

PUBLIC USE PLAN

DESOTO NATIONAL WILDLIFE REFUGE

TO BLAIR, NEBR.

←US 30→

TO MO. VALLEY IOWA

DESOTO HDQTS.
MUSEUM



IOWA
NEBRASKA

SAND BAR

"BERTRAND"

MISSOURI RIVER

NEBRASKA
IOWA

US 73

REFUGE ENTRANCE ROAD
TO-I 29

WILSON ISLAND CAMPGROUND
STATE OF IOWA

LEGEND

- REFUGE BOUNDARY
- IOWA-NEBRASKA BORDER
- ACCESS ROAD

DESOTO NWR

Public Use Plan
DeSoto National Wildlife Refuge

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INTRODUCTION

As planning progressed on the exhibit design and interpretive program for the new DeSoto Visitor Center, it became apparent that a close look at the total public use picture for the refuge was needed. Such issues as congestion at the south end, staffing levels for the public use program, and appropriate types and levels of recreational activities had been of concern for some time. Catalyzed by the planning effort for the visitor center and by the prospect of substantial funding under the Bicentennial Land Heritage Program, this plan was initiated in 1978 to identify the problems and opportunities of public use at DeSoto and to plot appropriate directions to be taken in the future.

The following plan, prepared by a planning team composed of area and regional office as well as refuge staff, presents material in six sections. Sections I and II deal with refuge resources particularly as they relate to present and future public use programs at DeSoto National Wildlife Refuge. Section III summarizes present public use on the refuge. Section IV proposes goals and objectives for the public use program. Sections V and VI of this report present an action plan for implementing public use programs based on output level objectives. Various appendices contain supporting material.

I. THE REFUGE

Land acquisition for DeSoto National Wildlife Refuge began in 1958. DeSoto was established as a waterfowl migration refuge and its basic purpose has not changed. Waterfowl objectives call for an annual peak use of 150,000 geese (snows and blues) and 250,000 ducks. Objectives for geese are currently being met. Recently, management emphasis has changed from maximizing agricultural food production and sanctuary for migratory waterfowl to a more balanced system involving increased emphasis on wildlife/wildlands interpretive values and less intensive farming practices in favor of more natural ecosystems.

The refuge is located on the Missouri River floodplain and the topography of the 7,823 acre area is mostly flat. Elevations range from about 990 to 1,005 feet above sea level.

Climate

The climate is typical of middle latitude, mid-continent areas, with wide annual variations in temperature and rainfall. Precipitation averages 28.08 inches annually, with over half normally occurring during the months of May through August. The average snowfall is 29.5 inches. Low temperatures combined with high winds make outdoor activities difficult during the winter.

Soils

Soils on the refuge are of recent flood deposit origin and vary from sands to heavy clay. Approximately 150 acres of the refuge are overlain by sand deposited by the Missouri River. These areas support several unusual species of plants and animals. At the other end of the spectrum are "gumbo" clay soils which are found in many of the refuge's farm fields. ✓

Vegetation

It is likely that the entire area which is now DeSoto National Wildlife Refuge was once covered with forest, although shifts of the river channel probably removed the forest cover periodically and maintained some areas in prairie grass. The climax association is currently cottonwood and river-bank willow with a brush understory primarily of dogwood. Poison ivy and switchgrass now dominate refuge woodlands at ground level.

Habitats on the refuge range from the oxbow lake itself to cattail marshes, dry grasslands and woodlands. The Missouri River traverses the southern quarter of the refuge flowing from west to southeast. The large sandbar near the southeast end of DeSoto Lake with its shifting sand dunes is a particularly interesting area.

At the present time, refuge acreage is classified as follows:

Marshes	50
Lake and Ponds	821
River	250
Croplands	2,818
Haylands	585
Restored Native Grasslands	229
Introduced Grasslands	127
Dense Nesting Cover	22
Woodlands/Brushlands	2,671
Sandbars	150
Buildings, Roads, Etc.	<u>100</u>
Total	7,823

Water Areas

The present character of the area was established in 1960, when the Corps of Engineers constructed a new channel across a seven mile bend of the Missouri River (formerly known as DeSoto Bend). A levee, separating the

new channel from the old, created a 750 acre oxbow lake. This lake is the heart of the refuge. Refuge wetlands include the lake, the present man-made river channel, three drainage ditches, and several small marshes and ponds located in old cutoff channels.

Wildlife

Waterfowl - Snow geese (both blue and snow color phases) are perhaps the most conspicuous wildlife on the area. Migratory concentrations build up during October and November and again in March and early April. During the fall migration, peak numbers of geese have ranged as high as 400,000, but 120,000 to 150,000 is more typical. Mallards are the principal species of duck using the refuge, but shovelers, teal, wigeon, pintails, gadwalls, wood ducks and common mergansers are also seen. The migration of ducks parallels that of geese with peak numbers sometimes reaching three-quarters of a million. A peak of 125,000 ducks is a more typical number. The fall migration of waterfowl is usually much larger, more concentrated and spectacular than during the spring. Peak numbers are usually reached around the second or third week of November. As long as open water is available, some waterfowl remain on the area. Usually, 5,000 ducks and some snow geese can be seen throughout the winter months.

Birds of Prey - One of the most spectacular sights on the refuge is the concentration of bald eagles in the winter. Up to 92 eagles have been seen on the refuge, particularly near the north end of the lake where waterfowl tend to concentrate when other water areas on the refuge freeze. No eagles nest on the refuge. Other birds of prey include kestrels, marsh hawks, red-tailed hawks, rough-legged hawks, Cooper's and sharp-shinned hawks, ospreys, and, occasionally, golden eagles and peregrine falcons. Great horned owls, screech owls and barred owls are resident species on the refuge.

Other Birds - Pheasants and bobwhite are quite common on the refuge. Shorebird and warbler migrations, although not spectacular, can provide some interesting birding. White pelicans usually stop on the area for several

weeks during migration. Piping plovers and least terns (relatively rare species for this area) nested on refuge sandbars as recently as 1972. Encroachment of willows and cottonwoods on these sandbars in recent years has prevented nesting of plovers and terns. Removal of brush from the sandbars is currently underway to restore their value as nesting habitat.

Mammals - White-tailed deer are the most visible mammals on the refuge (up to 500 in the refuge herd). Deer can be seen almost any evening in refuge fields. An occasional mule deer also reaches the area. Coyotes are frequently seen on the refuge. Bats and the smaller rodents are common on the refuge. Larger rodents - beaver and muskrat - are common and visible. Beaver lodges and workings are quite numerous in backwater areas and ponds. Skunks, rabbits, opossums, raccoons, badgers, and squirrels are common refuge residents.

Fish - The lake at one time supported a good population of game fish including bass, crappie, and catfish. The Iowa state record for paddlefish (83 lbs) was taken at DeSoto in 1973. However, for a variety of reasons, including winter die-offs and bank erosion problems, game fish populations have decreased dramatically in recent years. Carp and other rough fish now dominate the lake. The State of Iowa and Fish & Wildlife Service personnel have done extensive survey work on the lake and have proposed a lake renovation project to reinstate sport fishing at DeSoto Lake.

Other Species - A typical assortment of reptiles and amphibians for this part of the country can be found on the refuge. A detailed survey has not been done. Invertebrates have not been surveyed, but ticks are common in the wooded areas. Chiggers and other biting insects are a problem for visitors at certain times of the year.

Management

Farming - The refuge farming program makes up a significant part of management efforts. About 3,000 acres are cooperatively farmed by local farmers. Usually half the acreage is in corn while wheat, soybeans, and milo are other main crops. Most of the refuge's share of the crop (40 percent) is

farmed biologically (without inorganic nitrogen amendments) and left standing in the field for wildlife. This includes milo, winter wheat, corn and sweet clover. Some crops are harvested and transferred to other refuges.

In recent years about 600 acres have been taken out of row crops and put in alfalfa or "native" grasses, partially to meet wildlife habitat objectives, but also to provide a more diverse and natural looking area. Alfalfa is a good soil builder and provides nesting cover for a variety of wildlife. Warm weather prairie grasses also serve this purpose and help to make the area more aesthetically appealing.

Research - Field investigations are occasionally carried out on the refuge. A recent study dealt with the feeding habits of snow geese.

Other Management - A major portion of the management efforts at DeSoto deals with the public use programs. However, monitoring habitats and activities such as shoreline protection to prevent erosion are also important. Management of reestablished native grasslands and introduced grasslands is an ongoing refuge objective. Activities to reestablish nesting habitat for terns and plover have already been mentioned. A 60-box wood duck nesting program is also maintained on the refuge and nesting boxes are being provided in an attempt to encourage blue bird nesting on the refuge.

II. VISITOR CHARACTERISTICS AND USE PROJECTIONS

The Users

The 1970 census lists the population of counties within an approximate 30 mile radius of the refuge as 613,721 (see Appendix A for a more detailed breakdown). The Omaha-Council Bluffs Standard Metropolitan Statistical Area makes up 540,000, or almost 88% of this figure. A 1973 Public Use Survey on the refuge indicated that 65% of the visitors were from Nebraska (42% from Omaha) while 30% were from Iowa. Only 5% were from other states.

For the years 1974, 1975, 1976 and 1977, total visits to the refuge have shown an increase, averaging about 372,000 visits annually (see Figure 1). These figures are based on car counter readings combined with data from a 1973 creel census which also surveyed other public use on the refuge.

Survey data from 1973 plus actual head counts for certain activities (swimming, environmental education, etc.) are used to compile monthly public use figures for the refuge. Information from these reports is summarized in Figures 2 and 3 for selected activities.

Relative popularity of different activities has remained fairly constant over the last four years (see Table 1). The top five activities in 1977 were: (1) wildlife observation, (2) fishing, (3) picnicking, (4) viewing interpretive exhibits, and (5) boating.

