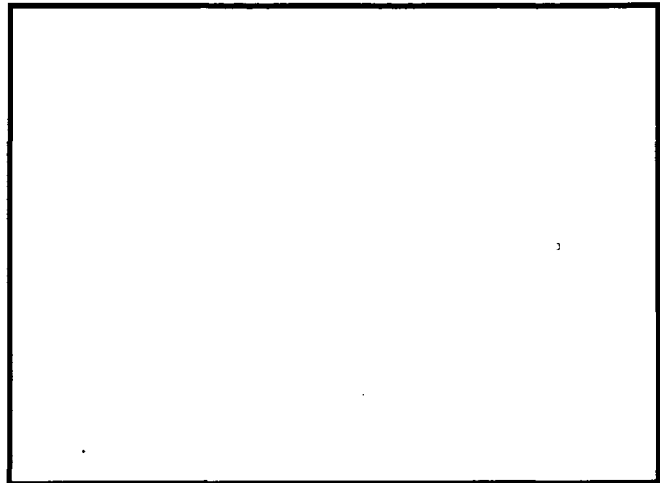
The fourth year of the Refuge's funded cooperative agreement with the Carroll County Soil and Water Conservation District was completed. This agreement includes a Wetland Specialist position working out of the Carroll County Natural Resource Conservation Service.

## 2b Upland Restoration

Refuge staff planted 166.6 acres of grass seed during 1997. Warm-season grass planting consisted of interseeding 104 acres which had been planted in 1995. Poor stand establishment necessitated the renovation.

Table 2b.1. Grassland Planting Summary			
Location	Acres	Grass Mix	Comments
Center Island - Former Sludge Demonstration Plot	38	Sandy Warm-Season	Renovation
	66	Mesic Warm-Season	
Total = 104.0			
North end of Center Island	9.0	Cool - Season	Spring new seeding
Northeast corner of refuge	17.8	Cool-Season	Cropland reversion; spring new seeding
Center Island; 3 former small food plots	35.8	Cool-Season	Cropland reversion; fall new seeding
Total = 62.6			

Renovation was started on April 17 with an early prescribed burn. The prescribed burn removed residual vegetation and darkened the soil surface. This accelerated weed growth and development as well as desirable warm-season grasses. Once two flushes of giant foxtail, the primary weed pest, were present the field was treated on May 20 with 16 fluid ounces of Roundup Ultra (glyphosate w/ surfactant) and 16 fluid ounces of 2,4-D. The low application rate of glyphosate killed most annual weed growth, annual grasses are particularly sensitive to glyphosate, and the 2,4-D broadened the annual broadleaf control spectrum. However perennials, such as the previously established warm-season grasses, are relatively tolerant to low application rates of glyphosate. Although little bluestem and sideoats grama respond (i.e., purple discoloration and temporary stunting) to the glyphosate, they usually recover during the growing season. The field was planted June 2 through 5 and mowed (3 times) after that to suppress weed growth through the growing season.



**Figure 5** Roundup/2,4-D being applied during a grassland renovation. Photo by M. Buske.

Cool-season grasses were planted (April 29 and September 9-11) conventionally using mechanical tillage to prepare the seedbed and control emerged vegetation, and maintained with periodic mowing.

Table 2b.2. <i>Grass Seed Mixes Planted</i>			
Grass Seed Mix	Species	Cultivar	Seeding Rate (lbs. PLS / acre)
Sandy Warm-Season	Sand lovegrass	NE 27	1.0
	Sand bluestem	Goldstrike	6.0
	Switchgrass	Blackwell	2.0
	Sideoats grama	Butte	1.0

Table 2b.2. <i>Grass Seed Mixes Planted</i>			
Grass Seed Mix	Species	Cultivar	Seeding Rate (lbs. PLS / acre)
Mesic Warm-Season	Big bluestem	Pawnee	2.0
	Little bluestem	Camper	2.5
	Indiangrass	0 to	2.0
	Switchgrass	Blackwell	1.5
	Needlegrass	none preferred	1.0
	Virginia wildrye	O'ma'ha	0.5
Cool-Season	Intermediate Wheatgrass	Oahe	7.0
	Tall wheatgrass	Alkar	5.0

Recent changes in the FmHA/FSA program have eliminated majority of the possible inventoried properties the Service could place easements on. No new properties were inventoried, or for that matter, submitted to us from FSA during the year. All recorded properties were visited or contact made with the landowner/tenant or FSA Supervisor during the year.

Improvements on two easements were completed. The Bruck/Lehrman and the Burson/Bothwell easements were planted to warm season native grasses by the landowners in late May and early June. Both were 9-12 acres in size and will be monitored during the next three years for germination and coverage. Five additional upland sites were planted to native grasses totaling 63-acres in five different counties.

## 2c Deepwater/Riverine Restoration

No activity this year.

# 3

## HABITAT MANAGEMENT

### 3a. Water Level Management

The station's wetlands required only fall pumping. A total of 79 hours was spent recharging these units.

The first unit in Botos Pond was expanded and a stoplog structure was added connecting it to the lower unit.

Water level in the Missouri River dropped in early December and DeSoto Lake draw-down began on December 2. The gate was closed on January 9, reopened on January 13, and closed again on January 29 when the lake dropped to 986 feet msl.

### 3b. Moist Soil Management

Two moist soil units required pumping in the fall for a total of 113 hours. The old moist soil unit next to the east dike road suffered muskrat and beaver damage to the levees. This unit will be drained and hopefully dry enough for repair work in the summer of 1998.

### 3c. Graze/Mow/Hay

The refuge contracted with a local farmer for three years to harvest 92.4 acres of alfalfa and 53.7 acres of smooth brome grass. The hay is cash rent established through competitive bidding. The smooth brome grass rent is \$27.00 per acre and alfalfa is \$31.20 per acre. As in the past, the cooperator is limited to two cuttings annually, between July 15 and September 10, and other refuge-specific management practices. The smooth brome grass is managed for snow goose green browse near the Bob Starr Overlook.

A new alfalfa seeding with an oat cover crop (34.1 acres) was custom planted by the farmer on May 20. The farmer harvested it as oat/alfalfa hay on July 15. Cash rent for the oat/alfalfa hay was \$653.70. The cooperator was paid for custom farming services provided to the refuge by him through a reduction in cash rent. Total cash rent (\$4,332.90) minus custom services (\$2352.56) equals a net cash rent of \$2634.04.

A forage test plot was planted on June 20 in a former small food plot on Center Island. This plot was established as one of two locations for evaluating alternatives to the current hay program. The refuge currently manages its alfalfa crop using a two-cut harvest. The first cutting has high



tonnage, but the forage value is low. The first cutting, being delayed until July 15, avoids harvest disturbance of nesting birds and destroying nests. An alternative to the current program is to plant a mix of Big bluestem and Indiangrass with a forage legume (i.e., such as a low seeding rate of alfalfa, Illinois bundleflower, partridge pea, etc.), and manage it as a one-cut or two-cut harvest. The warm-season grasses will not produce seedheads until late July or early August, thus forage value should be relatively high, and still produce maximum tonnage. The addition of a legume is intended to improve forage value and provide a partial nitrogen source for the grasses.

### 3d. Farming

Eight (8) local farmers farmed 2181.0 acres of refuge cropland using a two-thirds/one-third crop-share lease to provide food and loafing areas for migrating waterfowl, and food, cover, and edge for other species. This is two fewer farmers than in 1996. One farmer voluntarily canceled his cooperative farming agreement, and the second farmer died June 29 after a lengthy battle with cancer. Neither farmer was replaced (read Cropland Reduction section). Crops produced and acres in production are summarized below:

Table 3d.1. <i>Croplands Use Summary</i>			
Crop	Biological Crop Rotation	Conventional Crop Rotation	Crop Acres
Corn	538.4	75.4	613.8
Soybeans	728.3	218.3	946.6
Sweet Clover	423.5	---	423.5
Clover/Small Grain		---	
Milo	45.0	6.0	51.0
Alfalfa	92.4	---	92.4
Grass Hay	---	53.7	53.7
Crop Rotation Acres	1883.6	347.4	
Grand Total			2181.0

The 1997 crop season was difficult. Rainfall was below normal for most of the growing season. Yields, particularly corn yields, were below normal as a result. Giant foxtail control in corn was often very poor. The most likely explanation for the poor grass control was the application timing of the postemergent grass herbicide. The herbicide was applied in mid-June. Due to the low rainfall grassy weeds were under moisture stress and hardened off. This reduced uptake of

the herbicide by the weeds limiting herbicide effectiveness. In several locations grassy weeds were stunted recovering later in the growing season to compete with the crop. Soybeans being more tolerant of droughty conditions produced yields slightly below the refuge's five-year average.

Table 3d.2. *Corn and Soybean Yields - Biological and Conventional Crop Rotations*

Year	Biological Corn	Conventional Corn	Biological Soybeans	Conventional Soybeans
1993	129.0	88.8	40.9	34.7
1994	123.6	141.3	50.4	44.6
1995	78.3	67.1	33.3	36.7
1996	134.0	118.0	44.4	39.7
1997	103.1	82.0	36.6	37.1
1993-97 Avg.	113.6	99.4	41.1	38.6
1979-97 Avg.	103.3	99.6	37.6	35.4

The cropland program experienced several changes this year. Refuge long-term objectives have targeted the cropland program for a gradual although slow reduction in cropland acres, relying substantially on natural attrition of cooperative farmers. This year cropland acres were reduced by 127.5 acres from 2308.5 acres in 1996 to 2181.0 acres this year. Reductions occurred from reverting cropland to grassland or idling cropland.

