

DeSoto National Wildlife Refuge

Annual Narrative Report

Missouri Valley, Iowa

Fiscal Year 2005



Exploring cultural and natural resources are a family affair at DeSoto Refuge.

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3/22/06

Date

4/12/06

Date

4.20.2006

Date

Highlights

Monitoring and Studies

- Studies conducted on the refuge include: white-tailed deer research continues since 1990, survey of native grasslands, and grassland and forest bird studies.
- DeSoto is part of the Region 3 and 5 Impoundment Study of the effect of management actions to provide optimum habitat for migratory shorebirds, waterfowl, and water birds.
- The fall migration of snow geese and ducks were the lowest numbers ever recorded.

Habitat Restoration and Management

- Exotic plant control receives high priority at the refuge.
- Private Lands program works with many partners to accomplish habitat restoration projects.

Coordination Activities

- The Corps of Engineers worked with the refuge on a project involving Missouri River habitat for endangered pallid sturgeon.

Resource Protection

- Two SCA interns worked for a total of seven months helping with the backlog of work on the *Bertrand* Collection.
- Mountain Plains Museum Association's "Helping Hands Brigade" assisted the collection.

Public Education and Recreation

- Fifth annual RefugeFest.
- New monthly "Sunday/Fundays" began in March.
- Over 5,000 students visited the refuge for environmental education.
- Disabled hunters enjoy refuge hunts.
- Two all night fishing events were held during the summer.

Planning and Administration

- Youth Conservation Corps helped in accomplishing numerous projects.
- New *Bertrand* Curator was hired.
- Entrance road was redone.

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Introduction

DeSoto National Wildlife Refuge is found south of U.S. 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 1958 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.

This 8,360 acre refuge lies in the wide, fertile plain of the Missouri River Valley on former river meanders. Cottonwood bottom lands characterize portions of the refuge. Approximately 1,400 acres are biologically managed as croplands. Cool- and warm-season native grasses have been reestablished on more than 1,900 acres to provide additional biological diversity.

The focal point for both man and wildlife is the former oxbow of the Missouri River, the 788 acres DeSoto Lake. Recreational demand of 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 of 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 a significant assemblage of Civil War-era artifacts; 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. Besides 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. An average of 75,000 visitors pass through the center each year.

Monitoring and Studies

1a Surveys and Censuses

The fall migration resulted in the lowest numbers of geese and ducks ever recorded on the refuge. The majority of the month of October only brought a few ducks. Snow geese and ducks began arriving at DeSoto on November 3. Snow geese were observed flying over the refuge but the highest number recorded on the ground was only 120. The snows were reported in large concentrations at stop-over points, such as Sand Lake NWR north of the refuge, and subsequently at Quivira NWR south of the refuge. This suggests that the geese simply passed over DeSoto. Fall duck numbers peaked on November 17 with only 3,017 ducks, primarily mallards and green-winged teal. Mallard numbers were way below normal with only 2,700 mallards recorded on December 15. By January 6, 2005 the majority of the lake was frozen over with only one small pocket of open water and only about 2,000 canada geese and 1,500 mallards remained. By the next week the only open water on the refuge was in the Missouri River.

Use-days are shown in Table 1a-1. Total duck use-days for the year (Oct '04 – Sept '05) was way below the five-year average of 534,554 use-days. Goose use-days were well below the previous five-year average of 4,230,509 use-days. The lake began to thaw by early March. Ducks on their way north were more abundant than during the fall, with a peak on March 16 of 7,624 most of which were mallards and pintail. The first broods of canada geese were observed by mid-April.

Table 1a-1. Waterfowl use-day summary for fiscal year 2005.

	Oct-Dec 04	Jan-Mar 05	Apr-Sep 05	Totals
Ducks	143,805	171,204	42,434	357,443
Geese	67,004	41,193	9,215	117,412
Total Use-Days	210,809	212,397	51,649	474,855

DeSoto held the annual Audubon Christmas Bird Count on December 19, 2004. This was the fourth count with a new circle that encompasses Boyer Chute and DeSoto National Wildlife Refuges. Twenty-three volunteers from the Omaha Audubon Society and other interested birders recorded 54 species and 18,461 individual birds.

Volunteer birders also participated in the DeSoto Spring Bird Count on April 30, 2005. This count, which includes only the Refuge, recorded 84 species and 4,146 individual birds. This is a relatively low species count for the spring, and included a number of shorebirds and other migrants such as swallows, but warblers and vireos were rare or absent.

On February 11, 2005, researchers from the University of Nebraska at Lincoln conducted a survey of the refuge deer population from a helicopter. The survey was conducted from 12:00 to 14:30 hrs under a clear sky with winds at 15 mph and about six inches of new snow cover.

Confidence was high that all deer on the refuge at the time were counted, with little or no double counting. The final count was 926 deer on the refuge or about 82 deer per square mile of terrestrial habitat.

1b Studies and Investigations

Multi-Refuge Impoundment Study

During 2005, DeSoto began participating in a three-year study of effects of management actions (timing of water manipulations) to provide optimum habitat for migrating shorebirds, waterfowl and other water birds. Twenty-three refuges in Regions 3 & 5 are participating in the study. Study units include the two new units established at the north end of the refuge (Red Barn Units). Water levels in the two units were managed according to the study design with the West unit having water levels drawn down for northward migration and the East unit having water levels maintained at full-pool until southward migration. Both units had bathymetric surveys to create bottom contour maps and estimate available habitat at various water levels. Vegetation density and species composition was measured in both units as well. Invertebrates were sampled in both units at two time periods. Bird surveys were conducted weekly beginning in April 2005.

Shorebirds began using both units near the end of April and continued until the end of May. Primary species observed were greater and lesser yellowlegs, pectoral, least, semipalmated, Baird's, and white-rumped sandpipers, Wilson's phalarope, semipalmated plover, long-billed dowitcher, and killdeer. Spring migrating waterfowl also made extensive use of the units during this time, and a pair of peregrine falcons hunted the area for at least ten consecutive days during the peak of migration. Both units received extensive use by fall migrating waterfowl.

Maintaining the water levels in these units was difficult due to the rapid percolation of water. In the East unit, it appears that maintaining the water levels throughout the summer lead to rapid colonization by cattails. The West unit was drawn down by the end of May and was only colonized by annual plants.



White-tailed Deer Research

Research on white-tailed deer (*Odocoileus virginianus*) at DeSoto was initiated in 1990 and has continued through 2005. In 2005 research on male deer at DNWR was continued. Twenty-seven deer were captured using netted cage traps and chemical immobilization. Twenty males were fitted with custom-designed expandable radio collars. Over 6,000 radio-locations and over 5,000 direct observations were collected from 29 May 1999 to the present on 115 radio-collared deer. Researchers are in the process of evaluating the movements, mortality, home range and habitat use of male deer, as well as the habitat use of resident female deer. A manuscript has been prepared from some of this data and is currently in review for publication. Researchers will also use data to construct models that will be used to predict the potential for, and rates of disease transmission through riparian corridors. In 2005 they also began working on an extension/education aspect of the project which will include the production of two full-length DVD's regarding deer research and deer management techniques. Currently, they are also tracking 6 deer at Boyer Chute NWR in conjunction with the DNWR study. A similar research project was also initiated in the Panhandle of western Nebraska in 2004. The research is affiliated with the University of Nebraska-Lincoln and the USDA-National Wildlife Research Center. Field research at DNWR will continue through at least 2006.

Studies of Grassland Birds

During 2005, Dr. John McCarty, professor at University of Nebraska at Omaha, and several undergraduate and graduate students continued a study of abundance, diversity, and reproductive success of grassland birds in relation to land use and land management. Using point counts and distance sampling, the researchers documented populations and habitat use of grassland birds with the focus on dickcissels and grasshopper sparrows. They also collected supporting data on habitat quality. Papers focusing on local scale habitat effects were prepared and data collected in 2005 that examine landscape effects and management differences will be added to the manuscripts. This work will continue in 2006.

Studies of Forest Birds in Relation to Recreational Use

The second year of a study looking at the relationship between forest bird abundance and diversity and the presence and use of trails was completed. This work is being led by Katy Simmons as part of her Masters Degree research. In addition to continuing censuses of forest birds, in 2005 data were collected on forest vegetation at each site and a method was developed to monitor trail use. Preliminary results were presented at the 2005 Natural Areas Conference where the work was awarded the Best Student Poster Award. Initial conclusions are that presence of trails is unlikely to negatively affect bird abundance. This work will continue in 2006.

Studies of Grassland Butterflies

A second year of a study looking at the relationship between abundance and diversity of grassland butterflies and land use and management was completed. This work is being led by

Nichollette Rider as part of her Masters Degree research. Coverage of refuge habitats was increased in 2005. Censuses of butterflies will continue in 2006.

Survey of Native Grassland Plants

Dr. Carla DeLucchi, professor at Dana College, NE, sampled plants on 16 grassland sites on DeSoto NWR to document the species composition, relative abundance, diversity of the species present, and effects of burning on woody species.

Both relative and actual abundance of woody species decreased following burning and actual abundance of grasses increased. Both of these increases and decreases were statistically significant. In addition, actual and relative abundance of forbs increased slightly, although the increase was not statistically significant.