Figure 1. ANNUAL VISITS--DESOTO NATIONAL WILDLIFE REFUGE

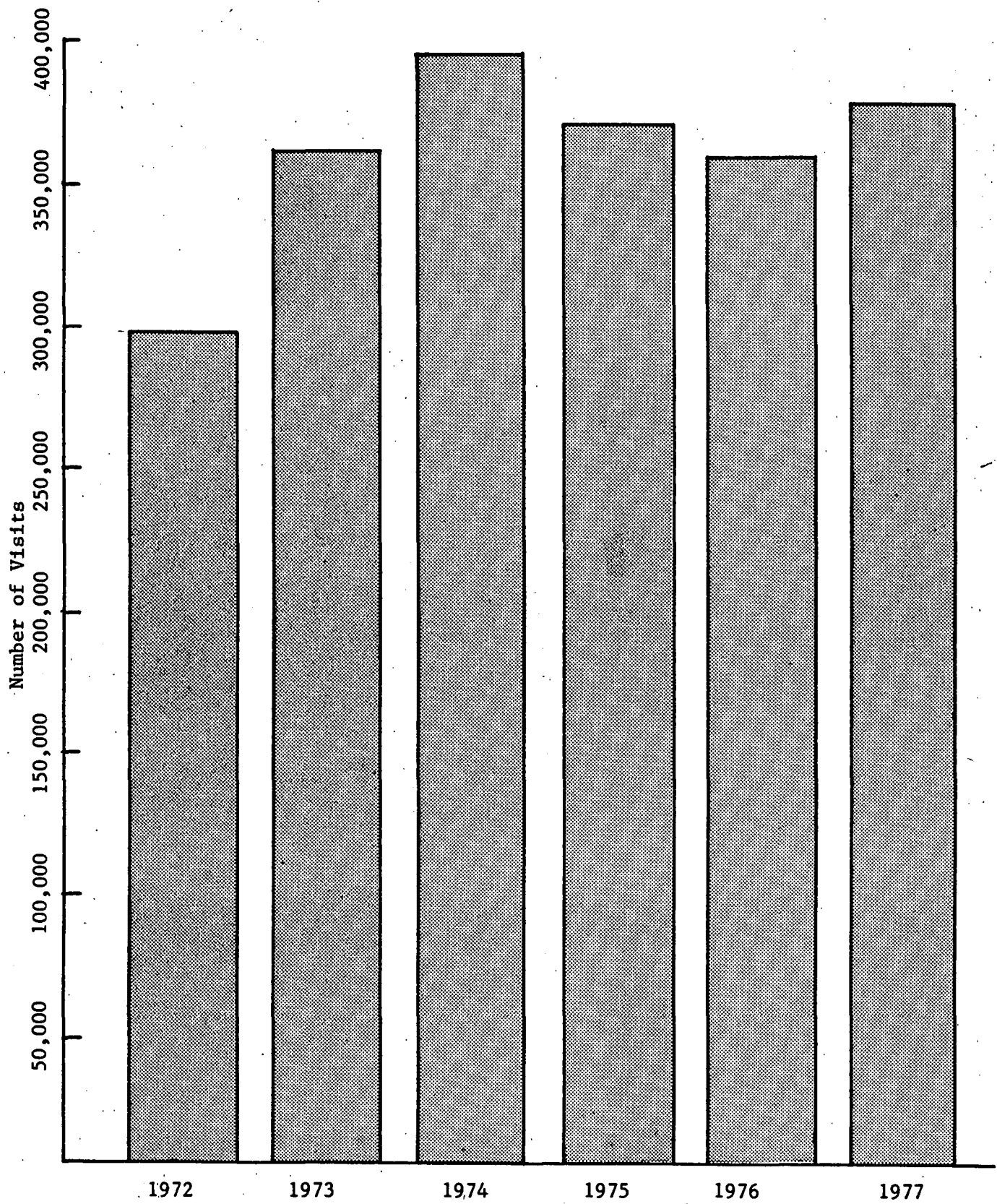


Figure 2. YEARLY VISITS--WILDLIFE ORIENTED ACTIVITIES

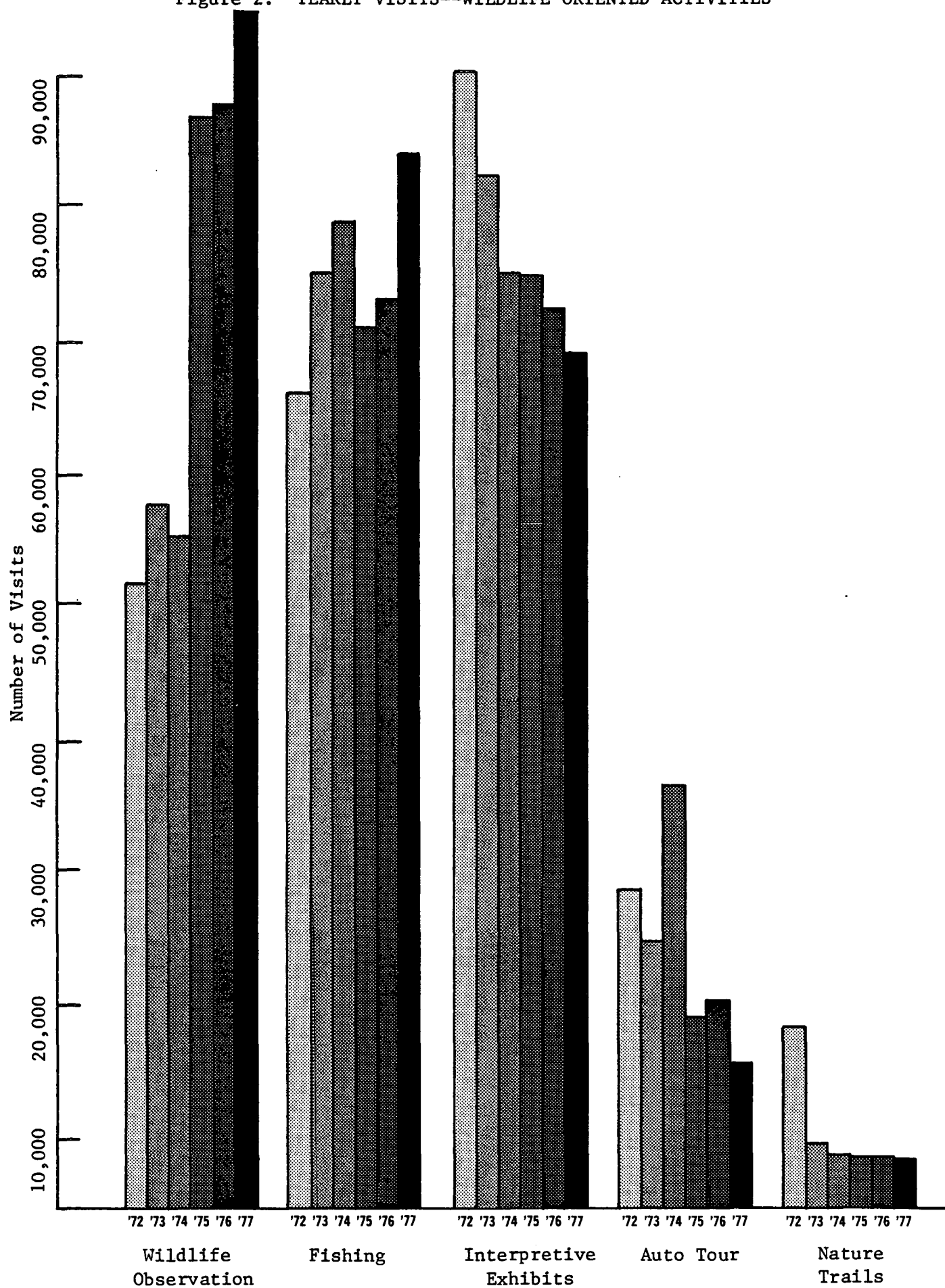


Figure 3. YEARLY VISITS--NON-WILDLIFE ORIENTED ACTIVITIES

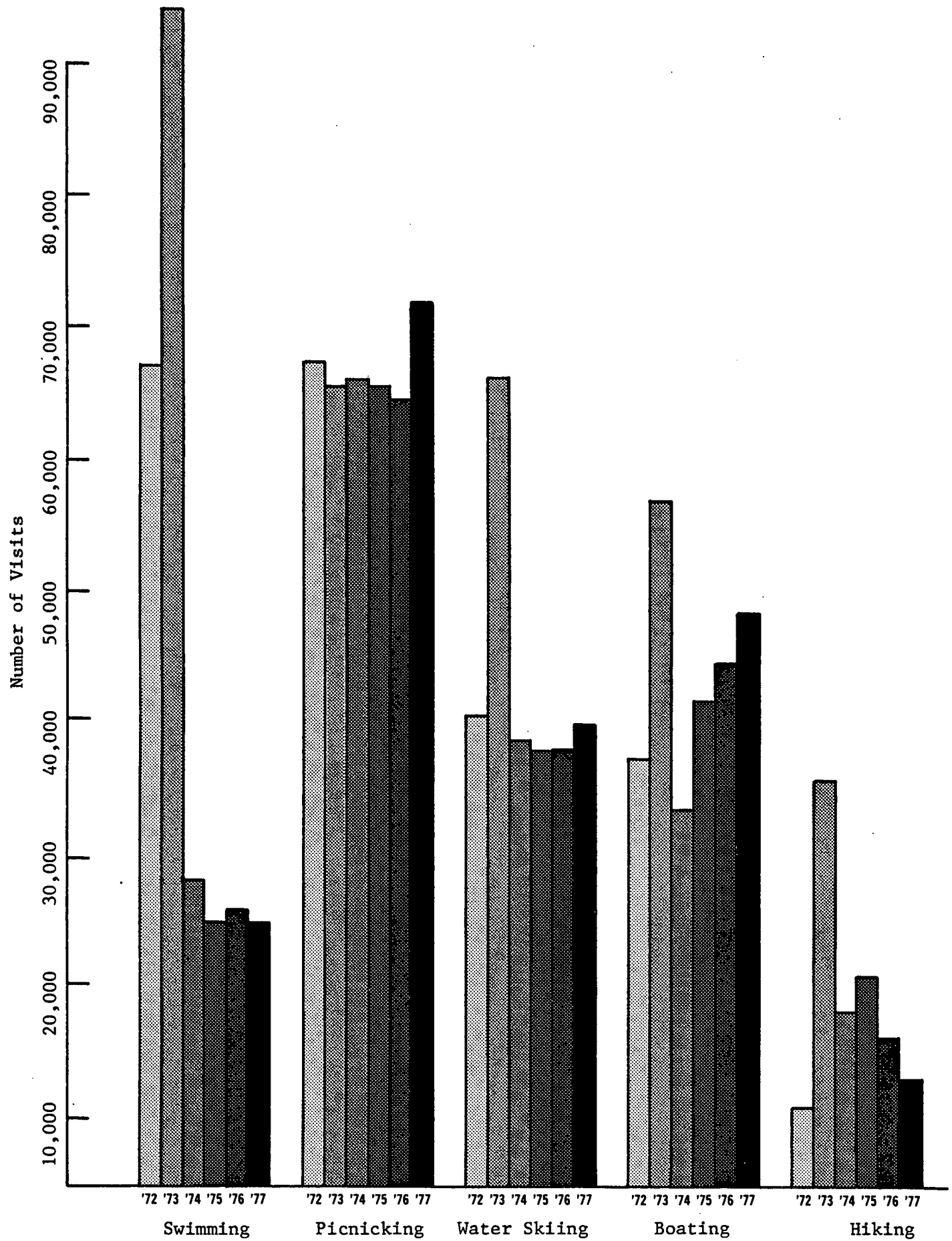


Table 1. Relative Popularity of Selected Activities

<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>
Fishing	Wildlife Observ.	Wildlife Observ.	Wildlife Observ.
Interp. Exhibits	Interp. Exhibits	Interp. Exhibits	Fishing
Picnicking	Fishing	Fishing	Picnicking
Wildlife Observ.	Picnicking	Picnicking	Interp. Exhibits
Bertrand	Bertrand	Boating	Boating
Skiing	Boating	Bertrand	Skiing
Auto Tours	Skiing	Skiing	Swimming
Boating	Swimming	Swimming	Bertrand
Swimming	Auto Tour	Auto Tour	Auto Tour
Hiking	Hiking	Hiking	Hiking
Nature Trails	Nature Trails	Nature Trails	Nature Trails

