

Washington

CHARLES M. RUSSELL
NATIONAL WILDLIFE REFUGE

and

Hailstone, Halfbreed, Lake Mason, and War
Horse National Wildlife Refuges and the
CMR Wetland Management Districts.

1990 ANNUAL NARRATIVE REPORTS

U.S. DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
NATIONAL WILDLIFE REFUGE SYSTEM

REVIEW AND APPROVALS

CHARLES M. RUSSELL
NATIONAL WILDLIFE REFUGE

Lewistown, Montana

ANNUAL NARRATIVE REPORT

Calendar Year 1990

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Regional Office Approval		Date	

INTRODUCTION

Located in central Montana, the Charles M. Russell National Wildlife Refuge has a long history of wildlife/grazing conflicts since inception by Executive Order in 1936. Prior to 1976, the refuge was jointly administered by the FWS and Bureau of Land Management. Dual management by agencies with differing mandates did not function and in 1976 the FWS received full management authority with the passage of the "Game Range" bill.

In 1980 a Draft Environmental Impact Statement (DEIS) was released calling for a 33% reduction in livestock grazing. Almost immediately a lawsuit was initiated by refuge grazing permittees challenging FWS authority and seeking to block implementation of the DEIS. The Montana District Court ruled in favor of the permittees and the decision was appealed. In 1983 the appellate court gave the FWS a clear, legal mandate to manage the refuge primarily for wildlife. In 1984 a second DEIS was issued. The Final Environmental Impact Statement was released in 1985.

After ten long years, the Record of Decision (ROD) was signed on April 22, 1986. The ROD favored wildlife and supported the proposed action alternative of the EIS. Overall grazing reductions of 33% began in 1987 and are being phased in over five years. After 50 years of livestock being allocated most of the forage, wildlife will receive priority.

On January 12, 1987, the livestock industry filed an amendment to the original lawsuit claiming the livestock reduction violates the Executive Order establishing the refuge and the U.S. Ninth Circuit Court of Appeals' decision. After numerous delays and extensions, briefs were submitted to the U.S. District Court in Billings in late summer 1989. Oral arguments were presented to the judge in September 1989 for a summary judgement. In August 1990 the District Court ruled in favor of the refuge. After 14 years of litigation, planning and political posturing the refuge now has a clear, legal mandate to manage for wildlife.

Habitat management planning began and numerous meetings have been held with the grazing permittees and BLM. Forty-four HMP's were finalized by the end of 1990, leaving 21 HMP's to be completed.



Bear Creek Fence Line, Spring 1990. This is the fence that began litigation with refuge grazers. BLM is on the left and CMR is on the right. This fence line clearly demonstrates the need for separating refuge lands from BLM lands. JMA

The refuge contains 1.1 million acres including native prairies, forested coulees, riverbottoms, badlands, and the 250,000-acre Fort Peck Reservoir. Refuge wildlife include mule and white-tailed deer, elk, bighorn sheep, antelope, coyote, bobcat, beaver, sharp-tailed and sage grouse, and numerous other species.

The refuge is managed through the refuge headquarters in Lewistown and three field stations located at Fort Peck, Sand Creek and Jordan. A refuge manager stationed in Lewistown is responsible for four waterfowl refuges, two WPA's located north of Billings and farm bill/wildlife extension programs. The refuge is extensively involved in the Prairie Pothole Joint Venture and Farm Bill programs in Montana.

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NTR

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A. HIGHLIGHTS

1. The U.S. District Court in Billings ruled in favor of the refuge in August. The decision strongly supported the government on all issues, ending 14 long years of litigation with refuge grazing permittees. Refuge permittees declined to appeal.
2. The largest and most complete skeleton of a Tyrannosaurus rex was removed from the refuge by the Museum of the Rockies, Montana State University. The dinosaur find received world-wide media coverage.
3. Implementation of the Record of Decision (ROD) continued. Livestock reductions have approximated 15,556 AUM's and will continue to 1991 when livestock AUM's will have been reduced by 19,967 AUM's. During 1990, eight Habitat Management Plan's (HMP) were completed, bringing the total to 44. The new due date for completion of all 21 remaining HMP's is June 30, 1991.
4. During the 1990 year 7,812 cows, calves and bulls; 2,870 yearling cattle; 103 bison; 785 sheep; and 23 horses totalling 11,593 domestic animals grazed the refuge as compared to 5,000 deer, 1,500 elk, 119 bighorn sheep, and 1,500 antelope totalling 8,119 big game animals.
5. Twenty-one waterfowl impoundments were constructed creating 85 surface acres of water under the FmHA Conservation Easement and Private Lands Program. Data collected on projects completed in 1988 and 1989 show an average of 9.5 indicated breeding pairs per impoundment which correlates to 2.4 indicated pairs per wetland acre.

B. CLIMATIC CONDITIONS

Lows were recorded into the subzeros at Fort Peck, Sand Creek and Jordan in January, February and March and ranged from -23° at Fort Peck to -20° at Sand Creek to -22° at Jordan. No further subzero temperatures occurred until November and December when temperatures plunged to -29°, -31° and -41° at Fort Peck, Sand Creek and Jordan, respectively.

Temperatures in excess of 100° were observed at all three field stations in June, July and August. Sand Creek experienced 100° temperatures during September. High temperatures were 104° at Fort Peck, 102° at Sand Creek and 104° at Jordan. The 1990 temperature spread was 133° at Fort Peck, 133° at Sand Creek and 145° at Jordan.

Precipitation in 1990 was variable with extreme drought at Fort Peck and average or so at Sand Creek and Jordan. Precipitation totalled 5.24 inches at Fort Peck, 9.76 at Sand Creek and 8.07 at Jordan. It was the third driest year on record at Fort Peck. Records have been kept since 1915 and only 1934 and 1984 were dryer. April, May, and June precipitation was 2.42 inches at Fort Peck, 5.37 at Sand Creek, and 3.85 at Jordan. Growing season precipitation was adequate at Sand Creek, marginal at Jordan and inadequate at Fort Peck. Conditions were so dry the crested wheatgrass on Fort Peck Dam did not even green up.

Fall rains and snows were nonexistent and the refuge entered 1991 with moisture varying from 0.38 inch at Fort Peck and Sand Creek to 0.66 at Jordan.



Looking north across the Missouri River toward the Little Rocky Mountains. WCH

Fort Peck Reservoir froze on January 31 and ice-out occurred on April 4. Maximum ice depth on the reservoir was 12.5 inches. Ice-out on the Missouri River occurred on March 12 and freeze-up on November 23.

Fort Peck reservoir pool levels reflected continued poor precipitation in the watershed. Pool level decreased from 2214.4 ms1 in January to 2209.6 in December. At the year's end pool elevation was over 40 feet below the normal pool elevation of 2250 ms1.

C. LAND ACQUISITION

1. Fee Title

There are approximately 47,500 acres of private land and 33,800 acres of state land within the CMR refuge boundary. The refuge has been actively acquiring inholdings from willing sellers as monies and properties are available.

In March 1,056 acres were purchased from the Henry Hedman estate. The lands lie within the Soda Creek Habitat Unit and are excellent big game and sharp-tailed grouse habitat. The lands had subdivision potential and were a natural for an outfitting operation. Livestock AUM's attached to the parcel were converted to wildlife AUM's and retired.

Negotiations continued for the Marks property along the Musselshell River. An option was obtained and the property closing will occur in March 1991. This inholding consists of 379 acres adjacent to the Musselshell River.



Sweetclover near the Musselshell Riverbottoms. BAK

2. Easements

Annual inspections were completed on the three Conservation Easements in the WMD.

The 120-acre Hardy FmHA Conservation Easement in Custer County was the site of a major marsh renovation in 1990. Ducks Unlimited constructed a 0.5-mile dike to enhance water levels on a 42-acre wetland. The owner of this tract has been a source of constant irritation and abuse. He claimed that he would not allow access for this project, and threatened to destroy equipment. Assistance from Special Agent Rod Hanlon was required to convince the landowner that interference would not be tolerated by FWS nor the U. S. Attorney. Construction of the project was then able to proceed.

Transfer of the 270-acre Bratsky tract near Bridger, Montana from FmHA to FWS remains pending. FWS first inspected this tract in 1988 and determined that it had acquisition potential. From 1988 until November 1990 the possibility of acquisition was uncertain and depended on approval of the process from the Washington FmHA office. Hence, no further efforts were made until we heard a land transfer was possible. A drawback to this acquisition has been the 200-mile distance from Lewistown to Bridger which makes it difficult to manage the property. During this interim period, the Montana Fish, Wildlife and Parks was consulted to determine if they would be interested in obtaining this property since they have an office within 50 miles. They declined since they had inadequate funding to manage any additional property.

FmHA notified FWS in November that approval to transfer the property was received. At that time FWS began a thorough evaluation to determine if it met the WPA

acquisition criteria. Initial plans were to acquire the property, construct an extensive dike system, and fill impoundments with water from irrigation rights attached to the property. A meeting was held the two water districts involved and it was discovered that water from these districts could only be used for agricultural purposes. A major obstacle! Without use of these water rights the tract could not be developed to serve the purpose of a WPA. Several alternatives were considered with only one suitable option. FWS is in the process of applying for a water right for a flow rate of 12 cfs and a volume of 8,686 acre-feet on a spring that surfaces on and flows through the property. The actual amount impounded would be 240 acre-feet and the additional water would flow through the impoundment without consumptive use. Results of this application are expected in April of 1991. If the application is approved, FWS will acquire this tract. If the application is not approved, FWS will not acquire the property.