In addition to the point intercept method employed to collect the data used for the above analyses, Dr. DeLucchi used a quadrat method to determine if more rare species would be encountered than using just the points. Six fields were sampled using both methods. Although the quadrat method sampled more area than the point method, the increase in number of species detected only averaged 2.2 species. Given these findings we will continue to use only the point method.

1c Climate Data

Season's Highlights

Temperatures - High temperature for the year was 101 degrees in July. The low temperature for the year was a bitter -14 degrees in January. Maximum daily temperatures were well above average for the early winter months until after the first of the year. The first killing frost wasn't until November with a low of 8 degrees. Lows of -14 degrees in January and -5 degrees in February, kept a blanket of snow on the ground for the latter half of the winter.

Precipitation - The Refuge's precipitation for the year was 34.09 inches (not including moisture from snow fall), which is 1.5 inches above normal. April and May were unusually wet this year (16.35" vs. the 30 year average of 7.65"), and the summer (Jul-Aug) unusually dry (8.85" vs. 12.21"). The wet spring had positive effects in less pumping required on the wetlands, but also made burning several units impossible. Planned spraying of brome units could not be accomplished on time and the late spraying had poor effects on the hardy grass.

The first measurable snow (2.8") was recorded in November. The snowfall total for the twelve month period was just over 30 inches. The snowfall totals below are not included in the total precipitation totals.

Table 1c.1. FY 2005 Precipitation and Temperature Summary.

Month	Precipitation (Inches)			Temperature (F)	
	Rain	Snow	Average*	Maximum	Minimum
October	1.58		2.55	82	29
November	2.89	2.8	1.76	81	10
December	0.44		1.04	67	-3
January	0.32	15.0	0.82	59	-14
February	1.16	6.0	0.81	66	-2
March	0.96	7.0	2.23	80	12
April	8.29		3.13	85	26
May	8.06		4.52	92	32
June	3.85		4.46	97	54
July	3.78		4.24	101	50
August	1.22		3.51	97	52
September	1.54		3.55	98	33
Total	34.09		32.62		

*30-year average

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Habitat Restoration

2a Wetland Restoration



Off-Refuge – There were 40 landowners that were provided technical assistance for restoration and/or enhancement of their wetland habitat in fiscal year 2005. There were also three wetland projects funded during the fiscal year with Partner for Fish & Wildlife funds. The Langstraat's wetland restoration project in Sioux County, Iowa totaled two acres, the John Otto wetland

enhancement project, adjoining the eastern boundary of DeSoto Refuge in Harrison County, Iowa totaled 30 acres, and the Jim Goodman wetland enhancement in Pottawattamie County, Iowa which totaled 6.5 acres. The John Otto wetland enhancement project included a right of way easement, for water that will flood a portion of the refuge along our eastern boundary.

In addition to the 18 counties in western Iowa that make up DeSoto's Private Lands Coordination Area, this is the third year that DeSoto's Private Lands Program has been working in eastern Nebraska within ten counties generally along the Missouri River, assisting the Partners for Fish & Wildlife Program in Region 6. One of the highest priority projects that continued into a third year is the Wetland Reserve Enhancement Program/Wetland Reserve Program (WREP/WRP) habitat programs for eastern Nebraska, along the Missouri River. The State of Nebraska was awarded \$16 million dollars to restore and purchase wetland acres within the floodplain of the Missouri River. To evaluate and rank the highest priority wetland acres for these funds, a wetland team or (B Team) comprised of engineers, biologists, and agronomists from government and non-government agencies, including the Private Lands Coordinator from DeSoto Refuge, have been evaluating thousands of acres of wetland habitat on numerous landowners properties along the Missouri River. In fiscal year 2005, 30 projects were approved for \$9,405,609 of funding on 3,220 acres in three counties in eastern Nebraska.

Another priority within Nebraska's Private Lands Program has been the partnering with the Missouri River Ecosystem Coordination Group, administered through the Natural Resource Conservation Service and the Papio/Missouri Natural Resource District in eastern Nebraska. This steering committee which meets every three months has brought in partners from many of the government and non-government conservation organizations to address the restoration and protection of the wetlands in eastern Nebraska. The Private Lands Coordinator at DeSoto Refuge has participated in these meetings to partner with other organizations with similar goals and objectives of conserving wetlands and surrounding habitats.

2b Upland Restoration

Grassland Restoration

During 2005, a total of 41.8 ac of cropland were permanently removed from production and were planted to native grasses and wildflowers (Field N53) on December 2, 2004 using a broadcast spreader. The mixture of grass seed used in this field was comprised of a number of species collected on the refuge including big bluestem, little bluestem, indian grass, switch grass, sideoats grama, Canada wild rye and sand lovegrass. Wildflowers planted are shown in the table below. This area is just east of the bald eagle nests and was converted as a buffer for the nests. The remainder of the buffer (61 ac) was prepared for spring seeding by disking the fields.

In addition to cropland conversions, seven cool-season fields (CS11, CS15, CS17, CS18, CS20b, CS37, CS44) comprised primarily of smooth brome, tall wheatgrass, and intermediate wheatgrass were prepared for conversion to warm-season species. Fields CS11, CS15, CS17, CS18, CS20b, and CS44 were sprayed with 2% glyphosate. Approximately 15 ac of the 43 ac in Field CS37 were disked to control trees, and the remainder was sprayed with 2% glyphosate. Field CS15 was mowed. Some of the preparation work was only partially effective and

additional spraying and/or disking will be needed prior to planting. In particular, Fields CS11, CS15 and CS 44 will need to be sprayed in early 2006 after green-up.

Grassland Diversity Enhancement

In addition to converting cropland to grassland, three fields lacking in overall plant species diversity were interseeded with wildflowers for a total of 146 acres. Fields N32 (33.0 ac), N37b (63.0 ac), and N23 (50.0 ac) received 20 lbs, 25 lbs, and 50 lbs respectively of the same mix of 23 species used elsewhere. For fields N32 and N37b, the fields had been recently burned and seed was broadcast by hand. In a number of areas throughout each of these fields small areas were raked down to the bare soil and seed was spread on the raked areas and then raked into the soil to ensure good seed to soil contact and possibly improve establishment of wildflowers. In Field N23 seed was broadcast from an ATV.

Native Seed Collection

Due to the amount of seed of certain species already on-hand, little effort was expended to collect additional seed during 2005. However, a number of patches of wildflowers were planted in an area near the headquarters to facilitate collection in the future. Species in the production plots include: gray-headed coneflower, purple coneflower, pale purple coneflower, Maximilian sunflower, ox-eye sunflower, butterfly milkweed, New England aster, prairie aster, purple prairie clover, and round-headed bush clover. Several other species were planted that did not germinate or were washed away by heavy spring rains. Collectable quantities of Maximilian sunflower, prairie aster and purple coneflower were produced.

Table 2b-1. Forb Species Planted in N53 and for Diversity Enhancements during 2005.

Species	Lbs PLS/lb	Species	Lbs PLS/lb
Aster, New England	0.050	Golden Alexanders	0.010
Aster, Prairie	0.050	Flax, Blue	0.200
Beardtongue, Large-flowered	0.020	Illinois Bundleflower (local)	0.100
Black-eyed Susan	0.100	Indian Blanket	0.050
Blazingstar, Prairie	0.025	Leadplant	0.020
Blazingstar, Rough	0.015	Milkweed, Butterfly	0.015
Clover, Purple Prairie	0.100	Sunflower, False	0.040
Clover, Rounded-headed Bush	0.020	Sunflower, Maximilian	0.040
Compass Plant	0.010	Vetch, Canadian Milk	0.020
Coneflower, Gray-headed	0.050	Blanketflower	0.040
Coneflower, Orange	0.020	Weed, Rosin	0.010
Coneflower, Pale Purple	0.050	Weed, Thimble	0.010
Coneflower, Purple	0.100	Wild Bergamot	0.020
Coneflower, Yellow Prairie	0.100	Yarrow, Western	0.040

Off-Refuge – Considerable efforts were again directed toward the prairie restoration efforts in the seven counties of the Loess Hills of western Iowa. Significant time was spent working with partners including the Loess Hills Alliance, the Golden Hills Resource Conservation and Development, and the Natural Resource Conservation Service developing funding needs, promoting fire in the hills, removing invasive species (mostly Eastern Red Cedar), training for

landowners and volunteer firefighters, and many other programs to restore and protect these natural resources.

Approximately 50 landowners were assisted with putting fire in the hills to restore native prairie habitat and remove invasive species, i.e. Eastern Red Cedar, dogwood and sumac on 5,392 acres within the seven counties of the Loess Hills. Another 15 Stewardship Initiative projects to restore native prairie in the hills, through burning, tree shearing, and reseeding was accomplished on private lands totaling 1450 acres. These restoration efforts are all apart of the Stewardship Initiative program that the Loess Hills Alliance has partnered with countless agencies and organizations, including the Fish & Wildlife Service's Partners for Fish & Wildlife Program to restore the native prairie and oak savannah habitat to the Loess Hills of western Iowa. Additional programs that the Loess Hills Alliance and the Stewardship Initiative have established include: work with the Loess Hills Prescribed Fire Initiative Program, the mobile fire crew, landowner fire ecology workshops, the Grazing Initiative Program and the Fire Learning Network program.