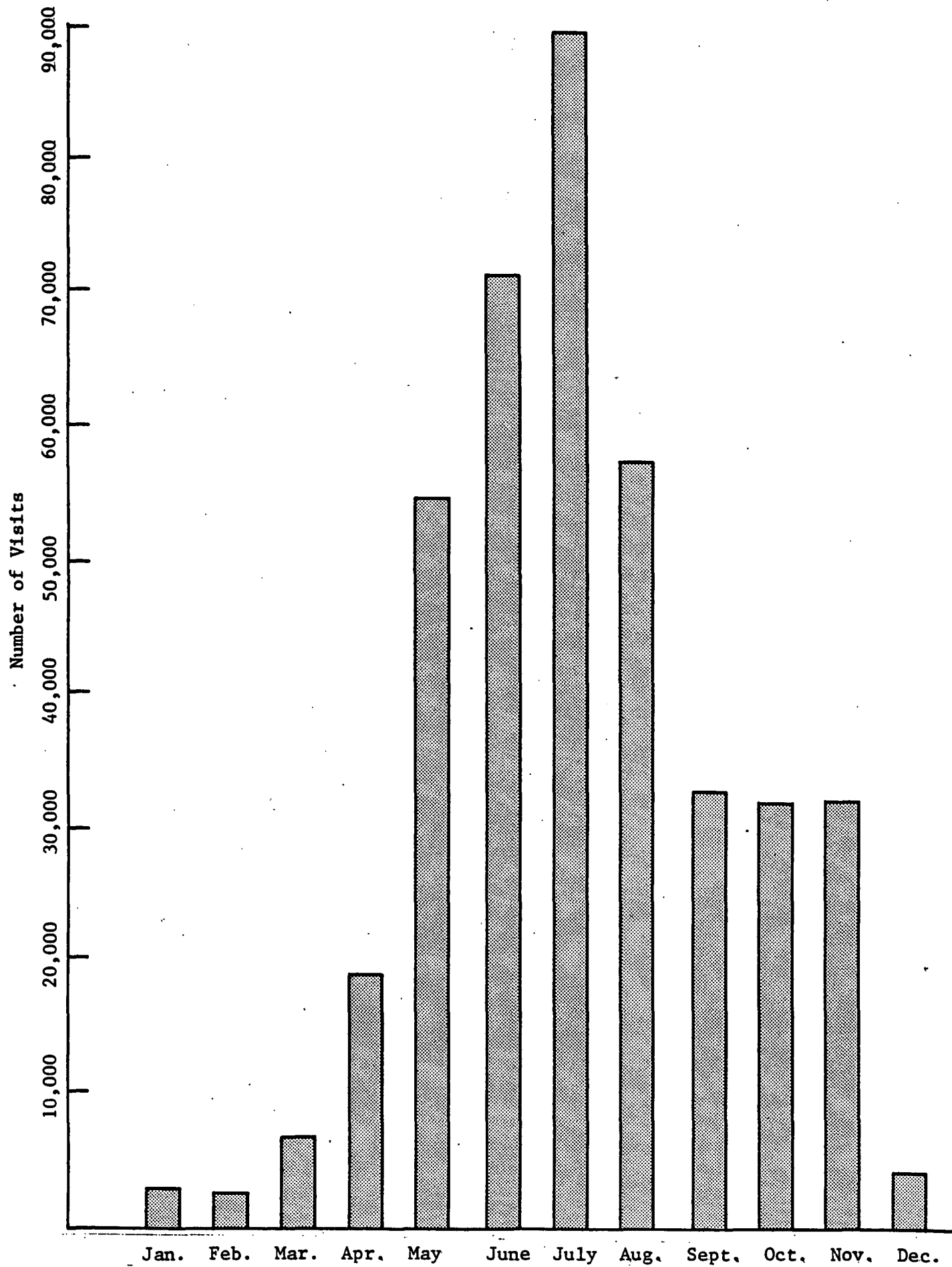
Visits to the refuge are heavily concentrated in the summer months (see Figure 4). Except for limited hunting, ice fishing and the fall and spring auto tours (three weeks in October and November and one week in March), the refuge is closed from September 30 to April 15.

Visitation Estimates

Projections of use for the refuge have been estimated in the Interpretive Plan for the new visitor center. A brief summary of the findings and conclusions is presented here.

Visitation Trends - It is highly likely that total visitation to the refuge will continue to rise. The area's population is increasing, with Omaha's population increasing faster than the national average. As more people turn from farming occupations, per capita income is also on the rise, and hence so is leisure time. These trends, combined with the fact that recreation areas are few in this region, indicate that DeSoto will continue to be an increasingly important source of recreation for many years to come.

Figure 4.. MONTHLY VISITS--COMPOSITE FOR 1974-1977



Linear regression analysis of past refuge visitation leads to the following projection:

1980 - 375,420 visits
1985 - 415,960 visits
1990 - 446,500 visits
2000 - 507,580 visits

This assumes a yearly increase of approximately 6,000 per year.

The above estimates are probably conservative. If a less conservative tack is taken, total visits to the refuge can be predicted for the year 2000 by using figures projected by the Outdoor Recreation Resources Review Commission (ORRRC) report. This would yield a low figure of 600,000 visits per year, and a high figure of 1,200,000 visits per year by the year 2000 - an average of 900,000.

The figure of 507,580 people per year by the year 2000 represents a reasonable bottom estimate for planning purposes. The top figure of 900,000 per year could be expected if present trends continue to accelerate.

A review of Figures 2, 3 and Table 1 demonstrates that the trends in visitation for various activities differ markedly. In the period 1974-1977 (years when public use figures at DeSoto were kept by the same person, using the same methods) boating use increased sharply while picnicking increased only slightly. Waterskiing and swimming remained approximately constant. For wildlife oriented activities, wildlife observation increased sharply and fishing was also on the rise. Viewing interpretive exhibits, walking nature trails and visiting the Bertrand museum all appear to be on the decline.

These figures correspond to impressions of staff members at DeSoto. However, it should be noted that the figures are based on information from the 1973 public use survey. Attempts have been made to modify this basic

information to reflect apparent trends. A thorough review of reporting techniques is needed, and a new survey is necessary as a basis for upgrading future public use figures, especially in light of the recent energy crunch.

Although the above figures are based on data of questionable reliability, the long-term trend toward higher use is evident. If this is the case, then it ceases to become a question of how many visitors the refuge will have in the year 2000 and becomes a question of how many visitors the refuge can reasonably support within its objectives.

It is not the purpose of this plan to make provisions for ever increasing use. Instead, realistic goals and objectives should be determined and attempts made to tailor public use to these levels (see Chapter IV of this report).

III. EXISTING VISITOR PROGRAMS AND ACTIVITIES

The following public use activities, facilities, programs and publications are provided on the refuge:

Wildlife Observation - Driving through the refuge to see waterfowl or deer is popular. Although waterfowl observation opportunities are limited to the spring and fall migratory periods, wildlife observation continues to be the refuge's most popular public use activity.

Fishing - Carp and other rough fish are the most commonly caught fish. Ice fishing during January and February for crappie, bass and bluegill has been popular in years past. All types of fishing use have declined during the past two years.

Picnicking - The refuge has several picnicking areas, and many people bring picnic lunches on refuge visits. Groups also use the picnic areas for family reunions, company picnics, etc.

Wayside and Office Exhibits - Wayside exhibits are provided at two observation towers where outdoor displays aid bird-finding and interpretation of habitat. Management and safety messages are included. The refuge office has a display of stuffed birds which are identified, a general exhibit on refuge programs and a portfolio of black and white photographs on the Bertrand excavation which visitors can look through. At the Bertrand site an overlook has recently been constructed which has a display interpreting the excavation and discovery of the Bertrand and the historic significance of the Missouri River steamboat era. A Nebraska State Historical Marker, located at the Bertrand site parking area, describes the Upper Missouri River trade, the sinking of the Bertrand and other river boats as well as the discovery of the Bertrand in 1968.

Waterskiing and Boating - The east arm of the lake is heavily used in summer months for skiing and power boating. Because waterskiing can be disruptive to fishermen and small boat users, the west arm of the lake is designated as a no-ski zone.

Swimming - The north beach is heavily used in summer months.

Viewing the Bertrand Exhibit - Artifacts are on display in a refurbished "store" and visitors can look through a window into the storage area of the small museum connected to the Bertrand Lab. Interpretive displays are also provided. An interpreter is on duty for tours, group orientations and other personal contacts.

Auto Tour - For three weeks in October and November, and during National Wildlife Week in the spring, self-guided auto tours (with leaflets) are provided.

Nature Trails - One self-guided trail has been open for several years. With the addition of an adequate parking lot and interpretive signs, a second trail will be opened in 1980.

Hiking - Except for the two nature trails, the refuge currently has no hiking trails. Hiking along refuge roads or cross-country in several areas is permitted.

Environmental Education - Local schools are encouraged to use the refuge as an Environmental Study Area. Both Blair, Nebraska and Missouri Valley, Iowa school groups use the refuge during the spring for environmental education classes.

Hunting - Deer hunting with bow and arrow is permitted on portions of the refuge in cooperation with the States of Iowa and Nebraska. A black powder hunt for deer was initiated on the "island" (Nebraska) portion of the refuge in 1976 and is expected to continue.

A small waterfowl hunting program is conducted from blinds on the north end of the refuge within the State of Iowa. Plans are underway for habitat development on the Nebraska side of the refuge to permit waterfowl hunting there by the fall of 1980.

No other hunting is allowed on the refuge.

Other Programs - Few personal programs are given on the refuge. If requested, groups visiting the refuge are given a short orientation talk. Wildlife movies are shown Saturday evenings throughout the summer at the Wilson Island State Recreation Area amphitheater. Slide programs are occasionally given at local schools or for local civic groups. No regularly scheduled nature walks are available. Off-refuge programs and conducted tours are generally considered less cost efficient than self-guiding activities.

Considerable effort is given to mass media contacts, through televised presentations and formal news releases. DeSoto receives many requests each year from amateur and professional photographers to use the refuge to photograph wildlife. The refuge provides a photo blind for use by photographers on a reservation basis.

IV. GOALS AND OBJECTIVES

The goals and objectives for the Fish & Wildlife Service interpretation, education and recreation programs have been spelled out in varying degrees of detail in Wildlife Refuge Handbook IV, and the draft of the Interpretation and Recreation Program Management Document. The "Interpretive Plan for DeSoto National Wildlife Refuge Visitor Center" also explores the subject of interpretive objectives for the new center. The following sections define goals and objectives specific to the interpretation, environmental education and recreation programs at DeSoto Refuge.

Goals

The overall goals of interpretation and environmental education at DeSoto National Wildlife Refuge are:

1. To promote an environmental ethic in the visiting public.
2. To heighten an awareness and understanding of man's role in the natural world.
3. To promote a sense of stewardship for the land and wildlife resources.

The goal of the recreation program is to provide opportunities for recreational activities which are in keeping with the primary purpose of the refuge, are not detrimental to the resource, and are not in conflict with higher priority activities.

Interpretive Objectives

The following objectives are set forth for the interpretive program at DeSoto National Wildlife Refuge:

1. To demonstrate farming methods that benefit wildlife in the area surrounding the refuge and throughout the Midlands.

Extension work will be accomplished in cooperation with FFA and 4-H groups including the use of these groups to develop farm plans and wildlife plots for the refuge. Roadside exhibits on farming and wildlife will be used, and an active program of news releases and programs for farming groups pursued. The refuge will take the lead by using and demonstrating innovative, modern farming that is conducive to wildlife and has a minimal negative impact on the environment. Biological farming practices have been initiated as part of the refuge's farming program.

2. To promote public appreciation of aesthetic and philosophical values related to the wildlife and wildlands of DeSoto.

The refuge will serve to demonstrate the compatibility of aesthetic considerations and sound wildlife management policies. Efforts will be made to emphasize a more natural appearance in the farm program and screen or clean up unattractive areas. Exhibits in the visitor center will deal with some of the philosophical and practical values associated with our wildlife heritage.

3. To provide factual information which will heighten environmental awareness among visitors, encouraging them to become involved in the issues affecting their environment.

The refuge will provide information to increase public understanding of past, present, and future relationships among man, wildlife, and the environment. Particular attention will be directed at principles and practices relating to the life supporting capabilities of lands and waters on the refuge and elsewhere. Wayside exhibits, visitor center displays, news releases, interpretive programs, and environmental education sessions will be used in fulfilling this objective.

4. To provide information and promote understanding of the cultural, historical and natural resources of the refuge with particular emphasis on the importance of the Missouri River.

Exhibits in the visitor center and at the Bertrand excavation site will be used to achieve this objective.