Personnel from Ducks Unlimited evaluated this site for a potential dike impoundment project in November. Their preliminary inspection resulted in a decision to proceed with the project if FWS acquires the property. This project would create an additional 100-150 surface acres of water.

3. Other - Farm Bill

The station's Farm Bill program can be divided into two main sections: (1) Food Security Act, and (2) the Wildlife Extension Program. Assistance was provided to the SCS on various Food Security Act conservation provisions. This consisted of providing the Service's recommendations on wetland determinations and minimal effects plus reporting potential swampbuster or sodbuster violations. In 1990, four wetland determinations and two minimal effects were made. One potential swampbuster and three potential sodbuster violations were also reported.

Several weeks were spent assisting SCS with their wetland inventories which are scheduled for completion in December 1991. With 20 counties in the WMD, it was felt that meeting with the personnel involved with the inventory process prior to beginning of any mapping would yield the most benefits. A one-day program consisting of discussions on wetland ecology, applicable laws and regulations, the Federal and Montana Riparian Association manuals available, and a field trip to inspect local wetlands was provided to each field office. The objective was to coordinate with SCS to ensure that a satisfactory inventory would be completed in each county. SCS was informed that further assistance would be available upon request if mapping difficulties are encountered. Reviews of the final mapping will be performed as time permits. In Sweetgrass County, the Conservation District sponsored a public meeting on wetlands. FWS was invited and made a presentation on "Montana Wetlands and Their Values."

Assistance was also provided to FmHA on a potential land acquisition and two conservation easements.

The Wildlife Extension Program is the major segment of the Private Lands Program. It was established to provide technical assistance and funding to landowners for increasing waterfowl production on private land. Local emphasis is on projects that provide breeding pair and brood habitat through wetland restoration, repair of existing water projects, or construction of new projects in areas of suitable nesting habitat. The program began in 1988 when six landowners participated and has expanded to the point where the number of interested landowners exceeds



This wetland on the Bratsky FmHA property was enhanced when a beaver plugged a drainage ditch and indicates the potential for developing this tract for waterfowl. RLJ



Montana plus water equals ducks. MHG

manpower and funding capabilities. This resulted in the establishment of a 180-day position to provide assistance. Later in the year this position was converted to a one-year appointment due the increasing workload.

In 1990, emphasis was continued on establishing landowner contact through newspaper articles, radio programs, presentations at local agricultural meetings, and by contacting landowners enrolled in CRP. The Jordan Wildlife Station assisted by writing to 128 landowners enrolled in the CRP program in Prairie, Custer, and Rosebud Counties and described the program's wetland/reservoir opportunities. About 30 responses were received, of which six to eight warrant further work.

During the year, 128 potential project sites on the property of 64 landowners were inspected with 62 of these sites approved. Twenty projects creating 43 surface acres were constructed force account with personnel and equipment from the Sand Creek Wildlife Station. The remaining projects were rescheduled for construction in 1991.

Projects in CRP fields were given priority due to the quality of adjacent nesting cover and results of waterfowl breeding pair counts conducted on WEP impoundments in CRP over the past two years. Projects are designed to provide breeding pair and/or brood habitat. Breeding pair habitat projects are less than an acre in size and 4-5 feet deep. These generally hold water during the spring, but evaporation dries them by summer. They are built when suitable brood habitat is nearby. Brood habitat projects are larger than an acre with water depths greater than six to seven feet and generally hold water until late summer.

Success of the WEP has been good due to a good working relationship with the SCS and ASCS who are in frequent contact with and know local landowners. SCS has assisted by informing FWS of landowners who have large CRP tracts with suitable locations for projects, or those that have expressed interest in water projects on their land. SCS has also assisted by providing a copy of their Engineering Field Manual and computer programs that estimate watershed runoff to determine the size of primary and secondary spillways required.

One goal of the WEP was to complete an interagency project with the ASCS. Until 1990, no cost share projects involving ASCS and FWS have been completed in Montana. In fact, FWS was informed by several County Executive Directors that this could not be done, although it has been in other states. The benefits of cost-sharing would be that more projects could be completed with the limited WEP budget and manpower capabilities. Also, SCS assistance with project design and contractor inspection would allow for the completion of additional projects which would be beneficial especially in counties distant to Lewistown.

A landowner in Fergus County with an ideal project for an interagency effort was located and expressed interest in trying this procedure. The landowner applied for ACP financial assistance, met with and obtained approval from the Conservation District board, and received assistance from SCS with project design. FWS provided equipment and manpower to construct this project. This effort has established a precedence and requests for additional cost-share projects have now been received from other counties.

Fred Lahr (one of the first landowners in this area to have a waterfowl impoundment constructed on his property under the WEP) was given an award by the

Lewistown Chapter of Ducks Unlimited recognizing him for the work he has done to provide habitat for nesting and migrating waterfowl on his farm. In 1988, Fred received WEP assistance to construct a 3-acre impoundment and plant 700 acres of CRP with a seed mixture beneficial to wildlife. The initial waterfowl response inspired Fred to build three additional reservoirs in 1990. Fred spread his enthusiasm for this program to his neighbors and over 20 projects have now been built in his area.

A workshop presented by the Regional Archaeologist on the cultural resources in Montana and the agency's responsibilities was attended by employees in Montana working with the WEP. The objective was to determine a process for avoiding damage to cultural resources during project construction, develop a better understanding of applicable regulations, and establish a process to obtain clearances on the numerous projects. An Archaeological Site Clearance form was developed that is completed at the project site and includes information on soil types, topography, known archaeological sites in the vicinity, record of any cultural resources found on the project site, and notation if the area has been previously disturbed. This information is then sent to the Regional Archaeologist for a determination if an inventory by a qualified person is necessary and is forwarded to the State Historic Preservation Office for concurrence.

Breeding pair and brood counts were completed on the projects constructed in 1988 and 1989 to monitor their productivity. A total of 171 indicated breeding pairs were counted for an average of 9.5 pairs per pond and 2.4 pairs per wetland acre. The number of pairs per pond was significantly different between the three land types adjacent to the projects evaluated; grazed, unestablished CRP (vegetation < five inches), and established CRP (vegetation > five inches). The number of pairs per pond was highest on ponds within established CRP land. These data indicate the reservoirs created under this program are providing important waterfowl habitat.

Densities of indicated breeding pairs on Wildlife Extension Program ponds on three land types in the Charles M. Russell Wetland Management District, 1990.

	<u>Grazed</u>	<u>CRP Unest.</u>	<u>CRP Est.</u>	<u>Overall</u>
Number of ponds	3.0	10.0	5.0	18.0
Wetland Area (acres)	45.2	11.4	13.2	69.8
Indicated Pairs (IP)	39.0	27.0	105.0	171.0
Ave. No. of IP/Pond	13.0	2.7	21.0	9.5
Ave. No. of IP/ Wetland Acre	0.9	2.4	8.0	2.4

D. PLANNING

1. Master Plan

On January 12, 1987, a group of refuge permittees filed an amendment to the original lawsuit, claiming the livestock reduction violates the Executive Order establishing the refuge and the U.S. Ninth Circuit Court of Appeals' decision.

The lawsuit was expanded to include Mark and Mitchell Etchart and the Page-Whitham Land and Cattle Company. The lawsuit amendment basically challenged the EIS and range survey adequacy. The permittees contended the deductions are not needed as range condition is primarily good and excellent, SCS recommendations include wildlife habitat, and the slope-water-soil deductions lack accuracy and are unreasonable.

The long awaited decision on the Schwenke II lawsuit was rendered on August 15, 1990, in favor of the FWS. The decision ruled the methodology used in preparation of the EIS adequate and in full accordance with NEPA regulations. The final "slam-dunk" to the livestock community was Judge Battin's ruling: **"The issuance or termination of grazing privileges is ... discretionary with the administering agency."** Federal land management agencies can go a long way with that ruling.



Refuge livestock congregating on a pond, Nichols Coulee Habitat Unit. WCH

2. Management Plans

With the approval of the CMR EIS and the issuing of the ROD, habitat management planning began. The HMP process consists of three meetings: the first being a scoping meeting where input from concerned parties is taken; the second where a draft HMP is discussed and problems noted; and the third where a second draft HMP is discussed. At any time after the second meeting and if all parties agree, the HMP is finalized. If resolution of differences is not resolved at the third meeting, the HMP can be finalized by the refuge. In some complex HMP's additional meetings have been held. The Montana Department of Fish, Wildlife, and Parks; Bureau of Land Management; Montana Department of State Lands; U.S. Army Corps of Engineers; and the grazing permittees are invited to all meetings.

The overall 33% reduction in livestock grazing will occur irrespective of the HMP process. The HMP process will identify goals and objectives for habitat units and wildlife management units (over 65 HMP's). Grazing reductions have occurred at 20% increments for five years and will be complete in 1991.