There were three upland habitat projects funded with 1121 Private Land funds this year in western Iowa. In Crawford County, the Milford Township Trust restored a one acre native prairie remnant in the Oak Grove Cemetery. In Carroll County, a five acre prairie seeding project was accomplished on the Dedham Prairie. The third project is an ongoing prairie restoration effort in Plymouth County on The Nature Conservancy's Broken Kettle Grassland totaling 3,079 acres. This grassland is considered the largest contiguous native grassland remaining in the state of Iowa. There are estimated to be over 200 breeding pairs of prairie rattlesnakes on this preserve, which is considered to be the largest concentration east of the Missouri River. This project will include; burning, tree shearing, biological and chemical treatment of invasive species, and reseeding of native grasses and forbs.

The DeSoto Private Lands program has continued for the third year, to assist with the Partners for Fish and Wildlife Program in ten counties in eastern Nebraska, generally along the Missouri River. Coordination with multiple partners, especially the Natural Resource Conservation Service, Papio/Missouri Natural Resource District and the Nebraska Game & Parks Commission has been successful in generating funding, willing landowners and potential projects.



Habitat Management

3a Water Level Management

Fall pumping was done to fill Willow, Wood Duck, Botos, Buchardt, Headquarters and the Red Barn wetland units. The new wells, which service several of the wetlands makes the management of the wetlands much easier. Spring recharge was done on the Headquarters, Botos and Red Barn units.

3b Moist Soil Management

The Old Moist Soil unit was pumped in the fall and spring after being renovated. The New Moist Soil unit has been taken out of production to begin renovation including some dike repair.

3c Graze/Mow/Hay

Maintenance Mowing - Sixteen miles of the refuge's boundary was mowed to control woody vegetation. This is an annual maintenance practice. In addition, road shoulders were regularly mowed throughout the year.

Weed Control Mowing -The east half of Field N23 (77 ac) was mowed to control the heavy infestation of musk thistle and to make it easier to spray the numerous Canada thistle patches.

3d Farming

Four local farmers cultivated 1,516 acres of refuge cropland. Farmers contracted to farm refuge cropland for a two-thirds crop share. Cropland provides food and loafing areas for migrating waterfowl, food, and cover for other species. Crop yields and acres in production are summarized in table 3d.1.

Table 3d.1. <i>Crop Grown, Acres Planted, and Yields for 2005.*</i>			
Crop	Acres	Total Yield (bu)	Avg Yield (bu/ac)
Corn	404	28,582	70.7
Soybeans	393	7,043	17.9
Wheat/Clover	615	10,091	16.4
Totals	1412	45,716	

*Does not include crops planted on custom rate basis.

Due to extensive depredation on crops by white-tailed deer, and increasing complaints of damage to crops on neighboring farms, 103.4 acres of smooth brome grass fields on the east side of the refuge were converted to crops on a temporary basis. Cooperating farmers were paid custom rates to plant these fields (total of \$9,475.42 or \$92.9/ac). Soybeans were planted on 76.7 acres

and corn was planted on 26.7 acres. All crops in these fields were left standing. These acres are not included in the above table.

The refuge's entire share of soybeans was harvested (except in the custom fields), sold locally and funds were transferred to three field stations (Table 3d.2). All refuge corn was left in fields as standing crop to provide food for resident wildlife. However, most of the corn was consumed prior to December. Nearly a four-fold increase in prices for sweet clover seed made the use of clover as a green fertilizer too expensive compared to other nitrogen sources. Corn and soybean yields were well below the 5-year average yield of 98.0 bushels and 33.3 bushels per acre due primarily to heavy use by deer.

Excess Grain – Because of the extensive deer damage there was no corn available for storage on site.

Table 3d.2. <i>Inter-elevator Grain Transfers to USFWS Field Stations.</i>	
Field Station	Amount
Region 3 Tamarac NWR	\$559.26
Region 5 Great Swamp NWR	\$559.26
Region 6 Benton Lake NWR	\$559.26
Total	\$1,677.78



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DeSoto NWR Crop Program 2005



Corn 431 ac
 Soybean 470 ac
 Wheat/Clover 615 ac
 Total Cropland 1516 ac

3e Forest Management

The field planted to hardwood tree seedlings during 2003 (17 ac) was examined to see how the seedlings were growing. Many of the seedlings showed some growth, although a number of areas showed extensive browse by deer. The Youth Conservation Corps group located seedlings and placed weed barrier cloth around about 200 trees to reduce weed competition.

Two fields totaling 60 acres that are scheduled to be planted to tree seedlings were planted with a short-grass mix during 2004 to establish ground cover and reduce weeds. During the planting operation at the end of May, 2004, soil disturbance created conditions favorable for the establishment of cottonwood seedlings. As a result, these fields were not mowed to allow the cottonwood seedlings time to become established. These fields will be planted to seedling hardwood trees in the spring of 2006.

3f Fire Management

The refuge staff/prescribed burn crew held their annual refresher training and took the pack test to prepare for the upcoming fire season. Physicals were also given to those requiring them. Prescribed burns were done on eleven units totally 340 acres. Several spring burns could not be accomplished due to wet conditions. The crew also traveled to Squaw Creek several times to assist with burns.

3g Pest Plant Control

Exotic plant species, which often aggressively invade new habitats, are of particular concern and are receiving more management attention. The following is a list of exotic, invasive or nuisance species known to occur on the refuge in populations of management concern during FY05.

Musk thistle (*Carduus nutans*) is the most common invasive species on the refuge. A number of infestations contain high population densities and cover 10 or more acres each, with 60-80 total acres affected. The worst infestations are in Fields N23, N43, and CS47. Some mowing (Fields N23, N43, CS47), disking (N15a, CS37), spraying with herbicides (Field N23, N43) and hand removal (Field N19d, N43, N46, N53) was accomplished during the summer of 2005 to reduce populations. Mowing is not very effective and only serves to set back the thistles until herbicide can be applied. Field CS09 that had an extremely bad infestation was converted to cropland, on a temporary basis, to address the thistle problem and to remove the non-native brome and wheatgrass prior to conversion to warm-season native species. Field CS47 will be similarly converted for 2006. Field N43 is scheduled to be burned during the fall/winter of 2005 to open up the area to allow for early spring 2006 spraying of musk and Canada thistles.

Canada thistle (*Cirsium arvense*) has been previously found in patches ranging in size from a few square yards to over two acres in size (Fields N07, N09a, N19b, N22a, N23, N28, N34b, N38, N43, N51, CS04, CS43, CS47). Most of these patches were treated at least once with 2,4-D but will need continued monitoring and additional treatments. Field N23, which was just converted from non-native cool-season grasses to native warm-season grasses, has a particularly bad infestation of Canada thistle. At least ten separate patches were found and sprayed with

2,4-D in the eastern half of the field. Treatments of this field were accomplished in early summer, however not all patches were treated before the other vegetation grew too tall to effectively spray. The eastern half of N23 was mowed in late August to allow for spraying of remaining patches during spring of 2006.

Crown Vetch (*Coronilla varia*) is currently limited in distribution to a few areas (Fields N15a, N16, N25, N29) however it is rapidly invading those sites. Treatment of crown vetch in Field N29 with 2,4-D during 2004 appeared to kill the majority of the treated patches and only a small area needed to be treated again in 2005. The east end of Field N15a was almost totally covered in crown vetch, marijuana, and musk thistle so the entire 5-acre area was sprayed with glyphosate, disked, allowed to re-grow and sprayed again.

Tatarian Honeysuckle (*Lonicera tatarica*) and Amur Honeysuckle (*L. maackii*) are two of the invasive bush honeysuckles. While they are present in scattered areas around the refuge, a majority occur around the Visitor Center where they were planted as landscape plants. They have spread through most of the area around the handicapped access to the Missouri Meander trail and around the lake side of the building. Many of these shrubs were removed during the summer of 2005 by cutting with chainsaws and treating the stumps.

Other major infestations occur around field CS50, in the patch of trees next to the outlet building, and between the Bertrand excavation site and the road. Some of the honeysuckle has invaded into the Research Natural Area. Large specimens will need to be cut with saws and then be treated with glyphosate. The numerous smaller plants may be brought under control by fall spraying with glyphosate.

Autumn Olive (*Elaeagnus umbellata*) occurs in several areas of the refuge where it was apparently planted some time in the early establishment of the refuge and occupies about 50 ac. Large patches occur on the west side of the river adjacent to field N33, at the Lakeview boat ramp parking area, in the South Gate Recreation area, and along US Highway 30 just east of field N44b. Like the honeysuckles, autumn olive will be controlled by cutting with chainsaws and treating with glyphosate. During 2005, a grant was obtained to purchase equipment (hand saws and glyphosate) for volunteers to use in removing this species. Work on the project was not started during the fiscal year.

Reed Canary Grass (*Phalaris arundinacea*) occurs in many of the low spots that have ephemeral water and currently occupies about 120 acres. The two worst areas are at either end of the lake, river-side of the levee in the old river channel and Botos pond. Control of the majority will be difficult due to the large area and locations. At Botos pond, we plan to mow the reed canary grass during the fall of 2005 and spray the area with glyphosate (Rodeo) when it greens up in the spring.