Management of small food plots changed this year. Small food plots were managed for many years exclusively for wildlife food and habitat. Food plots ranged in size from 10.2 acres to 24.0 acres, and were scattered throughout the refuge sometimes in isolated areas within larger noncrop habitats. Crops were grown using the biological crop rotation with all three crop components of the biological crop rotation usually planted at a location. Milo was substituted for corn.

Location and size of food plots favored the use of small farm implements. Only one cooperative farmer had equipment well suited for managing these relatively small areas. Thus the refuge contracted this farmer to manage most of the small food plots. Before the 1997 crop season started this farmer declined to continue farming on the refuge. Given this and other cooperative farmers equipment not being suited for managing small food plots, particularly in isolated locations, the small food plots were abandoned. Small food plot locations were either incorporated into adjacent cropland, reverted to grassland and incorporated into adjacent grasslands or reverted to stand alone grasslands. Production of milo as food for wildlife was continued, but was planted along the edge of existing commercial scale corn fields. Milo was planted by the remaining cooperative farmers in 3.0 to 8.0-acre plots totaling 51.0 acres.

The refuge in addition to reducing overall cropland acres has been reducing cropland acres managed using a conventional two-year corn-soybean crop rotation. This year farmers planted 347.4 acres using the conventional crop rotation. The goal is to reduce conventionally rotated acres to 120.8 acres by 1999. These remaining acres comprise the refuge's managed hunt program, which requires some standing corn each year in which to hide portable hunting blinds.

Seven hundred twenty-four and two-tenths (724.20) acres of refuge cropland came available for reassignment with the loss of two farmers. Four hundred forty-six and one-half (446.5) acres were reassigned for the 1997 crop season. The remaining 257.7 acres were reassigned effective for 1998 crop season. The following criterion was used to determine acreage reassignment.

1. Cropland was assigned to existing cooperative farmers or reverted to wildlife habitat. Reversion to wildlife habitat was given top priority. Some cropland targeted for reversion will be farmed temporarily until resources are available to complete the reversion to wildlife habitat. The refuge did not recruit new cooperative farmers.
2. The refuge did not reduce the number of acres currently farmed by existing cooperative farmers. Acres farmed by existing cooperative farmers increased in some instances. However, all farmers were advised the long-term trend is fewer cropland acres. In the short-term fewer total cropland acres will be offset by fewer farmers farming refuge cropland.
3. Refuge cropland acres were reassigned to improve equality between farmers in the number of acres farmed by each person. Also to the greatest extent possible fields farmed by each farmer are concentrated in one or two areas within the refuge, not scattered throughout the refuge, except the hay contract. This was done to reduce farm implement traffic on roads used by the public, and reduce use of low maintenance service roads.
4. A refuge goal is for each cooperative farmer to annually farm 200 to 250 refuge cropland acres. This objective will keep farmers from becoming dependent upon the refuge for the survival of their overall farm enterprise. Yet it should make refuge cropland important enough to each farm enterprise that farmers should be motivated to do a good job.
5. No cooperative farmer will farm cropland on both sides of the Missouri River.

Table 3d.3. <i>Acres of Cropland 1996 - 1998 and Projected to 2000</i>				
	1996	1997	1998	Projected for 2000
Total Acres	2308.5	2181.0	2048.3	2033.8
Number of Cooperators	10	9	8	8

Table 3d.3. <i>Acres of Cropland 1996 - 1998 and Projected to 2000</i>				
	1996	1997	1998	Projected for 2000
Average Acres per Cooperator	230.8	242.3	256.0	254.2
Std. Dev. as a % of Average Acres Farmed per Cooperator	62.5%	49.8%	43.2%	41.6%

The refuge stores approximately 1,000 bushels of corn for potential depredation or disease management problems per existing management plans. Any grain in excess of management plan needs is used to attract waterfowl to the vicinity of the visitor center during fall migration, and for filling the visitor center's bird feeders. When spring arrives, any held-over grain is used to reimburse cooperative farmers for early season custom work provided to the refuge or transferred to other field stations.

Under the current cropland management plan, the refuge's entire share of soybeans and some corn is harvested, and the monies used to reimburse cooperators (per Iowa State University Extension Publication FM-1698 "1997 Iowa Custom Rate Survey") for refuge farming activities such as seedbed preparation for grassland plantings. Any excess remaining after reimbursing cooperative farmers is transferred to other field stations. Cooperative farmers were reimbursed \$19,433.02. Remaining grain monies was transferred to the stations listed below.

Table 3d.4. <i>Grain Transfers to USFWS Field Stations</i>	
Field Stations	\$ Amount
Region 3	
Agassiz	\$4,500.00
Big Stone	550.02
Shiawassee	2,600.00
Swan Lake	23,787.85
Tamarac	1,500.00
Necedah	700.00
Region 5	

Table 3d.4. <i>Grain Transfers to USFWS Field Stations</i>	
Field Stations	\$ Amount
Blackwater	5,000.0
Great Swamp	1,850.00
Region 6	
Fort Niobrara/Valentine	3,600.00
Bowdoin	750.00
Medicine Lake	1,000.00
Lake Andes	2,000.00
National Elk	52,006.17
Total	99,844.04

Traditionally waste grain and excess grain has been provided to waterfowl, primarily lesser snow geese, during the fall migration. The amount provided averaged 29.8% of the lesser snow geese energy needs for several years. Since 1995 the amount of grain provided has been reduced to 11.2% (1995), 4.3% (1996) and 5.2% this year. The refuge's 1997 crop share in three corn fields was dedicated to waterfowl foraging. These fields were in areas that are important to public viewing.

Field trials established in 1995 to evaluate one-year sweet clover's value as a nitrogen source for a corn crop the following year were continued this year. The experimental design has been a paired-comparison testing whether or not corn following one-year sweet clover would respond to an application of nitrogen fertilizer. The late-spring soil nitrate test was used to determine the potential for a response to nitrogen fertilizer. A test level of 21-25 ppm nitrate or greater would suggest a corn crop would not respond to the application of additional nitrogen fertilizer. A late-season visual corn leaf rating protocol that assesses nitrogen deficiency was used to detect differences between corn with sweet clover as its only nitrogen source, and sweet clover plus 80 lbs. N per acre (1996) and 50 lbs. N per acre (1997). The higher the leaf rating the less the nitrogen deficiency. The visual leaf rating is useful for comparing treatments with different application rates of nitrogen or nitrogen utilization by corn plants. It was used in these trials as a tool to verify results from the late-spring soil nitrate test and compare sweet clover only to sweet clover supplemented with nitrogen fertilizer.

Results from 1996 showed the 1995 sweet clover "green manure" crop did provide sufficient nitrogen for optimum corn production in 1996. However, the 1996 sweet clover crop did not

provide adequate nitrogen for optimum production in 1997 (see table 3d.5).

Table 3d.5. <i>Comparison of Corn Following Sweet Clover Only and Sweet Clover Fertilized with 50-80 lbs. Nitrogen per Acre</i>			
	Average Soil Nitrate Test from Corn following Sweet Clover Only	Visual Leaf Rating Average Difference Between Corn following Sweet Clover plus 50-80 lbs. N/acre and Sweet Clover Only	Number of Fields
1996	31.7 ppm	0.0	6
1997	14.1 ppm	0.7*	6

\*Statistically significant, LSD=0.05

The effect a small grain nurse crop has on sweet clover growth and development as it relates to the nitrogen value of sweet clover is being evaluated. Results from 1996 and 1997 show small grain nurse crops, winter wheat in this study, on average may slightly reduce the nitrogen value of sweet clover, but the effect has not been statistically significant.

An ongoing effort to educate the public about low-input sustainable agricultural cropping practices contacted 76 people this year. These people represented government agencies and professional societies. Thirty-six (36) of the contacts were upper level administrators and "extension agents" from the Ukraine and Russia.

### 3e Forest Management

No activity this year.

### 3f. Fire Management

Fifteen units were prescription burned on DeSoto totaling 229 acres.

A previously acquired military surplus duce and a half, was outfitted with a rectangular 2,000 gallon tank. The tank was custom built by J.L. Houston Company in Missouri for \$2,200. A 4x4 ATV was purchased with fire money. Pete's Suzuki in Texas supplied us with a Polaris and ramps for \$5,500.

### 3g. Plant Pest Control

Musk thistle infestations and the biological control agent *Rhinocyllus conicus* continue to be monitored. Musk thistle infestations remain stable. The level of infestation of the musk thistle by *R. conicus* continues to steadily increase. Seedheads infested with *R. conicus* have tripled from 16% of seedheads examined in 1995 to 60% this year.

Table 3g.1. *FY 1997 Mechanical and Chemical Treatment of Weeds*

Unit	Treatment	Target Species	Acres
DeSoto Lake	glyphosate	Phragmites	10
Moist Soil Units	glyphosate	Phragmites	2
Headquarters and Visitor Center turf	2,4-D + dicamba	variety of broadleaf turf weeds	5
Agricultural levee	2,4-D + dicamba	Rough-leaf dogwood, Smooth sumac	15
Buffalograss turf	glyphosate	Kentucky bluegrass	>1
Refuge boundary	mowing	woody vegetation	44
Wood Duck trail	bromacil	variety of grass and broadleaf weeds	4000 lineal feet

# 4

## FISH AND WILDLIFE MANAGEMENT

### 4a. Bird Banding

The Iowa Department of Natural Resources banded, on the 30th of June. A total of 37 Canada geese were trapped, 12 were recaptures.

### 4b. Disease Monitoring and Treatment

An avian cholera outbreak began on December 11 and ended on the 20 when the lake froze over pushing the birds on. A total of 75 birds, mainly snow geese were incinerated.

A new carcass incinerator was purchased this summer from Burn Easy Company, Decatur, Indiana, for \$2070.00. Really does the job.

### 4c. Reintroductions

No activity this year.