Elk along Missouri Riverbottoms at dawn. CLO

During 1990, eight HMP's were completed, bringing the total to 44. The remaining 21 are in the final stages of completion with a set deadline of June 30, 1991. A computer "scoreboard" was created to help track HMP progress. The status of the HMP's at the close of the year follows:

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08/17/91

NEPA and EIS Project Schedule

Approved	Habitat Bank No. and Name	Scoping Mtg.	Draft Submitted	Revised Date	Mtg.	Draft Submitted	Revised Date	Mtg.
	0 1 Antelope Creek	08/30/88	03/02/90	05/30/90	10/04/90	12/03/90	12/18/90	0
	0 2 E. Slippery Ann	10/02/86	03/02/90	05/30/90	10/04/90	12/03/90	12/18/90	0
	0 3 Rock Creek	08/30/88	03/19/90	07/13/90	12/04/90	0	0	0
	0 4 Nichols Coulee	11/19/86	05/17/90	12/06/90	02/12/91	0	0	0
09/14/87	5 Beauchamp Creek	11/19/86	02/27/87	06/16/87	07/01/87	08/17/87	08/22/87	09/02/87
08/02/88	6 Fourchette Creek	07/22/87	09/30/87	11/05/87	12/16/87	02/15/88	03/17/88	03/23/88
08/02/88	7 N. Hawley Creek	07/22/87	09/30/87	11/05/87	12/16/87	02/15/88	03/17/88	03/23/88
12/22/89	8 Telegraph Creek	12/15/86	09/01/89	11/16/89	12/13/89	12/20/89	-	-
09/08/87	9 Long X	12/15/86	05/08/87	08/27/87	09/02/87	-	-	-
12/22/89	10 Box Elder #3	12/15/86	06/29/89	09/19/89	12/13/89	-	-	-
10/04/88	11 Box Elder	12/16/87	01/10/88	05/31/88	-	-	-	-
07/01/87	12 Kill Woman	10/09/86	03/02/87	05/22/87	06/12/87	-	-	-
09/11/87	13 Larb Hills	05/21/87	06/23/87	07/10/87	07/22/87	-	-	-
	0 14 Carpenter Creek	07/29/86	03/04/87	05/26/87	08/25/87	09/19/87	09/21/87	12/10/87
	0 15 Cabin Coulee	02/27/87	05/21/87	07/20/87	09/28/87	07/17/89	11/06/89	12/12/89
	0 16 7 Point	11/09/80	04/19/90	02/20/91	0	0	0	0
06/01/87	17 Silver Dollar	08/20/86	09/26/86	11/19/86	12/02/86	12/08/86	01/12/87	05/27/87
05/25/90	18 Skunk Coulee/Mud Creek	10/06/88	07/17/89	11/16/89	12/01/89	03/04/90	-	-
06/26/87	19 Duck Creek	02/03/87	03/04/87	05/22/87	06/17/87	-	-	-
11/07/88	20 Fort Peck Common	02/02/87	06/11/87	07/27/87	08/20/87	10/15/87	07/01/88	10/06/88
11/27/90	21 Bear Creek	05/12/89	05/02/90	07/13/90	-	-	-	-
11/03/88	22 Bobcat Creek	07/29/86	12/01/86	03/06/87	03/31/87	03/03/88	06/28/88	07/13/88
07/20/88	23 Spring Creek	07/29/86	12/16/86	03/06/87	03/31/87	02/29/88	06/28/88	07/13/88
06/29/87	24 Sand Arroyo/Rock Creek	08/20/86	12/17/86	03/06/87	04/13/87	05/01/87	06/02/87	06/22/87
10/14/87	25 Rock Creek	12/11/86	02/20/87	05/22/87	07/31/87	08/11/87	08/26/87	09/29/87
09/13/89	26 Bug Creek	01/27/88	02/09/88	07/14/89	08/03/89	08/30/89	-	-
	0 27 Nelson Creek	01/19/89	01/31/90	07/30/90	08/13/90	12/03/90	-	-
02/14/90	28 Pine Coulee	01/27/88	02/29/88	12/21/89	02/06/90	-	-	-
	0 29 Big Dry	07/30/87	05/31/90	0	0	0	0	0
	0 30 Snap Creek	09/04/87	05/17/90	11/27/90	0	0	0	0
	0 31 Lone Tree	05/09/89	04/16/90	10/29/90	0	0	0	0
	0 32 Covote Basin	05/18/88	01/21/90	07/30/90	12/05/90	0	0	0
11/12/87	33 Box Creek	06/03/87	07/09/87	08/27/87	10/28/87	11/10/87	-	-
	0 34 Norville Creek	03/03/88	06/29/89	09/05/89	12/04/89	0	0	0
	0 35 Spring Draw	03/03/88	01/08/90	04/12/90	05/29/90	0	0	0
11/29/88	36 Sage Creek Point	08/21/87	01/17/88	05/12/88	07/07/88	07/28/88	-	-
	0 37 Penick Coulee	11/09/88	03/30/90	12/20/90	0	0	0	0
02/20/90	38 Gilbert Creek	07/24/86	12/17/86	03/06/87	04/17/87	07/10/89	10/03/89	01/29/90
	0 39 Points Pasture	07/24/86	12/23/86	03/06/87	04/17/87	05/18/87	05/26/87	06/24/87 12/12/90
	0 40 Crooked Creek	08/24/87	05/22/90	0	0	0	0	0
	0 41 Well Creek	10/14/88	03/21/90	07/05/90	08/06/90	0	0	0
11/29/88	42 Brownie Butte	07/23/87	07/05/88	09/30/88	10/20/88	11/09/88	-	-
04/30/87	43 Snow Creek	09/16/86	12/05/86	03/25/87	04/17/87	-	-	-
06/05/87	44 Hill Coulee	01/08/87	02/23/87	05/18/87	06/05/87	-	-	-
03/15/88	45 Billy Coulee	09/04/87	09/24/87	12/29/87	03/03/88	-	-	-
04/16/88	46 Billy Creek	07/30/87	09/24/87	12/29/87	03/03/88	-	-	-
01/29/88	47 Slavmaker	09/04/87	09/24/87	12/29/87	01/26/88	-	-	-
02/14/90	48 7 Blackfoot	01/06/87	05/19/87	07/10/87	07/29/87	12/10/89	01/18/90	02/07/90
11/28/90	49 Herman Ridge	08/17/87	11/02/87	04/12/90	09/27/90	-	-	-
	0 50 Devils Creek	08/17/87	11/30/87	08/07/90	0	0	0	0

CMR HHR Progress Scoreboard

Approved	Habitat Unit No. and Name	Scoping Mtg.	Draft Submitted	Mailed Out	Mtg. 2	Draft Submitted	Mailed Out	Mtg. 3
01/29/88	51 Ghost Coulee	08/17/87	10/01/87	12/29/87	01/26/88	-	-	-
01/11/90	52 Deadman Coulee	10/20/88	04/14/89	10/04/89	12/04/89	-	-	-
10/12/89	53 Lost Creek	11/09/88	03/27/89	07/18/89	08/15/89	09/05/89	09/20/89	-
04/16/87	54 Grass Coulee	07/25/86	09/19/86	11/14/86	04/15/87	-	-	-
04/04/90	55 Germaine Coulee	07/23/87	07/17/89	02/01/90	03/14/90	-	-	-
07/01/87	56 79 Trail	01/27/87	03/10/87	06/10/87	06/30/87	-	-	-
03/16/88	57 Deer Coulee	07/30/86	10/01/87	12/03/87	02/29/88	-	-	-
06/21/89	58 Soda Creek	07/30/86	04/23/89	05/19/89	06/05/89	-	-	-
0	59 Musselshell Trail	07/30/86	12/15/89	05/04/90	05/24/90	12/10/90	12/18/90	0
06/08/89	60 Hansen Flat	01/27/87	12/10/87	07/20/88	09/07/88	02/15/89	04/27/89	05/17/89
0	61 East Indian Butte	03/21/88	11/30/88	08/30/89	12/03/89	03/02/90	05/24/90	09/12/90
0	62 West Indian Butte	03/21/88	04/20/89	08/30/89	12/05/89	03/09/90	04/12/90	05/07/90
05/19/89	63 Mobridge	01/21/88	06/17/88	07/01/88	07/19/88	08/01/88	01/24/89	03/27/89
07/10/89	64 Two Calf	01/27/87	12/10/87	08/29/88	02/08/89	02/16/89	04/06/89	06/06/89
07/15/88	65 Judith River	09/01/87	11/15/87	06/23/88	07/12/88	-	-	-

The Annual Water Management Plan was completed and submitted.

4. Compliance with Environmental and Cultural Resource Mandates

The petition/application to withdraw approximately 980,000 acres from the public mining laws was filed in October 1989. Following acceptance by the Washington Office of the Bureau of Land Management, the refuge was segregated from the Public Mining Laws for a period of two years (October 1991). During the two-year time period, an environmental assessment and a series of public meetings were supposed to have been held. The first public meeting was held on March 21, 1990. Because of a technical error on BLM's part, the meeting was declared invalid as it was not published in a local newspaper thirty days prior to the meeting. In the meantime the acreage to be withdrawn was changed requiring the whole process to begin over again.