5. To promote an understanding of DeSoto's environment and of management objectives including practices necessary to maintain that environment and promotion of an understanding of specific management techniques used to manipulate wildlife populations.

Wayside exhibits on the farming and grassland program will be used; as will guided tours, work with the media and a major effort to promote environmental education programs. Management objectives will be interpreted as part of the Refuge Today Gallery in the visitor center.

6. To promote understanding of the cultural, geological and ecological history of the Missouri River area.

Exhibits in the visitor center and at the Bertrand excavation site plus other methods outlined in objective 5 will be used.

7. To promote understanding of the mission of the U.S. Fish and Wildlife Service and of the National Wildlife Refuge System.

Development of this understanding will be an integral part of all interpretive and environmental education planning efforts on the refuge.

Exhibits in the visitor center, talks to local groups, work with the media and leaflets provided by Service sources will be used to further this objective.

8. To increase public involvement in the concepts of planning and management at DeSoto.

Public meetings, talks to local groups, and news releases will be used. Advisory committees will be established to keep the refuge staff in close contact with the community and its needs.

9. To provide information and promote understanding of the needs of endangered species.

Talks and programs on bald eagles, exhibits in the visitor center and news releases will be used.

Environmental Education Objectives

The objectives listed for the interpretive program also apply here. In addition, the following are proposed:

1. To involve refuge visitors in "learning by experience" activities which develop an understanding of the environment.

The environmental education program will provide activities which develop an understanding of concepts and relationships by pursuing experiments and explorations in the natural environment. The "We Can Help" package and materials developed by the refuge staff will be used to help plan specific environmental education activities.

2. To develop learning experiences which stress the interrelationship and interdependence of man and the environment.

Materials and activities will be directed toward developing an awareness of the essential interdependence of all forms of life. Environmental education learning experiences will provide a clear understanding of the importance of wildlife management practices to the everyday lives of participants.

Recreation Objectives

The following are the refuge objectives for the recreation program:

1. To provide opportunities for year-round wildlife observation and wild-lands appreciation by such diverse means as hiking, bicycling, cross-country skiing, snowshoeing, canoeing, and sailing.

The open season for the refuge will be extended and regulations changed to permit such activities as cross-country skiing in certain areas. The lake will be zoned to provide safe, quiet areas for canoeing or sailing, and hiking trails will be developed. Wildlife photography and birding will be encouraged with improvements of trails, photo blinds and observation towers.

2. To provide opportunities for high quality fishing.

A fisheries management plan for renovation of the DeSoto Lake is being developed and will be implemented. Areas of the lake will be zoned so that disturbance of fishermen by other recreationists is minimized.

3. To provide opportunities for non-wildlife oriented activities such as power boating, waterskiing, and swimming, in accordance with Service policy, commitments made at the time the refuge was established, Congressional directives, and the ability of the resource to accommodate the use.

Existing facilities will not be expanded, but will be maintained and improved to balance programming and optimize user safety. In some cases the location of facilities will be moved to reduce conflicts between activities or programs.

V. ACTION PLAN

Specific implementation strategies are detailed under each activity in Section VI. The following are general plans established by the Planning Team:

1. A public use survey will be conducted as soon as possible. A comprehensive survey will be designed to accurately sample public use on DeSoto Refuge. This survey is needed to improve public use reporting and to give a firmer picture of long-range trends. The study will be designed so that a picture of total use of the refuge throughout the year is obtained. The study will use the categories presently in use for output reporting to predict trends.
2. The sign system for the refuge will be totally reworked. The recently completed sign plan reveals that a wide variety of styles, shapes and colors are in use on the refuge. New signs will be standard white letters on brown background. Existing redwood signs have been rehabilitated. All new or replacement signs will use scotchlite sheeting. Standard signs from the Manual on Uniform Traffic Control Devices (MUTCD) and international recreational symbols will be used where possible.

Discussions will be initiated with the Iowa Department of Transportation to achieve better signing along Interstate 29 and U.S. Rt. 30. In addition, the sign plan will be updated before the visitor center opens.

3. The refuge will be made more aesthetically pleasing and natural in appearance. The extensive farm fields adjacent to refuge roads and storage areas visible from the road detract from the "natural world" theme that many people expect of a wildlife refuge. More extensive plantings of native grasses and wildlife shrubs will be used to further identify the area as a national wildlife refuge. The equipment storage area (boneyard) will be better screened or moved.

To encourage a more natural appearance and promote increased nesting of song birds, such as dickcissels and grasshopper sparrows, the possibility of planting roadsides to prairie grass will be explored. Prairie grasses furnish excellent habitat for small birds and mammals. A reduced mowing schedule will be initiated along roadsides planted with native grasses, other grasses and legumes.

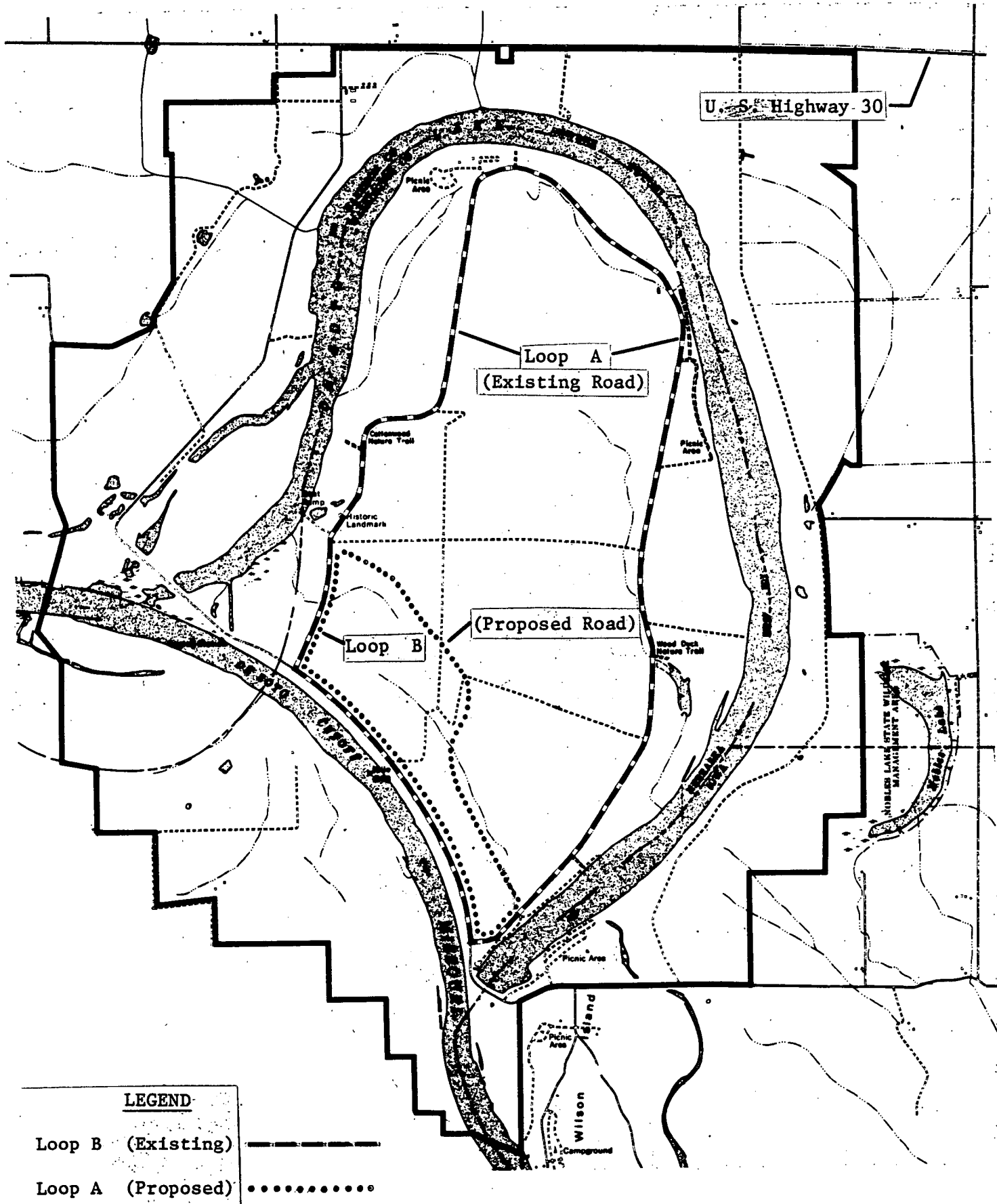
4. The interior loop of the refuge will be designated as the primary wildlife zone of the area. The interior loop of the refuge is ideal for wildlife oriented activities. Use of the area will be carefully controlled and disturbance to wildlife will be minimized. Additional activities or unnecessary traffic in the interior will be avoided. Non-wildlife oriented activities will be scheduled elsewhere.

The refuge road system will be redesigned as indicated on the following map (Figure 5). By connecting the roads to form two closed loops rather than the present horseshoe, better control of traffic will be achieved and wildlife viewing will be enhanced, and impact on endangered species (eagles) will be minimized. Relocation of part of the loop is essential for phasing in a mass transportation system, if that option becomes desirable. The existing interior road (loop B) will normally be open for public use during the summer recreational season.

Addition of the new connecting road (loop A) will provide the option for limiting tour route traffic in the interior portion of the refuge. If future use levels reach the point that little wildlife is visible because of disturbance, or if crowding begins to detract from a quality experience, a mass transit system and limited vehicular access options will be explored.

5. The possibility of extending the season and hours for wildlife observation on the refuge will be examined. With the opening of the visitor center, many additional visitors will be coming to the refuge. These people will be interested mainly in wildlife oriented activities. It is desirable to allow this group access to the refuge during winter months for wildlife observation.

Figure 5. Proposed Interior Road Addition



It is proposed that the refuge remain open from September 30th through April 15th, for wildlife observation. All activities except wildlife observation, ice fishing, controlled hunting in designated areas, cross-country skiing and snow-shoeing on designated trails would be prohibited. Personnel on the refuge will design a system for monitoring the effect of the increased use on wildlife. Attention will be directed toward observing the impact of public use on wintering bald eagles. Before the visitor center opens, a review of the facts will be undertaken and use levels will be tailored to minimize disturbance and fit anticipated staffing levels.

6. A study will be initiated to evaluate the effect of high speed boating on the ecology of DeSoto Lake. Bank erosion has been a continuing problem at DeSoto, resulting in considerable expense in erosion control with rip-rap. The question of other effects of boating on the lake has also been raised. A study will be initiated to document the actual effect of boating on the lake. At the end of the study period, a carrying capacity will be established for boats based on lake ecology, safety and public input.
7. Additional programming will be undertaken at DeSoto. At the present time, approximately 50% of refuge visitors are involved in non-wildlife oriented activities. Nature walks, "sneak tours", and other personal contact activities will be scheduled in recreation areas; summer employees will be used to reach these refuge users. Off-season tours and talks to civic groups will also be aimed at promoting the wildlife values of the refuge. Cooperative programs with Wilson Island State Recreation Area will be explored since their campground is a major factor in the refuge's public use program.
8. The west arm of the lake will be closed to motor boats. Many people have requested that a portion of the lake be set aside for non-motorized fishing, canoeing and sailing. Closing the shallow west arm of the lake to power boating (approximately 250 acres from the north beach south and west) will accomplish this and provide an area for quiet

wildlife observation. The observation gallery in the visitor center will overlook this stretch of the lake. Wildlife observation opportunities from the Refuge Today Gallery will be severely curtailed if power boating is allowed to continue on this arm of the lake.

9. The swimming beach will be moved from its present location. Approximately 25,000 people per year come to the interior of the refuge to swim. During peak times, this may be as many as 170 cars per hour. Heavy traffic moves wildlife into denser cover where it cannot readily be observed. This is in conflict with the philosophy of establishing the refuge's interior as a wildlife observation zone as proposed in item 4 above.