### 4d. Nest Structures

The sixty-two wood duck boxes again proved attractive to screech owls and not ducks. Six boxes held a total of 52 eggs, 42 of which hatched, for an 80 percent hatch success. A total of 18 boxes had either an owl or signs of owl use. Natural cavities are not in shortage on the refuge, evidently the wood ducks prefer these.

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

No activity this year.



# 5

## COORDINATION ACTIVITIES

### 5a. Interagency Coordination

A snow goose workshop was held at DeSoto on September 3 and 4th. Experts from Canada and the U.S. attended to discuss the snow goose population problem and to debate solutions.

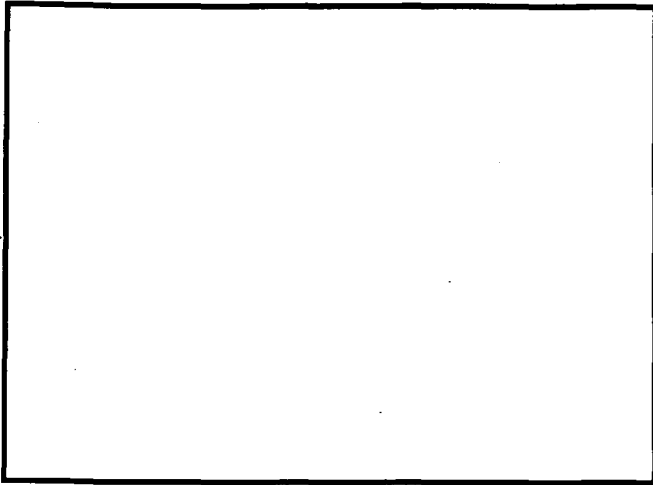
Interaction with other Federal, State, County and local governments continued at a strong pace thru the Private Lands program, law enforcement coordination, fishing clinics, research programs, and the farming program, to name but a few. Coordination with the Natural Resource Conservation Service and the Iowa Department of Natural Resources through the Private Lands program alone affected 971 acres.

### 5b Tribal Coordination

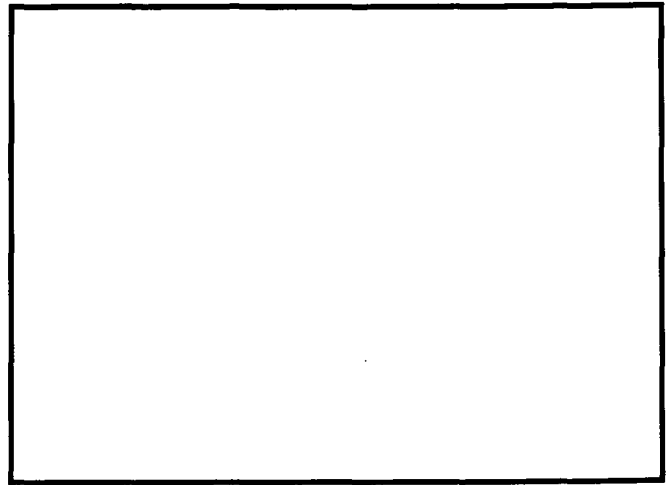
No activity this year.

### 5c Private Lands Activities

Thirty-five landowners were assisted during the year with either site evaluation, technical assistance, restoration, and/or enhancement affecting 354 acres. Technical habitat restoration assistance was provided to the Pottawattamie and Harrison County Conservation Board, the Golden Hills Resource Conservation and Development, and the Glenwood State Hospital to



**Figure 6** Wetland basins in their native state, such as shown here, are few and far between in western Iowa. Photo by S. Van Riper.



**Figure 7** Riparian wetlands, such as this, are also rare in western Iowa. Photo by S. Van Riper.

name but a few.

A cooperative agreement with Ducks Unlimited was established with the refuge, which allows the Partners For Wildlife program to match our funding for wetland/upland restoration projects here in western Iowa. This is a major change for Ducks Unlimited, as they have always sent most of their funding to the nesting grounds in Canada and northern United States in the past.

#### 5d. Cooperating Associations

The Midwest Interpretive Association (MIA) has completed its sixteenth year of operation. Sales decreased 19.1 percent compared to last year's receipts. Most of this decrease came because of the lack of visitors during the goose migration, which is the peak sale's period, and just basically low visitation throughout the year.

Revenue received from the sale of a variety of educational books, artwork, photographs, t-shirts, postcards, and posters at the DeSoto Visitor Center totaled \$50,831.28. Bruce Barkley serves as the MIA's full-time Business Manager, a non-government employee, operating a \$118,000 business from the DeSoto Visitor Center. Along with DeSoto, the Association also administers outlets at Mingo, Squaw Creek, Swan Lake, Horicon, and at Lewis and Clark Lake, which is a facility of the U.S. Army Corps of Engineers near Yankton, South Dakota.

Table 5d.1. <i>Summary of FY 1997 MIA sales activities</i>			
Outlet	Gross Sales	% of MIA Sales	Monetary Contributions
DeSoto	\$50,831.28	43.05	\$3,708.01
Mingo	10,923.45	9.25	456.50
Squaw Creek	14,731.55	12.48	3,035.30
Swan Lake	2,641.99	2.24	0
Horicon	15,832.75	13.41	27.00
Lewis and Clark Lake	23,104.16	19.57	2,208.74
Total	\$118,065.18	100.0	\$9,435.55

Direct monetary contributions to the refuge totaled \$3,708.01. This included sponsoring both photography and wildlife art shows, printing of the Fall Auto Tour leaflet, two Refuge fishing clinics, library books, ribbons for the student art show, a memorial bench, funding assistance for the Service's retirement seminar, and with the Service's directorate meeting at the refuge. The business manager also contributes to some of the above refuge's operational and interpretive programs in a variety of ways, in person and through his computer skills. Contributed assistance to the refuges from the MIA totaled an additional \$3,636.00.

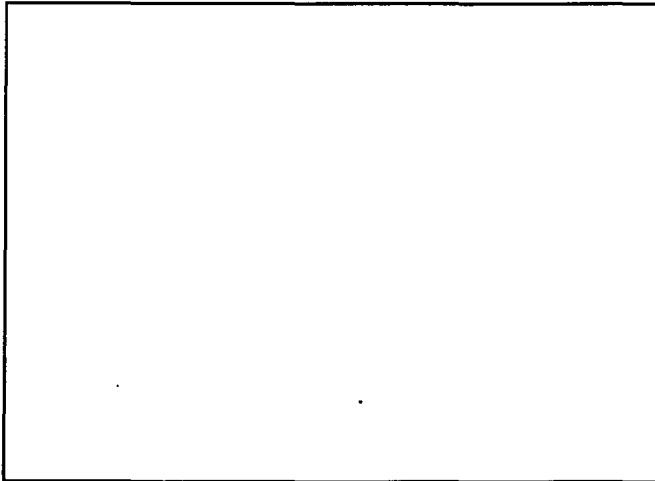
Planning continues for relocating and expanding the MIA sales area. We are looking forward to increased space and expanded sales soon.

# 6

## RESOURCE PROTECTION

### 6a. Law Enforcement

Many law enforcement contacts were made in FY 1997. Incidents of graffiti and vandalism were also documented. The south main gate was rendered inoperable for a short time on May 12 when someone backed a vehicle into the gate. The south kiosk was then destroyed by fire on May 18. Evidently, the fire started in the pamphlet holder. We believe that it was started by a person putting something hot or slow burning in the pamphlet holder. The kiosk was rebuilt and a new vehicle counter system was installed in August.



**Figure 8** Luckily, the driver was wearing her seat belt! Photo by J. Schmeling.

In May a volunteer got into an accident while driving a government vehicle on the refuge. The vehicle went off the road and rolled onto its top. Luckily, the volunteer suffered only minor injuries and returned to work within a week.

The detection of marihuana and paraphernalia seemed common this summer. Approximately 12 contacts either resulted in marihuana being discovered and confiscated or coming across marihuana pipes, residue, and in one instance needles that a cocaine addict had planned on using to shoot up. Also five State warrant arrests were made this year

on the refuge.

Table 6a.1. <i>Comparison of Documented Law Enforcement Contacts.</i>			
Fiscal Year	Violation Notices	Written Warnings	Verbal Warnings
1997	32	70	343
1996	28	55	data not collected

A total of \$3,325.00 in fines were assessed in FY 1997!

We also received a new law enforcement vehicle, a 1997 Ford Ranger extended cab.

Maintenance support of the LE program included several repairs to the three 1965 residences on station. The kitchen sink drains were replaced in all of the houses in January by contract. Refuge Officers and their families occupy these residences primarily for rapid law enforcement response when necessary.

## 6b Permits & Economic Use Management

Five Special Use Permits (SUP) were issued during the year. Two were for commercial fishing, one for bee keeping, and two for research activities. The research SUP's were for the ongoing white-tailed deer telemetry study by VerCauteren and the grassland/prescribed burning relationship with grassland birds study by Dr. F.D. Van Dyke and Jamie Schmeling.

## 6c. Contaminant Investigation

No activity this year.

## 6d. Contaminant Cleanup

No activity this year.

## 6e. Water Rights Management

No activity this year.

## 6f. Cultural Resource Management

The documentation and conservation treatment of *Bertrand* artifacts marches consistently onward. The Museum Curator and Museum Specialist positions were combined into one position description, and the Museum Specialist laterally transferred into it. With inestimable assistance from dedicated volunteers, the Museum Curator and Museum Technician treated 14,372 objects. These included lamp chimneys, men's dress boots, foodstuffs/liquors, shovel/axe/tool handles, grindstones, plates, candles, a shovel, and a textile piece. The treatment and storage upgrade of lamp chimneys and candles were completed this year. Two new projects of upgrading the storage, and conservation treatment of men's dress boots and tool handles were continued and started, respectively. Two hundred (200) random catalog numbers of artifacts were surveyed to complete an annual accountability process.