In October an issue paper was developed describing alternatives and the desired alternative on how to proceed with the withdrawal process. Since September, refuge staff have been working with the BLM to file a new mineral withdrawal. The process is extremely confusing and cumbersome due to various BLM interpretations of withdrawal orders. Once completed the refuge will be protected from locatable mineral entry for a period of twenty years. The withdrawal will prevent persons from filing mineral claims to extract locatable minerals such as bentonite, diamonds and lightweight aggregates. The withdrawal will also prevent people from filing nuisance claims for purposes other than locatable minerals.

5. Research and Investigations

In 1989 a significant fossil discovery was made by a local family while boating in the Nelson Creek Bay area of Fort Peck Reservoir. The fossils were determined to be the first complete forearm found of the Tyrannosaurus rex. Further excavation by the Museum of the Rockies revealed the majority of the skeleton. In 1989 a skull and several other bones were excavated but not removed. The skeleton was protected and was removed during the 1990 field season.



Dr. Jack Horner, Museum of the Rockies, speaking to refuge staff and families about the Tyrannosaurus rex fossil at Nelson Creek Bay. JMA

The Tyrannosaurus rex is probably the most widely recognized dinosaur, but few complete specimens exist. Only seven or eight exist in the world. This specimen is 85 to 90 percent complete. While the specimen is being studied and prepared, it will be on working display at the Museum of the Rockies, Montana State University, Bozeman.'

June and July were exciting months at the Tyrannosaurus rex site for CMR employees and the Museum of the Rockies. The Museum of the Rockies set aside one week in June for media events including a special day for the refuge staff. Participation was excellent and exciting. Refuge neighbors and local CMR permittees also visited. A special VIP tour for congressional folks, agency personnel and other dignitaries was held. The Fort Peck staff provided law enforcement security. An estimated 500-700 people toured the site.

Media coverage of the event was international. The excavation was covered by all major television networks, magazines and news services. The British Broadcasting Company spent six weeks on site and Walter Cronkite narrated their production. Tokyo reporters were on site. The Public Broadcasting System produced a one-hour NOVA special on the dinosaur that aired in February 1990. National Geographic Television is preparing a television special.



After being wrapped with burlap and plaster, the fossil was loaded and transported to Bozeman, Montana. JMA

One group expressing little interest in the find was the FWS Public Affairs Office that chose to ignore the story all together. It is unfortunate that an agency with an identity problem and funding shortfalls chose to pass up a human interest story of this magnitude. The CMR staff was totally disappointed with the Public Affairs Office during this media event.

Special Use Permits for paleontological research and excavation were issued to: Dr. Keith Rigby, University of Notre Dame; Dr. William Clemens, University of California, Berkeley; and Pat Leiggi, Museum of the Rockies, Montana State University.

Research personnel from Montana Department of Fish, Wildlife, and Parks have been studying mule deer population dynamics in the Sand Creek/Carroll Coulee area of the refuge since 1965. The study is much less intense than in the past and is being conducted on a maintenance level with emphasis on writing and publishing results.

CMR entered into a cooperative agreement with Colorado State University to process LandSat Thematic Mapper data into vegetative cover classes for the refuge and

surrounding area. Initial results were received and look promising. Fence-line grazing contrasts, old burns, and prairie dog towns appeared very clear on the images from 450 miles in space. Every 28.5 meter square area of the refuge will be classified into an objective, time-specific, vegetative category. Time and staff constraints, and a lack of suitable hardware and software for image processing, have prevented ground "truthing" or label assignments.

The three-year, sharp-tailed grouse study under the direction of Dr. Bob Eng of Montana State University in the Skunk Coulee Habitat Unit in Valley County ended this year. It was the first grouse study in Montana in a non-agricultural area and examined life history parameters and habitat selection. Habitat measurements were correlated with refuge habitat assessment methodology. The refuge received a copy of the first Master's thesis concerning nesting and summer use. The other thesis detailing winter use should arrive in 1991.

ADMINISTRATION

1. Personnel

Lewistown Headquarters Office



1. John Foster	Refuge Manager	GM-14	EOD	8/87	PFT
2. Bill Berg	Deputy Refuge Manager	GS-12/2	EOD	8/90	PFT
3. Richard Johnson	Realtor/Pilot	GS-12/9	EOD	9/82	PFT
4. William Haglan	Wildlife Biologist	GS-11/7	EOD	11/78	PFT
5. Dennis Macomber	Wildlife Biologist	GS-11/6	EOD	7/77	PFT
6. John Martin	Realty Specialist	GS-11/5	EOD	12/87	PFT
7. Mike Getman	Assistant Refuge Manager	GS-11/3	EOD	1/89	PFT
8. Randy Matchett	Systems Analyst	GS-11/1	EOD	6/87	PFT
9. Billie Lewis	Administrative Officer	GS-7/5	EOD	7/85	PFT
10. Rhonda Moline	Refuge Assistant	GS-5/4	EOD	7/85	PFT
11. Cynthia Osmundson	Coop. Ed. Program	GS 5/1	EOD	5/90	PFT
12. Sharon Patton	Clerk-Typist	GS-4/1	EOD	3/88	PFT
13. Clayton Christenson	Maintenance Worker	WG-8/5	EOD	12/84	PFT
14. Timothy Zachmeier	Biological Technician	GS-5/1	EOD	3/90	TFT
15. Carlton Christenson	Volunteer				

Not pictured:

Larry Malone	Deputy Refuge Manager	GS-12/8	TRANS	5/90	PFT
David Burton	Range Technician	GS-5			T

Sand Creek Wildlife Station



1. Eugene Williams	Assistant Refuge Manager	GS-11/2	EOD	11/89	PFT
2. Everett Russell	Assistant Refuge Manager	GS-9/4	EOD	7/88	PFT
3. Steve Delehanty	Assistant Refuge Manager	GS-9/1	EOD	4/90	PFT
4. Boyd Bergum	Maintenance Worker	WG-8/3	EOD	4/84	PFT
5. Kenneth Willmore	Maintenance Worker	WG-8/3	EOD	8/84	FTS

Not pictured:

Mike Barrick	Range Aid	GS-4	T
Ken Coffin	Range Technician	GS-4	T
Dean Vaughan	Range Aid	GS-4	T
Mark Hanzlik	Range Aid	GS-3	T
Dan Ritchey	Range Aid	GS-3	T

Fort Peck Wildlife Station



1. James Alfonso	Assistant Refuge Manager	GS-11/3	EOD	3/85	PFT
2. Dennis Mackey	Assistant Refuge Manager	GS-9/1	EOD	3/89	PFT
3. James Spence	Biological Technician	GS-7/10	EOD	8/77	PFT

Not Pictured:

Glenn Guenther	Range Technician	GS-6	T
Kevin Boden	Range Aid	GS-4	T
Bill Viste	Range Aid	GS-4	T
Michelle Christenson	Range Aid	GS-3	T
Carin Shoemaker*	Range Aid	GS-3	T

* terminated for failure to pass the step test or the 1½-mile run, a fire-fighter requirement.

Jordan Wildlife Station



1. Brad Knudsen	Assistant Refuge Manager	GS-9/4	EOD	1/88	PFT
2. Lynn Pluhar	Laborer	WG-3/3	EOD	4/87	FTS

Not Pictured:

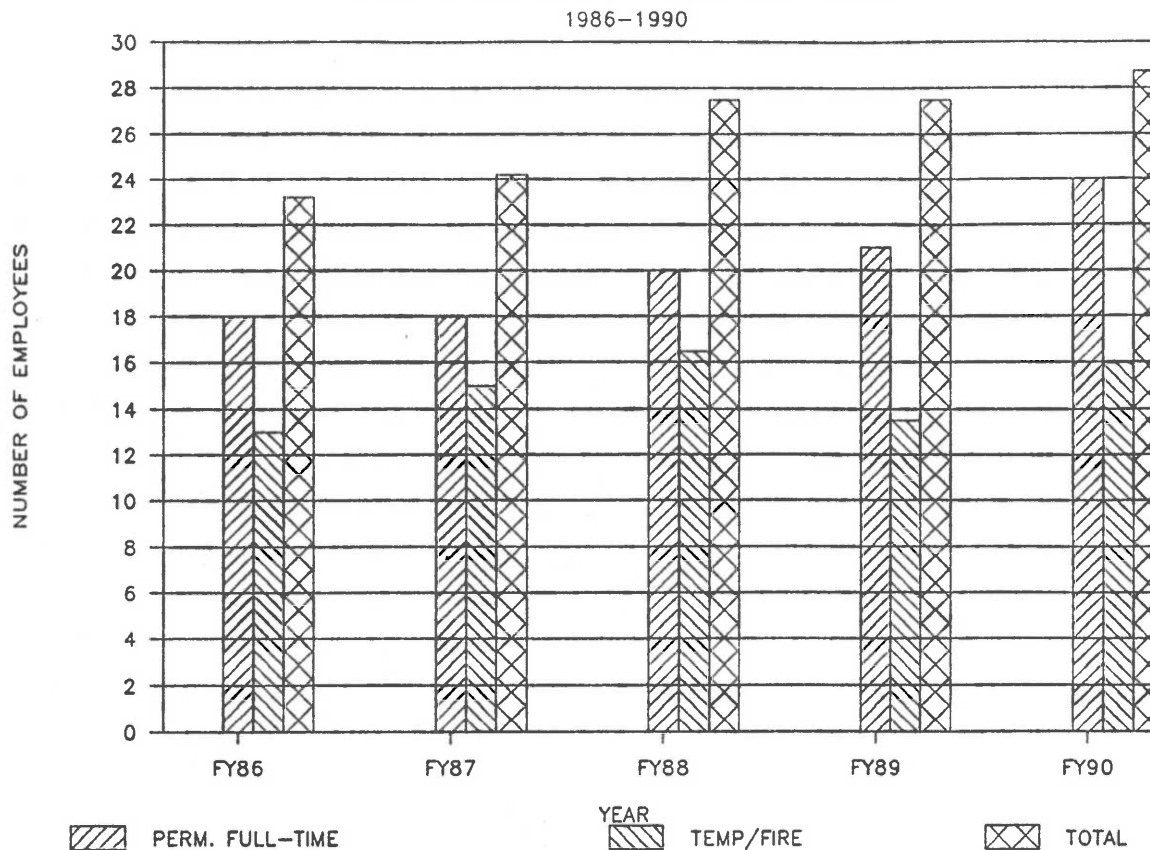
Elizabeth Buelna	Assistant Refuge Manager	GS-9/1	TRANS	11/90	PFT
David Ward	Range Aid	GS-4			T
William Bailey	Range Aid	GS-3			T
Dan Roshe11	Range Aid	GS-3			T