Garlic Mustard (*Alliaria petiolata*) occurs as the ground layer almost all of the wooded area of the refuge (3,300 ac). To date, no control measures have been attempted due to the enormity of the infestation. It does appear that areas with incomplete canopy cover do not support heavy stands of garlic mustard.

Common Mullein (*Verbascum thapsus*) is widespread in low densities and could be controlled with spot spraying and/or hand removal. During the summer of 2005 a large infestation at the Bob Starr Wildlife overlook was removed by the Youth Conservation Corps crew.

Multiflora Rose (*Rosa multiflora*) is found in most of the hedgerows bordering cropland, particularly in Center Island. It does not appear to be spreading to other areas so is not an immediate threat. It also provides some cover for wintering pheasants and bobwhite quail as well as nest sites for other passerines. No actions were taken to control this species.

Chinese Elm (*Ulmus parviflora*) and Siberian Elm (*Ulmus pumila*) are found throughout the refuge, primarily in windbreaks, and were probably planted as such. Locating these species will require extensive forest inventories. Removal of existing trees can be accomplished by cutting, girdling, or herbicide injection. No actions were taken to control these species.

4

Fish and Wildlife Management

4a Bird Banding

On June 28, 2005 the Iowa Department of Natural Resources conducted its annual banding of resident Canada geese. A total of 41 geese were banded with 8 recaptures.

4b Disease Monitoring

Disease monitoring is conducted throughout the year. During 2005, no outbreaks of avian cholera or other disease was found in the waterfowl concentrations.

The coyote population is still being affected by sarcoptic mange. With the exception of one coyote, observed just east of the refuge, that appeared healthy; all other coyotes observed on the refuge during the year were nearly hairless due to mange.

4c Reintroductions

On June 4, 2005 a red-tailed hawk from Raptor Recovery, Nebraska was released at the South Recreation area during the RefugeFest event.

4d Nest Structures

Wood Duck Boxes

A total of 77 nest boxes were available to wood ducks during the 2005 breeding season, and only 9 (11.7 %) were used by wood ducks. In the active boxes, 94 eggs were laid, 44 of which

hatched (46.8 % hatching success). This was the most eggs recorded and most boxes used since 1995. However, hatching success was the lowest in the same time period (Table 4d-1). Of the nine active boxes, three had complete clutches (9, 16, 22 eggs) that were abandoned in early incubation, accounting for half of all eggs laid. It is uncertain what caused the abandonment. This is the second breeding season since many of the boxes were moved from the forest interior to the lake edge and nine new boxes were placed in 2005. The majority of the boxes along the lakeshore are in locations where there is little or no cover for broods leaving the boxes, which may influence selection of boxes by hens. In addition, many of the boxes with nearby brood cover were placed only within the past two to three breeding seasons. Therefore, additional time may be needed before the boxes are used.

Table 4d-1. Wood duck nest box use on DeSoto NWR 1995 - 2005.

YEAR	# Boxes.	#Eggs Aband	#Eggs Hatched	Total #Eggs	% Hatch Success	#Boxes w/ Nests	#Eggs /Used Box	% Boxes w/Owls
1995	65	42	66	108	61.1	12	9.0	50.8
1996	65	0	43	43	100.0	7	6.1	43.1
1997	64	10	42	52	80.8	6	8.7	28.1
1998	64	4	15	19	78.9	3	6.3	59.4
1999	61	3	21	24	87.5	3	8.0	54.1
2000	65	6	6	12	50.0	2	6.0	44.6
2001	65	0	18	18	100.0	2	9.0	24.6
2002	59	0	20	20	100.0	3	6.7	47.5
2003	68	10	70	80	87.5	6	13.3	23.5
2004	69	8	32	40	80.0	5	8.0	17.4
2005	77	50	44	94	46.8	9	10.4	13.0

Bluebird Nest Boxes

Three bluebird boxes were added to the 43 existing boxes this year for a total of 46 boxes. Data on success of the 46 boxes is shown below. Twenty nest boxes were used more than once during the season, and of those, two boxes were used three times. Thirty-two boxes were used by a single species and 14 boxes were used by two species. Only one box was not used at all. The only species having second nests were eastern bluebirds; tree swallows and house wrens only attempted one nesting. Many of the nest failures were attributed to predation, as evidenced by nest material being removed from the boxes along with their contents. A number of nests of bluebirds and tree swallows were destroyed by house wrens.

Table 4d-2. Bluebird nest box use on DeSoto NWR during 2005.

	# Boxes Used*	# Nests	# Eggs	# Hatched	# Fledged
Bluebird	15	20	88	48	48
Tree Swallow	33	37	175	134	118
House Wren	7	7	37	23	21
Total	55	64	300	205	187

*Total number of boxes used is greater than number of boxes due to sequential use by different species.

Table 4d-3. Productivity of birds using nest boxes during 2005.

Species	Avg # Eggs	Avg # Hatched	Avg # Fledged	Avg Hatch %	Avg Fledge %
Bluebird	4.4	2.4	2.4	53.3	52.0
Tree Swallow	4.7	3.6	3.2	70.4	66.5
House Wren	5.3	3.3	3.0	55.4	50.0

Goose Tubs

Goose tubs were not maintained or monitored during 2005. However, some of the tubs located within view of frequently traveled routes did show use. The resident canada geese readily breed successfully around the lake.

4e Pest, Predator, and Exotic Animal Control

Nothing to report.

4f Fisheries Management

Stocking of game fish continued in DeSoto Lake to improve our recreational fishing opportunities and to keep a balance between predator and prey species. We received white bass, largemouth bass, channel catfish and walleye from either the Genoa National Fish Hatchery in Wisconsin or from the Iowa Department of Natural Resource's Rathburn Fish Hatchery. White bass were stocked again for the seventh time in the last ten years, to assist with the control of invasive gizzard shad. We will however, not be requesting white bass in future stocking requests, due to the low availability and due to their limited reproductive success in DeSoto Lake. This predator species should continue to provide a quality game fish for several years. The walleye, largemouth bass and channel catfish continued to provide a quality recreational fishery resource for the angler and as a predator species.

Table 4f. 2005 Fish Stocking in DeSoto Lake

<i>Date</i>	<i>Species</i>	<i># of Fish Stocked</i>	<i>Size</i>	<i>Location</i>
04/22/05	White Bass	400	11"	DeSoto Lake
09/23/05	Largemouth Bass	2663	5-6"	DeSoto Lake
09/23/05	Channel Catfish	2721	7"	DeSoto Lake

An electroshocking survey was conducted on DeSoto Lake again this year during the week of June 20th. The Columbia Fishery Resource Office and the Iowa Department of Natural Resources assisted with our annual survey. Fyke nets were set and electroshocking various sites throughout the lake using two boats took place. Information documented for each species included; species, weight, length and overall health. Scales and otoliths were removed from representative samples of black and white crappie and bluegill. Scales were removed from largemouth bass, with scales and spines collected from common carp. Age and growth data will be processed by the Iowa Department of Natural Resources fisheries office. Complete results from this summer's survey won't be available until later this year and the later than normal dates for this year's survey may have impacted the results for certain species of fish. With warmer water temperatures later in the year, certain species are displaced and are not reflected in the

sampling that electroshocking and fyke netting generally document. What the numbers do tell us, is that the crappie population is still high, but with fewer harvestable numbers (10-15"), the walleye population continues to look good and there are considerable largemouth bass numbers but few in the trophy size category. Both channel and flathead catfish continue to thrive, as does the common carp.

5

Coordination Activities

5a Interagency Coordination

The refuge staff interacted and coordinated activities with many different federal, state, county and local governments during the year. Major coordination efforts were conducted with the Corps of Engineers (COE), Nebraska Game & Park Commission, and Ducks Unlimited.

Refuge Manager Klimek, as a member of the Nebraska Game and Parks Commission's Partnership Team, attended numerous meetings representing national wildlife refuges in Nebraska for the Nebraska Natural Legacy Project. This is a long-term planning project whose goal is to conserve the state's flora, fauna, and natural habitats. It is anticipated approval and implementation of the plan will be important activities in FY 2006.

Coordination activities with Ducks Unlimited, while not a governmental agency, are similar to the activities with governmental agencies. Refuge staff and numerous other agencies were involved with applying for Phase Two of a North America Wetland Conservation Act grant for 1 million dollars for work within the floodplain of the Missouri River between Iowa and Nebraska.

Coordination with the COE involved the creation of habitat in the Missouri River that would be favored by the endangered pallid sturgeon and increase habitat diversity in the riverine environment. This project, to be completed in FY 2006, will remove 12 sections of the rock revetment on the east bank of the river. Each section will be approximately 200 feet long and approximately 20 to 30 feet wide and will create areas of differing depths and velocities.

5c Private Land Activities

The Private Lands program at DeSoto Refuge includes 18 western Iowa counties and ten counties in eastern Nebraska along the Missouri River. DeSoto's funding allocation for the Partners for Fish & Wildlife Program totaled \$25,000 for FY 2005. Additional funding from the Service's Challenge Cost Share Program, the Private Stewardship Grants Program and the Cooperative Conservation Initiative, as well as, partnering with Golden Hills Resource Conservation and Development, The Nature Conservancy, Natural Resource Conservation Service, Ducks Unlimited, Pheasants Forever, the States of Iowa and Nebraska and others, allowed us to accomplish much more than we would have on our own.