Again, Dr. Larry Stone, Professor of Microbiology at nearby Dana College, completed the survey of foodstuffs, and a partial survey of liquors. This survey of 785 objects, resulted in the treatment of 30 objects, which were either contaminated or losing liquid preservative. His assessment and treatment of *Bertrand* perishables is an annual task, which fulfills mandates in our preventive maintenance plan. We greatly appreciate his consistent relationship with our

collection, a continuum that will be sorely missed when he retires from spending his summers with us. His fee raised this year, and will probably raise again next year, as we are receiving quite a bargain for his highly-specialized professional services.

The Museum Curator prepared and published an article entitled *Be On the Lookout for Stanhope Lenses* in the British periodical (February 1998) *The History of Photography*. The article alerted a wide audience to the rarity, fragility, and conservation needs of Stanhope lenses. Another article written by the Curator appeared in the March issue of the *FWS News*. It was entitled, *Sunken Steamship at DeSoto NWR Finally Gives Up Her Last Secret*. Also, the Curator wrote a small article, entitled *The Steamboat BERTRAND Museum Archaeology and the U. S. Fish and Wildlife Service*, which will be included in an issue on *Federal Archaeology Education Programs, Intrigue of the Past*; and small narratives on the *Bertrand* and DeSoto NWR will be included in the eighth volume of *A Sesquicentennial History of Iowa* by Donald L. Kimball.

In continued documentary pursuits, the Curator and Technician/Registrar spent many hours/days/weeks cross-indexing the photographs of *Bertrand* objects. This collection of negatives/ photographs (more than 12,000 all told), was in dire need of such organization, to refine the process of providing researchers with requested information. They also began the process of cross-referencing and inventorying all of the information in the catalog files. They managed to complete 2,000 of the more than 5,000 files in this process.

Museum staff continued to monitor the museum environmental parameters with digitized hygrothermographs. IPM procedures also were routinely performed. A new gadget, called a "Spinsect"<sup>TM</sup>, was purchased and installed to catch little pests before they could find their way into the Collection Storage Areas. Luckily, we did not have a banner year for mice in the visitor center with only 28 caught. As the building ages and settles, new ports of entry arise, and must be constantly discovered and mitigated. Housekeeping practices of cleaning exhibits, windows, rotation of objects, etc. are a constant chore, but never neglected.

This year, we discovered yet another new name to add to the *Bertrand* (possible) passenger list. A gentleman contacted us via electronic mail to tell us that his ancestor, William Wheatley, had been aboard the ill-fated vessel. We are, however, awaiting the promised documentation to support these claims. We passed this information, along with the data about the two new passengers we discovered last year on to Jerry Petsche, the archaeologist who excavated the *Bertrand*. He is still in the process of writing a book about *Bertrand* passengers.

We also obtained copies of the journal of Captain Dave Harney from the *Steamboat Ontario*, which he captained at the time of the sinking of the *Steamboat Bertrand*. It seems that his boat picked up passengers and cargo from our ill-fated boat. Seems that "Hard-luck" Harney was a bit ill-fated himself, as he sank no less than four steamboats during his illustrious career! This journal adds new information to our files about the history of the boat.

Archaeologist Leah Rogers completed the final report of a field survey and shovel testing on the

refuge's northern boundary as part of the Harrison/Monona County Archaeological Project. She was seeking evidence of a historic settlement. She found objects of ceramic, glass, and metal which reflect a 19th/20th century farmstead at the site designated 13HR105. However, there was no evidence of early historic Parrish City or the Cincinnati steamboat landing.

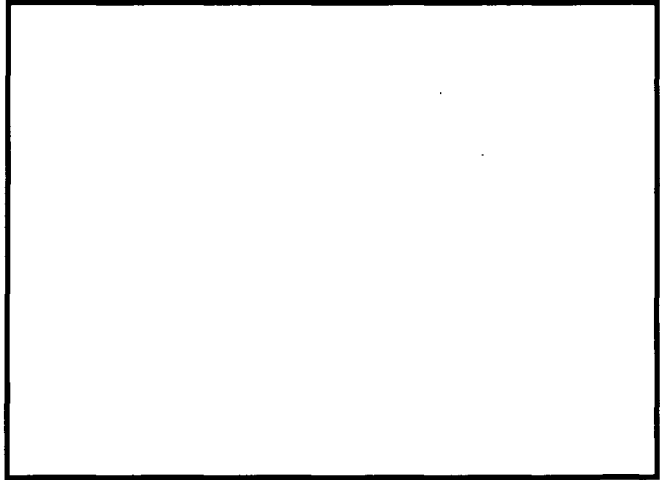
Our Programmatic Memorandum of Agreement (PMOA) with the National Advisory Council for Historic Preservation and the State Historic Preservation Officers of Iowa and Nebraska, again, required us to produce an annual assessment of our progress in realizing the 10-year Bertrand Collection Comprehensive Conservation Plan. The annual "event" is becoming even more voluminous! We also submitted our annual Museum Property Report.

# 7

## PUBLIC EDUCATION AND RECREATION

### 7a. Provide Visitor Services

DeSoto was hardly overrun with people this year. Sunday, November 5, was our peak day last year with 6,500 people. This year we peaked with 2,200 visitors Sunday, November 24. The three-day Thanksgiving weekend attracted only 3,425 visitors, despite the presence of more than 600,000 snow geese. The high lake water of the summer limited public access to some parking lots, boat ramps, walking trails, and even roads. The overall result was a 12% decline in fiscal year refuge visitations to 237,531. This is well below the 10-year average of 324,442 visits.



**Figure 9** High lake water covers (and closes) Whitetail Drive. Photo by M. Sheets.

The fall snow goose migration was on time despite concern the birds might bypass us. The geese followed the harsh weather fronts of late October and early November. The refuge had 250,000 geese by November 14 and 600,000 by November 20. However, the geese stayed in the fields on the lake near Prairie Lane and on Center Island (areas closed to the public) for weeks, and they were generally not visible. On November 20, they started using areas along the lake shore near the Bob Starr Wildlife Overlook and the visitor center. November is normally our busiest month of the year. The crowds came, though fewer than last year. Last year's visits to the refuge in November totaled 57,239. This year visitation was 28,872, a 50% decline, no doubt mostly because of the bad weather.

Summer visitation, Memorial Day through Labor Day, totaled 88,374 people with 3,966 people on Memorial Day weekend, 5631 on the July Fourth weekend, and 3918 on Labor Day weekend. In the past, before incompatible uses were prohibited, water recreation (swimming, high-speed boating and water skiing) attracted up to 10,000 people on any of these holidays.

At various times through the year, we have several consumptive uses on the refuge. Hunting programs consist of a controlled waterfowl hunt, a muzzle loader deer hunt, and two archery deer hunts. We had about the same number of waterfowl hunters this year and a decrease in warm-

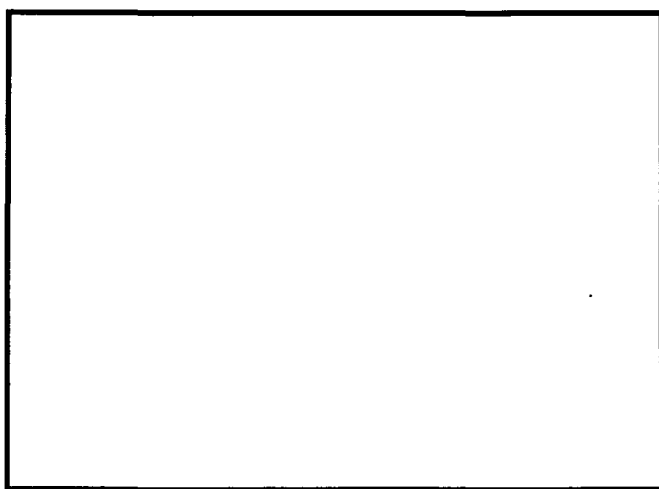


water fishing use. Mushroom hunters decreased from 760 visits in 1996 to almost zero because the cold springtime weather kept most of the morels from coming up.

Table 7a.1. FY 1997 Visitation		
Activity	Visits	Activity Hours
Interpretation	435,078	230,707
Environmental Education	7,935	23,686
Consumptive Wildlife Recreation	8,956	24,647
Non-Consumptive Recreation	217,549	151,984
Non-Wildlife Recreation	3,319	1,658
Total Activity Hours		432,682

#### *Visitor Center*

The DeSoto Visitor Center, a major attraction, is normally open every day of the year, except four holidays. The visitor center hosted 119,162 people this fiscal year. A 16% decrease from last year, and our lowest use ever. This is mostly because we had less than normal visitation in November and December, our busiest months. The ten-year average for visitor center use is 147,356 visits.



**Figure 10** Bio. Tech. Mike Ellis thanks a visiting German choir group for singing for the staff (at least we hope that's what he said - he spoke to them in their native tongue). Photo by S. Tuttle.

The refuge continues to attract an impressive variety of foreign visitors. They came from Nepal, Czechoslovakia, Ecuador and 47 other nations. Our registration book also records people from all 50 states and Puerto Rico. We gave tours to 20 Japanese exchange students in August and 25 German exchange students in July.

Either of our two orientation films "Seeds of Change" and "Off the Beaten Path" are generally shown hourly during the week, and on the half hour on weekends and during heavy-use periods. A total of 20,925 people viewed these introductory films, in addition to all school groups. Our special weekend wildlife films were viewed by 2,614 people.