- CMR, being a large station, has many personnel actions and 1990 was no different.
- Manager Getman was promoted to a GS-11 to reflect the increased responsibilities of his position in December 1989.
 - In February awards were presented to Biologists Haglan and Dennis Macomber for level four ratings, to Manager Getman for his farm bill work.
 - Realtor Martin received his ten-year pin in February.
 - Temporary Biological Technician Tim Zachmeier reported for duty in the Farm Bill/Wildlife Extension program in February.
 - Laborer Lynn Pluhar reported back to work in February.
 - Manager Delehanty arrived in March as an assistant manager at the Sand Creek Wildlife Station. Steve and his wife, Wendy, live in Roy.
 - Systems Analyst Matchett received a promotion to a GS-11. Randy is responsible for the CMR GIS system.
 - Deputy Manager Malone transferred to Fish and Wildlife Enhancement, Rocky Mountain Arsenal, Denver, Colorado, in May as the assistant project leader. Larry and his wife, Carolyn, live in Denver.
 - Cindy Osmundson was selected to participate in the Service Cooperative Education Program effective May 6, 1990. Cindy recently graduated from the University of Wyoming.
 - Deputy Manager Berg reported for duty in August. Prior to Lewistown Bill was the Asst. Project Leader at J. Clark Salyer NWR in North Dakota.
 - Clerk-typist Patton received a promotion to a GS-4 in September.
 - Maintenancemen Bergum, Christenson, and Willmore and Laborer Pluhar were recipients of a Group Special Achievement Award in September for the Reynold's Hill road graveling project, a joint effort between Phillips County, COE and the FWS. The project improved 35 miles of road leading to the Fourchette Bay and required "camping out" at the site without running water or electricity for eight weeks.
 - Manager Alfonso and his wife, Kris, were the proud parents of a baby boy born in November.
 - A going away party was held for Manager Buelna who was temporarily assigned to Red Rocks NWR for an extended vacation, prior to her move to Laurel, Maryland as a pilot/biologist for the Migratory Bird Office.
 - Biological Technician Zachmeier was selected in December for a one-year appointment in the Farm Bill/Wildlife Extension Program.
 - Laborer Pluhar was selected in December for the equipment operator position at J. Clark Salyer NWR in North Dakota. Lynn and his wife, Laurie, will be moving in April 1991.

Classification Specialist Debbie Burton from the Denver Regional Office spent a week at CMR performing desk audits on five refuge positions. The audit reviewed the Systems Analyst, Administrative Officer, Refuge Assistant and Clerk-Typist positions in Lewistown, the Assistant Manager position at Jordan, and the Biological Technician position at Fort Peck. The Clerk-Typist position was upgraded to GS-4 as a result. Other changes are unknown at this time.

The option of selecting for a work week different from the standard five, eight-hour days resulted in four Lewistown office employees selecting the 5-4/9 compressed work week and most field station employees selecting a 4-10 schedule for the summer. The opportunity for work hour flexibility is appreciated and helpful to the refuge.

REFUGE STAFFING LEVELS



4. Volunteer Programs

In 1984 local Audubon member Chuck Carlson of Fort Peck volunteered to provide annual migratory bird data, mostly in the form of seasonal population densities of important species sightings and passerine migration records. Chuck provides a valuable service in expanding the knowledge of the current bird resources in the Fort Peck area. He is always willing to provide any data on request about the status of various bird species on the refuge.

Chuck Carlson reviewed the refuge bird list and also helped with a segment of the piping plover/least tern survey.

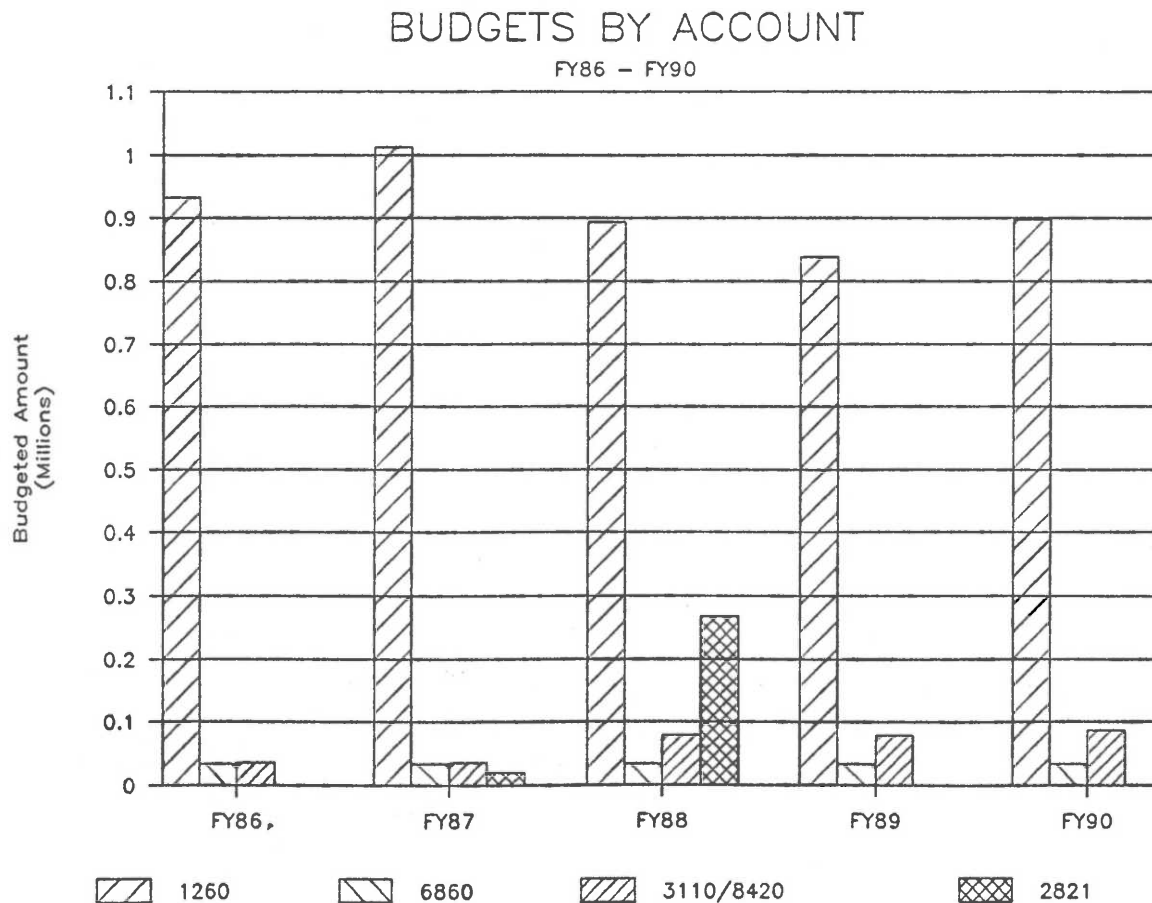
Carlton Christenson signed on to assist his father with maintenance projects in the Lewistown shop.

