

DESOTO NATIONAL WILDLIFE REFUGE
Missouri Valley, Iowa

NARRATIVE REPORT
Calendar Year 1980

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR

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PERSONNEL

<u>Name</u>	<u>Title</u>	<u>Grade</u>	<u>Status</u>
George E. Gage	Refuge Manager	GS-12	PFT
Lee R. Fulton (Transferred 5/4/80)	Asst. Refuge Mgr.	GS-11	PFT
Dean F. Knauer (Promoted 11/2/80)	Asst. Refuge Mgr.	GS-11	PFT
David W. Menke	Outdoor Rec. Plnr.	GS-11	PFT
Allan Montgomery	Collection Manager	GS-11	PFT
Richard S. Sojda, Jr. (EOD 12/14/80)	Asst. Refuge Mgr.	GS-9	CS
Mayda S. Goodberry (EOD 7/27/80)	Museum Specialist	GS-9	Term
John Jave III	Asst. Refuge Mgr.	GS-7	PFT
Mary E. Clawson (EOD 3/9/80)	Asst. Refuge Mgr.	GS-7	PFT
Susanne Benda	Museum Technician	GS-7	CS
Eric Volden	Museum Technician	GS-5	Term
James Guthrie	Police Officer	GS-5	CS
Randy A. Porter	Admin. Assistant	GS-7	PFT
Wanda Harbottle	Refuge Clerk (Typing)	GS-4	PPT
Nellie Walsh	Museum Aid	GS-4	CS
Lenora E. Lundeen (EOD 4/7/80)	Museum Aid	GS-3	CS
Kathleen Strain	Public Use Aid	GS-3	PI
Lori R. Hahn (EOD 7/28/80)	Public Use Aid	GS-2	CS
Harold Morrow (EOD 12/28/80)	Public Use Aid	GS-2	CS
Cletus LeBarge	Hvy. Mob. Equip. Mech.	WG-10	PFT
Harlan Lightwine	Eng. Equip. Operator	WG-10	PFT
Kenneth E. Marquardt	Maintenance Worker	WG-8	PFT

Submitted by

Date

Area Office

Date

DeSoto National Wildlife Refuge
Refuge

Regional Office

Date

George E. Gage 2/5/81 *Donald L. Young* 2/20/81
R. Wayne Steier 5/12/81

<u>Name</u>	<u>Title</u>	<u>Grade</u>	<u>Status</u>
<u>Seasonals</u>			
Ethel Brueggemann	Clerk-Typist	GS-4	30-Day
Layli Alexander	Student Trainee	GS-2	TFT
Myra J. Homes (4/27/80 - 6/26/80)	Public Use Aid	GS-3	30-Day
Kathleen M. Verdon (7/22/80 - 8/16/80)	Public Use Aid	GS-2	30-Day
Mitchell Jensen (5/18/80 - 9/6/80)	Recreation Aid	GS-3	TI
Pamela Larsen (5/18/80 - 9/6/80)	Recreation Aid	GS-3	TI
Scott Robertson (5/25/80 - 9/6/80)	Recreation Aid	GS-3	TI



Quite a crew! From left to right: Seated are YACC's Mark Cunnard and Susan Cooper, and Mary Clawson. 1st row standing are Harlan Lightwine, Susanne Benda, Lenora Lundeen, Wanda Harbottle, Nellie Walsh, Mayda Goodberry and Randy Porter. In the back row are George Gage, Ken Marquardt, Harold Morrow, John Jave, Dave Menke, Eric Volden, Allan Montgomery and Dean Knauer. Missing-in-Action are Clete LeBarge, Jim Guthrie, YACC's Mike Baxa and Sheila Roths, and CETA Kathy Sullivan.

DESOTO N.W.R.

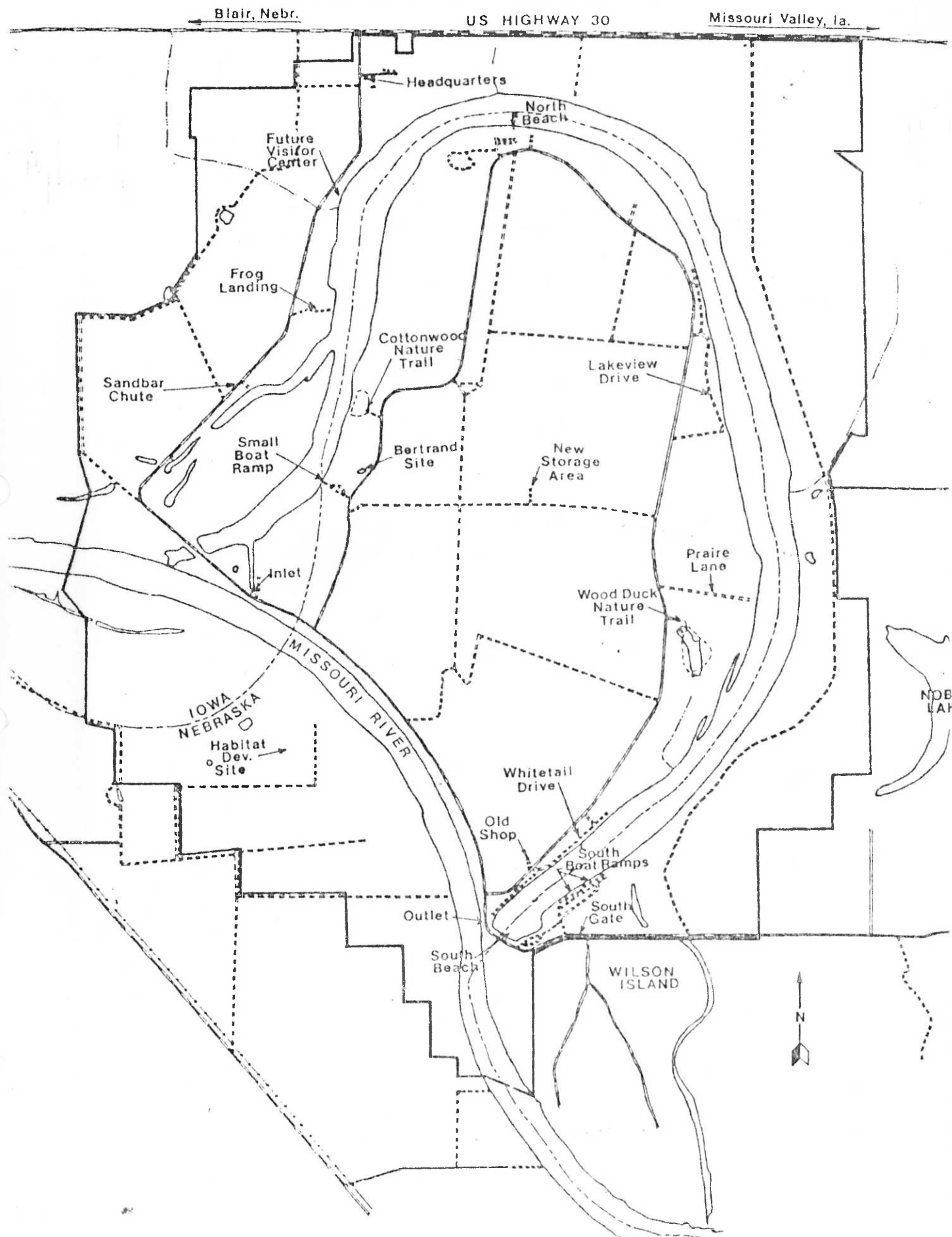


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I. GENERAL

A. Introduction

DeSoto National Wildlife Refuge is located along U.S. Highway 30, six miles west of Missouri Valley, Iowa and seven miles east of Blair, Nebraska (see map). The refuge contains approximately 7,800 acres of nearly flat bottomlands amid the extensively cultivated floodplain of the Missouri River.

Primarily established as a fall-spring waterfowl migration area, the refuge also serves 700,000 Omaha-Council Bluffs metro-area residents as a base for extensive outdoor recreation; particularly, boating, water-skiing, swimming, fishing and wildlife observation. This year, waterfowl concentrations reached peaks of 210,000 birds, mostly snow geese and mallards. Public use increased to approximately 335,000 visits. Projections of public use in the early 1980's exceed a half million people.

This year was a busy one with notable accomplishments, some new programs and a great deal of construction. Active planning and other activities involved in the visitor center project consumed much of our time as construction progressed on the 4.84 million dollar building.

B. Climatic and Habitat Conditions

The year began with mild temperatures, which encouraged higher than normal numbers of waterfowl to remain at DeSoto. January's high was 61°F.

February was colder, with five nights below 0°F. Total ice accumulation on the lake for the winter was only four to six inches. But March took winter honors, when a blizzard hit on the 4th, laying down 7 to 8 inches of snow. Warmer weather returned, however, and by the 18th, the ice was out of the lake and spring was on its way. Overall, it was an easy winter.

The effects of the mild winter were pleasantly observed by the marked increases in the pheasant and quail populations, both on and off the refuge. The refuge deer herd also seemed to benefit.

Warm (up to 90°F) and dry weather characterized April and early May. Farmers got their crops in early and then worried about lack of rain. One bout of frost on May 8th nipped at early gardens. One inch of rain arrived in mid-May.

Summer began with a bang; areas on all sides of the refuge experienced major hail damage, while the refuge remained untouched.

However, we did receive over six inches of rain in June, which raised lake elevations three-quarters of a foot above the desired level. The outlet gate was opened and the excess water was released in record time due to a 1.64 foot head.

Then came the drought. July and August were hot and dry. Scattered showers helped the refuge, but some areas (particularly central and western Nebraska) got virtually no moisture. Corn was burning in the fields.

With a dry fall, farmers were able to harvest early this year, giving them ample time to fall-plow. This, of course, reduced the amount of waste grain available to migrating waterfowl as well as resident wildlife species.

The earliest measurable snowfall in local history occurred in late October - five inches of it. This melted quickly, and mild temperatures remained until late December. The year ended on a cold note, with three nightly temperature readings below 0°F. But this wasn't sufficient to freeze the lake solidly enough for safe ice fishing at year's end.

The Corps of Engineers reported that the water supply to the main Missouri River reservoirs during 1980 was only three-quarters of the amount normally received, thus classifying 1980 as a drought year. As a result, the Corps reduced the winter water releases from Gavins Point Dam to 15,000 cfs in an effort to conserve water for the 1981 season. Thus, the Missouri River was extremely low during the late fall and winter. This worked to our benefit, allowing an early fall drawdown of DeSoto Lake.

Total precipitation for the year was 27.14 inches, almost two inches below normal. A total of 28.15 inches of snow was recorded.

C. Land Acquisition

1. Fee Title

The 3.2 acre Gilbert Meade tract, acquired by the refuge in November, 1979, was finally razed after Mr. Meade removed his personal belongings and a large quonset machine shed. The old house and remaining two sheds were salvaged and the foundations buried. The area has been reworked in preparation for seeding into brome grass. The new entrance road will adjoin this property, providing the visitor an aesthetically pleasing and safe approach to the refuge.

2. Other Lands

One investigation was made. The Pierre Area Office requested refuge assistance in reviewing a proposed Missouri River

development near the refuge since they were under travel restrictions. An assessment was prepared and forwarded on the Riverland Recreation Company proposal for another marina north of Blair.

3. Easements and Right-of-Ways

Several contacts were necessary with Iowa DOT and Iowa Power regarding visitor center development. Permits for the new entryway, and burying 1,200 feet of three-phase electric cable and telephone lines are being processed. The new entrance road will finally provide refuge visitors safe entry off the high-speed U.S. Highway 30. Both the east and west approaches to the new entry will have a 12-foot-wide storage lane, extending along 320 feet of the highway.

Complaints were received from two drainage districts regarding the condition of drainage easements across refuge lands to DeSoto Lake. The problem is a combination of beaver dams, low gradient and siltation resulting from intensive farming practices upstream. The refuge hasn't done much maintenance on Brown's ditch or the Cutoff Drainage District's ditch in recent years and, judging by the recent complaints, it is time we complied. However, because of tight funding, nothing more than periodic clearing of beaver dams can be accomplished in fiscal year 1981.

Under a 1972 memorandum of understanding, some action was finally taken on the development of a bypass channel to drain excess DeSoto Lake waters into the state's Wilson Island chute. The Iowa Conservation Commission prepared engineering drawings for a 48-inch diameter bypass tube which incorporates both stoplog and screwgate structures. These drawings were reviewed, modified and approved. The latest word is that ICC has funds available and will soon release bids for spring construction.

No further discussion took place between the refuge and ICC regarding the proposed development of an alternate pumping station between DeSoto Lake and the state's Nobles Lake. Although rainfall and runoff was limited this fall, there was sufficient water on the state's 90-acre marsh to sustain a fluctuating waterfowl population and heavy hunting pressure.