Outreach efforts to improve wildlife habitat and address other wildlife conservation issues continued throughout the year. During the year, private landowners, county conservation boards, the Natural Resource Conservation Service and the Loess Hills Alliance were provided technical assistance with site evaluations, habitat restoration and enhancements, and cost share assistance. Nearly all counties received some outreach efforts during the year. Refer to Sections 2a. Wetland Restoration– Off Refuge and 2b. Upland Restoration– Off Refuge for information regarding specific projects.

Again this year, a significant amount of time was spent working with the Loess Hills Alliance, a local grass-roots organization of landowners, government and NGO's all interested in the natural resources within the seven-county Loess Hills region of western Iowa. DeSoto's private lands coordinator continues to serve on the Stewardship and Protection Committees and participate on scoring committees rating applications for grant funding. The Stewardship Committee has continued to have multiple projects underway during 2005. Some of these projects include; wildland fire training courses, funding a summer fire crew that cleared invasive woody vegetation and established fire breaks, and prescribed burning to restore native prairie. Other projects undertaken by the Alliance included; landowner workshops for brush and woody vegetation management including prescribed fire, continuing the Service's fire cache program for loaning out fire equipment for prescribed burning on both private and public lands, and providing S-130 and S-190 fire training courses to landowners, volunteer fire departments and conservation agencies.

Funding in the amount of \$64,904 was awarded to the Loess Hills Alliance through the Private Stewardship Grant Program, for the control of invasive species and to improve habitat for endangered and threatened species in the Loess Hills. These funds are managed within a cooperative agreement with the Golden Hills Resource Conservation and Development, for the Loess Hills Alliance. Funding was also used from the Private Stewardship Grant Program to refurbish the Service's fire cache equipment used throughout the seven counties of the Loess Hills region.

5d Cooperating Associations

Friends Group

The Friends of Boyer Chute and DeSoto National Wildlife Refuge, began their third year of active involvement with the refuge. During the year the Friends group assisted with special events and took leading roles on several projects. In March, Friends volunteers initiated what is now known as, "First Sunday/Funday", activities. The first program was about housing for the birds and beginning birding. In May the Sunday/Funday program was about bats, August brought out wildflowers and butterflies and October was focus on prairies. These additional activities have proven to be a new attraction for family activities at the refuge.

The Friends helped with planning, organizing and funding the annual DeSoto RefugeFest event held in June. They also operated the concessions and sponsored the tagged fish prize competition where anglers tried to catch tagged carp from DeSoto Lake.

The Art Show and Sale continues to develop and the Friends have contributed to that success with advertising and overall support of the event.

The Friends sponsored the first public use intern for a 12 week term in the summer of 2005. A student from Northwest Missouri State College worked with the Visitor Center staff from early June through August. The internship program supported by the Friends provides added support to the staff during busy events as well as providing a valuable learning experience to students interested in environmental education and interpretation.

An important contribution by the Friends of Boyer Chute and DeSoto NWR's continues to be the Eagle Emporium. In operation since November 15, 2003, the store has proven to be a tremendous success and asset to DeSoto and is popular with the visitors. Sales this year were down due to low visitation, especially during November when the migration normally draws visitors.

6

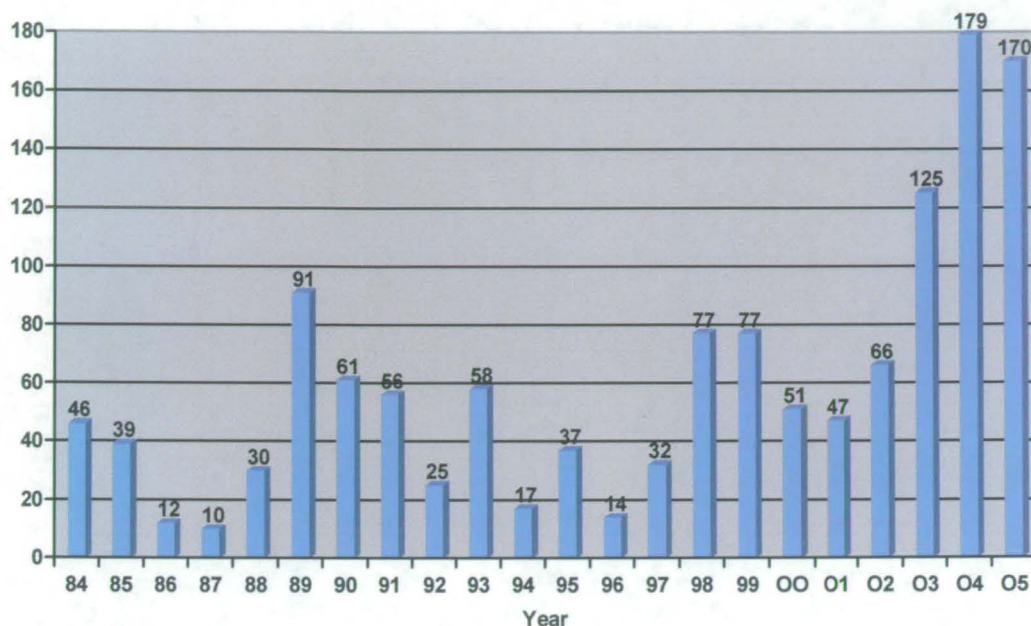
Resource Protection

6a Law Enforcement

A total of 170 Federal Violation Notices totaling \$20,295.00 in fines were issued by refuge officers in FY2005. Collateral duty officer Susan Cooper and full-time officer Rod Hansen are commissioned officers. Although the numbers of cases were down slightly from the previous year, the total fine amounts were up by \$7,270. Fines have increased this year and the Central Violations Bureau now adds \$25 to each fine.

Fishing/Boating	76
Traffic	33
Trespass/After Hours	32
Hunting	12
Littering	4
Unauthorized Fires	2
Alcohol/Drugs	1

DeSoto NWR Federal Cases Prosecuted



Additionally, fifteen cases were made by Refuge Officers but prosecuted in State Court. These include two driving while under the influence cases, one boating while under the influence case, four hunting cases, and the remainder being miscellaneous traffic cases.

Officer Rod Hansen continues to serve as a Field Training Officer. Two trainees completed training with Rod this year. Additionally, Rod continues to serve on the National Incident Management and Reporting System team and is a Regional Firearms Instructor. He also became part of the Region 3 Special Operations Response Team this year.

6b Permits and Economic Use Management

Five Special Use Permits were issued during the year. Permits were issued to: a film production company in the United Kingdom to film the migrating snow geese, Dana College for their ongoing water quality analysis of DeSoto Lake, the University of Kansas Natural History Museum to collect sedge wrens for a research project, and the New ERA State Layman's Association and Omaha Indian Tribe of Nebraska and Iowa for use of the Marquardt Pond Environmental Learning Site.

6c Contaminant Investigation

On 08/25/05, a small petroleum spill occurred, by the contracted road crew (see 8c), on the refuge just south of the Visitor Center. A roll-a-packer rolled over in the ditch and leaked diesel fuel from its tank. The refuge's Spill Prevention, Control and Countermeasure Plan was put into

action. The necessary contacts and documentation was completed, as well as, absorbent material was used to clean up the fuel that made contact with water in the ditch. It was determined that the fuel tank held 30 gallons and that it was no more than half full. The contractor who was responsible for the equipment and spill; U.S. Asphalt Company, was required to remove the contaminated soil and dispose of it properly.

6d Contaminant Cleanup

As mentioned in 6c (Contaminant Investigation), the petroleum spill on 08/25/05 was cleaned up with absorbent pads for petroleum spills in water. The site was also excavated removing approximately 6" of contaminated soil which was properly disposed of off site, as required by our Spill Prevention, Control and Countermeasure Plan and State regulations. The site was then probed for any residue petroleum odor.

6f Cultural Resources Management

This was a typically busy and productive year for the Steamboat *Bertrand* Collection. The year also saw the arrival of a new Museum Curator, Marshall Owens, who assumed the position in mid August after serving as the curator for the National Park Service's USS Arizona Memorial.

Research Requests / Access to Collections - Museum staff responded to 72 requests for information on the *Bertrand*, the cargo, artifact curation and general care of antiques. This year, as in past years, the majority of research requests were answered electronically rather than through conventional mail, with most researchers/respondents preferring this method. Researchers were sent 92 JPEG images, 63 slides and one photographic print. Subjects included the excavation of the *Bertrand*, structural elements and parts of the *Bertrand*, tin ware, cans, knitted textiles and assistance with identification of unknown boat parts of the *USS Cairo* (comparative research based on identified parts from the *Bertrand*). 17 individuals were assisted with on-site collections research. Museum staff presented four programs and tours, including a university tour group of Danish exchange students and a class of museum professionals and archaeologists participating in a National Preservation Institute program.

Conservation - Work continues on upgrading permanent storage conditions of the *Bertrand* Collection with 20,798 objects handled this year. Types of objects treated include textiles, bottle fragments, clock parts, tools and hardware. Of the objects handled, 11,383 objects and storage encapsulations were given priority cleaning of a light sooty residue deposited on all surfaces in High Cargo storage chamber. The soot was a result of a smoldering motor fire in the Heating Ventilating and Air Conditioning System (HVAC) unit in January 2005 (in addition to all objects and containers stored in the space, all surfaces in High Cargo were cleaned, including exteriors of 90 storage cabinets, 380 shelves and 624 textile boxes).