5. Funding

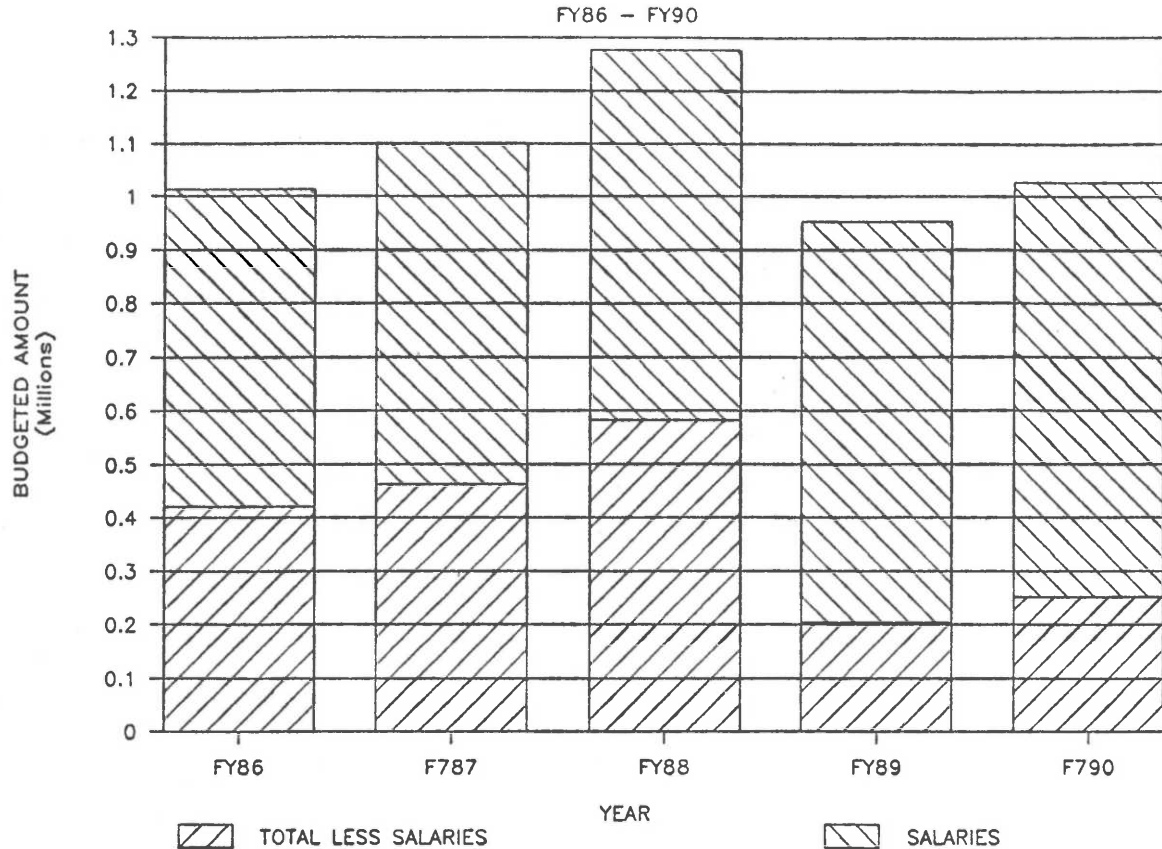
Four months into the fiscal year this station received a preliminary budget for FY90. The budget brought mixed emotions as it was again inadequate to fulfill refuge responsibilities. Funding for inflation, Environmental Impact Statement implementation, endangered species, Farm Bill/Wildlife Extension, facility maintenance and other new, number one or top priority projects has not been

forthcoming. Refuge receipts from the grazing program totaled \$148,819 in FY89 and \$136,791 in FY90. Cost of sales receipts to the refuge was \$33,400 in FY90 and \$34,000 in FY91, hardly an adequate figure. CMR will be the second reintroduction site for the black-footed ferret in North America, but the refuge has yet to receive a nickel. Although HMP's were completed, no implementation was possible as no project funds existed. Completing plans gives a false sense of security, when in reality little is being accomplished for wildlife or the habitat.

The following graphs reflect past budgets along with a comparison of the budgets to the cost of salaries from 1986 to 1990.



BUDGET TOTALS



6. Safety

Several minor accidents occurred during the year.

- Range Technician Coffin struck a finger with a post-pounder and lost a finger nail.
- Laborer Pluhar failed to set the emergency brake or leave the transmission in gear while parking. The unattended truck took a solo flight in the Snow Creek area of CMR, rolling approximately 80 yards before going over the edge of a steep coulee. No injury resulted, but damage to the truck was \$1677.40.
- Range Aid Ward suffered a minor cut to a hand when a piece of tractor tire was thrown from a vehicle shattering the windshield of the truck Ward was driving.
- Realtor Martin backed his pickup truck into a car causing \$159.70 in damage.

Monthly safety meetings were held in each office on various topics.

8. Other

Revenue sharing checks were distributed to the following counties:

<u>County</u>	<u>FY 1990*</u>	<u>FY 1989</u>	<u>FY 1988</u>	<u>FY 1987</u>	<u>FY 1986</u>
Fergus	\$ 3,137	\$ 3,937	\$ 4,322	\$ 3,722	\$ 3,337
Garfield	\$ 6,045	\$ 7,201	\$ 8,565	\$ 7,375	\$ 6,612
Golden Valley	\$ 533	\$ 444	\$ 442	\$ 381	\$ 342
McCone	\$ 590	\$ 709	\$ 597	\$ 514	\$ 461
Musselshell	\$ 7,821	\$ 6,820	\$ 7,322	\$ 6,305	\$ 5,653
Petroleum	\$ 5,449	\$ 4,587	\$ 5,518	\$ 4,752	\$ 4,260
Phillips	\$14,978	\$19,353	\$22,853	\$19,679	\$17,643
Stillwater	\$ 2,300	\$ 2,982	\$ 1,182	\$ 1,018	\$ 913
Valley	\$ 4,735	\$ 5,290	\$ 1,113	\$ 958	\$ 859
Yellowstone	\$ 341	\$ 284	\$ 345	\$ 297	\$ 266
	-----	-----	-----	-----	-----
TOTALS	\$45,929	\$51,607	\$55,259	\$45,001	\$40,346

*Not available

F. HABITAT MANAGEMENT

2. Wetlands

The eighth annual habitat tour was devoted to riparian evaluation and management and occurred during August at Fort Peck. The tour began with a riparian management classification workshop conducted by Dr. Paul Hansen of the Montana Riparian Association from the University of Montana in Missoula.



Dr. Paul Hanson, Montana Riparian Association, presented an excellent overview of riparian classification and management for refuge staff. JMA

Several areas were toured including: Hillard Coulee, divided by the Bear Creek Fence that initiated all refuge litigation; the 1,380-acre North Fork of Rock Creek Exclosure, where the riparian vegetation is starting to recover after being excluded from grazing since 1985; the proposed 1,000-acre South Fork of Rock Creek exclosure, with high potential for artificially enhancing riparian rehabilitation with minimal cost and effort; and a degenerated cottonwood forest along the Missouri River below Fort Peck Dam with little regeneration potential if livestock were excluded. Much discussion centered on the value of riparian exclosures, the need for a riparian site baseline inventory, and the cooperative development of a riparian "scorecard" to numerically evaluate specific riparian community health.

During April and May, Refuge employees planted approximately 450 sandbar willow, 200 cottonwood and 100 peach leaf willow stem cuttings in the Hawley Creek drainage on the west end of the Refuge. By early summer, most of the cuttings had produced buds or had leafed out. Summer drought and competition from surrounding vegetation took their toll. Only 15 percent of the cuttings survived by fall.



Everett Russell with a bucket of sandbar willow cuttings to plant along Hawley Creek, UL Bend NWR. WCH

Low fall moisture in the Fort Peck area did not replenish many of the dry refuge ponds and it only became worse during the spring and summer months. In May, 8 (24%) out of 33 reservoirs in Valley County and 7 (47%) out of 15 in McCone County were dry. In July, 17 (52%) in Valley and 8 (53%) in McCone County were dry. The lack of any appreciable moisture during the fall closed 1990 with dry and low ponds throughout the refuge.

4. Croplands

One permittee farmed 106.5 acres below Fort Peck Dam. Wheat was planted on 61 acres and the remaining 45.5 acres fallowed. One-third (20 acres) of the crop was unharvested as a wildlife winter food source. These croplands lie outside of the Executive Order boundary and are leased from the COE for wildlife benefits.

5. Grasslands

Severe drought conditions returned again this year to portions of the refuge. Only 5.24 inches of precipitation were recorded at Fort Peck, and 1990 was the third driest year on record (records have been kept since 1915 and only 1934 and 1984 were dryer). Grass growth on the east end of the refuge was essentially nonexistent. Although western Valley County appeared to have greater precipitation than to the east, grass growth was generally poor. Grass availability was so poor, cattle on one habitat unit near Fort Peck began losing weight during late summer and the permittee decided to move cattle off the refuge with 62 AUM's remaining in his permit. Obviously, with forage availability that poor, wildlife species needing grass for winter forage or early spring nesting cover are negatively affected. During drought conditions, where there is very little or no grass growth, livestock grazing pressure and range deterioration are compounded from one year to the next. Future management decisions will have to account for drought conditions when developing stocking rates for habitat units.



Elk grazing along a ridge top with the Little Rocky Mountains in the background.
UNK

Habitat monitoring in 1990 was primarily restricted to sampling currently existing upland transects after the grazing season and photo-stations in riparian areas. The photos will document dramatic changes in riparian habitat quality resulting from livestock exclusion. Riparian sampling techniques were explored and a "photo board" was developed to document changes in riparian communities through time. Beaver moved back into a riparian area, excluded from livestock last year in the Spring Creek Habitat Unit, and began dam rebuilding. Evaluating the adequacy of the new monitoring programs will be an ongoing process for several years.