D. System Status

1. Objectives

All refuge objectives were revised two years ago and are current, but will continue to undergo close scrutiny as we near

completion of the new visitor center. During 1978, the waterfowl objectives were revised but no confirmation has been received regarding their acceptability.

Final approval of our comprehensive Public Use Plan was received during 1980. After three years and several revisions, we finally have a planning document that is almost obsolete.

2. Funding

DeSoto represents a complex station with a broad spectrum of wildlife and nonwildlife activities. The real problem is not so much the incompatibility among uses, but budgetary competition between 1210 and 1240 funds. In past years, as a result of expanding I&R programs, we were in a deficit spending posture for 1240 activities. In fiscal year 1980, the Area office introduced a bit of flexibility by increasing 1240 funds by \$23,000. This shift somewhat balanced our program funding, but in fiscal year 1981, our shift to Region 3 brought us broad budgetary latitude. Funds were allocated by program and we were able to distribute them as our sub-activity needs dictated.

But, now the bad news. Our preliminary fund target of \$510,000 was recalled and replaced with a new economy model. The new total decreased our budget by \$30,000.

Should present funding trends continue, DeSoto will be forced to curtail many activities, most of which are politically entrenched in our operation. Commitments made during the creation of the refuge and during program expansions have created O&M burdens which have not been compensated by increased funding. In short, we are expected to do more and more with considerably less money.

A case in point: DeSoto's two controlled waterfowl hunts require over \$10,000 for annual operation. In the past two fiscal years, we received reimbursements of \$4,800 and \$2,000, respectively. In fiscal year 1981, we are told to expect no additional funds to help defray the expenses of waterfowl hunt costs. While these programs do provide outputs to aid in the accomplishment of our objectives in two states, they will be among the first to be curtailed as dollars get tight.

BLHP may or may not have been good to us. An additional 1.4 million was approved for completion of the visitor center but then in October no funds were added to DeSoto's O&M base to open, staff and tie up the loose ends of construction.

The following table shows a three year breakdown of station funding. While total FY-81 funding appears to have increased \$12,500 over FY-80, in reality it did not. A \$16,000 rehabilitation project will be completed by contract. Deducting that amount from our total funding, the station ends up with a \$3,500 deficit compared to FY-80 base funding. Inflation, high energy costs, expanding programs (including the completion, opening, and dedication of a new visitor center) will create a critical underfunding situation at DeSoto unless substantial funding increases are received.

<u>Sub Activity</u>	<u>FY-81</u>	<u>FY-80</u>	<u>FY-79</u>
1110		500	300
1210	124,000	136,000	133,000
Base O&M	108,000*	121,000	113,000
Cyclic Maintenance		15,000	10,000
Revolving Rehab	16,000		10,000
1220	3,000		
1240	369,000	345,000	321,000
Base O&M	165,000*	116,000	95,000
Cyclic Maintenance		25,000	22,000
Special Bertrand	204,000	204,000	204,000
8340		2,000	4,800
GRAND TOTAL	\$496,000	\$483,500	\$475,800

*Includes cyclic maintenance funds

3. Manpower

Invariably, decreased funding means fewer personnel on a national wildlife refuge. Because an anticipated increase was not added to the station's base as we changed regions, four positions have been dropped from the FY-81 staffing plan. The visitor center will definitely not be operated at full potential without a clerk-typist and an interpretive specialist. It would also appear that we may not have had a clear concept of maintenance responsibilities at the new center. The building is 26,000 square feet, mostly carpeted. It will have a complex physical plant due to required humidity and temperature controls for the artifacts. There is also over 20,000 square feet of plate glass which will have to receive periodic maintenance. Since the facility will

require a high degree of polish, all these custodial duties may be too much for the one planned WG-8 maintenance worker. Only time will tell.

DeSoto now has four BLHP positions with the conversion of Assistant Manager Jave into a 1210 BLHP slot. In addition, the station maintains seven career-seasonal positions and two part-time positions which remain a constant staffing concern at this station.

II. CONSTRUCTION AND MAINTENANCE

A. Construction

Most of this year's construction activity was concentrated on visitor center development. Some of these activities are covered under Section V-A. Although 4.8 million dollars were obligated to the project, refuge participation was required due to overruns in contractual expenditures and the need for expediency in keeping the projects running on schedule.

Much of the preliminary work of site clearing, leveling, ditching and filling was accomplished by refuge personnel and equipment. This included site work on the shoreline lagoon, parking area, road, drainage and sewage lagoon.

The 1.4 miles of new entrance road is the best example of the monetary savings we were able to subtract from project costs. The original cost estimate was \$313,000. By using our own manpower and machinery for clearing, filling of low-lying sections, placement of two 100'x4' drainage culverts, development of field accesses, etc., a local contract for moving the remaining 29,000 cubic yards of material was effected for only \$26,700. The asphaltting of the entrance road was awarded for a total of \$85,400. Thus, the completed job, minus some additional force account landscaping and seeding, will cost the Service only \$112,000, a savings of approximately \$201,000.

The new road crosses diagonally through the headquarters shelterbelt just north of the office. So that the pines, cedars, cotoneaster and lindens would not be wasted, two tree spades were rented to move the trees to areas where they would either screen the headquarters area from the visitor center or improve roadside aesthetics. A 44-inch spade was rented from Woodbury County Conservation Board to relocate 100 small juniper and cotoneaster. Then, the largest tree spade in Omaha (a 78-inch Big John) was contracted to relocate 49 large pines and lindens. The survival rate has been excellent to date.



Shelterbelt trees were moved from the path of the new entrance road to locations where they will visually screen the headquarters complex from the visitor center. YACC Fountain 10/80



Once the refuge staff got started, they weren't satisfied with just moving the "little 'uns". Clawson 10/80

Another force account construction project completed this year was the rip-rap stabilization of 1,800 linear feet along DeSoto Lake's shoreline. The shoreline north and east of the visitor center was stabilized using both the bank-sloping technique and the dump-and-push method. Approximately 2,600 tons of riprap material were used. A seeding of brome completed the job in April. This project was undertaken both as a test of techniques for the 1981 BLHP stabilization project along a six-mile section of the lakeshore and to aesthetically heal the shoreline immediately north of the visitor center before opening to the public in 1981. Excellent success resulted.

A 30-inch stoplog structure was placed at the junction of the Wood Duck pond drain and DeSoto Lake so that drawdown can be effected during high water. Another 30-inch stoplog structure was installed on a field drain on one of cooperator Meade's farm fields so that off-season water control can be improved on the Iowa waterfowl hunting area.

The new Nebraska waterfowl hunting area also got some attention. Final slopes on one half mile of dike were completed and 375 feet of 16-inch PVC pipe were installed, complete with snifter valves, at the pumping station. The crisafulli pump with diesel motor works much more efficiently now since the pipeline was laid to make full use of the syphon effect. Previously, a flexible rubber pipeline ran uphill the entire 375-foot length from the Missouri pumping station, a vertical height of nearly 12 feet. Also, a half-mile drainage ditch on the south side of the hunting area was cleared and deepened to improve drainage from the waterfowl impoundments.

The Wood Duck nature trail parking area was finally completed this year. The surfacing of the parking area and loop approach (for buses) required 200 tons of crushed stone.

A portion of the visitor center bypass road had to be rebuilt to tie in with the newly constructed entrance road. It required stone resurfacing to allow temporary access to the inner refuge for work projects, public hunting and fishing. This bypass road will be completely removed in the spring along with portions of the old entrance road, as soon as the new entry is asphalted.

The salvage and disposal of three buildings on the former Gilbert Meade property was authorized this summer after we had assisted Mr. Meade in removal of a large metal quonset shed from the property during the winter. He had been authorized to move the shed to his new homesite approximately two miles east on U.S. Highway 30, but it was too large to cross a concrete bridge between the two sites. Refuge personnel constructed a temporary earthen viaduct across the refuge section of the adjacent Scebold ditch



A 375-foot PVC pipeline was laid to pump water from the Missouri River to the Nebraska waterfowl hunting area. Clawson 11/80



The 1,800 feet of sloping and rip-rapping north of the visitor center healed over fairly well by winter drawdown. Knauer 12/80

to circumvent the bridge and allow transport. Since the old house could not be moved intact due to its piecemeal construction, permission was granted a local salvor to raze the building to ground level for salvageable building material. Afterwards, the remains of the buildings, concrete slabs and debris were buried on-site by refuge personnel. The old entranceway off Route 30 and the inholding boundary fence were removed and the 3.2-acre property was prepared for a spring seeding of brome.

B. Maintenance

The maintenance and minor rehab of equipment and structures at DeSoto is never-ending. Maintenance personnel must protect millions of dollars of real and personal property required to support the extensive public use program. In addition to our full-time maintenance staff, we would not have accomplished half of what we did without a crew of 3-5 YACC enrollees.

The completion of several painting jobs greatly enhanced the appearance of the headquarters complex. The wood trim and doors on the red brick headquarters and oil house were painted our standard chateau brown. The gables and personnel door of the 8-stall were also repainted brown, as were the gables of the three residences. The above-ground unleaded gas tank and the regular gas pump were repainted red and equipped with appropriate safety warning signs.

Headquarters building insulation was enhanced by the addition of 50 bags of cellulose insulation to the attic (R-32 achieved), the placement of storm windows over the single pane windows and the replacement of the outside glazing in the office with reflective solar glass. The replacement glazing cost at the office was very reasonable (\$30 per 22 x 42 inch solar window pane). Although overhead lighting must be used during the day, the air conditioner can at last cool the office without working overtime. This, in addition to a new paint job and new framed photos on the walls, created a more pleasing work environment. Custom-built storm windows were also added to the large thermopane picture windows at the residences. This triple glazing seems to reduce heat loss.

The pine shelterbelt at the headquarters was thinned to prevent the reoccurrence of needle blight.

A 36-inch culvert on the cutoff drainage ditch was removed and the west levee road over this tube was removed to facilitate drainage.

Work progressed in moving all equipment and supplies from the old shop area, which is visible to the public, to the center

island site, which is isolated from public access. The old tin shed which burned out this summer was bulldozed under, as were several piles of old wood and asphalt which had lain on the edge of the Research Natural Area.

Almost 400 tons of crushed stone, hauled from a stockpile on the west side of the Missouri River, plus an additional 760 tons of contractually hauled stone were required to repair deteriorated areas on the east side of the river. Stone was added to one waterfowl hunt parking lot, the wildlife viewing area, the visitor-center bypass road, several fishing access parking lots, the main loop road, Lakeview Drive and the newly constructed Wood Duck Pond nature trail parking lot. Coarse stone was also dumped into large holes at the end of the concrete boat ramps to prevent damage from occurring to boat trailers.

Approximately one mile of asphalt road shoulders received additional dirt which was subsequently leveled and seeded. Gravel roads were maintained regularly.

Nine miles of asphalt road received a new centerline paint job through a local contractor for \$470.

The 54-inch outlet screwgate on DeSoto Lake began leaking following a late winter drawdown. Everyone had horrible dreams about the expenses required to perform underwater surgery on this structure. However, with the help of a Corps of Engineers maintenance person, a couple of bolts were tightened and the situation resolved. It is believed that the large head differential between the lake and river was putting extreme force on the gate, thus preventing it from seating properly. The leak was judged to be "probably insignificant"; that it would stop once the head differential was equalized. This experience also gave us an excuse to change gear grease in the two screwgates. The exposed screw rods were covered to prevent future gear box freeze-up.

Portable metal boat docks were straightened and new bumpers attached to the edge. These docks receive a lot of use and abuse by boaters. The badly deteriorated wooden boat docks at the South Concession and at the north ramp of the south boat docking facility were completely rebuilt this season using salt treated lumber.

All trails and dike surfaces were bush-hogged and blowdowns removed to facilitate enforcement patrols. Fourteen miles of boundary fence were mowed to remove encroaching woody vegetation.

The refuge staff cleared the ditch on the south side of cooperator Jones' farming unit, which ultimately drains the two

Nebraska waterfowl impoundments. Our ditch cleanout provided the stimulus for the Washington County Road Department to clean out their connector ditch. This will allow us to drain our impoundments without flooding private lands. A sealed concrete pit toilet was installed on the Nebraska unit which replaced a deteriorated "one holer".

Drainage of wet spots was improved by shallow ditching on the Case, Meade, Stratbucker and Jones farming units. Field approaches and farm access roads were reworked on Case's and Botos' farming units.

A 1000-gallon surplus water tank was mounted on the grain truck to haul water to transplanted evergreens. (This became a full-time job for 1 YACC during the summer).

Several gates were repaired or replaced as a result of vandalism. Four tubular steel gates were purchased and installed to replace old galvanized flat gates located on the boundary.

Fifty-six wood duck nesting boxes were maintained during the winter. On many of these, the mounting system was altered to facilitate easy box removal. In addition, a total of twelve new Sonoco wood duck nesting tubes were modified and erected.