The visitor center contains exhibits on cultural history, natural history, wildlife, conservation, and Service-oriented displays. Two galleries feature displays about the Steamboat *Bertrand*, which sank in 1865, and the effects of westward expansion on the habitat and wildlife of the Missouri River Basin. Various temporary exhibits are displayed in the visitor center throughout the year. A wildflower photo book, a morel mushroom photo book, a bird reporting book and an information book on the FWS System are placed at the information desk during the appropriate seasons, and these are regularly updated.

A visitor-activated three-minute steamboat excavation video in the Cargo Viewing Gallery can be viewed on a 21-inch monitor in a 'shipping crate'. The VCR and monitor generally work well in the 'crate'. In the visitor center lobby, we show a four-minute video of DeSoto's wildlife, produced by volunteer Bob Horton, who has captured hundreds of hours of wildlife on tape. Both visitor-activated videos are popular, but tapes and machines need regular maintenance when they are viewed 15-20 times a day throughout the year.

Also requiring increased maintenance are the three Labelle 8-track audio interpretive systems, which operate 22 telephone handsets. After 15 years, tapes are wearing out, hand sets and cradles are breaking, and the Labelle players themselves are developing irreparable buzzing problems. This is to be upgraded to solid-state technology by Wilderness Graphics as part of the visitor center rehab.

Binoculars are available to visitors for free use in the visitor center. We use nine rubberized Minolta 8 x 40s. This service is very popular with waterfowl and eagle observers. Damage to loaned binoculars is infrequent; we keep a driver's license as security. Watchable Wildlife funding provided five of our nine Minolta 'loaners' several years ago. The station also issues three copies of National Geographic's *Birds of North America* for visitor loan.

The staff responded to 13,000 public inquiries. This includes 12,396 telephone responses, and 992 written responses. All of this keeps the phones ringing and the computers humming.

DeSoto Visitor Center houses a variety of excellent special exhibits. The first is usually the Student Wildlife Art Show throughout the month of March. This year was the 14th annual showing. There were 221 works, from 55 classes in 22 Iowa and Nebraska schools (K-12), in the exhibit. Award ribbons were provided, and all participants received a personalized parchment certificate. Judges were Kari Jaeger (Blair, NE), Gene Dixon (Harlan, IA), and Penny Christensen (Neola, IA). More than 8,000 visitors enjoyed the exhibit in the center's multipurpose room.

We exhibited the landscape art of Jim Fox from April 5 to 28, and the center hosted the 14th Annual Wildlife Photography Exhibit and Sale from May 17 to June 21. The latter exhibit included 627 photos by eight Iowa and Nebraska photographers. A fifteen percent commission and \$25 per photographer entry fee brought \$455 to the co-sponsoring Midwest Interpretive Association. A total of \$1,702 worth of local photography was sold. More than 10,000 people

saw the show.

We exhibited "Gary Tonhouse Photo Exhibit" from August 3 to 31. Prairie Appreciation Week was held during September 6 to 14. A multi-purpose-room exhibit of prairie grasses and wildflowers were set up for environmental education classes during the weekdays, and opened to general visitors during the weekends. Volunteers went afield with the students to conduct prairie appreciation exercises. A total of 303 students (six schools), primarily fourth graders, participated. Twenty separate sessions were given. While the exhibit was up, DeSoto hosted the Regional Snow Goose Management workshop.

The 14th Annual Wildlife Art Exhibit and Sale were held during September 28-October 26. Twenty-seven Iowa and Nebraska artists displayed 235 two-and-three-dimensional works (paintings, carvings, and sculptures). Sales totaled \$2,544. The Midwest Interpretive Association retained \$1,057, from a 15 percent commission, and a \$25 entry fee. Nine volunteer artist/demonstrators were featured on weekends during the show, sharing their skills and personalities with visitors. More than 19,000 visitors saw this show.

From December 1 to 30, we hosted the exhibit "Iowa's Wild Places." This is a traveling exhibit of color photos by Carl Kurtz, highlighting Iowa's diverse natural beauty and wildlife. This exhibit, seen by 5,500 visitors, was sponsored by the Iowa Natural Heritage Foundation.

Table 7a.2. FY 1997 Visitor Center Exhibits and Activities	
January 10 - 26	Federal Junior Duck Stamp Exhibit
February 6 - March 3	Lewis and Clark Exhibit Panels
March 8 - 29	Student Wildlife Art Exhibit
April 5 - April 28	Landscape Art of Jim Fox
April 20 - 26	National Wildlife Week Exhibit - Suitcase for Survival
May 17 - June 21	Wildlife Photography Exhibit & Sale
July 1 - 30	Outdoors Writers of America Exhibit
August 1 - 31	Gary Tonhouse Photo Exhibit
September 6 - 14	Prairie Appreciation Week Exhibit
October 4 - Nov 1	Wildlife Art Exhibit & Sale
October 15 - November 30	Wildlife Auto Tour
November 6 - December 31	Fantasy Insects

Table 7a.2. <i>FY 1997 Visitor Center Exhibits and Activities</i>	
November 24 - December 31	Iowa's Wild Places Photo Exhibit

*Rehabilitation of VC Interpretive Facilities*

Marvin Cook of Wilderness Graphics is contracted to solve interpretive needs in the visitor center, the refuge, and particularly at the new Boyer Chute National Wildlife Refuge. Wilderness Graphics has done an excellent job of providing well-designed and durable interpretive panels for Boyer Chute and DeSoto NWR roadsides. Wilderness Graphics will update in 1998 the visitor center's interpretive media, and install a new information desk and three life-size dioramas. We are also increasing the publication sales area fourfold.

All this follows a 1994 station evaluation, in which a high priority was given to upgrading the refuge's interpretive message including the 17-year-old visitor center exhibits and the Service's ecosystem message, (i.e., the Missouri River story).

*VC Maintenance*

We finally saw some (limited) progress on the energy retrofit contract work this year. As we were developing the specifications for a contract to connect the cooling tower (acquired in 1995 from the Madison Lab) to the chiller in the building, we learned that the tower would not work. The tower would use evaporation to cool the system. We calculated the rate of evaporation and it would have exceeded the capacity of the building's water treatment system. The station's Maintenance Mechanic got an On-the-Spot Award for catching that before we let the contract. In September, we connected a new Trane 120-ton, air-cooled condenser to the chiller through a contract with Waldinger, Inc. Although it was late in the cooling season, we think the new system will work quite well.

In August, a contract (\$19k) was let to rehabilitate the water supply system. Under this contract, the system was retrofitted with a chlorine injector, which was a major shortcoming as to compliance with the Safe Drinking Water Act. However, during the contract, the vendor was allowed to relocate the injection point from behind the softener to in front of it. The chlorine-treated water is not good for the softener and the injection point needs to be moved to behind the softener.

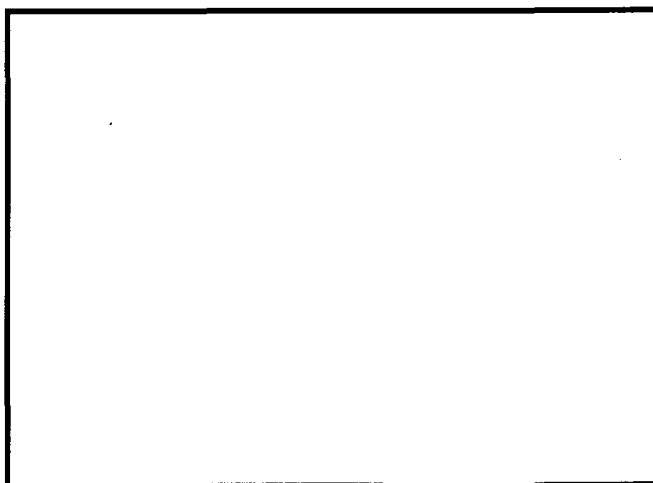
The two water softeners were supposed to be replaced through this contract, but the final specifications called for replacing with only one softener. Two softeners are needed to meet the building's peak water demand and with the current plumbing configuration, the softener has to be monitored manually when it is back-washing, and some untreated water is being introduced into the potable water storage tank. At the end of the FY, we were working on obtaining the money to do some additional work to the water supply system to correct these, and other, deficiencies.

Last fiscal year (February 1996), a malfunction in the lab HVAC caused a fire and subsequent halon dump in the lab (see CY 1997 Report). Because halon is now banned, a more environmentally friendly (0 percent ozone depletion potential) fire-suppression system was purchased at a cost of \$7,800. The system is called FM200. It replaced the Fenwall 1303 Halon system in the laboratory, but not in the cargo storage areas. Because of the funding constraints and administrative delays, automatic fire suppression capability in the laboratory was not restored until December 1996, ten months after the fire.

Specialized HVAC services were required, again, throughout the year, at great cost to the budget, and staff time, since repair people must be constantly attended while in the collection areas. Like last year, one Trane unit had to be completely altered to cool only, without dehumidification, because of incapacitated refrigeration coils. It had to be "un-bypassed" once Autumn rolled around. We cannot get this fixed, because it would cost about \$5,000, and the units will be abandoned when (or, **if**) the renovation takes place. We also have many storage cabinets that were purchased last year, and will be used in the Cargo Storage Areas for object storage. They are in the crawl space to this day, waiting to occupy the space that will be freed up when the Trane units are moved out. Hopefully, they will not be rusted and unusable by the time that opportunity rolls around!

This year, we updated our obsolete security system with a new keypad, panel/motherboard, and supervised dialer from Simplex. This system was only a few thousand dollars, and is working well. The old system became more difficult and more expensive to fix, and failures of old components occurred more frequently because of advanced age and obsolescence.

Two visits from "Cody's Pests" were required to take care of a carpenter ant infestation in the entranceway to the visitor center. We are having more and more problems with this "diminutive livestock", as the copious amounts of woodwork used in constructing this building is rotting from age and needs TLC from a nonexistent janitor!