The current location of the beach is a major inconvenience to refuge visitors, being some 4.5 miles from facilities at the south end. A location near the south entrance would reduce driving time and be more convenient for campers at Wilson Island. An estimated 1,700 gallons of gasoline will be conserved annually by relocation to the south end.

The swimming area will be consolidated with recreation facilities at the south end. The ideal solution would be to construct a swimming pool at Wilson Island. Such a facility would eliminate safety problems such as boating/swimmer conflicts, provide ideal service for campers at Wilson Island and eliminate a non-conforming activity on the refuge. The Fish and Wildlife Service is exploring this possibility with the State of Iowa. Young Adult Conservation Corps (YACC) or Youth Conservation Corps (YCC) may help with staffing the pool.

If it proves infeasible for Wilson Island to construct a swimming pool, the area just north of the south boat ramps may provide a suitable location for the beach (see Appendix B). Development of a beach and swimming area near the boat ramps and concession area would require a careful evaluation of road access into and out of this heavily used area.

10. Non-wildlife oriented activities will be consolidated at the south recreation area. Consolidation of boating, picnicking and swimming at the south end will help to eliminate disturbance to wildlife in the interior of the refuge and provide better service for campers from Wilson Island and refuge visitors from Omaha via Interstate 29.

The possibility of paving the road from Loveland to the south entrance will be explored with the state of Iowa and Pottawatomie county. As explained in the attached memos (Appendix C), paving this stretch of road will result in less high speed "commuter" traffic through the refuge and make travel to the Wilson Island campground and refuge's boat launches much more convenient. An estimated 6,500 gallons of gas could be saved annually using this shorter route.

11. The farm program will be reviewed with the aim of making the refuge a model of good farming/wildlife practices. The economic necessity of certain practices such as fall plowing will be investigated to see if inducements can be found to encourage practices more beneficial to wildlife. Row cropping close to roads will be reduced to create a more natural feeling. Refuge farm cooperators are being encouraged to adopt biological farming practices in which no inorganic nitrogen amendments or insecticides are used and the use of herbicides is minimized. The success of biological farming will be evaluated with the hope that the refuge farming program will serve as a model for midwestern farmers.

Consideration will be given to involving 4-H and FFA groups in developing wildlife management plans for portions of the refuge. The objective will be to provide opportunities for farm youngsters to learn more about wildlife and the employment of farming practices which have minimal negative impact on wildlife. Attention will also be paid to environmental awareness and the impact of farm practices on the environment. These groups will also be involved in planning and in follow-up surveys to determine wildlife response to habitat manipulation.

12. The area on the west side of the refuge will be set aside as a limited public use zone. In conjunction with activities associated with the new visitor center and subject to the study proposed in item 4 above, activities such as hiking, cross-country skiing and bird watching will be permitted in the area enclosed by the west boundary, the river levee, the west shore of the lake and south of the visitor center. These activities will be designed to have a minimum negative impact on wildlife and the environment.
13. Staffing for the interpretation and recreation program will be increased. Additional staff positions will be needed to conduct interpretive programs. Assuming that the additional programs envisioned in this plan are implemented, one full-time and one part-time position should be added to the interpretive staff. One of these positions will be the Interpretive Specialist Trainee working as part of the visitor center staff. The seasonal Interpretive Aid will be employed during the refuge public use season working with groups that visit the refuge, leading nature walks and conducting campfire programs.

Under this plan, the interpretive and recreation program staffing for the refuge would include:

The Outdoor Recreation Planner, responsible for supervision of all I&R programs, facilities and personnel. This individual also has overall responsibility for administration, operations and maintenance of the visitor center.

The Collection Manager, to supervise curatorial, historical and educational activities and programs related to the Bertrand collection.

An Interpretive Specialist Trainee, to serve as the on-site interpretive program specialist at the DeSoto Visitor Center.

An Interpretive Aid, to conduct outdoor interpretive programs during the public use season.

Two Park Aids, with duties as receptionists at the visitor center.

Three Recreation Aids, lifeguards for the beach.

The Refuge Patrolman, for law enforcement duties during the summer recreation season, patrol during the waterfowl and deer hunting seasons and duties related to visitor center security.

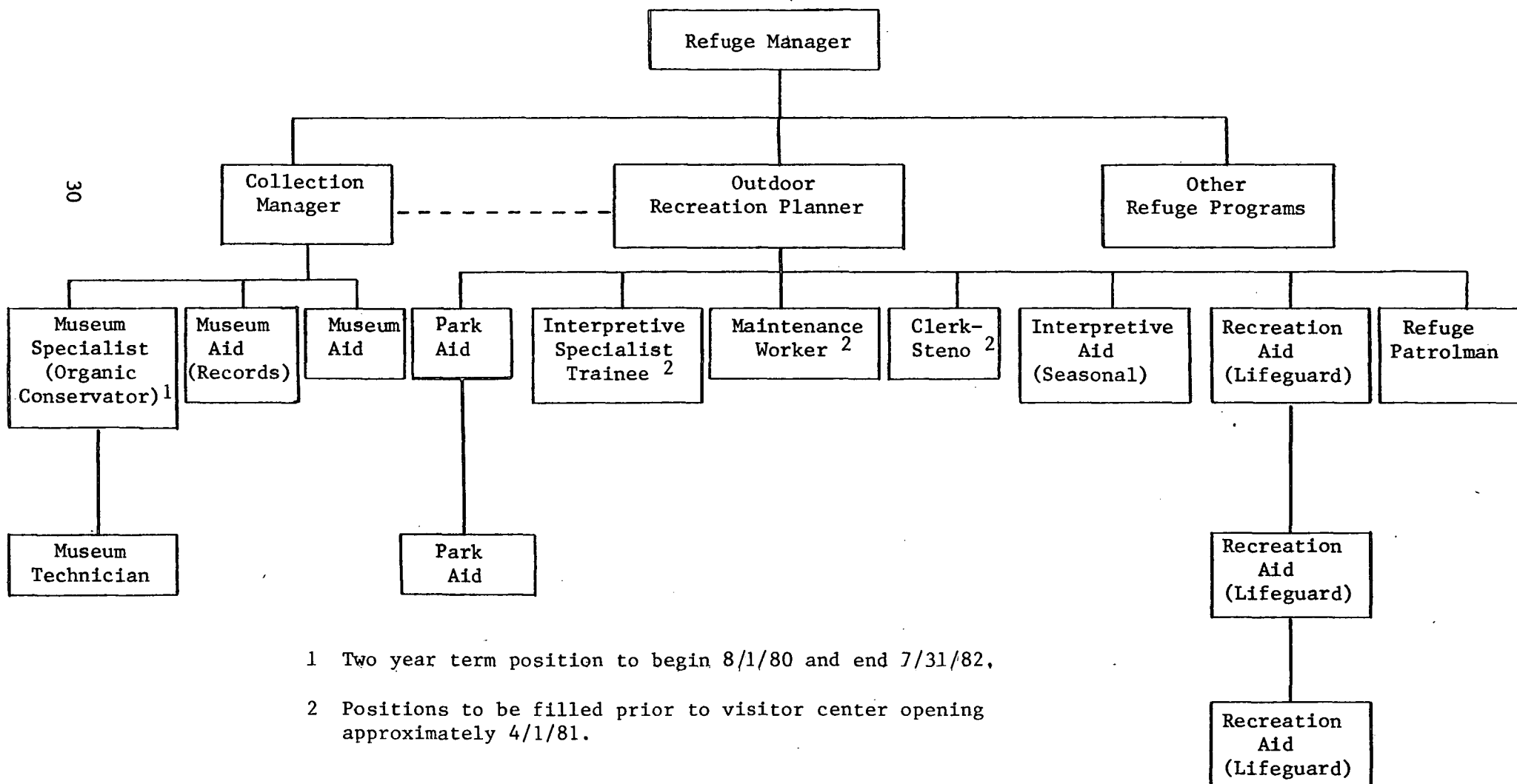
Support staffing assigned specifically to the visitor center will include a Maintenance person, Clerk-Stenographer and Museum Aid. A Museum Aid (Records) would be assigned the specific duty of maintaining Bertrand records and files. The Collection Manager will supervise on-going artifact conservation responsibilities with the assistance of an Organic Conservator and Museum Technician. The proposed public use and visitor center staff organizational chart is outlined in Figure 6.

14. The interpretive and recreational trail system on the refuge will be expanded. At the present time only two nature trails are available for hikers. This system will be greatly expanded to include a 7.5 mile hiking trail, a 2.5 mile recreation trail, and four nature trails (see Figure 7). The trail system will consist of an interconnected series of closed loop trails, for hiker accessibility and convenience.

The recreation trail will be open throughout the year and winter use for cross-country skiing and snowshoeing will be encouraged. A major hiking trail will parallel DeSoto Lake on the "island" portion of the refuge. This trail will be maintained as a primitive facility with no interpretation other than directional signs. These two loop trails will be routed, to the extent possible, through timbered areas. Road and farm field crossings will be kept to an absolute minimum.

The existing interpretive trail system will be augmented by the addition of loop trails near the visitor center and Bertrand excavation site. These two trails will be interpreted to give the visitor a better conceptual understanding of the cultural and natural history of the Missouri River Valley.

Figure 6. Proposed Public Use and Visitor Center Staff Organizational Chart
DeSoto National Wildlife Refuge



A detailed map of the Nubia Lake State Wildlife Management Area. The map shows the lake's shoreline with various trails marked by different line styles: a dashed line for the Interpretive Trail, a dotted line for the Contommed Nature Trail, and a solid line for the Wood Duck Nature Trail. Several picnic areas are indicated with small star-like symbols and labels. A historic landmark is marked near the center-left. The map also shows the Mississippi River to the west, the Iowa-Missouri border to the south, and the U.S. Highway running along the eastern shore. A legend at the bottom left defines the line styles for the trails. Other labels include 'Wilson Island', 'Campground', 'Picnic Area', 'Historic Landmark', 'Contommed Nature Trail', 'Wood Duck Nature Trail', 'Missouri', 'IOWA', 'DE SOTO CUTOFF', 'Camping Station', and 'Nubia Lake State Wildlife Management Area'.

U. S. Highway

Interpretive Trail

LEGEND

Contommed Nature Trail

Wood Duck Nature Trail

Missouri

IOWA

DE SOTO CUTOFF

Camping Station

Historic Landmark

Picnic Area

Picnic Area

Picnic Area

Picnic Area

Wilson Island

Campground

Nubia Lake State Wildlife Management Area

Interpretive Trail _ _ _ _ _
Recreational Trail _ . _ . _ . _
Primitive Trail

VI. OUTPUT LEVEL OBJECTIVES AND IMPLEMENTATION STRATEGIES

The Fish and Wildlife Service's Program Management System divides public use on refuges into discreet activities such as walking nature trails or fishing. The number of visits and activity hours for each category of public use are used as objectives in the budgeting process and in setting refuge priorities. Implicit in this system is the assumption that participation levels for these activities can be linked to the accomplishment of refuge objectives. If the objective is to impart factual knowledge about woodland ecology, then it is assumed that the more people who walk Cottonwood nature trail, the better. In actual practice, this "more is better" philosophy must be judiciously tailored to money and manpower constraints as well as to the resource's ability to sustain use without damage. Conflicts between activities must also be resolved to yield the best "mix" for meeting objectives.

An important part of the Fish and Wildlife Service's management system is the assumption of a certain standard of quality for each activity. Therefore, a diverse and plentiful fishery is necessary to meet the objective of providing enjoyable opportunities for fishing; and a nature trail must be well designed and skillfully interpreted before it can be an effective tool in meeting refuge interpretive objectives.