Many signs were either replaced with new sign shop signs or repaired and repainted. Almost all of our signs now conform to the sign manual standard of white letters on a brown background. Much effort went into fabrication and erection of corten steel frames for the new signs.

All public use programs (waterfowl and deer hunts, fishing, boating, swimming, auto-touring, open house, etc.) required many hours of preparation time.

All vehicles, including tractors and heavy equipment, were maintained and safety inspected at required maintenance intervals. The vehicle that continued to receive the yearly prize as the maintenance headache is a 1976 Chevrolet pickup used for daily LE patrol. This vehicle received two alternators, a battery, two starters, a speedometer, a carburetor, a heater fan, a transmission seal, an air conditioning compressor, some body filler and a paint job.

The Huber maintainer received a brake job. A borrowed tree planter that broke while in use here was modified slightly and repaired.

The biggest joke of the year was the rubber-tired 1½ yard front-end loader which was received by transfer from Jones Hole NFH.

After spending numerous hours to marginally improve the efficiency of the brakes, we tried using it to load riprap material. The engine proved too weak to adequately handle this task, besides burning copious quantities of oil. The engine was eventually diagnosed as having a cracked block. So, the station now has two old loaders hardly worth the repairs. Both will be surplused in FY-81 as new BLHP equipment arrives.

Few equipment purchases were made in 1980. A 7½-foot Myers snow plow was bought and installed on the 4x4 Ramcharger. Additional purchases included a mobile radio, an air conditioner for the back office, a forced-air grain dryer, a slide file cabinet and several bundles of corten steel posts to be used in mounting signs.

C. Wildfire

There were no wildfires during the year.

The refuge has had local agreements with both the Blair, Nebraska and Missouri Valley, Iowa volunteer fire departments for mutual fire control since 1974. New agreements were drafted, reviewed and approved during the year. They have been submitted to both departments for signatures.

III. HABITAT MANAGEMENT

A. Croplands

A total of 2,924 acres were cooperatively farmed by 12 farmers. Croplands were divided 60/40, with the refuge receiving 40 percent of the planted crops. The principal crops grown were corn, soybeans, winter wheat, sweet clover-oats, alfalfa and milo.

Biological farming techniques were applied to 469 acres or 24.6 percent of the cooperator's share and to almost all of the refuge's share (964 acres). Approximately 50 percent of the cropland acres were biologically farmed in 1980. This is a gain of six percent over last year.

The goal of the biofarming program is to farm without the aid of inorganic nitrogen, herbicides or insecticides. As noted last year, weeds are a problem and must be controlled if any type of farming program is going to succeed. Thus, we have developed a modified biofarming program that involves the limited use of unrestricted herbicides. Hopefully, as the tilth of the soil improves and as more cooperators use rolling cultivators, we can become less dependent upon herbicides.

For the most part, we have defined the techniques required to convert from chemical to biological farming. No commercial nitrogen is applied. Nitrogen is supplied either by a previous year's crop of 80 percent yellow biennial sweet clover and 20 percent mammoth red clover or by rotating ground which has been in alfalfa for several years. However, the application of commercially available phosphate and potash is encouraged.

The use of crop rotations has eliminated our need for insecticides. Rotations involve sweet clover-oats or alfalfa during the first year, followed by corn the second, then soybeans, sometimes wheat and clover-oats again. Primarily, chisel plows and discs are used for ground preparation. Fall tillage is restricted.

The biofarming program received a boost when 55 tons of humates were spread on 277 acres in January and another 56 tons were applied on 318 acres in July. The humates were spread at the rate of 350 lb/acre at an average cost of \$25/acre. Humates are considered to be soil amendments and are administered by farmers as part of the cooperative farming agreements. Humates should release tied-up nutrients, improve physical structure of the soil, increase activity of soil microbes and add humus. To date, the actual value of the humates has not been determined. Composted feedlot manure will be applied in 1981.

The biofarming program has progressed well in two-years time and is gaining more acceptability by the cooperators. In many cases, corn and soybeans grown biologically have out-yielded those grown chemically. One eight-year-old alfalfa field that was fall-plowed in 1979 yielded 106 bu/acre of corn. An adjacent field that has been chemically farmed for at least 20 years yielded only 76 bu/acre. Both fields were planted at the same time with the same seed.

Another cooperative farmer planted two adjacent soybean fields. The biological field yielded 29 bu/acre and the nonbiological field yielded 21 bu/acre.

Still another cooperator had a 10 bu/acre difference between his biological soybean field (41 bu/acre) and his chemical field (31 bu/acre) of soybeans.

Corn production was generally poor because of an extended drought that occurred at planting time and throughout the summer. However, soybean production was good, since their water requirements are less. Again this year, overall yields from the biological fields compared very favorably with yields from the chemical fields. Average corn yields were identical (90 bu/acre) for both types of

farming. However, the soybean yields on the biological fields (36 bu/acre) averaged 12.5 percent higher than those on the non-biological fields (32 bu/acre). Biological farming is working at DeSoto. The next move is to get a research team to document our progress, to determine how well biofarming works, to determine how to improve the yields and to determine the overall benefits of this technique.

Our second Biological Farming Workshop was attended by 40 Service employees, representing four regions. A full day's activities included an introduction to biofarming, a progress report, a tour of DeSoto's crop fields and a tour of Del Akerlunds' organic farming operation. The workshop was a success and many positive comments were received.

Throughout the year, Assistant Manager Knauer consulted with many refuge managers, Washington, regional and area office staffs about biofarming techniques, gave several tours and even made a trip to Hastings WMD to evaluate the initiation of biofarming techniques on wetland management tracts there.

Excess corn from 1979 was transferred to the Nebraska Game and Parks Commission and to the Iowa Conservation Commission for duck banding and feeding of a captive Canada goose flock, respectively. Excess winter wheat from 1979 was transferred to Swan Lake NWR for fall seeding. The refuge share of harvested crops in 1980 included 1,920 bushels of corn, 460 bushels of winter wheat and 282 bushels of oats. Winter wheat was transferred to Swan Lake NWR and to the Iowa Conservation Commission for fall browse seeding. Corn and oats were transferred to Fort Niobrara NWR to feed yearling longhorn calves, and the remainder of the corn was stored over-winter for use in case of an unexpected DVE outbreak.

Cooperative farmer Hoyt sold his farm and moved to the West. His acreage was transferred to cooperator Botos. Concurrently, an equal number of acres were exchanged between cooperators Botos and Scebold. These transfers gave us increased flexibility to manage our fields in the vicinity of the Iowa waterfowl hunting program. The transactions comply with existing guidelines and are well documented in refuge files.

B. Grasslands

Almost 505 acres were in alfalfa this year. Of this total, almost 30 acres were planted this year and became part of the refuge share of cropland acres. The remaining 475 acres were included in the annual hay program.

Alfalfa has been planted on poorer cropland to reduce the germination of weed seeds, specifically shattercane, to add nitrogen



Assistant Manager Knauer discusses DeSoto's biological cropland management program with other "refugees" at the second biological farming seminar held at DeSoto. Montgomery 7/80



Humates are spread on biologically farmed fields to facilitate nutrient release and increase organic composition of soil. YACC Fountain 8/80

and to improve the structure of the soil. Alfalfa fields remain in production from 3 to 8 years. The fields were hayed twice between June 20 and September 1. Refuge permittees removed 1,600 tons of hay in 1980. The hay rate collected by the refuge remained at \$7.50/ton.

The average selling price was \$36.50/ton for the first cutting and \$43.00/ton for the last cutting. The first cutting is always sold more cheaply because it is stemmy, over-mature and less desirable than the second cutting. The selling price was \$6.00 to \$8.00 higher this year than last because of the scarcity of hay in the drought-stricken Midwest.

A nesting bird survey was again accomplished to determine the effects of our later June 20 haying date. A survey of hayed alfalfa fields indicated there were no losses of pheasant and quail nests, but there were possible losses of mallard nests. However, mallard nesting is negligible on DeSoto.

Approximately 238 acres of native grass have been established since 1965. Marginal and excess cropland was planted to various mixtures of big and little bluestem, switchgrass, Indian-grass, sideoats grama, western wheat grass and sand bluestem. Approximately seven acres bordering Highway 30 were seeded in May to a mixture of five native grasses and three forbes. The field was clipped several times to reduce the weed competition.

Native grass fields are burned on a three year schedule. Approximately 100 acres of native grass were scheduled to be burned this spring. Burning was accomplished on 52 acres during late April and the remainder was cut and baled during April and May. Haying was initiated this year as an alternative to burning. Native hay was in high demand to be used as mulch for roadside and dam site seedings. Although there were some logistical problems with the haying, the growth response from the native grass duplicated that of the burned fields. Haying also left some residual cover for early nesting birds that was unavailable on the burned fields.

C. Wetlands

DeSoto Lake is a 788-acre oxbow lake which is seasonally managed for full utilization of the water. Optimum summer elevations are 989.0 to 989.5 feet mean sea level to accommodate skiing, swimming and boating use. Ideally, during the remainder of the year, the lake should be lowered 2.0 to 2.5 feet to expose sandbars for resting and feeding waterfowl and shorebirds, and to concentrate predaceous and forage fish species. This lower level also retards shoreline erosion caused by wave action and provides



Controlled native grass burning can be pyromaniac's delight.
Clawson 5/80

storage capacity for spring runoff. However, a drawdown can only be effected when the Missouri River is low enough to permit gravity discharge. This river stage is generally reached by mid-December.

The outlet gate was opened during January and DeSoto Lake was lowered to slightly less than 988.0 feet (msl). By March, the lake level was a foot higher and the outlet gate was opened again to remove the excess water and to give the lake adequate storage capacity for the anticipated spring rains. However, spring runoff was low this year. As a result the inlet gate was opened in May to raise the lake to operating pool (989.00 ft. msl) by Memorial Day.

Rains in June raised the lake three-quarters of a foot above optimum pool. Luckily, the Missouri River was lower than normal and the outlet gate could be opened to drain the excess water. This has never been possible in the past. It may be that river degradation over the years has increased our drainage capabilities. We hope so.

Summer evaporation lowered the lake level and the inlet was again opened in late July. Following the public use season, the outlet was opened during late October and early November. Again, it is quite unusual to be able to lower the lake this early in fall. The lake was lowered to 988.3 feet msl to facilitate work on the anticipated riprap project and lagoon development at the visitor center. The lake was eventually lowered below 987 foot msl by the end of the year. The river became very low in December when only 15,000 cfs was being released from Gavin's Point Dam (normally 20-27,000 cfs).

Lakeshore erosion continues to be a major refuge concern. Shoreline erosion has filled in deep holes and created shallow edges that become choked with vegetation, making bank fishing difficult. Estimated shoreline erosion was only 2 feet 2 inches this year. Even with normal water levels, this is a lot of soil loss. The average loss during 1979 was more than double this amount due to wave action during high water. Completion of the six mile stabilization project in 1981 will stop this accelerated eutrophication (see photo).

The only pumping occurred on the west side of the Missouri River, to provide fall waterfowl habitat.

D. Forestlands

Approximately three acres of the headquarters' shelterbelt were thinned to prevent overcrowding and disease problems. In addition, almost 150 trees removed from this shelterbelt were transplanted to other locations on the refuge (see Section II A).



The above photo gives a good comparison between protected (riprapped) and unprotected DeSoto Lake shoreline. Jave 12/80



The lake was drawn down this fall in anticipation of a six-mile BLHP stabilization project. The treeline in the background is a favored eagle perching area. Knauer 12/80

E. Other Habitat

The sandbar received limited clearing this year when approximately 1.5 acres were cleared of trees and vegetation by local Boy Scouts. This area was a historic nesting site for the endangered least tern and piping plover. Additional clearing is anticipated for 1981.

F. Wilderness and Special Areas

Nothing to Report.

G. Easements for Waterfowl Management

Nothing to Report.

IV. WILDLIFE

A. Endangered and/or Threatened Species

DeSoto's bald eagle population peaked at 68 birds on January 11th. This was down slightly from last year's peak of 74 birds on March 20, 1979.

DeSoto supported good numbers of bald eagles throughout the winter period. Mild weather allowed above normal populations of wintering waterfowl. Plenty of avian cholera and lead poisoned victims proved an attractive food source for the eagles.

A wing-banded immature bald eagle (red ribbon on right wing) was sighted on the refuge on November 22 and reported to Dan Frenzell, professor at the University of Minnesota. The eagle is probably part of a University of Minnesota study located on the Chippewa National Forest.

Prior to the 1979 muzzleloader deer hunt, an endangered species Section 7 consultation was written and approved. Of special concern was a night roost that is located on the edge of the most heavily hunted timber area. Managers thought that this hunt "may affect" endangered bald eagles, but to what extent was unknown. The Denver Regional Office determined that the hunt would "not affect" eagles but suggested that the eagle population be monitored. As a mitigating measure, refuge hunters were advised not to park or hunt in the posted vicinity of the eagle roost after 3:00 p.m. We received 100 percent compliance.