**Figure 11** New Simplex security alarm - the keypad in the middle replaces the entire blacked-out panel to the right. Photo by S. Tuttle.

The concrete benches and planters at the entrance to the Visitor Center have been sinking for some time now. There are also cracks in the building itself near the entrance. In May, we made a video tape of the problems and sent it to Engineering. Some concrete fixtures have sunk more than 11 inches!.

A switch gear for the outside lights timer was replaced in November. One of the buildings boilers went down and was repaired in January. The directional signs on the Auto Tour Route at the entrance to Visitor Center were replaced in February. The outside steps on the south side of the building were replaced late in the FY.

### Hunting

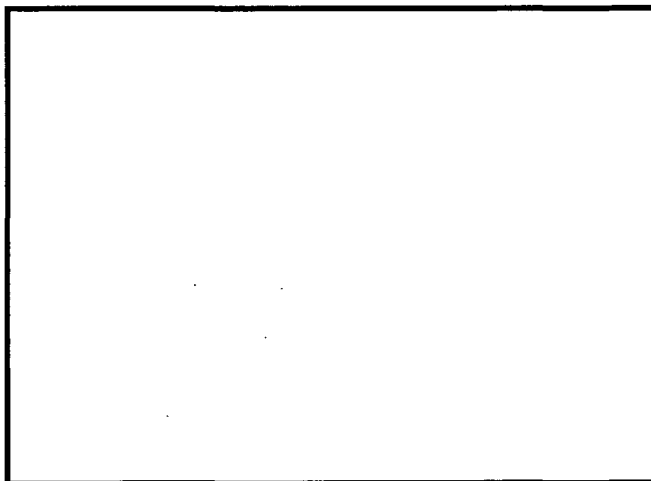
The twenty-third consecutive controlled Iowa waterfowl hunt ran from November 2 through December 5. The four days per week hunt hosted 265 hunters logging 1,206 hours to harvest 84 geese and 24 ducks. It took an average of more than 11 hours, and nine shots, to harvest a single bird.

The Nebraska muzzle loader deer hunt ran from December 7 through the 9th. A total of 98 hunters participated in the hunt, and logged 1,871 hours to harvest 55 deer (34 bucks, 21 does). The success rate was 56 percent.

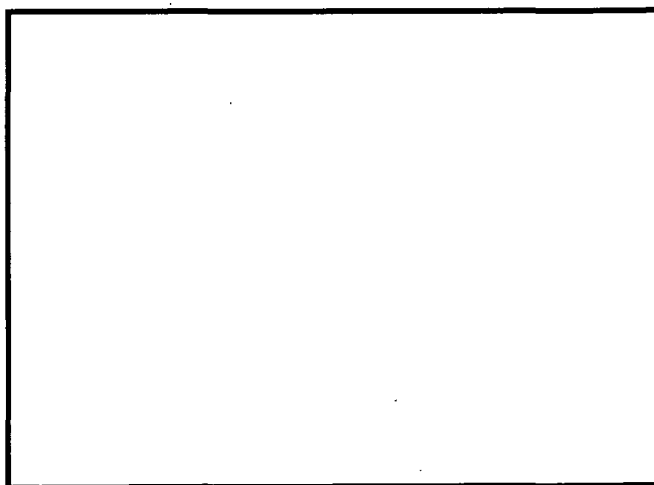
The archery deer hunt for Iowa and Nebraska residents runs during the respective state seasons. Information is obtained on a voluntary basis. Two hundred forty-four (244) Nebraska hunters reported 691 hours to harvest 15 deer. Three hundred thirty-five (335) Iowa hunters reported 1,001 hours to take 20 deer.

### Fishing and Lake Fisheries Management

Recreational fishing on the refuge this spring provided some of the best black and white crappie fishing on DeSoto Lake since the late 80's. Twelve inch crappies were common until late spring flooding provided a more attractive food source and reduced water clarity, thus fishing success. This was the second year in a row that high water in late spring dropped fishing success considerably. Largemouth bass fishing was sporadic and walleye fishing never did materialize as it had in past



**Figure 12** Several nice bucks, such as this one, were taken during the muzzle loader hunt. Photo by M. Sheets.

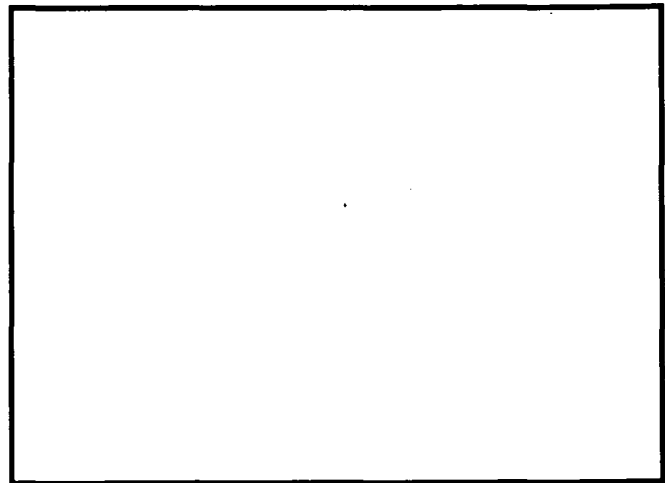


**Figure 13** Lakeview Drive's accessible rock jetty provided one disabled angler the opportunity to "bring home dinner". Photo by S. Van Riper.

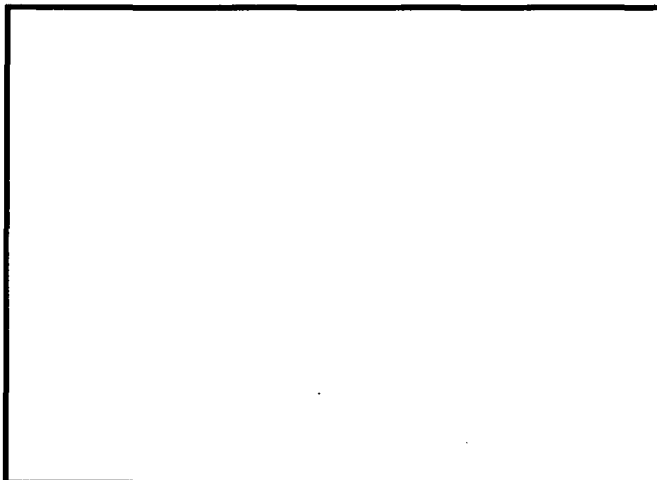
years. Even catfish and carp were noticeably lacking from most creel surveys during the summer months when they are normally taken. When the river water level is above the outlet gate for DeSoto Lake, we are at the mercy of the weather, and with higher than normal rainfall shoreline flooding and erosion are inevitable.

Twelve bass tournaments and one archery fishing tournament were held on DeSoto Lake this year. More than one hundred eighty largemouth bass were weighed in for 489 pounds by 440 anglers. All were released alive with the average bass weighing 2.7 pounds. Three hundred and nineteen carp and buffalofish, weighing 1140 pounds, were harvested by fifty-six bowhunters at the yearly Carp-O-Rama.

Stocking of game species continued with 400 eleven to fifteen-inch white-bass, 2400 seven-inch channel catfish, and 2100 five to six inch walleye released in DeSoto Lake. This will benefit recreational fishing and help control the increasing gizzard shad populations.



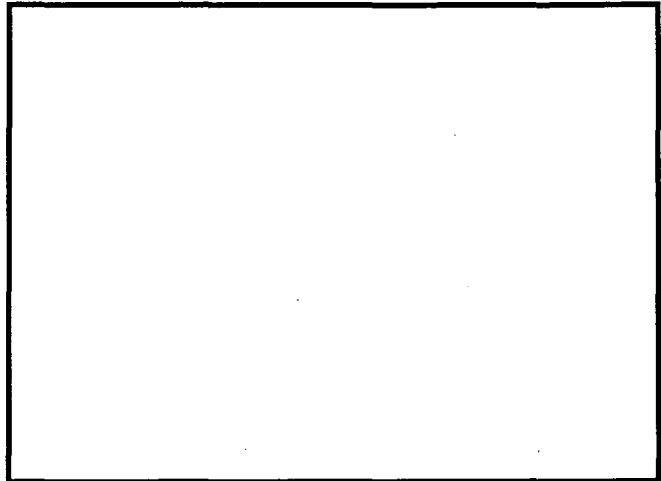
**Figure 14** This was the second year of stocking white bass in an attempt to slow down the prolific gizzard shad population. Photo by S. Van Riper.



**Figure 15** A day's catch of buffalofish by our commercial fisherman. Photo by S. Van Riper.

Commercial fishing efforts to control rough-fish populations continued again this year with two commercial operations. The first nets were in place on April 4 and the season came to a close on October 9. Total rough-fish netted this year included 12,358 pounds of buffalofish and carp (10,537 pounds of buffalo and 1821 pounds of carp). This is part of a continual decline in harvest seen the last several years. Last year 18,092 pounds of roughfish were harvested.

Three fishing clinics were held at DeSoto Lake during the summer months. Two hundred and forty inner-city youth were brought out to the refuge for a day of learning, fishing, and enjoyment. Adult volunteers numbered more than sixty for the three different clinics. Two of the clinics involved a contracted concessioner that provided an artificial trout pond, where the youth could experience catching and cleaning fish.