- After numerous and frequent failures of the cooler refrigeration apparatus, this mechanism was replaced during the fall of 2004. During the replacement the *Bertrand* foodstuff were without refrigeration for one week. This necessitated increasing Dr. Larrie Stone's annual foodstuff conservation hours.

- Dr. Larrie Stone performed his yearly examination of the foodstuffs, patent medicines and liquors in January-March, with 40 items treated this year. Dr. Stone worked an additional 25 hours this year to assess and treat foodstuffs damaged by the failure and replacement of the cooler refrigeration unit.
- **Storage Cabinet Gasket Replacement Project**
A comprehensive collection condition survey in 2003 substantiated a known deficiency with the metal storage cabinets for the collection: grossly deteriorated foam gaskets around the doors and internal bumpers. Replacement of the cabinets' gaskets is underway, but this will be a multi-year endeavor. This year 44 cabinets were refurbished, with all the items stored in these cabinets cleaned and deficiencies in the permanent storage enclosures and housings upgraded and/or replaced as needed.
- On September 16, 2005, the Steamboat *Bertrand* Collection was the host site for the *Helping Hands Brigade*, a yearly volunteer work day conducted by the Registrars Committee of the Mountain-Plains Museum Association (MPMA). The work day was held in conjunction with the MPMA annual conference held in Omaha, Nebraska, September 13-16, 2005. Professionals from many museum institutions and organizations throughout the Mountain and Plains states assisted with a variety of projects for the Steamboat *Bertrand* Collection. Activities which the *Brigade* participants assisted with included replacing deteriorated gaskets; cleaning of exhibit stands and objects; re-



housing of miscellaneous collection objects (glass bottle fragments, fragile lead seals and corks, bucksaw turnbuckles, nails, men's felt hats, vests and textile fragments), inventory, back-logged cataloging and documentary photography.

Backlogged Cataloging / Records Maintenance - All the objects in the Steamboat *Bertrand* Collection have been accessioned and assigned a catalog number. However, approximately 20%

of the collection has not been fully described or item-level counted. Incomplete cataloging was identified as a deficiency in the Inspector General's 1989 report. This year 114 numbers were fully cataloged. In addition to the above, 20 numbers were re-cataloged after extensive accession and provenience research was conducted, thereby providing more complete and accurate information in the permanent museum records.



Volunteers - Pat Jensen continued her work maintaining the research library, assisting with the annual random sample inventory of museum collections, completing data entry, photographing artifacts and providing support for other miscellaneous tasks. Michelle Widhalm provided valuable assistance with rehousing work in conjunction with the gasket-replacement project. Four Youth Conservation Corps participants assisted staff during the summer with cleaning, artifact processing and library activities. SCA Intern Stacey Connor, from Pennsylvania, worked with museum staff from mid October to mid January. She gained experience in all aspects of object processing and assisted with the Gasket Replacement project. She was followed by SCA Intern Kelley Gove, from the University of Wyoming, who worked with staff from June through late August. Kelley received also assisted with a wide range of museum functions.

Publicity and Publications - The Steamboat *Bertrand* Collection was publicized through *RefugeUpdate* and the World Wide Maritime Museum web-based searchable database. Boyer Chute NWR and DeSoto NWR created and staffed a booth during the Nebraska Lewis & Clark Signature Event, which was held at Fort Atkinson State Historical Site on July 31-August 3, 2004. This Signature Event was one of twelve national events. The Steamboat Bertrand Collection was highlighted in the booth display. On April 3, 2005, DeSoto NWR staff and volunteers presented a *Bertrand*-related program as part of the refuge's Sunday/Funday which is held on the first Sunday of each month. The *Bertrand* Day program invited participants to have a family passport photograph taken (see cover photo), and then embark on a virtual steamboat journey up the Missouri River. In addition there were children's crafts and a photographic display on the excavation of the Bertrand.

During the Mountain Plains Museum Association in Omaha, Museum Technician Jennifer Stafford and Ranger Barb Nielsen staffed a DeSoto informational booth. Museum staff also presented the *Bertrand* Day activities to several groups of Omaha Public School educators.

Public Education and Recreation

7a Provide Visitor Services

Visitation - Refuge visitation totaled 234,237 down slightly from the five-year average of 259,235 visitors per year. November is normally the busiest month of the year due to the draw of the fall snow goose migration. Visitation totaled 12,173 for the month of November, even with a poor showing by the geese. The Visitor Center hosted 63,702 people this fiscal year, which is down from 83,959 last year. Visitation was lower than five-year average of 76,903 visits, mainly due to low migration numbers of geese in the fall and 5 ½ months of entrance road construction from late April through early September.

Deputy Secretary of the Interior Steve Griles - DeSoto NWR was visited by Mr. Griles on October 26th to highlight hunting and fishing activities in the Refuge System. DeSoto hosts a wide variety of hunting and fishing opportunities for the public. Special hunts and accessible blinds are in place for disabled hunters for both muzzleloader and archery deer hunting and turkey hunting. After a tour of the refuge Mr. Griles assisted the refuge staff with a fish habitat project on the lake. The Friends of Boyer Chute and DeSoto NWR's provided a luncheon and Mr. Griles answered questions from local hunters and anglers.



International Migratory Bird Day (IMBD) - DeSoto hosted a successful IMBD on Saturday, May 14th, with over 400 visitors attending the event. Family oriented activities focused on migratory birds found at DeSoto and the mission of DeSoto as a migratory bird stopover. Activities included making bluebird boxes, learning to identify local migrating birds, bird bingo, and a migration activity.

Refugefest - DeSoto NWR's fifth annual RefugeFest was held Saturday June 4th. The day started cool but improved and by mid morning the sun was shining and the event was again a success. Approximately 400 visitors participated in a wide array of activities throughout the day. The event was held in conjunction with National Fishing and Boating Week and Iowa's Free Fishing Weekend. The refuge sponsored an adult and youth carp fishing contest which featured fishing equipment prizes for catching the most carp and the longest carp in both adult and youth divisions. In addition to the fishing contest there were family activities, including: fishing excursion boat rides; pontoon boat rides throughout the day; boat rides on the Lewis and Clark

replica piroque boat; bluegrass music; boat safety programs presented by the Corps of Engineers, and lunch concessions served by the Friends of Boyer Chute and DeSoto NWR's.

Annual "Art of the Wild" Art Show and Sale - DeSoto National Wildlife Refuge hosted its annual Art of the Wild Exhibit and Sale at the Visitor Center on November 20 and 21. Seventeen outstanding artists and photographers were on hand to sell their works of wood carvings, photography, metal, wood, stained glass, feathers, acrylic, pencil, watercolor, oil, pen and ink. There were approximately 1,800 visitors in attendance over the 2-day event.

New week-end programs offered at the DeSoto NWR Visitor Center – First Sunday/Funday (S/F) activities began in March and continued throughout the year. These events were hosted at DeSoto's Visitor Center on the first Sunday of the month. Activities were presented by staff and volunteers from the Friends of Boyer Chute and DeSoto NWR's.

The first S/F was Family Birding Day was held Sunday, March 6th. The day's events included various wildlife related activities, crafts, movies, refreshments and nature walks. Approximately 60 visitors enjoyed making bird feeders of various types, watching videos and practicing their bird identification skills throughout the day with the help of the staff. The day of activities were made possible by the Friends of Boyer Chute and DeSoto Refuges.

Sunday, April 3, the S/F activity "Ho! For the Goldmines!" commemorated the Steamboat *Bertrand's* maiden voyage on April 1, 1865 and its untimely sinking. Approximately 35 families participated in a virtual steamboat tour up the Mighty Missouri River as the *Bertrand* once did in 1865! With the help of a Steamboat Captain, each family's journey began by having a family passport photo taken (see cover photo), departing St. Louis, navigating the mighty Missouri while encountering sandbar snags and unpredictable weather as the Steamboat *Bertrand* experienced. In addition, fun and educational hands-on-craft projects were held in the multipurpose room for children of all ages.

"DeSoto NWR goes Batty". Sunday, May 1st, the S/F activity gave approximately 80 visitors a fun-filled afternoon learning about bats; their habitat, what they eat, their predators and how they raise their young. Activities of the afternoon included crafts, live bat demonstrations by Volunteer Darlene Klimek, supervisor of the Wild Kingdom Pavilion at the Henry Doorly Zoo, a short video, and story time corner.

"Wildflowers and Butterflies" August 7th, the S/F included wildflower bingo and hands-on fun nature crafts. A guided nature hike was also conducted for nature enthusiasts and those wanting to learn more on how to identify the many wildflowers and butterflies common to the Refuge.

S/F September 4th. "The World of Wetlands" program was given to a group of 40 visitors. Activities included a video about the aquatic habitat around us and other fun learning activities in the multipurpose room involving a 'bubble' undersea world where youth learned about wetland life.

Interpretation

Beginning with the new fiscal year, events at the refuge began with the celebration of "National Wildlife Refuge Week". DeSoto hosted an "Open House" and free entry to DeSoto National Wildlife Refuge over the October 11th and 12th weekend.