Eagles were counted prior to, during, and following the 1979 and 1980 muzzleloader hunts. It appears that some eagles were

temporarily displaced from the roost site because of hunting activity. Some eagles were observed roosting on the east side of the lake near the south (Iowa) archery parking area where no disturbance existed. Other eagles may have used temporary roosts in the vicinity of the refuge and a few may have returned to the principal refuge roost after dark.

Eagle numbers increased after each hunt ended. Our limited data indicates that the hunts temporarily displaced eagles for up to two weeks. However, the hunt has been judged to be nondetrimental to the eagle population.

An intra-Service Section 7 consultation concerning the endangered bald eagle was also requested for DeSoto's BLHP shoreline stabilization project. After a review of project information, a biological opinion was issued by the Washington Office stating that the action would promote the conservation of the bald eagle.

B. Migratory Birds

All migratory birds were counted weekly from the ground. These counts were supplemented by two aerial counts conducted by Iowa's waterfowl biologists during November and December. Reliability of ground counts range from 70-90 percent, depending upon the species, time of year, and size of the population. Reliability of aerial counts was thought to be similar.

1. Waterfowl

a. Winter Period

During the fall-winter period of 1979-80, avian cholera hit DeSoto's goose flock hard. The first snow geese suspected of succumbing to avian cholera were picked up on November 3, 1979. By the 15th, notable numbers of snow geese were seen floating in shallow water. Intensive cleanup operations were initiated and continued almost daily through January. The carcasses were incinerated in an oil burner borrowed from the Hastings WMD.

During the three-month outbreak 2,753 birds were picked up from the lake and surrounding uplands. This total includes birds that died from all causes. The following table documents the number of snow geese and mallards that were retrieved each month.

Waterfowl Deaths - 1979-80

<u>Species</u>	<u>Nov.</u>	<u>Dec.</u>	<u>Jan.</u>	<u>Total</u>
Snow Goose	835	698	240	1773
Mallard	32	686	233	951
Total	867	1384	473	2724

These figures are thought to be minimal because cleanup operations were also conducted by coyotes and bald eagles. Possibly an additional 10-15% of the birds were either eaten by scavengers or were not retrieved and decomposed. Thus, the total kill from all causes is estimated to be at least 3,166 birds.

While it was assumed that most of the birds died of avian cholera, necropsy reports indicated that lead poisoning also took its toll. Of the total number of birds picked up, it was estimated that 73% died of avian cholera and 17% died of lead poisoning. For snow geese, it was estimated that 88% of the deaths were caused by avian cholera, 4% by lead poisoning and 7% by crippling wounds. Mallards deaths were estimated at 44% caused by cholera and 41% by lead poisoning.

Avian cholera was not contracted at DeSoto. As early as the previous August, snow geese were being found on the breeding grounds that had died of cholera. It was thought that lack of food stressed the birds and made them susceptible to cholera. The migration may have further stressed those weakened birds.

Mild weather and lack of snow cover allowed many waterfowl to winter at DeSoto. Snow goose populations started the new year at 30,000 and dropped to 13,000 by the end of January; mallards numbered 55,000 and declined to 25,000. An early northern migration was in effect by the weekend of February 23-24.

A single whistling swan visited the refuge for several days in January.

An unusual sighting of 30 ruddy ducks was recorded on February 3rd.

b. Spring Period

By early March, the bulk of DeSoto's wintering waterfowl had departed. Snow goose populations dropped from 7,000 early in the month to 1,000-2,000 for the remainder. Mallards peaked at 8,000 by mid-month, with 560 common mergansers present, also. It was evident that a major migration was underway during the week of March 16th. However, few birds used the refuge. Waterfowl numbers declined dramatically after the lake was opened to boating on April 15th.

Jave and Guthrie were detailed to Hastings WMD for six days in early April to assist in waterfowl disease control. Nebraska's Rainwater Basin lost large numbers of waterfowl to avian cholera as the birds concentrated in that traditional stopover area on their northward migration.

c. Summer Period

DeSoto's waterfowl production is generally limited to wood ducks, although a few mallards and blue-winged teal nest each year. Sixty-eight wood duck boxes were available for occupancy this summer with almost 85% of the boxes being used. Hatching success was average at 49 percent. The average clutch size was 14.7 eggs. Dump nesting was evident with 19 boxes containing 18-36 eggs.

It is estimated that 200 wood ducks, 30 mallards and 20 blue-winged teal were raised to flight stage.

Mourning doves are a common sight at DeSoto, particularly around the shelterbelts where nesting is heavily concentrated. From information gathered in Objective 1 of the National Mourning Dove Study, it was estimated that mourning doves spent 225,000 use-days at DeSoto.

d. Fall Period

The early migration of blue-winged teal went by almost unnoticed. Relatively few flocks were observed on the refuge or its vicinity.

The first flight of snow geese was recorded on October 4th. By the end of October, 24,000 snows and 14,000 mallards were present.

Snow geese peaked during the week of November 26th at 150,000 - about 10 days later than normal. The duck population reached only 61,000 birds during November. Above-average moisture conditions in the Dakotas slowed fall harvesting and made for ideal field feeding conditions. This, combined with unseasonably mild weather throughout the upper Midwest, slowed the fall waterfowl migration.

Waterfowl hunters on the Iowa unit harvested an immature male black brant on November 2nd and an immature male greater snow goose on November 24th. These confirmed records are a first at DeSoto.

The fall mallard population reached its peak of 100,000 during the week of December 11th - nearly one month

later than normal. Waterfowl populations dwindled to 32,000 geese and 15,000 mallards by month's end as encroaching ice cover forced birds into a few remaining potholes. Lack of snow cover allowed birds to find adequate food in floodplain cropfields and remain longer than usual.

Total fall snow goose and mallard use days were 5,206,688 and 3,522,705, respectively. This represents the highest recorded snow goose use days since 1971 (see the following table). A mild November and December and favorable feeding conditions allowed high populations to remain on the refuge. Generally, unfavorable weather forces the birds south in early December.

Fall Waterfowl Use Days for DeSoto
1969-1980

<u>Year</u>	<u>Use Days</u>	
	<u>Snow Goose</u>	<u>Mallard</u>
1969	7,883,000	20,274,000
1970	4,049,000	5,850,000
1971*	9,528,000	9,468,000
1972	2,157,000	3,064,000
1973	3,210,000	2,685,000
1974	3,532,000	2,840,000
1975	2,676,000	1,627,000
1976	3,208,000	1,986,000
1977	3,892,000	5,245,000
1978	2,420,000	1,917,000
1979	4,492,000	5,254,000
1980	5,206,688	3,522,705

*Data represent all species of geese and all species of ducks, respectively. Additional data are not available to separate snow goose and mallard use.

The annual fall snow goose productivity count was conducted on November 26th. The results were: 26% in juvenile plumage, 1.7 young per family, and 37% of the flock comprised of blue-phase geese. Another productivity survey, taken on December 14th and 15th, averaged 30% juveniles and 39% blue-phase geese.

As might be expected, the snow goose average family size of 1.7 young per family was lower than the 1.89 recorded in 1979, a year of very high productivity.



Snow goose populations peaked at 150,000 with a flock composition of 61% white phase and only 30% immature birds. Jave 12/79



Good numbers of killdeer continue to nest on the refuge's sand-bars. Menke 7/80

Another avian cholera outbreak was discovered in DeSoto's snow goose flocks on December 15th. Cleanup operations were begun immediately using an incinerator borrowed from Hastings WMD. During December, 365 dead birds were picked up (329 snow geese and 36 mallards). The majority were believed to have died of cholera because of their observed posture and condition.

A sample of 11 dead snow geese was sent to the National Wildlife Health Laboratory on December 18th. Five of six geese necropsied were diagnosed as having cholera. The other five were not necropsied.

By the end of December, the die-off lessened to a few birds per day. The peak of the die-off coincided with a cold snap and freeze-up of the lake which confined the geese into one 2-3 acre pothole of open water. Approximately 70,000 snow geese and 90,000 mallards were using the refuge at that time.

Cholera outbreaks were reported at many locations in December. Birds were dying in appreciable numbers at Riverton in southwest Iowa at year's end. Plattsmouth in southeastern Nebraska, and the RSR Ranch near Squaw Creek NWR also reported losing birds to cholera.

2. Marsh and Water Birds

Marsh and water birds accounted for approximately 9,070 use days. This is only slightly lower than the 9,100 recorded in 1979.

The bulk of the use days were accumulated by double crested cormorants, great blue herons, white pelicans, and pied-billed grebes.

Rare sightings included a western grebe (10/29) and three sandhill cranes (11/13).

3. Shorebirds, Gulls, Terns and Allied Species

A variety of species visited the refuge in 1980. The draw-down of DeSoto Lake for visitor center construction exposed numerous mudflats and made sandbars available for foraging and loafing.

Rare (R) and Occasional (O) species seen were the western sandpiper (R), black-bellied plover (R), sanderling (O), semipalmated sandpiper (O), as well as Caspian and Forster's terns (O).



The fall 1980 fowl cholera outbreak (329 birds picked up) was less serious than the epidemic of last winter. Menke 12/79



Bald eagle populations on the refuge increase during and following cholera outbreaks. Menke 12/80

An unusually large population of killdeer (up to 130) remained on the refuge during October. They were attracted to standing water in borrow-pits created during visitor center parking lot construction.

4. Raptors

Commonly seen residents included red-tailed hawks, barred owls, great horned owls and screech owls.

Prairie falcon sightings on January 20th and again on November 14th were the first ever recorded for the refuge.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

The refuge white-tailed deer population is usually estimated by two different census methods: winter drive counts and aerial surveys. Neither survey was conducted this year. An aerial census has not been completed since 1975.

A vehicle census of the "island" portion of the refuge was conducted in early December. A total of 207 deer were counted. This count was slightly higher than the 1979 count of 194 deer. This is a rather crude survey and only projects a trend. It is estimated that the overall refuge herd remains stable at approximately 400 animals. The deer herd is managed by means of both archery and muzzleloader hunts (see Recreation section). It is felt that the muzzleloader hunt has improved overall herd condition. Based upon kill information, younger deer are more prevalent now than in the past. Also, no disease has been noted among harvested deer.

2. Other Mammals

Other than deer, coyotes are one of the more frequently seen mammals on the refuge. During the winter months they are often observed prowling on the ice around the waterfowl-filled potholes. The refuge population may increase by as much as 50 percent during the fall and winter months. Crippled and diseased waterfowl provide an abundant food source.

Although refuge personnel have not seen it yet, tracks, etc. indicate that the Nebraska side of the refuge has been invaded by a female Black Angus. She is reported to have first found sanctuary on refuge lands in early November. The owners have extended half-hearted attempts at locating her.



DeSoto's mixture of forest, grassland and cropland provide excellent browse for about 400 deer. Menke 10/80

We thought perhaps an archery deer hunter or a two-footed coyote might get her, but that hasn't happened that we know of.

No changes were noted in other mammal populations.

3. Resident Birds

Most resident bird species benefited from the unusually mild winter of 1980. The lack of prolonged snow cover made foraging much easier and most populations responded positively.

A pheasant crowing count was conducted on May 15. A record total of 361 calls were recorded along the 12 mile refuge route. This count is 29% higher than the previous record set in 1979.

The annual bobwhite quail whistling count was conducted July 9. A total of 51 different males were recorded, down 9% from 1979. This trend survey is contrary to data recorded by both state conservation agencies. Quail numbers generally increased.

A late renesting attempt by a determined bobwhite quail hen hatched successfully on September 16, with 13 of 15 eggs producing chicks.

Visitor center construction personnel reported seeing two wild turkeys on November 10 near the construction site. This is the second year in a row that sightings have been reported.

The refuge and the Audubon Society of Omaha jointly sponsored the 4th annual DeSoto Christmas Bird Count on December 21st. Outdoor Recreation Planner Menke served as count compiler. Twenty-one observers participated in the count which was centered at refuge headquarters and included an area 15 miles in diameter. Fifty-five species were recorded; somewhat lower than the 64 species observed in 1979.

DeSoto recorded several new bird sightings in 1980. Species observed for the first time included the following: winter wren (2/3); water pipit (4/20); blue grosbeak (8/17); and solitary vireo (9/7).

4. Other Animal Life

During the past year, the Service received many complaints concerning the poor sport fishing in DeSoto Lake. The

extremely high populations of carp and buffalo have simply been providing too much competition for desired fish species to become established in sufficient numbers to create a good sport fishery.