The following section, organized along program lines, contains output level objectives for public use activities at DeSoto. The recommended output levels will not cause undue damage to the resource, can be supported at current or anticipated refuge funding levels and do not represent conflicts with high priority objectives. The following output levels contribute directly to achieving the refuge objectives listed in Part IV and are closely allied with the action plan strategies outlined in the previous section.

Interpretation

Trails - Present outputs are 1,700 visits and the same number of activity hours spent walking nature trails. Previous objectives called for 134,000 visits and activity hours. A more realistic level of 40,000 visits and activity hours will be implemented in this plan.

Most use is presently on the Cottonwood nature trail. The present level of use does not appear to be damaging to the trail. Increased outputs will come from opening new nature trails near the visitor center and Bertrand site overlook as well as improvements to the Wood Duck trail to make it more accessible.

Specific plans:

1. Cottonwood Trail - The Cottonwood trail has been reworked to form a closed, one-way loop. The booklet and trail marker system will be revised so that a coherent picture of Missouri River bottom ecology is presented. An observation blind will be included where the trail adjoins the river. A close look will be taken at potential safety hazards associated with the steep river bank in several places.
2. Wood Duck Trail - The Wood Duck trail has been rerouted and elevated sections added so that standing water will not be a problem. A booklet keyed to numbered posts will be developed around the wood duck pond/refuge management theme, including the nest box program. A parking lot that can accommodate 12 cars and two buses will be constructed.
3. Lake Side Trail - This trail near the new visitor center will use oxbow lake ecology as its theme. A booklet/numbered post system will be used. The trail will follow the lakeshore south of the visitor center and loop back to a point near the entrance.
4. Bertrand Site Trail - A new loop interpretive trail is planned to connect the Bertrand excavation site with DeSoto Lake. This trail

will be interpreted to show how the Missouri River channel has shifted on several occasions since 1865 to leave the Bertrand landlocked in its present location.

Nature trails will be a primary interpretive tool used to meet objective #6 and will also be important in accomplishing numbers 3, 5 and 7.

Tour Routes - Present outputs are 13,000 visits and 17,000 activity hours. Recommended levels are 60,000 visits and 78,000 activity hours. Increased levels are expected to result from extending the seasons which the refuge is open, and renovation of the tour route as outlined below.

Specific plans:

1. The booklet and post system will be replaced with a system of permanent wayside exhibits with adequate wayside pull-offs. These exhibits will be available to inform the public throughout the year rather than the limited time the tour is now used.
2. The following wayside exhibits are planned as a minimum:
 - a. As part of the Rt. 30 observation area, a wayside will be constructed that deals with waterfowl, eagles and a general introduction to the refuge.
 - b. The new observation area planned to replace the tower at headquarters will have an exhibit on wildlife management and a viewing area north of the visitor center.
 - c. The wayside at the River Observation Point will be replaced with one dealing with the historic Missouri River and its ecology.
 - d. The wayside at the Bertrand site has been renovated and will have exhibits interpreting the sinking, discovery and excavation of the steamboat.

- e. A wayside on prairie restoration and native grasses will be designed in the area of the grass plots (Prairie Lane).
- f. A wayside which stresses the relationship of farm management to wildlife will be erected on the east arm of the loop road just south of the north picnic area.

The tour route and wayside exhibits will be major tools for accomplishing objectives 1, 2 and 5. They will also contribute directly to achieving objectives 6 and 7.

Centers - The new visitor center is expected to produce 135,000 visits and 135,000 activity hours of interpretation. Interpretive design and program plans for the center are summarized in the "Interpretive Plan, DeSoto NWR Visitor Center" and "DeSoto Visitor Center: A Proposal". The center will serve as the focal point for interpretive activities on the refuge. Much of the programming will start from there (auto tours, nature walks, etc.) and the exhibits will communicate the overall message of the interpretive program. Integrating the visitor center complex with wildlife observation areas, hiking trails, nature trails and the auto tour route is extremely important to the total refuge interpretive program.

The visitor center will be important to accomplishing almost all the objectives, listed in Section IV; but interpretive media in the center will be particularly directed at objectives 3, 4, 6 and 7.

Exhibits and Demonstrations - Present outputs are 77,000 visits and 23,700 activity hours. Objective levels are 225,000 visits and 75,000 activity hours. Increases are expected to be achieved by using the proposed seasonal interpreter for on-site demonstrations, and by phasing in a series of wayside exhibits as indicated under tour routes.

Other On-Refuge Programs - Present outputs are 900 visits and 1,300 activity hours. Objective levels are 5,000 visits and 5,000 activity hours. These

increases are expected to be achieved by using the proposed seasonal interpreter in a regularly scheduled series of summer programs.

Personal contact with a knowledgeable interpreter is very effective in terms of imparting in-depth concepts and information. A personal contact program will reach more non-wildlife recreationists by taking the program to them. It represents an opportunity to involve this group in the philosophy and purpose of the refuge.

Specific plans:

1. A cooperative program will be initiated with Wilson Island State Recreation Area to hold joint weekend and mid-week campfire programs at the Wilson Island amphitheater in their campground. Most of the present visitors to the refuge campfire programs are campers at Wilson Island, and a location in the campground would be more convenient for them.
2. The campfire programs will not be confined solely to showing wildlife films. Slide talks by the refuge interpretive staff, local photographers, Audubon members, etc., will also be arranged.
3. "Impromptu" sneak tours will originate from the main picnic areas on heavy use weekends. These guided auto tours or nature walks will be brief and designed to appeal to the casual visitor who comes to picnic or boat.

Refuge regulations and safety elements will be skillfully worked into presentations.

4. Consideration will be given to the use of a Young Adult Conservation Corps (YACC) appointment for the second interpreter. This person must have educational background or considerable experience in interpretation. With the current oversupply of students graduating from recreation curricula, this is not an unrealistic possibility.

5. Additional possibilities for programs that will be explored are nature art shows, programs on National Hunting and Fishing Day, guided nature walks, wildlife photography classes, orienteering, fishing clinics, wild food cooking demonstrations, bird walks and study sessions, nest surveys, deer surveys, fishing tournaments, wildlife demonstrations and practices, hunter safety courses, waterfowl demonstrations and practices, hunter safety courses, waterfowl identification classes, etc.

An active schedule of public contact programs can be expected to contribute to specific management objectives such as reduction in littering, fewer violations, and better visitor safety. In addition, programming should be used to meet interpretive objectives 2, 3, 5, 6, 7, 8 and 9.

Environmental Education - Present use levels for environmental education are 768 visits and 4,141 activity hours. Objective levels are 2,000 visits and 8,000 activity hours.

Many schools in the refuge's service area conduct field trips to the refuge, but under current Service definitions, these groups are included under interpretation rather than environmental education. Increases in use to meet proposed objectives can be achieved by working with these schools to reorganize their environmental education programs into educational objectives with specific goals. The additional interpretive specialist proposed in the staffing pattern would have major responsibilities in promoting environmental education programs.

Specific plans:

1. A main thrust of the program will be aimed at teachers rather than students, and will use the resources of DeSoto to demonstrate the many activities and opportunities that are possible in a well-rounded program.
2. Several "key" school systems will be identified (Blair and Missouri Valley, in particular) and model programs initiated if teachers and administrators are receptive.

3. The refuge's environmental education program will encourage hands-on and learning-by-doing activities which promote environmental awareness. Concepts will be stressed rather than facts.
4. Environmental study areas will be established on the refuge at the Wood Duck trail and Bullhead pond.
5. A technical assistance program will be initiated to involve groups other than schools (i.e. scouting programs, garden clubs, senior citizen groups, etc.) in environmental education activities.

Wildlife Oriented Recreation

Goose Hunting - Current outputs are 580 visits and 2,364 activity hours. Objective levels are 1,000 visits and 4,200 activity hours. The increase is expected to result from recent habitat development on the west (Nebraska) side of the refuge and the reestablishment of controlled hunting on this area.

Specific plans:

1. "Skybusting" has been a problem in refuge hunts with an average of 13 shots fired per bird bagged. A hunter education program will be initiated to improve this aspect of the hunt.
2. The viewing tower which overlooks the Iowa waterfowl hunting area on Rt. 30 will be moved. The present location poses the unnecessary threat of a serious conflict between bird watchers and Iowa waterfowl hunters.

Deer Hunting - Present outputs are 1,900 visits and 7,000 activity hours. Objective levels are 2,800 visits and 10,000 activity hours. Slightly increased use levels are expected as the number of people living in this area increases. At the present time, areas of the refuge in both Iowa and Nebraska open to archery hunting are underutilized. These areas can sustain greater hunting pressure with little or no impact on the quality of the hunting experience.

Specific plans:

1. A study of the deer herd will be made to document harvestable surpluses. Based on the observation of the biologists involved, present take levels appear to be sound but firmer documentation is needed because groups continue to closely question hunting programs.
2. A method is being developed to better document archery deer kill and hunting activity hours.

Fishing - Current outputs are 70,000 visits and 220,000 activity hours. Objective levels are 150,000 visits and 450,000 activity hours.

Until recent fish kills lowered use levels, fishing visits to the refuge continued to climb despite a decline in number of game fish caught. Carp and other rough fish currently make up a major part of the catch.

The objective use levels would be implemented if a sport fishery were to be reestablished in DeSoto Lake.

Specific recommendations:

1. Work will be done with the assistance of Kansas City Area Office fisheries personnel and the states of Iowa and Nebraska to develop a fisheries management plan for the lake and reestablish good sport fishing.
2. As mentioned in Action Plan #8, powerboating will be eliminated from the west arm of the lake to reduce conflicts between boaters and fishermen.

Other Consumptive Uses - Current outputs for mushroom gathering are 1,450 visits and 2,000 activity hours. Objective levels are 4,300 visits and 6,000 activity hours. Increasing the area open for picking, extending the refuge season, and construction of more hiking trails should all contribute to a higher use level for this activity.

Specific plans:

1. Berry picking, grape gathering and mushroom picking will be considered for inclusion in refuge regulations as being permissible.
2. Limits (in pounds) will be set for mushroom picking and regulations will prohibit commercial picking.
3. Programs dealing with mushrooms and other wild foods will be included as part of the interpretive program.

Wildlife-Wildland Observation - Current outputs are 124,000 visits and 136,000 activity hours. Objective levels are 200,000 visits and 300,000 activity hours. Wildlife observation has been increasing rapidly on the refuge and changes such as opening the new visitor center, extending the open hours and seasons for the refuge, establishing new hiking trails and realignment of the interior loop of the refuge will all contribute significantly to meeting the new objective level.

Specific recommendations:

1. As proposed in Action Plan #4, the interior loop of the refuge will be designated for wildlife oriented activities, particularly wildlife observation. The interior loop road will be rerouted as shown on the map in Figure 5. This proposed realignment will give considerable flexibility in routing traffic through the interior. During fall migration or when concentrations of eagles are on the area, Loop "A" will be used to give people a good chance to see deer and geese without deep penetration into the refuge interior.

For much of the rest of the year, Loop "B" will be used so that people may reach the picnic areas and nature trails, etc. The realignment of the road and use of Loop "B" will bring the road through one of the most scenic parts of the refuge and allow additional wildlife viewing opportunities. By making the road a one-way, closed loop, summer patrol

work and evening closure will be greatly facilitated. As pointed out below, this re-routing is also necessary if a mass transit system is to be used; the slowly moving bus or tram should not be used on roads with normal automobile traffic.