Following are comparative data from representative habitat units expressed in percent of residual grass cover remaining in the grazed area compared to a control or exclosure:

Spring Draw #1 - Garfield County

<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
7.3%	25%	13.0%	46.0%	0.0%	7.7%

Nelson Creek Habitat Unit - McCone County

<u>1990</u>	<u>1989*</u>	<u>1988</u>	<u>1987*</u>	<u>1986</u>	<u>1985</u>
17%	*	4.5%	*	0.00%	0.00%

Seven-Point Habitat Unit - Valley County

<u>1990</u>	<u>1989*</u>	<u>1988</u>	<u>1987*</u>	<u>1986</u>	<u>1985</u>
22%	*	1.4%	*	0.00%	*

* not read due to early snow

7. Grazing

With reduced grazing levels established by the Record of Decision and the Habitat Management Planning process underway, the refuge is slowly changing the livestock grazing program inherited from BLM in 1976 to a program recognizing the needs of wildlife. While each habitat unit is unique, underlying themes are present in most HMP's. Those themes consist of fencing separately the bulk of refuge lands from adjoining BLM and/or large blocks of private and state lands. Other lands are licensed at full livestock carrying capacity and when left intermingled with refuge lands, make refuge wildlife forage reservations meaningless. Generally, the grazing season of use will avoid springtime grazing (April 15 to June 15) to provide for cool season grassland plant communities and ground nesting birds. Riparian drainages are often incorporated into livestock exclosures and double as control sites for vegetative changes.

The verdict is still out whether the cow is "king" on CMR after the fourth year of ROD grazing and completion of 44 HMP's. Progress towards managing CMR as a wildlife refuge has begun. If ROD grazing levels are valid, a general increase in residual cover should occur. The ROD establishes a grazing level for each unit the service is politically obligated to license yearly, regardless of vegetative conditions. It is already obvious that refuge wildlife objectives on many units will not be attainable at ROD levels. Hopefully, through the HMP process and subsequent evaluations, the FWS will attain management authority of the refuge grazing program.



This residual cover height-density transect is in a grazed portion of the Spring Creek Habitat Unit. The photo is from September and after the livestock grazing season. DLM

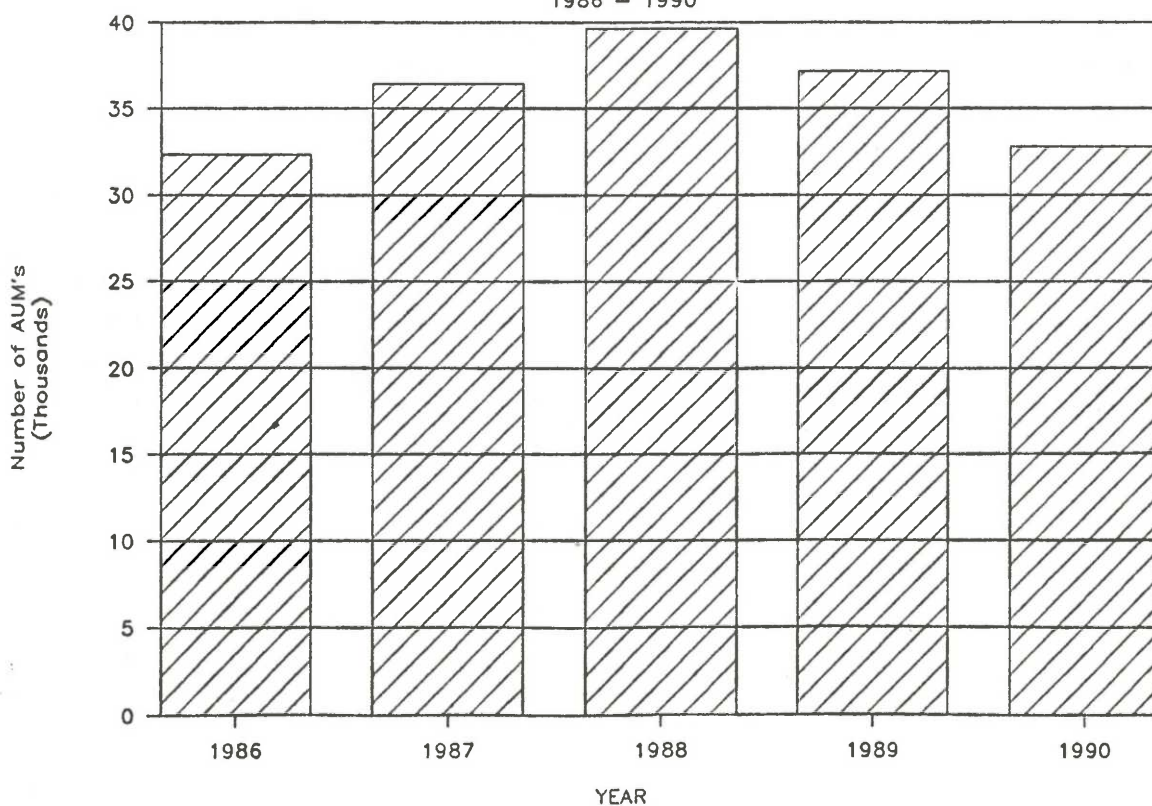


This is the adjacent control transect (located in a grazing exclosure) for the previous photograph. The exclosure was constructed in fall 1989 and reflects only one growing season of rest. The 1990 year was a drought year with only 2.42 inches of moisture during April, May and June. DLM

In 1990 the refuge licensed 32,782 AUM's for active grazing use on 65 grazing units. Voluntary nonuse amounted to 6,586 AUM's. Nonuse is encouraged and does not endanger the permittee's grazing privileges. Refuge AUM's were utilized by 7,812 cows, calves, and bulls; 2,870 yearling cattle; 23 horses; 785 sheep; and 103 bison.

LICENSED LIVESTOCK AUM'S

1986 - 1990



The grazing fee, established by Director Dunkle in 1986, is \$4.50/AUM for eight years. However, upon completion of an HMP the fee will be reduced to \$3.00/AUM for three years after which it will return to \$4.50 for the remainder of the eight-year period. Total grazing receipts in 1990 amounted to \$136,791. A grazing rate survey for the CMR satellites refuges completed in 1988 established a fair market value of \$9.22/AUM.

The low water levels in the Fort Peck Reservoir caused continued water gap problems throughout the summer. The pool level in 1990 was 40 feet below full pool. The ends of some water gap fences were over one mile from water. In instances impractical to lengthen fences, pastures were combined. Electric fence proved to be valuable as it is easily lengthened and shortened. Some permittees worked very diligently to keep up water gaps and others did not bother.



Livestock along the Missouri River below Fort Peck Dam in the Fort Peck Common Habitat Unit. DLM

Numerous requests from refuge grazing permittees are received each year requesting spring development, reservoir construction and wells. Unless the site is a water source used to calculate the EIS stocking rates, the request is denied. The permittee motive is to distribute livestock through more water sources. Even distribution is not desirable from a residual cover or deciduous shrub standpoint. GIS analysis of water locations buffered to reflect livestock impacts reveal definite impacts on sharp-tailed grouse lek locations.

8. Haying

Two special use permits were issued for haying on Missouri River bottomlands in the western part of the refuge. Permittees cut 67 acres of hay at \$10 per acre.

Refuge goals are to phase out haying by 1991 except for periodic haying or burning on White Bottom in the Slippery Ann closed area to facilitate elk viewing from the tour route. Elimination of most haying will restore the riverbottoms to a more natural state as specified in the refuge mission statement. The following table summarizes haying acreages at Sand Creek:

<u>Year</u>	<u>Acreage</u>
1990	67
1989	134
1988	176*
1987	326**
1986	277*

*Includes 35 acres in the Slippery Ann closed area.

**Includes 67 acres in the Slippery Ann closed area.

This year one, 38-acre field at Fort Peck normally planted to irrigated alfalfa was fallowed to control cheat grass. Alfalfa was harvested on the other 23 acres and the one-quarter refuge share was used to feed refuge horses and display animals in the COE big game exhibit and the CMR Lewistown buffalo exhibit.

9. Fire Management

Two prescribed burns were planned for the spring of 1990 on the Missouri River bottoms. Weather and personnel constraints prevented implementation. These plans will be re-submitted for 1991.

Wildfire activity on CMR in 1990 did not live up to predictions. Abundant residual vegetation from the previous year coupled with extreme drought would leave a prudent individual with quite a negative outlook. Actual wildfire activity was slightly above normal with 24 fires and 7 false alarms, and substantially below normal the five-year average in total acres burned.

Following is a table summarizing the fire activity on CMR for the past five years:

Wildfire Frequency and Size on CMR

<u>Year</u>	<u>No. of Fires</u>	<u>Acres Burned</u>	<u>Range of Acres Burned</u>
1990	24	1042	1/10 - 300
1989	19	436	1/10 - 343
1988	47	7232	1/10 - 3000
1987	8	64	3/10 - 50
1986	4	258	1/10 - 250

5-year average: 20.4 fires/year
88.5 acres/fire
1806.4 acres burned/year

Man caused fires are relatively rare at CMR, but two such fires this year were quite eventful. Our first fire this year, on March 31 near Fort Peck, was caused by a catalytic converter in dry grass. The driver, out test driving his new car, decided to turn around out in residual cover and got stuck. Ten acres later, the refuge was short some grass, and the driver was short a new car. The investigating refuge officer didn't have the heart to issue a violation for off road driving.