A fisheries survey taken in September 1979, after the major winterkill of 1978-79, indicated that approximately 80% of the standing crop was rough fish. Two fairly strong age classes of largemouth bass were found: age 0 bass, four to five inches long; and seven to ten inch, age I bass. Black and white crappie also appeared to be making a good comeback. A 15-inch minimum length limit on largemouth bass was recommended and put into effect during the 1980 fishing season to protect this developing population. Minimum length limits were also placed on northern pike (30 inch) and walleye (15 inch).

Early in the season there were minor problems with fishermen keeping undersize bass, despite special fishing regulation signs which had been erected at all access points.

Fisheries Biologists Visscher and Milligan from the Kansas City Area Office conducted electro-fishing, trap and net surveys on the lake June 2-4. Their findings showed many crappies, small bullheads and carp. The bass population looked healthy with most bass falling within the 10-13 inch length class.

The only possible course of action, until such time as full chemical renovation can be funded, is to attempt to manage the existing fishery through stocking and restrictive regulations. Several species of sport fish were stocked during the year. There is a tremendous imbalance in the lake, but the introduction of these game fish will certainly provide additional sport fishing opportunities as well as providing predatory species to help contend with the blossoming rough fish populations. This approach is mostly cosmetic, but doing something is better than nothing. (See the stocking table on the following page).

The Iowa Conservation Commission and the Nebraska Game and Parks Commission both support a complete renovation of DeSoto Lake; plus, restocking of game fish to establish a high quality sport fishery. Both states insist that the Service purchase the chemicals needed for the fish renovation. Both states have offered to help apply the chemical and provide sufficient sport fish for restocking. At present, little progress has been made on this stalemate, although attempts are still being made to secure funds for the necessary chemicals through the budgetary process. It is an expensive project.



Fisheries surveys were conducted by Kansas City Area Office fisheries' personnel and refuge staff. YACC Fountain 6/80



DeSoto Lake stocking this year included Northern Pike (pictured), Walleye and Bass. Marquardt 4/80

Without renovation, the future outlook for sport fishing in DeSoto Lake is extremely bleak. Game fish are expected to make moderate increases over the next couple of years. However, as the rough fish grow and reproduce in even greater numbers, their ability to compete with sport fish and their concomitant role in degrading water quality will assuredly cause sport fishing to decline.

However, management of the fish populations in DeSoto's ponds is inexpensive and attainable. Fisheries Biologist Milligan of the Kansas City Area Office renovated Bass Pond, the west side and east levee ponds via application of rotenone on September 8th and 9th. Bass Pond contained many small crappies while the other ponds held many large (15-30 lb) buffalo and small crappies. A few channel catfish and green sunfish were also noted in the west side pond. All three ponds were then stocked with bluegill and catfish on October 21st. Largemouth bass will be stocked in the spring.

DeSoto Lake Fish Stocking

October 10, 1979	40,000 Channel Catfish; (3-4") Source: Cedar Bluffs National Fish Hatchery
March 31, 1980	750 Northern Pike; (avg. 2½lb., 12-30 inches) Source: Crawford National Fish Hatchery from Valentine NWR
May 8, 1980	300 Largemouth Bass; (avg. 2 lbs. each) Source: Cedar Bluffs National Fish Hatchery from Geneva NFH
May 28, 1980	75,000 Walleye; fingerlings (avg. 1-2") Source: Gavins Point National Fish Hatchery
October 21, 1980	Bass Pond: 100 bluegill, 100 channel catfish; fingerlings (1-2") East Levee Pond: 500 bluegill, 100 channel catfish; fingerlings (1-2") West Side Pond: 750 bluegill, 150 channel catfish; fingerlings (1-2") Source: Gavins Point National Fish Hatchery

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On Refuge

Refuge visitation rebounded to a more typical figure of approximately 335,000 visits in 1980 after showing a significant decline in 1979. The following table indicates visitor use patterns for selected recreational activities on the refuge during the period 1970 to 1980.

<u>DeSoto Visitation for Selected Activities</u>				
1970 - 1980				
<u>Year</u>	<u>Fishing Visits</u>	<u>Fall Auto Tour Visits</u>	<u>Museum Visits</u>	<u>Total Refuge Visitation</u>
1970	44,853	11,700	74,635	364,215
1971	47,660	21,640	42,909	320,000
1972	68,971	21,410	57,345	295,648
1973	76,731	24,500	44,412	353,792
1974	79,303	25,000	51,639	388,935
1975	70,465	18,782	45,475	363,713
1976	74,345	19,044	39,480	360,988
1977	84,345	16,320	24,712	375,387
1978	69,745	19,748	20,845	342,853
1979	30,279	23,463	19,354	272,796
1980	103,586	28,303	18,705	334,410

a. Trails

Refuge nature trails and the asphalt trail to the Bertrand excavation overlook were used by approximately 15,500 visitors in 1980. YCC crews maintained both nature trails and placed wood chips on a one-half mile section of the Cottonwood nature trail. The parking area at the Wood Duck nature trail was graded and resurfaced to provide all-weather parking for 12 cars and 2 school buses.

b. Tour Routes

The refuge was open for a one-week auto tour during the third week of March, scheduled to coincide with National Wildlife Week. Approximately 3,500 visitors toured the refuge during this period. An additional 260 visitors



DeSoto's fall auto tour seemed to attract more media attention
than geese during 1980. Menke 12/80

enjoyed the refuge-sponsored wildlife film series on the final weekend of the spring auto tour. Refuge employees were available after each film showing to answer visitor questions about DeSoto and the National Wildlife Refuge System.

The ever-popular DeSoto fall auto tour (late October through mid-November) was characterized by excellent weather but rather poor wildlife observation opportunities. Just over 28,000 visitors used the refuge during the 3-week period. Most enjoyed the mild weather but, naturally, were disappointed by the delayed waterfowl migration. During most of the auto tour period, the best opportunities to see large flocks of geese were from the refuge's two overlooks.

c. Bertrand Conservation Laboratory

Most of the activity related to the Bertrand Collection in 1980 was in preparation for the move into the DeSoto Visitor Center in 1981. Museum technicians assisted the visitor center architect with design recommendations for cargo storage shelving and arrangement of laboratory equipment in the center. Laboratory workers also spent several days with the exhibit fabricator measuring objects for space requirements and assisting with the design of artifact mounting brackets.

With the hiring of an organic conservator in July, additional emphasis was added to the ongoing artifact conservation effort. Artifacts scheduled for exhibit were measured, photographed and assigned treatment priorities. Artifacts undergoing stabilization treatment during the year included shovels, butter churns, metal boat parts, shoes, boots, shirts, buttons and ironstone china. Several exhibit items were sent to the Rocky Mountain Regional Conservation Center in Denver for restoration to exhibitable condition.

A contract with Larry Stone at nearby Dana College for stabilization of collection foodstuffs was completed in August. A walk-in cooler was installed in the laboratory to store foodstuffs as treatments were completed. New museum cases were ordered to improve crowded artifact storage conditions. All museum cases were repainted by contract to conform to the visitor center color scheme selected by the architect. Laboratory technicians began to place the collection's 4,000 boots and shoes in specially constructed storage boxes which had been purchased in 1979.



Bertrand collection treatment efforts this year concentrated on preparation of artifacts to be used in visitor center exhibits.
Montgomery 1/81



Assistant Manager Clawson spoke with Missouri Valley residents at the refuge exhibit for the "Bertrand Days" fair. Jave 10/80

During 1980, archival documentation of the Bertrand excavation project was improved. Jerry Petsche, on-site archaeologist in charge of the 1969 excavation, provided the refuge with an eyewitness account of the excavation by identifying slides and photographs. Original mylar drawings of the Bertrand hull, as excavated, were obtained for our archives from the Southwest Archaeological Center. Acquisition of books and periodicals for the research library also began. Publications relating to nineteenth century culture, steamboating on the Missouri River, flora and fauna of the midwest, and wildlife management are included.

As the Bertrand collection becomes more widely publicized, we find ourselves dealing with an increasing number of requests for artifact loans and technical information about the collection. Collection Manager Montgomery prepared a draft of the Scope of Collections Statement which will outline loan requirements and procedures. Updating of collection records generally kept pace with collection treatment during 1980. An artifact master locator file will assist records keeping procedures during the transfer of artifacts from the current storage location to the new visitor center. A two-year artifact treatment schedule was prepared by Organic Conservator Mayda Goodberry. Lots of conservation work will remain to be done after the artifacts are in the new facility.

d. DeSoto Visitor Center

Progress on the nearly \$5,000,000 DeSoto Visitor Center project continued at a feverish pace throughout 1980. The final foundation pile caps for the building were poured during January and February. Mild winter weather permitted some construction activities throughout most of the winter. Structural concrete pours for the building proper began in mid-spring 1980 and continued through October. A six-week construction strike in June and July made us wonder about the completion of concrete work prior to the onset of bad weather. Fortunately, mild, dry fall weather permitted most outside work to be completed on time.

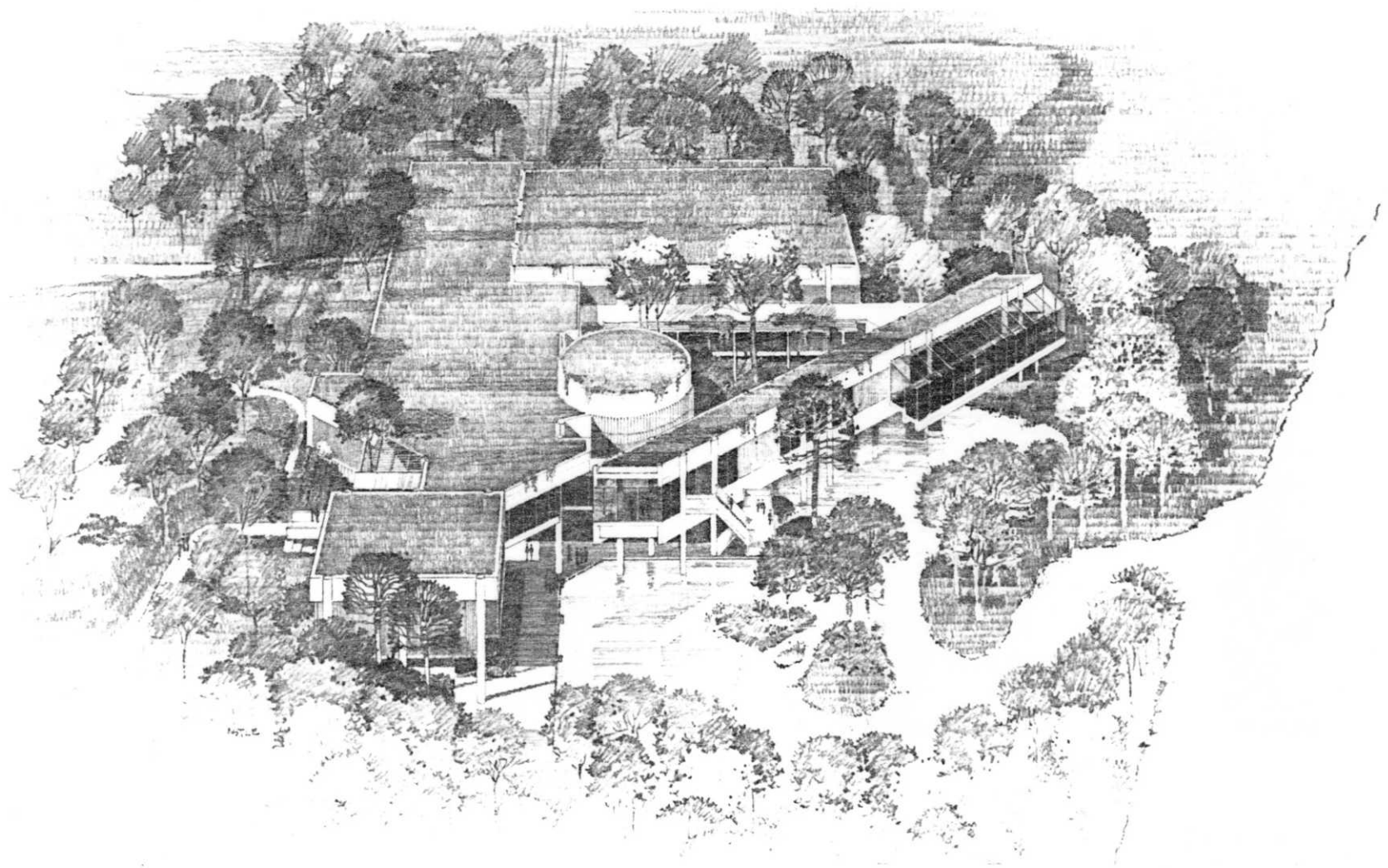
During the period of construction, the refuge staff has been called upon to make literally thousands of major and minor decisions (telephone jack locations, location of the sewage lagoon, types of locks for various doors, etc.). Due to potential project cost overruns, the Service decided to complete a larger portion of the



Visible progress on the visitor center began early in the year
with the formation of columns. Menke 4/80



Over 3,600 cubic yards of concrete were poured to form the
visitor center's structural shell. Montgomery 5/80



This conceptual design of the DeSoto Visitor Center was modified only slightly. The building is situated a little closer to the shoreline and the lagoon is not quite as pronounced as the one pictured.