2. Considerable discussion has centered around the possibility of using a mass transit system for the interior loop of the refuge. Current use levels do not warrant such a system. It is unlikely that a mass transportation system will be needed before the year 1990, or even 2000. Advantages of a mass transit system would be fuel conservation and increased wildlife observation opportunities due to the elimination of heavy traffic on interior roads.
3. At present, there are no hiking trails on the refuge. A recreation trail is planned to start from a point on the new entrance road, follow the west levee, circle back along the lakeshore, tie in with the visitor center trail and return to the start. A spur will connect this trail with other nature and hiking trails (see Figure 7). The recreation trail will be used seasonally for cross-country skiing and snowshoeing.

A primitive 7.5 mile hiking trail will be constructed on the "island" portion of the refuge running roughly parallel to DeSoto Lake. It is expected that this trail will be used primarily by scouting groups and day hikers. The refuge will explore the possibility of involving scout groups in the construction of this trail.

A separate bicycle trail or marked lane for bicycles on existing roads will be considered when plans for loop road development are finalized.

4. An observation blind will be available to the public. One blind is proposed on the Cottonwood nature trail. The blind presently used by refuge staff may be upgraded and made available to users on a controlled basis.

5. As discussed under Action Plan #5, the season and hours for wildlife observation on the refuge will be extended.
6. As indicated in Action Plan #3, when compatible with other refuge objectives, management will be undertaken to attract wildlife close to refuge roads and observation areas. Where it will not interfere with goose management, field size will be considerably reduced.

Wildlife plantings will be made along road and field edges to attract more wildlife to observation areas and frame views from the road.

Photography - Current outputs are 615 visits and 1,400 activity hours. Objective levels are 3,500 visits and 7,800 activity hours. Programs listed under general wildlife observation including photography clinics and will contribute to meeting this objective.

Non-Wildlife Oriented Recreation

Picnicking - Present use levels are 75,000 visits and 150,000 activity hours. Since there appears to be little physical damage to the resource from picnicking, items such as cost of litter control and compatibility with primary refuge objectives will determine objective levels for picnicking.

Specific plans:

1. Picnicking areas on the interior loop of the refuge will be relocated to the south end of the refuge.

Swimming - As indicated in Action Plan #9 and Appendix B, it is recommended that the beach be relocated near the south concession area. If a beach is constructed rather than a pool, approximately the same size water and sand area will be maintained. This appears to be adequate spacing for sunning and swimming for the present use levels. The present use levels of 30,000 visits and 90,000 activity hours would be used for planning purposes.

Safety must be a prime consideration of the new construction. Care will also be taken to insure that a reasonable lifeguard to swimmer ratio is maintained and that new facilities do not cause vehicle access problems or overcrowding near the concession area and boat ramps.

Boating - Present use levels are 42,000 visits and 120,000 activity hours of boating on the lake. The 120 boat limitation was imposed ten times in 1978. A review of the literature shows that the recommended ratio of acres per boat ranges from 3 acres/boat to a high of 18 acres/boat. An average or optimum carrying capacity of 9 acres/boat has been the refuge objective. If this average is used, DeSoto Lake has 40 boats more than the stated optimum when the current 125 boat limitation is in effect.

Present use levels will remain as objective levels until the study recommended in Action Plan #6 is completed.

Water Skiing - Present use levels are 47,000 visits and 100,000 activity hours. Since skiing and high-speed boating are inextricably intertwined, present use levels will remain as objective levels until the study mentioned above is completed.

Fish and Wildlife Information - More intensive work will be done with the media to keep visitors better informed of opportunities and activities at DeSoto. Seasonal events, facility construction, program development and enforcement problems will also be logically presented to the public by TV appearances, radio interviews and media releases. A weekly newspaper column will be considered if staff time permits.

Cooperative Programs - If the long-range goal of the Fish and Wildlife Service is the promotion of a quality environment, then extension activities in environmental education are badly needed. Activities such as helping school districts develop environmental study areas will be encouraged. Teacher workshops, help in curriculum development, and work with area and state environmental education groups will all be annual work planned and

funded. An important aspect of this program in the DeSoto area would be work with 4-H and FFA groups to promote good conservation in farming practices.

In conjunction with the opening of the visitor center, a cooperating association will be established to provide a variety of books and other interpretive materials for the visitor who wants to learn more about the refuge, the natural world or history.

APPENDIX A

POPULATION ESTIMATES -- DESOTO NWR SERVICE AREA

Population Estimates - DeSoto NWR Service Area

The service area of DeSoto NWR is defined as a 30 mile radius around the refuge. This area is not a circle, but follows county lines. By using this method, the radius will vary from 22 miles to 36 at the extremes. It is only possible to give complete data on a county wide basis.

The service area for DeSoto NWR includes the following counties in Nebraska: Douglas, Sarpy, Dodge, Burt and Washington. The following figures are derived from the U.S. Department of Commerce 1970 census.

The following list population totals, urban and rural, by Nebraska counties.

<u>County</u>	<u>Urban</u>	<u>Rural</u>	<u>Total</u>
Douglas	373,160	16,295	389,455
Sarpy	53,931	9,765	63,696
Dodge	22,962	11,820	34,782
Burt	-	9,247	9,247
Washington	6,106	7,204	13,310
Total Nebraska	456,159	54,331	510,490

The following list population totals, urban and rural, and rural by Iowa counties, from the same source.

<u>County</u>	<u>Urban</u>	<u>Rural</u>	<u>Total</u>
Harrison	3,519	12,722	16,240
Pottawattamie	64,847	22,144	86,991
Total Iowa	68,366	34,865	103,231

The following list the population total and urban and rural totals, for the service area of DeSoto NWR.

<u>Urban</u>	<u>Rural</u>	<u>Total</u>
524,524	88,197	613,721

Population

	<u>1950</u>	<u>1960</u>	<u>1970</u>
Iowa	2,621,073	2,757,537	2,824,000
Monana Co.	16,303	13,916	12,069
Harrison Co.	19,560	17,600	16,240
Pottawattamie Co.	69,682	83,102	86,991
Mills Co.	14,064	13,050	11,823
Fremont Co.	12,323	10,282	9,282
Council Bluffs	45,429	55,641	59,923
Missouri Valley	3,546	3,567	3,519
Nebraska	1,325,510	1,411,330	1,483,000
Douglas Co.	281,088	343,490	389,455
Sarpy Co.	15,695	31,281	63,696
Dodge Co.	26,271	32,471	34,782
Burt Co.	9,124	10,192	9,247
Washington Co.	8,015	12,103	13,310
Omaha	251,117	301,598	347,000
Blair	3,815	4,931	6,106

<u>Year</u>	<u>Iowa</u>	<u>Nebraska</u>
1960	2,756,000	1,417,000
1965	2,742,000	1,471,000
1967	2,793,000	1,457,000
1968	2,803,000	1,467,000
1969	2,805,000	1,474,000
1970	2,830,000	1,490,000
1971	2,852,000	1,512,000
1980*	2,985,000	1,614,000
1980*	3,230,000	1,790,000
Omaha-Council Bluffs SMSA -	1960 458,000	
	1970 540,000	

*Bureau of Census estimates

APPENDIX B

RELOCATION OF SWIMMING BEACH

UNITED STATES GOVERNMENT

Memorandum

TO : Area Manager, Area 3, Kansas City, MO (RW)

DATE: February 15, 1978

FROM : Refuge Manager, DeSoto NWR

SUBJECT: Meeting of Public Use Planning Team

On 2/6/78, the planning team met at DeSoto to work on the Public Use Plan. Kent Olson, Carol Lively and Hank Drake were here from the RO and Ed McCrea represented the refuge on the team.

The first afternoon, the team reviewed the attached outline and decided that it adequately covered the material that should be included in the plan. The team also decided that the first order of business should be an examination of the Bertrand detour project, and a look at the issue of the beach relocation and redesign of the south recreation area.

On the following morning, the team visited the Bertrand site and the south recreation area. The team then returned to headquarters and discussed both projects with refuge staff. The Bertrand detour engineering survey done by Pat Carson was examined, and Hank Drake indicated that he would come up with a design for the location of the detour and new parking area at the Bertrand site.

The pros and cons of various alternative locations for the relocation of the swim beach were debated at considerable length on 2/8. Assistant Manager Dean Knauer and Administrative Assistant Randy Porter joined in the discussions. After several possible sites were considered, it was decided to develop a rating system for the various areas. The following 13 criteria were decided upon and assigned an importance factor of either A, B, C, or D. A indicated a maximum point value of 20, B=15, C=10, D=5.

1. Safe water depth - A
2. Low conflict with boating - A
3. Separation from fuel pollution - D
4. High purity of water - A
5. Ease of lifeguard surveillance - A
6. No problems with boat wakes - B
7. Lack of traffic pedestrian conflicts - A
8. Initial cost of construction - C
9. Low O&M cost - A
10. Freedom from mosquitos - D
11. Closeness to Wilson Island - C
12. Closeness to picnic grounds - C
13. Closeness to concession - C



5010-110

George E. Long

Conclusions: The planning group discussed the rating results in detail and came up with the following recommendations.

1. If it is possible to do so without creating an operation and maintenance problem, the beach should be moved from its present location. The view from the proposed visitor center would include the present beach, and swimming would conflict with the image of tranquility and naturalness we are trying to promote in the V.C. Noise from the beach would also be a problem for visitors to the new center.

The present location for the beach also draws some 25,000 people per year into the interior of the refuge and conflicts with the concept of zoning the interior of the refuge for higher priority activities such as wildlife observation and interpretation.

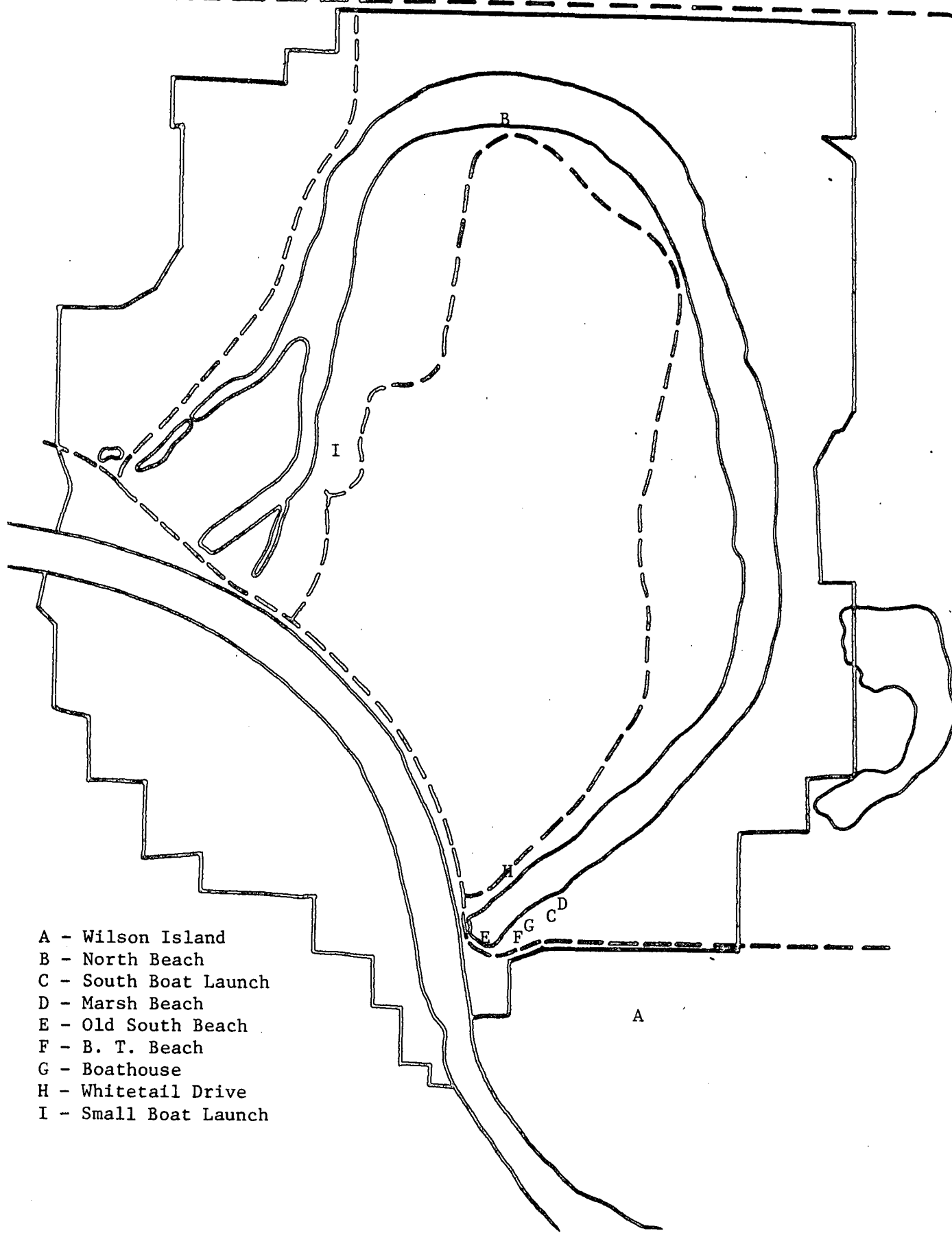
If the beach remains at its present location, it would be impossible to initiate a mass transit system for wildlife observation should high use levels indicate that such a system is desirable in the future.