The Nishnabotna Girl Scout Council of Southwest Iowa held their, "Wildlife Adventure", at DeSoto on August 5, including both Jr. Girl Scouts and Brownies. The day event gave 25 girls the chance to earn "Wildlife and Eco-Explorer", badges through environmental education, outdoor activities and a stewardship project on the Visitor Center grounds. DeSoto staff promoted a greater understanding of conservation issues including what makes a habitat and what causes a species to become endangered. In connecting the habitat program with a field experience, the girls constructed bluebird nest boxes and installed four of them near the Visitor Center grasslands giving the girls a sense of pride and a link to the land. The girls also learned about poisonous plants, nature's remedies, food chains, and wildlife characteristics.

Our two orientation films "Seeds of Change" and a new refuge system DVD "America's National Wildlife Refuge System A Place for Wildlife and People " are generally shown hourly during the week, and on the half hour on weekends and during heavy-use periods. A total of 20,865 people viewed these introductory films, in addition to all school groups. Weekend wildlife films are shown each weekend in the Visitor Center. A total of 2,197 attended.

DeSoto Visitor Center hosted a variety of temporary special exhibits and interesting programs:

- ▶ In October, the Visitor Center showcased the Richard Hart Exhibit of paintings, bronze sculpture and other art work based on field research of the Skagit River and findings on the contribution that tributaries make in maintaining biodiversity and impact on habitat quality for endangered Pacific salmon.
- ▶ In January, the 22nd annual Student Wildlife Art Exhibit through to the month of April. The artistic talents of local area students from grades Kindergarten through 12th were exhibited using this year's theme of "Snowgeese". Visitors to the refuge viewed approximately 140 selected artworks by Iowa and Nebraska school students. Students received recognition ribbons in four age divisions. Five judges were invited to participate from the art community. An awards ceremony took place on International Migratory Bird Day, May 14, 2005 where the winners were given prizes and recognition.
- ▶ May brought in the works of Swinarski and Son Photography. The exhibit of colorful and inspiring photographs of the wildlife and scenery of DeSoto were taken by the father-son team.
- ▶ June art exhibit featured nature photographer Jack Nordeen of Saint Edward, Nebraska who exhibited 25 of his works of wildlife in natural settings.

- ▶ The Outdoor Writers Association of America exhibited, in July, an array of black and white and color photos by some of the nation's premier outdoor photographers. This was co-sponsored by Nikon Sport Optics
- ▶ August was set up for Michael Kreizel's art exhibit of drawings focusing on the eyes of eagles, hawks and pheasants.
- ▶ Saturday Girl and Boy Scout programs were conducted throughout the year. Programs varied and were based on badge earning activities. Some scout troops are continuing a long term commitment to the refuge by becoming volunteers in our Adopt a Prairie program.

Other Interpretive Programs - The refuge continues to attract an impressive variety of foreign visitors. They came from India, Iran, Ecuador and 36 other nations. Our registration book at the Visitor Center also recorded visitors from all 50 states, and Puerto Rico.

Staff presented talks and programs to a variety of groups other than students. A total of 67 organized groups and bus tours, containing 1,237 persons, visited the refuge. Programs on endangered species, wetlands, migration, grassland management, wildlife management, volunteerism, careers in the FWS, and the steamboat *Bertrand* were all subjects for programs given by staff. Groups coming to the refuge are as varied as the requested talks.

Volunteer Accomplishments

- ▶ We implemented a volunteer workday on the last Saturday of every month. The workdays began in March and continued through the year. Girls and Boys Town residents helped in April working on the reforestation program by clearing weedy plants away from the saplings. They also worked in the prairie areas clearing invasive species as well as litter pickup. The other major activity during the workdays was working on the Visitor Center Landscaping Plan clearing away invasive species.
- ▶ Two Eagle Scouts, Mike and Matt Harrington of Omaha worked out their projects based on a landscaping plan, solicitation of sponsors for supplies and materials and installing the pavers and planting wildflowers in the area surrounding the Visitor Center Eagle Sculpture. The project was finished at the end of June.
- ▶ On September 20 in recognition of National Public Lands Day DeSoto sponsored a cleanup day and prairie seed harvest. Volunteers from Girls and Boys Town as well as several girl and boys scouts troops participated.
- ▶ Another Eagle Scout, Jeff Becerra of Omaha developed an eagle scout project to clear roots and dead vegetation and plant native shrubs and trees along the west façade of the Visitor Center. 26 native shrubs and small trees were planted in the area in conjunction with the refuge's landscaping plan.

Entrance Fees - This was the 19th year of entrance fee collection. Self-registration stations are at both entrances to the refuge, and visitors can also pay in the visitor center.

Table 7a..3 History of Vehicle Pass Sales

Year	Refuge Cost	Receipts	Permits Issued	Refuge Visits
1988	\$19,483	\$60,534	30267	382003
1989	\$23,039	\$61,750	30876	386030
1990	\$20,145	\$56,087	28044	390929
1991	\$23,590	\$48,684	24342	371139
1992	\$26,167	\$54,317	27159	313584
1993	\$46,070	\$64,137	18689	297475
1994	\$35,751	\$76,398	20888	302727
1995	\$35,000	\$85,832	25730	309288
1996	\$35,000	\$90,367	24275	270998
1997	\$35,000	\$72,126	18490	237531
1998	\$35,000	\$70,990	18006	255064
1999	\$35,000	\$79,895	19310	256245
2000	\$35,000	\$62,313	16682	236770
2001	\$30,000	\$63,348	16666	274189
2002	\$30,000	\$67,002	16877	270717
2003	\$17,380	\$70,902	17838	276729
2004	\$11,100	\$69,521	18166	362427
2005	\$11,100	\$60,488	15,760	234,239

Table 7a..4 FY2005 Entrance Fee Permits		
TYPE OF PERMIT	NUMBER	RECEIPTS
Single Visit (\$3)	14,576	\$43,703
Groups/Commercial (\$20 & \$30)	23	\$630.00
Golden Eagle Passports (\$65)	24	\$1,560
Golden Age Passports - (NC)		
REISSUED FREE OF CHARGE	1	0
Golden Age Passports (\$10)	294	\$2,940
Golden Access Passports (NC)	65	0
Federal Duck Stamp (\$15)	129	\$1,935
Refuge Pass (\$15)	648	\$9,720
Total	15,760	\$60,488

Public Information - The staff responded to 15,815 public inquiries. Thirty-eight news releases were sent to news media in Iowa and Nebraska, as well as major Kansas, Missouri, and South Dakota media resources. Special information was provided to the Omaha World Herald, Blair Enterprise, Missouri Valley Times News, Des Moines Register, Council Bluffs Nonpareil, and Lincoln Journal-Star newspapers. Eight interviews were given to newspapers and TV/radio representatives. Topics included goose migration, art show, fishing, auto-tour, the *Bertrand* Collection, and our special exhibits. In addition, 93 requests for technical assistance were provided throughout the year.

Students - The refuge is active with students and classes especially in spring and fall. A total of 5,004 students (294 classes) visited the refuge and were involved in environmental education programs. Our busiest months were May and November with 3,423 students. In the fall, most students come to learn about "Birds in Migration" as well as the new programs, "The Habitats of DeSoto" and "The Natural History of the Lesser Snow Goose". Most classes work on the "Artifacts and Lifestyles" cultural resources packet provided by the refuge during their spring visits.

Eleven college classes totaling about 199 students used the refuge as an outdoor classroom this year, including Creighton University, Clarkson College, Drake University, Dordt College, Dana College, Westmar College, the University of Nebraska, Iowa State University, Iowa Western Community College, the University of South Dakota, Morningside College, Hastings College, University of Connecticut and Northwestern College.

Interpretive Foot Trails - The four foot trails were used by more than 33,972 visitors. Volunteers performed "trail patrol", picking up litter and pruning overhanging branches. Guided tours of the trails were provided to 581 visitors.

Mushroom Hunting – 20,236 people visited the refuge and spent approximately 60,338 hours in search of the highly sought after morel mushrooms during April and May.

Fishing – Ice fishing started in early January with 4”-5” of ice. Below zero temperatures during mid January provided sufficient ice through most of February. Even with a slower than normal crappie harvest, on the weekend of January 22nd over 100 ice anglers were observed from Lake View to the South Beach Recreation Area.

The refuge opened on the 1st of April for the first time this year, since the majority of the waterfowl had departed, to give anglers an extra two weeks of fishing. With the lack of waterfowl using the refuge, a finding of no negative impact was documented with a compatibility determination for the early opening. Walleye and crappie didn’t start feeding and/or spawning in the shallows until the third week of April, as water temperatures were still rather low (40-50 degrees Fahrenheit). Fishing success was sporadic, due to the cool temperatures and rainy weather throughout the spring and early summer fishing season.

DeSoto offered for the first time all night catfishing this year; on the 23rd of July and the 10th of September. The turnout for the first event was over 2,000 anglers. The second all-nighter in September drew approximately 300 anglers.

There were six fishing tournaments held on DeSoto Lake. Three tournaments were for largemouth bass, one for catfish, one for carp and one for all species. Approximately 460 anglers with 220 boats participated.