The 5 million dollar DeSoto Visitor Center is quickly gaining a close resemblance to the above architectural rendering.

project "in house" than originally anticipated. In house, in this case, meant that the refuge staff became intimately involved with entrance road layout, design and construction; landscape planning; tree relocation and many other elements of the total project.

The original well for the visitor center proved to be a "dry hole". After much finger pointing to decide who was at fault, test well drilling was contracted at another location which did produce an adequate water supply. The refuge, in concert with area and regional office staffs, worked on plans for the visitor center parking area, theater design, outside lighting, sales area shelving, and front entrance.

The refuge staff formulated recommendations for building furnishings, interior signs and a telephone system to serve both the headquarters and visitor center buildings. Funds for paving the new entrance road and for fabrication of Bertrand cargo storage units were obligated from project monies prior to the end of FY-80. Other major project elements including the well, sewage lagoon and parking area construction were processed as change orders to the building contractor, Lueder Construction Company.

The visitor center theme relates the positive and negative impacts of western expansion (as symbolized by the steamboat Bertrand) to the conservation movement in the United States (as symbolized by the refuge). Much of the first half of 1980 was occupied with reviewing and fine-tuning exhibit design plans. The exhibit fabrication contract was awarded to Design and Production, Inc. of Alexandria, Virginia just prior to the end of the fiscal year.

The refuge staff was also actively involved in other aspects of visitor center interpretation including:

- (1) collecting and arranging for work on taxidermy specimens
- (2) final design of the natural settings for the visitor center introductory display
- (3) preparation of scopes of work for a scale model of the Bertrand and for the theater production
- (4) procurement of audio-visual equipment for the center.



Visitor center construction activities came under critical inspection by both resident and migratory wildlife.
Menke 10/80 and 12/80



e. Exhibits - Demonstrations

By the end of the recreation season, the refuge had received interpretive displays for the Bertrand site overlook. The five modulate display panels will be in place for the 1981 public use season.

Late in July the refuge prepared a photographic exhibit for the "Bertrand Days" fair in Missouri Valley. Assistant Manager Clawson was on hand to answer questions and distribute literature during the time the display was in place.

f. Other On-Refuge Programs

Nearly 3,200 people visited the refuge office to view waterfowl displays and inquire about refuge programs and facilities. Museum receptionists hosted approximately 45 group orientation programs and had contact with nearly 19,000 visitors. Other groups from the Omaha Audubon Society, Fontenelle Forest Nature Center, Iowa State University and University of Nebraska make regular annual visits to the refuge during the fall migration. The refuge hosted senior citizens on bus tours from Omaha, Council Bluffs, Sioux City and Des Moines.

The DeSoto Public Use Plan underwent final review and approval. Two hundred copies of the plan should be available early in 1981. Two printings of the revised DeSoto Bird List were required. The first printing of 7,500 copies included two FWS logos, one of which was upside down! We requested, and received, a complete reprinting of the bird list which looks good. The Bertrand brochure was completely revised and 25,000 copies were printed. The refuge staff has worked up an "in-house" publication titled "DeSoto in a nutshell..." to be passed out to groups and individuals seeking additional information about the history of the refuge and the Bertrand project.

Most of the refuge's outdated roadside signs were replaced by signs which conform to the current sign manual. Three temporary bulletin board displays were revised and updated during the year. Water-damaged displays depicting native grasses and the Bertrand excavation project were also reworked.

The staff has long recognized the potential of a sales outlet for interpretive materials at the refuge.



Most roadside signs were replaced with new style signs prior to the refuge's April 15 opening. YACC Fountain 9/80



Eagle scout projects were planned to assist the refuge with trail clearing and restoration of endangered species habitat. Menke 10/80

During 1980, the staff explored the option of establishing a cooperating association as a non-profit corporation with the goal of enhancing visitor interpretive services. The association would act as an independent agency within the general guidelines established by the Service.

Because space for a sales outlet is provided in the center, it was decided to establish a cooperating association now so it would be operational when the center opens. Our inquiries proved that existing cooperating associations at other locations were unwilling to take direct organizational responsibility for a branch at DeSoto. We finally decided to pursue the option of establishing an independent cooperating association based here. Three Missouri Valley business persons were contacted to form a board of directors for the association. On December 1, 1980, the Midwest Interpretive Association was chartered as a non-profit corporation. Our own Allan Montgomery will serve as its first Executive Secretary. The interpretive association will have the capability for expanding to other facilities in the future if that option proves attractive. The association has received a \$10,000 interest free loan from the Eastern National Park and Monument Association. Everything seems to be "go" for a well-stocked sales area by the time the visitor center opens in mid-1981.

g. Environmental Education

A total of 2,668 activity hours of environmental education were recorded this year. Once again, the refuge made arrangements for spring environmental education classes from Blair, Nebraska and Missouri Valley, Iowa. Outdoor Recreation Planner Dave Menke conducted two environmental education workshops for Omaha elementary teachers and students. Six eagle scout projects were conducted on the refuge during the year. The refuge provides a coordinator for all on-site scout projects. The coordinator outlines the general objectives of the work and explains the environmental implications of the project in relation to refuge management objectives.

2. Off-Refuge

The refuge responded to 2,400 public inquiries and prepared 37 news releases during 1980. This year, because of an overwhelming number of program requests, the refuge implemented a policy of limiting off-site programs to no more than five programs per month. Those that require more

than fifty miles travel are not honored. Even with these restrictions, the refuge staff made 34 personal appearances this year. The staff supported 72 professional services, mostly technical information requests related to the Bertrand project.

Televised short features on the fall waterfowl migration at DeSoto have become an annual event for many television stations in Omaha, Sioux City and Des Moines. The snow goose migration was also featured on a local segment of "PM Magazine." The opening of the recreation season, waterskiing and progress on the Bertrand project also received television coverage during 1980.

B. Recreation

1. Hunting

a. Waterfowl

Two controlled waterfowl hunts were held on the refuge in 1980, one on the Iowa portion of the refuge and one on the Nebraska portion (west of the Missouri River).

The 1980 Iowa waterfowl hunt was the seventh held by the refuge. Hunting was allowed each day of the 42-day season (November 1 - December 12), and was limited to one-half day of hunting in ten blinds.

The Nebraska unit waterfowl hunt was the first held since 1975. Two new shallow water impoundments totaling approximately 40 acres were filled (via pumping from the Missouri River) by October 25. Four additional periods of pumping (10 days total) were required to keep the impoundments at the desired water level. Hunting was allowed on Tuesdays, Thursdays, Saturdays and Sundays from November 1 through December 9 (23 total days). Hunters were limited to nine blinds with one-half day of hunting allowed.

Both Iowa and Nebraska unit blinds were available by advance reservation only, with a maximum of three hunters permitted per blind. Hunters were required to use steel shot only and could take a maximum of 25 shells per hunter to their blind.

The following table shows the hunt statistics for both the Iowa and Nebraska units. This year's Iowa unit hunting was much less successful than in 1979. The total bag declined 42%, from 544 birds bagged in 1979 to 315 in 1980.

Waterfowl Hunt Statistics, Iowa & Nebraska Units

	Iowa Unit			Nebraska Unit	
	1979	1974-79	1980	1974-5	1980
No. Blinds	10	10	10	13	9
Hunter Visits	619	639	815	595	298
Activity Hours	2929	2784	3886	2242	1197
% Reservations Sold	75	80	98	87	100
% No Show	22	26	21	36	34
TOTAL BAG	544	339	315	16	51
Birds Bagged per Hunter Visit	0.88	0.50	0.39	0.03	0.17
Hours Hunted per Bird Bagged	5.4	11.1	12.3	140.1	23.4
% Imm. Geese Bagged	78	61	56	72	31
% Imm. Ducks Bagged	30	22	33	0	26
Shots Fired	6088	4398	3837	389	1059
Shots Per Bird Bagged	11.2	15.4	12.2	25	21
No. Cripples Reported Lost	147	90	90	10	38
% Cripples Lost	21	23	22	36	43
Shell Limit	25	25	25	25	25
Acres Hunted	174	276	174	431	326
Season Length (Days)	37	39	42	34	23

The 1980 bag was composed of 297 geese and 18 ducks. Hunter success declined 56%; birds bagged per visit decreased from the record 0.88 in 1979 to 0.39 birds bagged/visit in 1980. The number of hours hunted per bird bagged increased 128%, from 5.4 hours/bird bagged in 1979 to 12.3 in 1980. These figures reflect the reduced number of immature snow geese in the flock, the lower peak population (150,000 in 1980 versus 200,000 in 1979) and the delayed peak of waterfowl migration this year.

The 1980 Iowa hunt was fairly similar in comparison to the average of the 1974-79 hunts. Most of the variables measured fall within a midrange of the hunt statistics from 1974 to 1979. One notable exception, however, is the comparison of shots fired per bird bagged, which was 21% lower in 1980 than the 1974-79 average. This indicates that the 1980 hunters were being conservative in their shooting habits, perhaps because of the high cost of steel shot.

Although the Iowa hunt was average in most respects, it did produce a couple of firsts. Hunters bagged one immature male greater snow goose and one immature male black brant. Neither had been taken on the refuge before.

If the Iowa waterfowl hunt is classified as "fair", the Nebraska hunt can only be classified as "poor". The total bag taken by hunters was 51 birds; a total of 38 ducks and 13 snow geese. Hunter success was fairly low, with 0.17 birds bagged per hunter visit. Hunters spent 23.4 hours per bird bagged. The geese were taken within a three-day period, from November 20 to 23. Approximately 80% of the ducks were bagged during the first half of November. By the end of November, the shallow water impoundment was completely frozen. Some ducks (100-500) remained on the area, using a 1.5 acre pond which did not freeze until after the hunt was over. Low hunter success can be attributed to a couple of factors. First, 75% of the total bag consisted of ducks. Because blinds were set in harvested fields and not over water, this resulted in a "pass-shooting" situation for the majority of the hunt; definitely not the ideal. Secondly, because of mild weather and good water conditions in the Dakotas, the migration was delayed. By the time the waterfowl peaked at DeSoto, the Nebraska impoundment was fairly well frozen, greatly reducing the area's attractiveness to waterfowl.

b. Big Game

The Nebraska Game and Parks Commission again issued 100 special permits to Nebraska residents for DeSoto's fifth annual black powder hunt. Enforcement and check station activities for the 5-day, any-sex muzzleloader deer season were jointly administered by the refuge staff and NGP personnel. The 1980 season ran from December 13-17. Ninety-two hunters participated in the hunt, with a total of 55 deer taken from the "island" portion of the refuge. Hunters required an average of 32.8 hours to bag a deer; which is slightly higher than the 30.4 hours averaged in 1979. The kill was composed of 44% adults and 53% bucks, both lower than the 1976-80 average. Fawn weights averaged 76 pounds (67-93 range) for bucks and 70 pounds (62-77 range) for does. These are both lower than the 1979 averages of 83 pounds for bucks and 75 pounds for does. The oldest deer recorded to date was taken in 1980 - a 9½ year old, 140 pound doe. The heaviest deer taken was a 193 pound, 5½ year old buck.

Archery deer hunting was permitted again this year on areas of the refuge in both Nebraska (west of the Missouri River) and Iowa. Hunting license requirements and season length for the refuge hunts were consistent with archery deer hunting regulations of the state in which the hunting occurred. The high quality hunting provided in this program requires very little administration or enforcement by the refuge staff.

The Nebraska archery hunt was interrupted to accommodate the Nebraska unit waterfowl hunt. Archers were not allowed to use the area from November 1 through December 9, to avoid any possible conflicts between the two activities.

A voluntary sign-in system was again used to monitor archery deer hunting. Sign-in boxes were located at all hunter parking areas. Hunters were requested to sign in and out each day, indicate the number of hours hunted and record hunting success.

Both hunts were the most successful archery hunts recorded. Iowa hunters reported 10 deer taken during 1,367 activity hours and Nebraska hunters reported 5 deer taken during 964 activity hours.

2. Fishing

Ice fishing was only open for one week due to mild weather and resultant poor ice conditions. Yet, fishing was one of

the main reasons for increased refuge visitation to DeSoto in 1980. There were just over 100,000 fishing visits this year, representing a three-fold increase over 1979 levels. Some publicity of stocking efforts at DeSoto Lake may have been responsible for the renewed interest in fishing. Despite a few reports of fair catches of bass and walleye, the only consistently taken species were carp and bullhead. Several good catches of carp were observed.