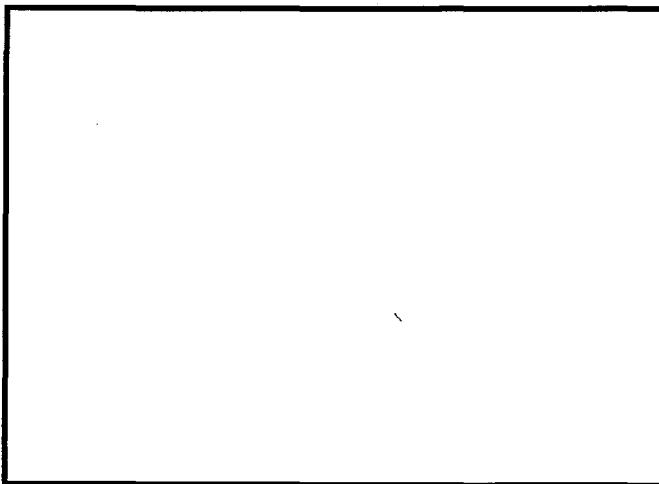


**Figure 16** The South Beach Recreation Area fishing pier attracts many during August Fishing Clinic. Photo by S. Van Riper.

#### Environmental Education and Interpretation

The refuge is active with students and classes especially in the spring and fall. A total of 7,935 students (389 classes) visited and were involved in environmental education programs. Teachers supervised many of their own classes at the refuge, and borrowed films, slide shows, and videos to use in their classrooms.

Our busiest months were May and November with 2,429 students (124 classes) in May and 2,835 students (139 classes) in November. In the fall, most students come to learn about "Birds in Migration". Overall, most of our classes work on the "Artifacts and Lifestyles" cultural resources packet provided by the refuge during their spring visit. As part of a full two-day EE program on the refuge, the four, fifth-grade classes from Blair's Arbor School even got instruction in canoeing and cooking breakfast over an outdoor grill.



**Figure 17** Volunteer Jack Brownrigg helps with Prairie Appreciation Week. Photo by B. Weber.

"Prairie Appreciation Week" is held the second week in September. This program teaches students the historical importance of prairies. We have both indoor and outdoor lessons. A total of 303 students (six schools) were accommodated during the three-day program. The weather was marvelous and prairie grasses were at their peak. We conducted 20 separate sessions, and used the grasslands next to the visitor center as the field site. Four volunteers



conducted the classes along with the outdoor recreation planner.

Because of limited interpretive staff, we must depend on refuge volunteers to help with most education programs. Volunteers are first assigned to new groups, and then to as many repeat-user groups as can be scheduled.

About a dozen college classes used the refuge this year, including Creighton College, Clarkson College, Drake University, Dordt College, Westmar College, the University of Nebraska, Iowa State University, Iowa Western Community College, the University of South Dakota, Morningside College, Hastings College, and Northwestern College.

The staff presented talks and programs to a variety of groups, other than student groups. A total of 81 organized groups and bus tours, 2,703 persons, visited the refuge. Programs on endangered species, wetland, wildlife management, and the steamboat Bertrand were all subjects for many programs given to visiting groups by staff and volunteers.

The Weekend Wildlife Film Series was enjoyed by 2,614 visitors throughout the year. Many of the same local folks come each Saturday or Sunday to enjoy a film. Each feature is now shown three times Saturday and Sunday. The series included special programs for Earth Day, Prairie Appreciation Week, and Lewis and Clark weekends. Weekend films are stopped in November, because of high public visitation and crowded parking lots during the peak waterfowl migration.

In August, an interpretive panel entitled Farming for the Future was erected along the Auto Tour Route, just south of the Visitor Center. The panel explains the biological farming program in place at DeSoto. It was located in front of the boundary between two crop fields to emphasize the crop rotation explained in the panel. A vehicle turnout area was constructed to allow motorists to pull fully off the road to read the panel. Our Engineering Equipment Operator received an On-the-Spot Award for the exceptional work he did in establishing this interpretive facility.

#### Wildlife Observation and Photography

The four refuge foot trails were used by more than 35,000 visitors. Volunteers performed 'trail patrol', picking up litter and pruning overhanging branches, plus periodically restocking the Wood Duck Pond and Cottonwood Nature Trail dispensers with interpretive leaflets. Guided tours of the trails were provided to 1,917 visitors (approx. 70 groups). Volunteers provided the majority of these tours - mostly for conservation-oriented tour groups that called ahead for reservations.

The Auto Tour runs from October 15 through November 30. The current route ends at the new "Bob Starr Wildlife Overlook" and people return on the same seven miles of paved road. Generally, this route continues to be well accepted by the public, although it means they are excluded from the unpaved (and dusty) gravel part of the road that continues the loop around Center Island. More than 40,700 people drove the horseshoe-shaped tour route during the 47-day

period. Compared to previous routes, this one reduces law enforcement problems, reduces the amount of special signing that had previously been required, and eliminates traffic disturbance at the eagle roost site, since it no longer passes nearby. Cottonwood picnic ground was kept open during the auto tour, as was the Bertrand Excavation Site and Missouri River Overlook. These sites helped to disperse traffic during peak-visit periods.

The Small River Overlook turnout, near the South End Recreation Area, was permanently closed in September after being flooding for a good part of the year. The New River Overlook, a short distance north near the Inlet area, is larger, improved, and has some interpretation.

#### Museum-Related Visitor Services

Museum staff extended technical assistance to 109 researchers. Requests were received from Federal agencies, state agencies, local governmental agencies, colleges/universities, and the private sector. Requests were received from people locally and from far away, and 37 requests were made via electronic mail, reflecting the increasing popularity of the information highway. Having a Bertrand and DeSoto homepage on the Internet has made us much more accessible to the public. Voluminous amounts of information on the conservation of ethnographic materials and professional museum standards and practices were sent to the George W. Brown, Jr. Museum and Cultural Center in Lac Du Flambeau, Wisconsin. This Ojibwa center, under the direction of Marcus Guthrie, heard about us from the U. S. Forest Service. Our museum program has quite a following! Even the Bureau of Land Management approached us for assistance when they were confronted with damaged collections in their storage facilities at the University of North Dakota. The archaeological objects were inundated with contaminated water in the flood at Grand Forks.

The Museum Curator sent encoded brochures to Sean Furniss in Washington, and now he has made them available at a DeSoto website on the Internet also. Check us out at:

<http://bluegoose.arw.r9.fws.gov/NWRSFILES/RefugeSystemLeaflets/R3/Iowa/DeSoto/DeSoto.html>.

This site is the perfect complement to our Bertrand homepage.

Articles which included information on the *Bertrand* appeared in *Lost Treasure Magazine*, entitled "Once Frozen in Time". The new booklet on the Boy Scouts of America merit badge for archaeology is now available, and includes photographs and information on the excavation of the Steamboat *Bertrand*.

Nineteen tours were given by the Museum Specialist to interested groups. These tours included in-depth interpretation of the *Bertrand*, and the conservation of the collection. Tours included such diverse groups as Ukrainian agriculturalists, and an elder hostel from Denver, Colorado.

The *Bertrand* Museum was, again, one of the sponsored stops for participants in Iowa

Archaeology Week. Special posters and information were available to visitors. The museum also was included in a new CD ROM detailing the nation's museums, as well as in the *1997 Official Museum Directory*. Information also was provided to *Thimble Collectors International* for inclusion in their publications.

#### Entrance Fees

This was the tenth year of entrance fee collection at DeSoto. Convenient self-registration stations (for paying the daily vehicle fee) are found near both entrances to the refuge and at the visitor center. Several types of annual passes are also available at the visitor center information desk.

Table 7a.3. FY 1997 Entrance Fee Permits			
Type of Permit	Cost	Number Sold	Receipts
Single Visit	\$3/vehicle/day	16,097	\$48,518
Groups/Commercial	\$20 ( $\leq 21$ people) \$30 ( $> 21$ people)	69	\$1,950
Golden Eagle Passports	\$50	48	\$2,000
Golden Age Passports	\$10	374	\$3,740
Golden Access Passports	no cost	105	NA
Federal Duck Stamp	\$15	800	\$12,000
Refuge Pass	\$10	412	\$4,120
Total		17,905	\$72,328

Entrance fees collected were down 20 percent this year from \$90,367 to \$72,126. We sold 26 percent fewer permits. Sales of single-day permits were down 28% percent, although refuge visitation was down just 12 percent. This drastic drop in daily fees is partially due to lower general visitation, but also to sales (beginning April) of 412 annual refuge passes, our new entrance pass that sells for \$10 for twelve months. This is also the likely cause of a 55% drop in Golden Eagle passes. The price of these rose from \$25 to \$50, which makes them less affordable for many refuge users.

Table 7a.4. Entrance Fee Data				
Year	Refuge Cost	Receipts	Permits Issued	Refuge Visits
1988	\$19,483	\$60,534	30,267	382,003
1989	\$23,039	\$61,750	30,876	386,030
1990	\$20,145	\$56,087	28,044	390,929
1991	\$23,590	\$48,684	24,342	371,139
1992	\$26,167	\$54,317	27,159	313,584
1993	\$46,070	\$64,137	18,689	297,475
1994	\$35,751	\$76,398	20,888	302,727
1995	\$35,000	\$85,832	25,730	309,288
1996	\$35,000	\$90,367	24,275	270,998
1997	\$35,000	\$72,126	18,490	237,531

#### Miscellaneous

At the end of FY 97, we ordered and received four concrete, disabled-accessible pit toilets. The new vaults and toilets cost approximately \$6k each. These units will replace two dilapidated units at the Cottonwood Trailhead, one unit at the Small Boat Ramp/Bertrand Excavation Site, and one unit along Whitetail Drive. These new facilities will benefit visitors engaged in many different refuge uses. Most of the remaining pit toilets (three) on the station are extremely old and worn and also need to be replaced.

#### 7b. Outreach

Thirty-seven news releases were sent to news media in Iowa and Nebraska, as well as major Kansas, Missouri, and South Dakota media resources. Our mailing list consists of 225 television, radio, and newspapers. This covers the major small towns in our two-state area. Special information was provided to the *Omaha World Herald*, *Blair Enterprise*, *Missouri Valley Times News*, *Des Moines Register*, *Council Bluff's Nonpareil*, and *Lincoln Journal-Star* newspapers.