Six fishing clinics were held at the Marquardt Pond Environmental Learning Site during the sixth year of operation. A total of 107 youth and 56 adults participated in the all-day events which generally included instruction on casting, knot tying, fish identification, catch and release practices, and outdoor conservation practices. Groups participating this year included the New ERA State Laymen’s Association of Omaha, the Omaha Indian Tribe, and Cub and Boy Scouts. Approximately 176 fish were caught and all but the roughfish were released back into Marquardt Pond.

White-tailed Deer Hunts-In response to the growing deer herd, the 122 hunters were allowed to take two antlerless deer during the two day October hunt. A total of 144 deer were harvested. The either sex deer hunt was held on December 11th and 12th. Hunters were allowed a second antlerless animal. A total of 116 deer were taken. In an effort to take more deer a hunt was offered to Nebraska hunters on January 8-9 and to Iowa hunters on January 15-16 for antlerless deer. Cold weather limited the number of hunters and only 68 deer were taken

Archery deer hunting continues in the traditional areas on the “west side” and the “east dike” area. The hunt runs from October 1st through December 31st. Archers are required to log their hunt each day. This year 98 deer were recorded as harvested.

In February a helicopter count was done by the researchers from the University of Nebraska. A completed refuge count revealed 926 deer. Work then began with the two states to drastically

increase our hunts to control the deer numbers. Hunts were set for the fall of 2005 season. Two hunts in October and one in January were established to hunt the entire refuge, including the archery ground. Two hundred hunters would be allowed two antlerless deer. Rifle and shotguns would also be allow for the first time. The traditional muzzleloader hunt in December remained the same except that a second antlerless animal could be taken.

Youth Pheasant Hunt – The second annual youth pheasant hunt was held on November 5th and 6th. Twenty-five youth hunters are drawn for each day to hunt. Although the harvest is minimal, due to the thick native grass, the kids and their sponsors are very grateful for the hunt.

Youth and Disabled Hunters Spring Turkey Hunt- The second annual youth and disabled hunters turkey hunt was held on April 16-17th. Thirty-five youth and their non-hunting sponsors are drawn for the refuge-wide shotgun hunt. Wheel-chair accessible blinds are also provided to disabled hunters. A lunch is provided for all the hunters by the Friends Group. The blinds are also provided to disabled hunters during any of the deer hunts.

Archery Turkey Hunt – This was the first year to offer a public archery turkey hunt. The hunt began after the youth hunt and ran through May 15th. The traditional archery deer hunting areas were used and the hunt was run in the same way. Hunters are required to self register and this showed use by only 12 hunters with six turkey taken.

7b Outreach

Staff responded to eight speaker requests by civic groups and provided 93 technical information requests. A total of 15,815 public inquiries were processed including written information requests, email, phone calls and onsite requests.

In January, refuge staff and volunteers provided information to visitors by operating a booth at the Pheasants Forever annual meeting in Omaha Nebraska. Some 15,000 outdoor enthusiasts learned about the refuge, the refuge system, private lands and Partners for Wildlife programs offered through the Fish and Wildlife Service.

In March, staff went to a one day Environmental Education Expose where our environmental education programs were highlighted and information provided to “home schoolers”. Several hundred contacts were made and ten bookings for refuge visits were attributed to this outreach.

On Saturday, June 11, refuge staff participated in the annual Gateway to the West parade in Blair Nebraska. Approximately 2,000 people watched the procession that included a float depicting the Big 6 recreational opportunities at DeSoto NWR. The float also attended the July 23rd annual Harrison Country parade in Missouri Valley, Iowa. DeSoto received second place honors in the business division. Approximately 1,500 fair goers enjoyed the 2 mile long parade. Main attraction on the float was the ever popular Blue Goose. The refuge staff along with their families, and members of the Friends Group threw out candy to the children along the parade route.

Planning and Administration

8a Comprehensive Conservation Planning

The refuge's Comprehensive Conservation Plan (CCP) was completed in January 2001. The CCP process is now focusing on implementation and preparing the step-down management plans. During the year, the Fisheries Management Plan and the Habitat Management Plan were approved. The draft Wildlife Inventory and Monitoring Plan was completed during the year. While a few activities have changed, in the four years since the CCP was approved, the document is proving to be a useful tool for management on the refuge.

8b General Administration

DeSoto National Wildlife Refuge Budget for Fiscal Year 2005 (33510)	
Subactivity 1121-03HR Private Land – Habitat Restoration	\$20,000.00
Subactivity 1121-03TA Technical Assistance – Administrative Support	\$5,000.00
Subactivity 1261-0000 Base Salaries, Operating Expenses, Challenge Cost Share on Service Lands & Volunteers	\$1,367,559.00
Subactivity 1261-BMDT Interregional Shorebird Study	\$4,375.00
Subactivity 1262-A3DE Annual Maintenance	\$100,000.00
Subactivity 1262-B3DE Replace LE Vehicle	\$28,000.00
Subactivity 1262-D3DE Environmental Education Shelter	\$40,000.00
Subactivity 1262-H3DE Replace Motor Grader	\$155,000.00
Subactivity 1262-Y3DE Youth Conservation Corp (YCC)	\$8,893.00
Subactivity 9263-0000 Prescribed Fire Operations	\$5,000.00

Youth Conservation Corps enrollees were back at DeSoto for the second year. Two boys and two girls were hired from the surrounding area. They worked on a wide range of projects; from litter pick up to noxious weed eradication. The enrollees were a big help with the work load on the refuge and were greatly enjoyed by the staff.

One Student Temporary Employment Program (STEP) employee, Jeremy Havener was hired to primarily to supervise the Youth Conservation Corps program.. Deb Skorup also a STEP employee continued to work at the Visitor Center on Friday and Saturdays.

Marshall Owens transferred to the refuge on August 7 as our new Museum Curator. Marshall transferred from the National Park Service where he served as the Museum Curator for the USS Arizona Memorial in Hawaii.

8c General Maintenance

- Repaired south end and middle boat ramp launches. New sections of concrete were added to extend the ramps.
- Removed old restroom at south end of refuge. Asbestos shingles had to first be removed by McGill Abatement Company.
- Removed existing benches at Bertrand Site. They were replaced with recycled plastic benches.
- Cable Tech finished installing the fire and security system.
- Removed fence and an old outhouse type restroom at the headquarters area.
- Used recycled asphalt millings from road project to resurface our equipment parking lot at headquarters.
- Installed scales for measuring chemicals for water system at Visitor Center.
- Resurfaced $\frac{3}{4}$ of a mile of the east levy with recycled millings from road project.

The project to tear up and redo the entrance road began in April. The \$1,125,956.42 project only got us a mile down the road, but it was much needed. The base of the existing road was gone and large ruts crossed the road. Midwest Paving, Inc., Midwest Construction Services was awarded the contract. As part of the contract a new entrance gate was installed by American Fence.

8d Safety

Monthly staff and Quarterly Safety Committee meetings were held throughout the year. Some of the topics and speakers included; annual Fort Calhoun Nuclear Power Plant training, an update on our Environmental Compliance inspection, winter survival training, a physical therapist speaker, personal floatation devices, Material Safety Data Sheets, boating safety, Lyme disease, skin cancer, and hearing loss.

Quarterly safety committee meetings and inspections were held four times during the year. The annual Station Safety Inspection was conducted and the Environmental Compliance Audit findings were corrected. Automated External Defibrillator refresher training is provided online and encouraged for each trained staff member to keep up with the proper steps and procedures.

During the year; fire extinguishers and first aid kits in all buildings were checked, required physicals for fire fighters, law enforcement officers, and pesticide applicators were completed, water samples taken and analyzed, and volunteers took the defensive driving video training as needed. Resource Conservation and Recovery Act training was taken by George Oliver, Rex Stambaugh, Marshall Owens and Steve Van Riper during the year.

8e. Compliance

- As a result of the April 2004 Environmental Management System (EMS) audit, DeSoto has complied with the last three findings:

Finding #	Action taken
33510.04.03	Hazcom Plan is updated to include list of chemicals used onsite, MSDS's, and responsible personnel contacts.
33510.04.06	Non-safe jerry cans are removed from facility.
33510.04.14	Station is using re-refined oil as a target product in vehicles where manufacturer recommendations allow.

- DeSoto Spill Prevention, Control and Countermeasure Plan were implemented on 8/25/05 due to a contractor petroleum spill on an onsite refuge construction site. Required notification, documentation, clean-up, and disposal were coordinated with the Iowa DNR's Contaminants Office.
- On 2/24/05, DeSoto complied with Region 3 Prescribed Burn Fire Smoke Management Policy by training 14 staffers in traffic control flagger training, and updating refuge traffic control devices and personal safety equipment.
- A Intra-Service Section 7 and Environmental Assessment (EA) was completed for the construction for a new shed on "center island".
- An EA was completed for the asbestos removal on the south recreation area building.
- A Categorical Exclusion and a new Compatibility Determination for opening the refuge to fishing when migratory birds have stopped using DeSoto Lake were completed.
- There were 31 Private Lands projects on private and public lands that had all compliance processes completed including categorical exclusions regarding Section 7, NEPA, and SHPO.
- One Intra-Service Section 7 consultation was completed for herbicide use on the refuge.