3. Mushroom and Berry Picking

Mushroom hunting is a major avocation of refuge visitors and employees alike from mid-April through mid-May. Despite persistent searching (over 5,000 activity hours), concentrations of morels were elusive this year. Dry weather didn't help matters any. Berry picking is permitted on the refuge but hasn't proven to be a popular activity.

4. Wildlife/Wildlands Observation

Wildlife observation and interpretation accounted for nearly one half of refuge visitor use in 1980. Interpretive use accounted for 161,500 visits and wildlife observation accounted for 104,000 visits. Both migratory waterfowl and resident wildlife (deer, coyotes, pheasants, etc.) attract the attention of some visitors even if their primary objective for refuge use is non-wildlife oriented. The refuge's two boundary overlooks are particularly popular when the refuge is closed to public entry.

5. Non-Wildlife Oriented

Non-wildlife oriented activities are permitted only during the refuge's recreational season (April 15 to September 30). Non-wildlife visits accounted for 188,700 visits in 1980. Picnicking headed the list of non-wildlife oriented activities, accounting for 67,750 visits; followed by boating (57,100 visits); waterskiing (38,100 visits); and swimming (25,600 visits). Crowds at the swimming beach were low to moderate this year compared to past peak years. The 125 power boat limitation on DeSoto Lake was imposed only once during the summer. No drownings or near fatal accidents occurred on the refuge during the recreation season. Fenderbenders and minor enforcement problems were all we could muster.

C. Law Enforcement

Enforcement activities on the refuge were curtailed at times because of a shortage of LE personnel and our efforts to conserve gasoline by reducing the number of patrol vehicles used.



Jet skis are the latest word in noisemakers for DeSoto Lake.
Menke 9/80



A large share of DeSoto's summer public use comes from the
picnic and volleyball crowd.
Jave 7/80



Patrolman Guthrie writes yet another dog who either failed or refused to read the refuge regulations leaflet. Jave 7/80



A small storage shed on the refuge was destroyed by fire. The State Fire Marshall's conclusion: possible arson. Jave 8/80

DeSoto normally has seven personnel with law enforcement authority. This number dropped to six because of a transfer during the spring. These people worked altered schedules throughout the public use season to cover high visitor use on weekends and holidays. Iowa Water Officers, stationed at Wilson Island State Park, again patrolled the lake during the summer, thus relieving our staff of this extra duty.

Motor vehicle larcenies continued to plague our public use areas. In one instance, an eye witness description of a suspect and vehicle led to the apprehension of a suspect. The suspect was arrested by Iowa Water Officer Overson on a warrant involving automobile larceny that had occurred on another recreational area. Hopefully, this arrest will solve some of our future problems.

On the evening of August 7, fire destroyed a 600 square foot metal pole building used to store refuge and YACC equipment. Damage was estimated to be approximately \$25,000. The Nebraska State Fire Marshall investigated the fire and classified the cause to be arson. The FBI investigated. A couple of suspects were questioned and the case was finally closed with no arrests.

A summary of violations that were processed by refuge personnel follows. This summary does not include violations processed by Special Agents, State conservation officers or those referred to State courts by refuge officers.

In overview, we had an easy enforcement year. Public use was spread throughout the summer and few conflicts occurred. We received no congressional inquiries, made no arrests, and were not subjected to any carnage - for a change. Police Officer Guthrie was bored. Summer patrol work was almost pleasant.

VI. OTHER ITEMS

A. Field Investigation

1. Snow Goose Study

Although it's certainly not a dead issue, research funds were not approved for continuance of DeSoto's formal snow goose study. Dr. E. E. (IRV) Klaas of the Iowa State Cooperative Wildlife Research Unit had requested a \$38,000 grant from the Office of Migratory Bird Management for a new proposal, entitled "Energy Requirements and Management of Post Breeding Waterfowl on Mid-latitude Refuges". Iowa State's Bob Frederick, who completed his Master's thesis on DeSoto's

DESOTO NWR VIOLATIONS - 1980

<u>Types of Violations</u>	<u>No. of Violations</u>	<u>Total Fines</u>
<u>Boating Violations</u>		
Improper registration	2	\$ 40
Insufficient personal flotation devices	3	\$ 70
Other boating violations	13	\$280
<u>Motor Vehicle Violations</u>		
Speeding	5	\$ 90
Other motor vehicle violations	5	\$205
<u>Fishing Violations</u>	15	\$375
<u>Trespass</u> (closed areas and closed hours)	3	\$150
<u>Littering</u>	2	\$ 50
<u>Possession of marijuana</u>	1	\$100
<u>Possession of pets</u>	2	\$ 45
<u>Hunting violations</u>	2	\$125
<u>Miscellaneous Violations</u>	5	\$140
Subtotal	58	\$1670
<u>Other</u>		
Dispositions pending	5	
Juveniles not prosecuted	8	
TOTAL Violations	71	

WARNING TICKETS ISSUED - 1980

<u>Motor Vehicle Violations</u>	64
<u>Parking Violations</u>	10
<u>Boating Violations</u>	21
<u>Swimming Violations</u>	22
<u>Possession of Pets</u>	40
<u>Miscellaneous Violations</u>	37
TOTAL Warning Tickets Issued	194

snow geese, continues to study energy requirements of refuging waterfowl in relation to present agricultural practices and management schemes. He has several years of data on hand. He proposes to simulate alternative situations caused by changes in agriculture and management through construction and analysis of a computer model, and to evaluate effects on the behavior and distribution of refuging waterfowl. Progress was extremely limited due to the lack of funding. Some field behavioral and movement data were collected during the fall using student volunteers from Iowa State University. This data will also be plugged into the model, if and when the project is approved. Additional information on body condition was obtained when refuge personnel collected 39 snow geese in February. The weight of the abdominal fat was used to construct an index of body condition.

A related study involving remote censusing received EROS Data Center funding. This study involved the verification of LANDSAT satellite photos by aerially photographing random sections of cropland in the vicinity of DeSoto Refuge. Ground truthing information was also collected in addition to sampling of corn in selected fields.

Finally, an observation by past researchers, Stephen Parris, et al., appeared in the fall 1980 issue of Raptor Research, entitled "Coyote Steals Snow Goose From Bald Eagles". This was only one of several interesting observations during the last few years of snow goose studies.

2. Dove Nest Study

DeSoto participated for the second year in Objective 1 of the National Mourning Dove Nesting Study. The one and two acre study areas used were the same as in 1979.

Early April saw the first arrival of mourning doves to DeSoto, with nest initiations beginning the week of April 13-26. Field investigations began formally on April 16.

DeSoto's study areas led the nation in total number of nest initiations. May, June, and July were particularly hectic months. The following table outlines the chronology of nesting attempts.

It is believed that the high number of nesting attempts is a direct result of severe summer storms that destroyed many nests, causing the birds to reneest soon afterwards.



Student Volunteer Kathy Verdon and Student Trainee Layli Alexander collected data for Objective 1 of the National Dove Nesting Study conducted again this year on the refuge.
YACC Fountain 8/80

Dove Nest Initiations

<u>Month</u>	<u>Study Area 1</u>	<u>Study Area 2</u>	<u>Total</u>
April	4	11	15
May	99	37	136
June	118	49	167
July	108	66	174
August	53	30	83
September	<u>10</u>	<u>5</u>	<u>15</u>
Grand Total	392	198	590

Nesting activity tapered off through August and September, with the last nest initiation discovered September 18. This nest was destroyed September 25, when the tree in which it was situated was moved to accommodate DeSoto's new entrance road. No new nests were discovered in October, and the 1980 study ended with only 2.5 percent of the total nest initiations occurring in September and October.

3. Grassland Study

A cooperative research study was begun in 1979 using DeSoto's native grass plots. The objectives of the research are to determine yield and quality of several warm season grasses as affected by nitrogen fertilizer and harvest date. Cheryl Nielsen of the University of Nebraska at Lincoln has now completed all field work. Lab analyses should be completed in April and all data will be combined and statistically analyzed with the aid of a computer. Cheryl presented a scientific paper on this project at the annual meeting of the Nebraska Section of the Society for Range Management. Another paper will be presented at the International Meeting of the Society for Range Management in Tulsa, Oklahoma in February. Cheryl should have her MS thesis, entitled "Yield and Quality of Warm Season Grasses", completed by June. The results will be reported next year.

4. Dendrochronology Study

The objective of this Master's level project by Donald Zuroski at the University of Nebraska at Omaha is to reconstruct the lateral migration of the Missouri River between Blair and Omaha during the past 100 years. The refuge will be examined in detail, and maps will outline the historic channels of the Missouri River. This will be accomplished through the use of climatic data, geomorphological principles, historic maps, remote sensing and dendrochronology, (the study

of a tree's age by using core drillings). Don pursued the project throughout the fall months.

5. Other Studies

Fishery Biologist Jim Milligan of the Kansas City Area Office continued to monitor the status of DeSoto Lake's fishery as outlined in Section IV C-4. Jim's vigil this spring and summer confirmed that several age classes of largemouth bass and two age classes of crappie are doing well. Although the stocking this year may help fishing for an interim period, it is Jim's considered opinion that we are going to experience a couple of good years of fishing, and then, due to the imbalances that prevail, the lake is going to decline dramatically because every conceivable age class of carp and buffalo are present.

A refuge lead/steel shot study continued with collection of waterfowl gizzards from the two controlled hunting programs. Forty-three gizzards were collected in Nebraska and 139 in Iowa. Analysis will be completed during the winter. During previous years, as high as eight percent of our bagged birds have carried steel in their gizzards, while up to 12% carried lead. Although our sample size may not be statistically significant, we know that our steel shot regulation is saving a lot of snow geese. The percent of geese carrying steel has averaged over five percent since initiation of the study.

John Robinson, who continues his Cooperative Student Trainee position while studying at Iowa State University, conducted an independent study this fall. "A Study of the Wood Duck Nesting Success at DeSoto Refuge" resulted from a comparison of historic data from DeSoto's nest box program with data from three other randomly selected studies in Illinois, Oregon and Mississippi. In summary, DeSoto's nest box program is a successful one, having lower predation, higher percentage of box utilization and generally higher hatching success than the other areas. While thoughts on dump nesting are as numerous as nesting studies, we appreciate John's thorough analysis of our data and his management recommendations.

Again, our appreciation is extended to the Nebraska Game and Parks personnel for their cooperation in the muzzleloader deer hunt. Dave Oatis, Research Biologist, collected deer eyes and heads for his continuing "time of death" research. Chest-girth measurements were also taken to try to correlate this measurement with weight. Perhaps next year, we can get Dave to officially begin a tenderloin palatability study. We stand ready to volunteer our expertise as taste testers.

B. Cooperative Programs

1. Youth Programs

YACC - The year began with six enrollees participating in DeSoto's non-residential YACC program. The principal assistant refuge manager was in charge of directing the enrollees' daily activities in a variety of refuge maintenance tasks.

One enrollee was assigned to photographic and related duties at the Bertrand lab while another's time was divided between clerical work for the visitor center construction management representative and the refuge office. The remaining enrollees worked on field assignments.

During the winter, many of the enrollees spent their time collecting and incinerating diseased waterfowl and thinning the headquarters shelterbelt; when the weather didn't force them inside to paint picnic tables.

In April, our lab photographer resigned. A replacement was found in May; plus, we were authorized to pick up an additional person for field work.

From May through September, the seven enrollees kept the refuge in top shape by assuming much of the maintenance burden. Two major tasks included mowing and litter pickup on over 60 acres of roadsides and picnic grounds. Another "popular" duty was making the twice-a-week run to maintain DeSoto comfort stations and eleven pit toilets.

Late summer found us losing our YACC staff one by one. Five of the seven enrollees either resigned early or ended their year's appointment on October 1. We were given authority to hire two replacements in October, giving us a total of four enrollees.

As of the beginning of FY 81, the administration of the DeSoto satellite YACC camp was transferred from Mingo to the Crab Orchard YACC camp.

YACC fall activities included assisting with the waterfowl and deer hunt check stations, removing old decals from vehicles and applying new ones, and retrieving and incinerating diseased waterfowl.

DeSoto has received many valuable benefits from the YACC program. The refuge is now dependent upon YACC manpower to plug some of the voids created by insufficient monetary support. Without YACC, DeSoto's programs would definitely suffer.

YCC - DeSoto hosted a YCC program for the eighth year in a row. It was back to a 20 enrollee non-residential camp after hosting a 30 enrollee residential camp in 1979. What a relief!

Ten enrollees each from Iowa and Nebraska were recruited. In previous years, all enrollees were recruited from Iowa. Recruitment from both Iowa and Nebraska proved satisfactory and should be continued in future YCC camps.

A veteran staff was on hand when camp opened June 16th. Camp Director John Laughhunn returned for his eighth straight year. Other returning staff members included Environmental Specialist Debbie Lipschultz, and Work Leaders Bob Addy and Bill Gidley.