Nineteen interviews were granted to newspapers and 17 to TV/radio representatives. Topics included goose migration, art show, fishing, auto-tour, the Bertrand collection, and our special exhibits.

We had much coverage by local and regional stations and newspapers. Most television and newspaper coverage continues to be focused on waterfowl. In fact, it seemed at times like a game of one upmanship was underway, each company trying to do a better story than the other. Special arrangements and interviews involved considerable time from the refuge staff, but the net result was continued excellent coverage for the refuge.

Staff responded to speaker requests by civic clubs for DeSoto programs whenever asked. The ORP spoke to Rotary, brought an EE program to the Winnebago Indian Reservation for Earth Day, and spoke at Blair High School and Fort Calhoun High School career days. He also is on the Board of Directors for Lions Club and Nebraska Statewide Arboretum. In addition the refuge does outreach by lending videos; thirty films reached a combined audience of 3,173, slightly more than last year.

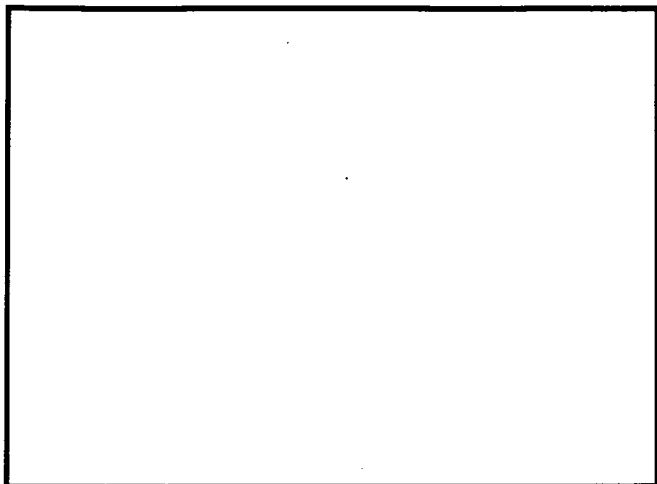
DeSoto Refuge continues to be a friend to scouting. Marco Buske, Steve Van Riper, Bruce Weber and Mike Ellis spent 29 official hours for orientations, fish clinics, refuge projects, and nature badge activity. In addition, Marco contributed 285 volunteer hours with Troop 729, Treynor, Iowa, doing troop meetings, committee meetings, camping trips, planning trips and fund-raisers. Steve contributed 550 volunteer hours with Troop 558, Missouri Valley, Iowa, as assistant scoutmaster, and organizer of summer camp and merit badge training.

The museum curator was active with professional organizations. She participated in the State of Iowa's Museum Review Panel, determining which requesting museums and organizations will receive state grant monies for improvements to their museums and collections. She also traveled to the new USFWS National Conservation Training Center in Shepherdstown, West Virginia, to courier a "Ding Darling" manuscript that belonged to them, but has been curated here for the past few years. The manuscript is now on display in their new museum.

Continued contacts were made from the Mystic Seaport Museum in Connecticut, in request for a loan of Bertrand objects. The museum is planning a three-year display entitled American and the Sea Exhibition: Coastal/ River Transportation: Traveling Around America. The exhibit includes a re-creation of the Steamboat Bertrand cargo space, and is scheduled to open in the spring of 1998.

The Western Heritage Museum located in Omaha, has made preliminary contact with us also, in anticipation of a loan of Bertrand objects for display in their completely renovated facilities. It will be part of the "Early Omaha" exhibit.

The new National Conservation Training Center in Shepherdstown, West Virginia, will be acquiring 36 framed duck stamps from DeSoto's collection for display at their new facility. This will be a "permanent" loan. The Mark Twain Museum in Hannibal, Missouri, has approached us for a loan of artifacts. The Bertrand surely represents a link to Mark Twain's past, as her pilot, Horace Bixby, taught Twain the steam boating business!



We continued to work with contractors at Nebraska Educational Television, who produced a software program for the multimedia computer kiosk, which was installed in the visitor center lobby. This kiosk allows visitors to access Bertrand Collections catalog records for all objects on display. It also tells stories of the passengers and the excavation.

**Figure 18** A young visitor explores the *Bertrand* stores via the new touch-screen computer. Photo by B. Weber.

# 8

## PLANNING AND ADMINISTRATION

### 8a. Comprehensive Conservation Planning

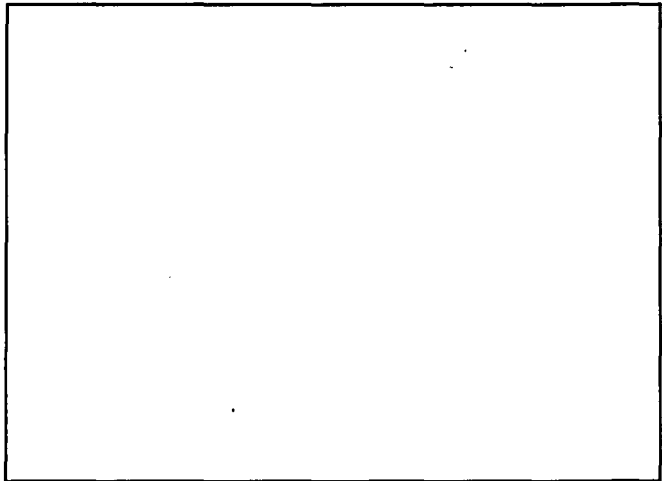
No activity this year.

### 8b. General Administration

#### Volunteers

We had a total of 99 volunteers who contributed 3563 hours. A half dozen volunteers continue to be the mainstay of our environmental education program, and remain active throughout the year as interpretive guides, both on the nature trails and in the visitor center. Volunteers were involved in a variety of specialized tasks, such as spring and winter birds counts, art and craft demonstrations, observation deck assistants, and helping in field investigations. Boy Scouts and Audubon Society continue to be significant contributors of volunteer hours.

Our volunteer recognition luncheon was held Tuesday, December 10. The volunteer program and its highlights were reviewed. Manager George Gage briefed the group about the important projects happening at DeSoto and Boyer Chute, and volunteers were presented with key chains and calendars. Pat Jensen was selected as "Volunteer of the Year." She contributed untold hours in our library, updating our collection to the Library of Congress system. Other notable volunteer activity includes the Freeman family (Deb, David, Josh, and Drew) who came nearly every week, assisting us in the treatment and storage upgrade of *Bertrand* objects. Jennifer Willers, a student at Dana College in Blair, Nebraska, assisted with many curatorial and conservation duties in order for her to gain museum experience. Wayne Weidenhamer, at the University of Nebraska in Omaha, Nebraska, completed an inventory of museum slides. And last, but not least, Rudy Chamber put the final touches on the design of a new publication, *The Bertrand Stores*, which will be published in FY 1998.



**Figure 19** Volunteers from Creighton University in nearby Omaha, NE cleaned up the lake shoreline. Photo by B. Weber.

Table 7a.5. <i>FY97 Volunteer Services</i>	
Activities	Hours
Surveys and Censuses	600
Studies and Investigations	1,104
Cultural Resource Management	728
Provide Visitor Services	1,024
Outreach	80
Total	3,536

### 8c. General Maintenance

Some of the general maintenance projects (those that support multiple RCAR activity categories) completed this year include:

- The kitchen sink drain lines in the three residences were replaced by contract in January.

### 8d. Safety

Monthly safety meetings and Quarterly Safety Committee meetings were scheduled and held throughout the year. The intent was to update and train personnel, and resolve any safety concerns that arose during the year. Safety meetings are assigned to individual staff members who are then responsible for providing programs. Topics this year included hypothermia-cold water drowning, pesticide use, accidents, fire extinguisher use, first aid kits, stress, heat stress, poisonous plants and animals, Fort Calhoun Nuclear Power Plant tour, recycling, and safety tips.

Quarterly safety meetings/inspections were conducted during the year with concerns presented to the Project Leader. All concerns were addressed, with majority being corrected, some forthcoming, and a few needing further consideration (i.e., funding).

An Environmental Compliance Audit was conducted by Pat McDermott and John Leonard, of the Regional Office, on June 16 and 17. Twenty-four negative findings were documented with action required. A formal response back to the Regional Office was submitted, as requested, by the end of the year. All findings have been either corrected, in the process of being corrected, or waiting for funding for further action. Two such findings include, the water system and proper storage of pesticides and oil and gas products. Both require considerable funding requirements, and have been submitted through the proper funding channels (i.e., MMS, RONS, etc.). The



refuge's water system's problems could be reduced considerably, if we can find funding to connect with the City of Missouri Valley's water system.

The Annual Station Safety Inspection was completed as required by the end of the year. A number of items require correction once funding is provided.

The annual rehearsal evacuation drill for the nearby Fort Calhoun Nuclear Power Plant was held and the yearly training session and dosimeter check. The nuclear power plant is only 1.3 miles from the nearest refuge road (western edge of the refuge), which puts us within the bulls eye of any westerly winds heading across the river.

All fire extinguishers were checked and either replaced and/or hydrostatically-tested during the year. All vehicles and buildings were checked for proper first-aid kits, universal precaution kits, and updated as necessary. Refuge staff collected and submitted drinking water samples routinely, as required, for analysis. All required physicals for fire and law enforcement personnel were arranged and provided. Finally, a series of three Hepatitis B shots were provided for Law Enforcement and Maintenance staff who were designated as "high risk" positions.

## 8d General Compliance Activities

- In May, six employees were certified to operate various types of heavy equipment.
- In June, one employee attended the Boat Operator Safety Train-the-Trainer course.