2. The group recommended that a dialogue be initiated with the State of Iowa to discuss the feasibility of building a swimming pool on the Wilson Island area. If this proves to be a realistic approach, it would solve many of the problems associated with the present swimming program. A pool at Wilson Island would be ideal for the campers there and would not conflict with activities such as wildlife observation. A comprehensive plan could be developed more easily there to insure a safe design with adequate provisions for parking and support facilities.
3. If it does not appear feasible to develop a pool in cooperation with Iowa, the group recommended that the beach be relocated to Site C. Redesign of the boat launch (which is badly needed in any case) would give adequate room; control of access and initiation of a fee system would be easiest at this location; adequate parking and support facilities could easily be incorporated in the redesign.
4. Additional items were also discussed by the planning team before the meeting ended on the 9th. Recommendations on arrangements of concessions, fee system, design of boat launch, etc., will be described in future memos and/or included in the draft of the public use plan.

Beach Site Rankings

<u>Site</u>	<u>Average Rank</u>	<u>Final Rank</u>
A. Wilson Island	1.00	1
B. North Beach	2.50	2
C. Large Boat Launch	4.16	3
D. Marsh Beach	4.50	5
E. Old South Beach	5.83	5
F. BT Beach	6.08	6
G. Boathouse	6.67	7
H. Whitetail Drive	6.83	8
I. Small Boat Ramp	7.41	9

Potential Locations for Swimming Beach



- A - Wilson Island
- B - North Beach
- C - South Boat Launch
- D - Marsh Beach
- E - Old South Beach
- F - B. T. Beach
- G - Boathouse
- H - Whitetail Drive
- I - Small Boat Launch

APPENDIX C

PAVING OF ROAD TO SOUTH ENTRANCE

UNITED STATES GOVERNMENT

Memorandum

TO : Area Manager, Area 3, Kansas City, MO

DATE: December 12, 1977

FROM : Refuge Manager, DeSoto NWR

SUBJECT: Improvement of Road Leading to South Entrance

It has been brought up several times at planning sessions for the visitor center that it would be desirable to reduce the amount of "non-wildlife oriented" traffic that presently uses our north entrance.

Many people use the north entrance because the present gravel road leading to the south entrance is in poor condition. The high speed "commuter" traffic that is generated as people travel to the boat launches, swimming area, and campground at Wilson Island, is unsafe and is inappropriate for wildlife zone we are trying to create near the new visitor center.

Paving of the six mile stretch of road from I-29 to our south entrance would be of considerable benefit to the Wilson Island State Recreation Area, as well as enhancing the wildlife viewing opportunities and safety for many visitors to the refuge. Paving would also result in considerable energy saving since more people would use the shorter route. Approximately 6,500 gallons of gasoline per year would be a conservative estimate of savings.

Personnel at Wilson Island have been pursuing this goal for some time, but inform us that the township, county, and state are unable to agree on funding. Would it be appropriate to bring up this matter when we make our presentation on the hill in January? The issue relates directly to a quality experience for visitors to the new Bertrand facility, and a little nudge from Washington might be all it takes to get this project started.

George E. Gage



5010-110

UNITED STATES GOVERNMENT

Memorandum

TO : Area Manager, Area 3, KCAO (AM)

DATE: July 30, 1979

FROM : Refuge Manager, DeSoto NWR

SUBJECT: Congressional Inquiry Representative Harkin's Office

I was contacted today by Congressman Tom Harkin's Administrative Assistant, Brent Wynja. They had received complaints from our local landowners on the southeast side of the refuge regarding the poor condition of County Route 14, the gravel access road we have been discussing for years.

Mr. Wynja had talked to the Pottawattamie County Highway supervisor and Iowa's DOT Director, Don McQueen. He stated that he had discussed their responsibility with both but apparently had not come up with and assurances. Apparently, the route will come under state jurisdiction as of July 1, 1980, but at \$100,000 per mile, nobody is ready to obligate funds for 6 miles of asphalt paving, especially when the majority of the users would be our recreational visitors.

I concurred that the road is in terrible condition and that the dust problem often makes travel unsafe. I explained that both Wilson Island and DeSoto are in the process of upgrading their road systems and the County Road No. 14 should receive similar consideration.

Mr. Wynja asked about the possibility of our Service cost sharing with the other agencies since most of the use would come from our visitors. I explained that DeSoto currently returns revenue to the counties (an annual average of only \$2,000 to Pottawattamie) and any additional monies would appear unlikely. I further explained that while the County road cuts some 9.2 miles off the distance the public must travel to get to Wilson Island and our recreational facilities, and could be very energy efficient to metropolitan/Council Bluffs users, the refuge's programs could continue to operate effectively if the road were closed tomorrow.

He was thinking of calling a meeting of the various entities to discuss alternatives and suggested that I be included in the discussion. I agreed to assist them in any way possible.

George E. Gage



5010-110



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

~~BUREAU OF SPORT FISHERIES AND WILDLIFE~~

DeSoto National Wildlife Refuge

RR 1, Box 114

Missouri Valley, Iowa 51555

July 31, 1979

Honorable Thomas Harkin
324 Canon House Office Building
Washington, DC 20515

ATTN: Bruce Wynja

As a followup to our conversation regarding Pottawattamie County Route 14 which lies to the Southeast of DeSoto National Wildlife Refuge, I offer the following:

At roughly \$100,000 per mile, the asphalt contract for 5.3 miles of paving would exceed one half million dollars.

The energy savings for the visiting public from the metropolitan Omaha/Council Bluffs area would be considerable if this section of the road from the Loveland exit of Interstate 29 were paved. To safely reach our recreational facilities and the Wilson Island State Recreation Area, the average visitor currently travels north to the Missouri Valley exit and over U.S. Route 30, an extra 18.4 miles on a round trip. Assuming that half of our future visitors (250,000 people) would otherwise use Route 14, the savings becomes quite significant.

I was unsure of the revenue returned to Pottawattamie County when we discussed the Refuge Revenue Sharing Act monies the other day. In reality, we have limited acreage in the County and the annual revenue check to them has only averaged about \$1,660 during the past three years. (See Attachment).

As I told you, we are definitely interested in seeing the road improved. It would compliment both state and federal recreational programs. Both DeSoto and Wilson Island will be upgrading their road systems this year. We anticipate a major influx of visitors as the DeSoto Visitor Center reaches completion in FY-1981 and people are attracted to the facinating stores from the Steamboat Bertrand. A safe shortcut between the Loveland interchange of I-19 and our recreational facilities just makes very good sense.

If I can be of any further service, please feel free to call on me at any time.

Sincerely,


George E. Gage, Refuge Manager

JUN 17 1987

Regional Refuge Supervisor, FWS, Twin Cities, MN (RF2)

Permit System Plan

Refuge Manager, DeSoto NWR, Missouri Valley, IA

We have reviewed the revised subject plan and it is approved as written. The plan was thoroughly prepared. We intend to distribute copies of this plan as a model for other entrance fee refuges to use when they prepare their plans.

Thanks for a job well done.

/s/ John W. Ellis

John W. Ellis

Attachment

RF2:JWellis:bak:6/17/87:x3701

memorandum

DATE:

15 JUN 1987

REPLY TO
ATTN OF:

Outdoor Recreation Planner, FWS, Twin Cities, MN (WSS/TS)

SUBJECT:

DeSoto Permit System Plan

TO:

Regional Refuge Supervisor, FWS, Twin Cities, MN (REF2)

ga 6/16/87

I have reviewed the revised Entrance Permit System Plan submitted by DeSoto Refuge and have signed my concurrence. The plan was thoroughly prepared. When the final guidelines from Washington are received, the refuge will attach them to this plan. I intend to distribute copies of this plan as a model for our other entrance fee refuges to use when they prepare their plans.

Tom Worthington

Tom Worthington

Attachment:incoming



United States Department of the Interior

FISH AND WILDLIFE SERVICE
DESOTO NATIONAL WILDLIFE REFUGE
RR 1, BOX 114
MISSOURI VALLEY, IOWA 51555
(712) 642-4121

April 14, 1987

Memorandum

To: Regional Director, FWS, Twin Cities, MN (WSS-TS)

Through: Regional Refuge Supervisor, Division 2, Twin Cities, MN (RE-2) *9/20/87*

From: Project Leader, DeSoto NWR

Subject: Entrance Permit System Plan - DeSoto

Attached is the modified plan which incorporates Tom Worthington's comments.

While I read the "Expectations and Recreation Fees" manuscript with interest, I still have personal reservations. Lots of our visitors come as part of an organized bus tour. They have already paid some other agency (Fontenelle Forest Nature Center, "See Nebraska" Tours or a commercial enterprise) a minimum of \$15-25 to visit DeSoto. They expect and demand preferential treatment once they get here. They are mad as hell when they don't get it!

I've enclosed information on both the Iowa User fee system and Nebraska entrance fee system. Iowa uses largely a self-service system, whereas Nebraska has strictly a vendor system. Iowa is adding "Self-service" to their informational signs because the public waits patiently for an attendant to arrive at these fee stations. They have also had problems with money envelopes deposited back into the fee information stand instead of in the envelope depository safe.

Both states differ in placement of stickers on windshield. You will note that Iowa parks allow non-fee, drive-through without stopping; Nebraska does not. Both state's daily permits are good through the morning of the following day. Our plan doesn't concurrently accommodate campers at the Wilson Island State Recreation Area and maybe it should. DeSoto's paved road is their primary access to the campground. As it stands, campers would have to pay our entrance fee, pay for the camping privilege at Wilson Island and then pay to come back through the refuge, unless they prefer to haul their camper, RV, etc. over six miles of dusty, bumpy gravel state road. Most won't! Some will pay; others will make a run for it through the refuge.

Iowa has found that their permits don't work on motorcycles. They blow off. Nebraska has developed a special frame-mounted sticker for motorcycles.

Iowa collects a lot of vehicle data that they don't use. We would need minimally "Today's date", "vehicle license number" and "make of vehicle". Some consideration of data collection for public use survey purposes, such as "number of occupants", might be incorporated as long as its kept simple and short.

George E. Case