YCC members completed a variety of maintenance and construction related tasks: restraining concession buildings at South Beach and the observation tower on Highway 30; painting refuge pipe gates; modifying cement dumpster pads; aligning barrier posts; conducting a grassland bird nesting study; and checking 66 wood duck boxes for productivity. One major project was the approved development of a connector nature trail between Cottonwood nature trail and the North Beach. A 3-day spike camp was held at the Fort Niobrara/Valentine Refuge complex. A canoe trip down the Niobrara River proved to be the highlight of the 1980 camp.

CETA - DeSoto's summer work force was supplemented by two CETA employees. Don Arrick assisted the YACC with maintenance of the public use facilities and Rick McKean worked with the YCC as a group aid. The CETA program ended two weeks earlier than scheduled (mid-July), when program funding ran short.

At the end of the year, DeSoto had one CETA on board. Kathy Sullivan entered on duty in December and was assigned to the Bertrand laboratory to assist in artifact stabilization.

C. Items of Interest

1. Personnel

With its large staff, personnel actions are commonplace at DeSoto, but only a light turnover was experienced this year. The more notable occurrences follow in chronological order.

She still looks the same but Wanda Harbottle's position changed from series 301 to 303, making her a GS-4 Refuge Clerk.

Ethel Brueggemann served two consecutive 30-day appointments as a GS-4 Clerk-Typist to complete typing of a stores inventory and Bertrand transcripts.

Randy Porter received a monetary Special Achievement Award for his administrative prowess in review and correction of deficiencies at the Mingo YACC Camp.

Mary Clawson entered on duty on March 9th as a GS-7 Assistant Refuge Manager, transferring in under a Cooperative Education Student program, after having completed her requirements for a Master of Science degree at the University of Missouri at Columbia. Mary is DeSoto's first female manager.

Museum Aid Nellie Walsh received a monetary Special Achievement Award for her outstanding work in completion of the Bertrand files and inventory.

Personnel actions were required to temporarily staff the Bertrand museum until a register could be established. Myra Homes served two consecutive 30-day Public Use Aid appointments until Lori Hahn finally entered on duty in June, and Lenora Lundeen, who began life as a GS-2 Public Use Aid in April, was promoted to a career-seasonal GS-3 Museum Aid in August.

About the same time, Primary Assistant Manager Fulton's feet got itchy and in early May he hiked on down to Atlanta where he now serves in some decrepit planning position in the regional office. Iowa winters did not agree with this "good ole boy".

Officer Guthrie was promoted to a GS-5 position as of May 4th.

Three lifeguards, Pam Larsen, Mitch Jensen and Scott Robertson, were present to begin their long summer season at the North Beach as of Memorial Day weekend.

Layli Alexander served as a summer student under the Junior Fellowship Program. We also had the very able volunteer services of Kathy Verdon from Colorado State University who is majoring in wildlife management. When she could no longer afford to stay, she was hired as a 30-day Public Use Aid to maintain survey consistency.

Collection Manager Montgomery and Assistant Manager Jave both received promotions in early July; Montgomery to a GS-11, Jave to a GS-7.

Mayda Goodberry entered on duty in late July as the long-awaited Organic Conservator at the Bertrand Lab. It had become all too clear that we were looking for a very rare species during our two-year search. Mayda's background in conservation at Winterthur, Delaware and Washington University serve her well.

Dean Knauer received a monetary Special Achievement Award during August for his extensive efforts in initiating DeSoto's biofarming program. He was promoted to the GS-11 Primary Assistant position in November after a rather exhaustive look at some good candidates.

Rick Sojda transferred into Dean's GS-9 Biologist slot from the Kansas City Area Office in December.

Harold Morrow arrived from Mingo NWR on December 28th to fill a career-seasonal GS-2 Public Use Aid position.

As the year came to a close, Clete LeBarge was out on sick leave, having undergone a serious ulcer operation.

2. Travel and Training

Aside from defensive driver and first aid training, most of our training actually followed the proposed training plan this year, with a few extra sessions thrown in that somehow became necessary. We remain concerned about the high costs of time and manpower to accomplish required training, some of which seems terribly counter productive. Is it really necessary to send all our managers off for 9 weeks of LE training, fire school, procurement training, etc.? This station had to participate in over one-half man-year of such training this year. Where does it end?

Managers Gage, Fulton, Jave and Knauer attended an excellent goose banding workshop at Swan Lake in January.

Managers Fulton and Knauer completed a Fred Pryor course, Management of Time; while Managers Jave, Menke and Montgomery completed Introduction to Supervision courses.

Manager Gage and Administrative Assistant Porter attended the 4-week law enforcement program at Glynco during the winter.

Manager Jave attended the Mississippi Wing Bee during February and Basic Refuge Managers' Academy at Beckley in March.

Manager Knauer and Maintenance Worker Marquardt attended a fire school at Flint Hills refuge in mid-March.

Officer Guthrie participated in a mini-LE workshop in Des Moines during late March.

Manager Gage attended Gyroscope III in Salt Lake City in early April.

Collection Manager Montgomery attended a training course on conservation of woods and metals in Delaware during early April.

Outdoor Recreation Planner Menke attended the AIN meeting in Rapid City, South Dakota in April.

Manager Knauer returned to Glynco in June for one week of LE refresher training and took a speed reading course at Iowa Western in August.

Managers Gage, Menke and Clawson attended a Project Leaders' Conference in Kansas City Area Office during August.

Manager Knauer participated in a USDA Organic Farming Seminar in Lincoln, Nebraska during October.

Museum Aid Walsh attended a 3-day seminar for new librarians at Springbrook Education Center in Guthrie Center, Iowa during November.

Museum Technician Benda traveled to Washington, D. C. and Wilmington, Delaware for textile conservation training.

Outdoor Recreation Planner Menke was selected to attend the 42nd Midwest Fish and Wildlife Conference in December.

Maintenance personnel Lightwine and Marquardt participated in a two-day chain saw operation and maintenance course along with YACC personnel, given by Bob Mayer, Crab Orchard YACC.

3. Meetings and Tours

Several meetings were held with ICC and NGP personnel regarding fishing and hunting programs, at the refuge and elsewhere. Some contact was maintained with U.S. Corps of Engineers and various state agencies regarding refuge developments and required permits.

As mentioned in an earlier section, our biological farming program attracted attention from all over and several tours resulted.

Although a refuge-sponsored public meeting had originally been programmed for FY-79, it has been delayed due to other priorities. Maybe, in the late winter...

4. Notable Visitors

Aside from the normal official and sundry visitors, the refuge received the critical eye of such persons as the Service's strong supporter and benefactor, Senator John Culver; Fred Mohrman, Secretary to the House of Representatives' Appropriations Committee; our own Mel Evans, Chief of Program Management Assistance; and Les Dundas, North Central Representative of NWRA.

Two well-known wildlife artists visited the refuge this year, Andy Peters and Maynard Reese. Andy has done a lot of field work at DeSoto and, much to our surprise, he presented the refuge with a framed (and signed) copy of one of his latest paintings, "DeSoto Snows".

Also, DeSoto Lake was host to three baptism services this year.

5. Other Items

Local developments may impact on the refuge in the near future.

Both DeSoto's and Wilson Island's primary roads have asphalt surfaces. However, the major approach to the south end of the refuge and Wilson Island is a six-mile gravel road from Interstate 29. Historically, Pottawattamie County's Route L-14 has been in such poor condition that discerning visitors would travel an extra 18.4 miles round trip via a circuitous route to get to our facilities from the metropolitan area. Now the Iowa DOT has annexed the road and is putting some funds into its maintenance. Hopefully, it will be asphalted soon. It has been estimated that some 6,500 gallons of gasoline would be saved annually over this shorter route.

Acquisition and planning are continuing toward two other local developments: (1) a new fossil fuel power plant seven miles north of the refuge, near Tyson's Bend and (2) a new approach and bridge on U.S. Route 30 across the Missouri River.

6. Concession Contract

After suffering a bad year in 1979, concessionaire Mike Alger realized a 31% increase in gross sales during the 1980 summer season. He will begin his third year of a five-year contract for the concessions this next summer season.

7. Refuge Revenue Sharing

During 1980, DeSoto returned over \$33,000 to counties through the Revenue Sharing Act. The totals for the three counties are as follows: Harrison County, Iowa - \$14,197; Pottawattamie County, Iowa - \$1,673; and Washington County, Nebraska - \$17,148.

8. Narrative Credits

All managers contributed to the narrative, as did Administrative Assistant Porter and Police Officer Guthrie. Refuge Clerk Harbottle typed the final product while Manager Gage edited and cracked the whip over her head. Photo credits are noted.

D. Safety

Accidents and injuries sustained by refuge staff were all fairly minor this year, with one lost-time accident occurring. Our previous record had been 790 days; at year's end we're at 56 days since a lost-time accident.

Our heavy equipment operator, Harlan Lightwine, sustained the lost-time injury while operating the JD-750 bulldozer; he got a dirt particle in his eye. After waiting several days, with his eye feeling constantly irritated, he finally went to see a doctor. His retina was scratched and he had to wear an eye bandage awhile.

Harlan's luck was not running extremely well this year. Two months prior to his eye injury, a broken hydraulic hose on the HD-5 front-end loader sprayed hot oil all over him. Fortunately, he wasn't burned, just awfully surprised.

Police Officer Jim Guthrie also had two accidents to report this year. While removing the supporting nails from a deer hunter's tree stand, the stand slipped and cut him slightly over an eyebrow. Later, he got dust or dirt in one eye while operating an all-terrain vehicle at the Hastings WMD where he had been detailed to assist in diseased waterfowl pickup.

Museum Aid, Kathleen Strain, sustained a minor neck injury when she fell off a step-stool. She was washing windows outdoors and

the stool sank unevenly in the mushy ground, causing her to tip over.

Cletus LeBarge, Equipment Mechanic, backed a government vehicle into our Mayda Goodberry's POV, causing a few dents and scrapes. His foot slipped off the clutch pedal while backing. It was his first accident in nearly 30 years of service.

Our YACC crew got through the year with very few injuries. One YACC cut his hand while sharpening a mower blade and required stitches. He also contracted a nasty case of poison ivy after he mowed a section of foot trail with a tractor mower. Still another YACC got a particle in one eye while sweeping the carpentry shop and required medical treatment.

YCC had their usual cases of poison ivy, minor cuts and scrapes. In addition, a girl broke her finger the first day of camp while playing softball, and a boy sliced the length of one finger when he hit it with his hammer instead of hitting the stake. He required eight stitches.

The Station Safety Plan was rewritten and approved in March.

Three refuge staffers completed an 8-hour first aid course, given to YCC staff and students. A defensive driving course given to the YCC staff and students was also attended by 2 YACC's, 2 summer students and 10 refuge staff. Earlier in the year, 4 YACC's received the eight-hour defensive driving course.

Two years have passed since the tragic plane crash that took the lives of two Nebraska Game and Parks' personnel. Biologist Len Kozoil, who was taken from the scene in a comatose condition, remains so today.

A construction worker at the visitor center construction site fell 12 feet from a scaffolding onto a concrete floor. He sustained lacerations and possible broken ribs. He was lucky it was not worse. Another carpenter had a ladder slip out from under him. He was taken to Missouri Valley hospital by the rescue squad and x-rayed. He was bruised and spent a few days off work, recuperating.

Public accidents/incidents which were reported and investigated were as follows:

- a. A refuge visitor damaged his boat trailer while trying to pull both boat and trailer up a one-foot drop-off at the concrete boat ramp. A small tort claim was honored.



Some refuge visitors still persist in their attempts to defy the
law of gravity. Menke 7/80



- b. A waterskier twisted her knee trying to get up on her skis. The Missouri Valley rescue squad transported her to the hospital.
- c. One boater, pulling a waterskier, ran his boat into the side of a stationary boat causing some property damage.
- d. One boater ran over another's ski rope, causing the rope to snap back and injure the skier.
- e. A motorist, driving a pickup with camper, attempted to turn off Highway 30 into the refuge. The car behind it tried to pass from the left, ended up hitting the side of the pickup and overturned it. No one was injured. The Iowa Highway Patrol handled the incident.
- f. While turning the wrong way into a one-way refuge road, a visitor's boat trailer wheel caught on a barrier post. The trailer tipped upwards and to one side. The boat landed upside down on the pavement. ICC handled the incident report.
- g. A refuge visitor hit a deer with his vehicle, resulting in over \$250 in damage.

"Exercise Calhoun", a simulated nuclear accident at the Fort Calhoun Nuclear Power Plant (just upstream on the Missouri River) required only limited refuge participation in June. However, it gave pause for thought. There is no way that DeSoto could be evacuated in 15 minutes on an average summer day!

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