A catalytic converter, some grass, a nice overlook and presto. JMA

Then, one hot July day, one of our former hay permittees decided to recover some of his irrigation equipment. Since the water delivery equipment would not fit in his truck, he opted to modify the size with a cutting torch. Well, 264 acres later the refuge was the recipient of some rejuvenated hay ground and the permittee was the proud owner of some badly deformed irrigation pipe.

An interesting sidelight to the whole episode was the "loss" of several fallen down buildings on the old hay bottom. One of the buildings had been stuccoed some time in the past and painted a very garish turquoise. Such a structure on a NWR was quite an eyesore. Anyway, the incident commander reported after the first burning period, all structures had been saved. He was then summarily chided for being too efficient. The next day, refuge headquarters received a call relating several of the structures had burned to the ground overnight, the turquoise building being one of them. What a fortuitous stroke of "luck!"



Changing air patterns caused by fire can result in erratic fire behavior. UNK

Fifteen fire fighters were hired to meet our wildfire management responsibilities. One of those hired was unable to pass the step test and subsequently released. Needless to say, the basic training had been completed and we were unable to fill behind.

FMO Macomber assisted with instruction for two Service Basic Fire Management courses at Jackson, WY (National Elk Refuge), and Soldotna, Alaska (Kenai NWR).

10. Pest Control

Russian and spotted knapweed, Canadian thistle, and leafy spurge are the primary noxious weeds on CMR. Some whitetop occurs in the western part of the refuge. Weed distribution is limited. Refuge control efforts are a combination of mechanical and limited chemical means. Efforts to participate with biological agents have been ongoing.



Refuge firefighters hand pulled Russian knapweed plants from portions of the Hell Creek Habitat Unit after pesticide use proposals for chemical control were rejected by the regional pesticide review team. BAK

An experimental release of the Russian nematode, a potential control agent for Russian knapweed, was accomplished on Peter's Bottom this summer. The project in cooperation with the U.S. Department of Agriculture, A.P.H.I.S and Montana State University, Bozeman. The release of 600,000 nematodes and its resulting impact on various plants will be utilized to fulfill quarantine requirements.



Dr. Sarah Rosenthal, APHIS, released 600,000 Russian nematodes, a biological control agent for Russian knapweed, on Peter's Bottom as part of the ongoing quarantine studies. WCH

The few isolated patches of leafy spurge on King Island, Mauland Bottom and Knox Bottom along the Missouri River were treated by hand-pulling and Banvel granules. The efficacy of this technique is unknown.

Thirty-two staff hours were spent "grubbing out" Russian knapweed patches in the Hell Creek drainage to satiate local weed board grumbling about CMR's lack of control efforts on an expanding infestation. Only a fraction of the four acres were dug out, but at least the weed board saw an effort.

An unofficial request was made by Valley County to release the spotted, leafy spurge bug on stands of leafy spurge on the refuge. The spotted, leafy spurge bug is an approved USDA biological control agent for leafy spurge. Approval of the project is pending the county's overall plan and an official request.

Low Fort Peck Reservoir levels have encouraged salt cedar (Tamarix spp.) growth in many bays along Fort Peck Reservoir. Past stands of salt cedar have been self-limiting due to terrain and the lack of ground water beyond the high water level. The plant has primarily increased from the high water line toward the receding lake. Once Fort Peck Reservoir refills, the majority of the salt cedar plants will probably drown, leaving a small stand near the high water line.

11. Water Rights

The spillway elevation of the Pump Site Pond on the UL Bend NWR was lowered in 1989 to resolve a water rights dispute with the Wiederrick Ranch. A follow-up survey in 1990 confirmed allegations the remaining pond continued to infringe. The spillway was breached, resolving the water rights dispute.

12. Wilderness and Special Areas

No action has been taken on the 15 wilderness proposals for the refuge since oversight hearings were held in July 1979.

G. WILDLIFE

2. Endangered and/or Threatened Species

This was the third year of funding by the COE for CMR personnel to study breeding populations of piping plovers (threatened status) and least terns (endangered status). This year's study expanded to include the Missouri River off the CMR from Fort Peck Dam to the North Dakota border. Fieldwork was conducted from May 30 through August 9 and 396 staff hours were expended.

A minimum of ten piping plover and two least tern nests occurred on the refuge along Fort Peck Reservoir, more nests than observed in previous years. In 1989 six plover and two tern nests were present. Plovers and/or terns were observed on 12 different beaches, and most beaches used for nesting in the past were used again. Both species selected nest sites in small pea gravel and/or sand substrate 50 to 100 yards from water with low or no vegetative cover. Thirty-five piping

plover young fledged or 3.5 young/nest. No young fledged from the two least tern nests. Both nests were destroyed by a severe rain and wind storm in July.



Least tern chick, lower Missouri River. DLM

Reservoir water levels were eight feet lower during the 1990 nesting season than during 1989, creating extensive unvegetated beaches suitable for nesting. Vegetation growth is rapid and these areas will be unsuitable for nesting next year. When reservoir levels rise, availability of nesting habitat will decline abruptly. Vegetation encroachment on reservoir beaches appears to be the single greatest threat to breeding piping plovers and least terns.

On the Missouri River between Wolf Point and Poplar, Montana, six piping plover and 26 least tern nests were located. Water levels on this river stretch are controlled primarily by Fort Peck Dam. Nest numbers observed in 1990 were similar to 1989. Most plover nests occurred in association with least tern colonies. Nests were 0.6 to 1.9 feet above the water level and 6 to 75 yards away from the water. All nests were on sandbar islands with no vegetative cover and usually on the highest point. Mean river discharge at Wolf Point was 7950 cfs. River flows of 9800 cfs will begin to flood nests and all nests will be flooded at 14,000 cfs.

Plover and tern production this year was poor. No plovers and only five terns fledged. Loss of nests and/or broods was due to severe hailstorms and predation. River water levels controlled by Fort Peck Dam directly influence the quantity and quality of nesting and brood-rearing habitat on the river.

Bald eagles continue to increase below Fort Peck Dam. Between 1982 and 1988, an average of less than ten bald eagles wintered yearly around Fort Peck. Ten were observed in 1988, 36 in 1989 and 43 during the 1990 Midwinter Bald Eagle Survey.

The bulk of the birds concentrate around Kiwanis Park east to the Nelson Dredge Cuts.

Cisco, a forage fish planted in the Fort Peck Reservoir by the Montana Department of Fish, Wildlife and Parks in 1984, pass through the powerhouse and provide bird food. The cisco food source is a contributing factor, along with open water and cottonwood trees, for the increased eagle winter use. Wintering waterfowl provide dietary variation. Bald eagles usually start arriving in November and peak numbers are observed between mid to late December through January.

The Army Corps of Engineers has designated one eagle watching area below the powerhouses with the Watchable Wildlife Binocular Logo, and plan to designate two other areas next year. In addition, roads have been closed near eagle roosts in Kiwanis Park between December 1 and April 1.

Each year the refuge participates in the midwinter bald eagle survey. Two survey routes are flown and in some years additional areas are surveyed to document suspected eagle concentrations.

Midwinter Bald Eagle Surveys

<u>Year</u>	<u>Judith River</u>	<u>Vicinity of Fort Peck Dam</u>	<u>Other Areas</u>
1990	9	43	-
1989	17	36	-
1988	8	10	-
1987	6	4	8
1986	16	7	-

Successful captive rearing of black-footed ferret resulted in efforts to prepare reintroduction sites in several states. Currently 184 black-footed ferrets reside in captivity. Ferret release sites were prioritized by an interstate working group with Meeteetse and Shirley Basin, Wyoming being the first two choices. The north-central Montana site of which CMR is part was selected as the third site. Continued plague in prairie dogs has resulted in Meeteetse being dropped. In 1991 black-footed ferrets will be reintroduced in Shirley Basin. The north-central Montana site will be the second reintroduction site in 1992.

The north-central Montana site is located in Phillips County and contains 26,000 acres exclusive of an estimated 25,000 acres on the Fort Belknap Indian Reservation. Of the 26,000 acres, 6,000 acres are refuge, 12,000 acres are Bureau of Land Management and the remainder are state and/or private lands.

The Bureau of Land Management is currently revising the Resource Management Plan (RMP) for Phillips County. To provide input for the RMP and the black-footed ferret management plan in north-central Montana numerous public meetings were held. BLM established a Coordinated Resource Management Planning committee to guide BLM prairie dog decision making. Over 40 ranchers (those directly impacted) were met with individually by a team composed of FWS (both FWE and refuge), BLM and MDFWP biologists. Local ranchers, including CMR grazing permittees, range from resigned or adamantly opposed to ferrets. Most do not care about the ferret, they just do not want prairie dogs or an endangered species. Concern over changes

in lifestyle is a major issue. The eastern Montana Congressional Representative is vehemently opposed to the black-footed ferret, endangered species and the FWS. Some public relation challenges lie ahead.

Black-footed ferret and prairie dog matters are requiring significant money and staff time contributions from the refuge. Adequate refuge funding or FTE's for the necessary work to reintroduce ferrets is nonexistent. It is discouraging to be the number two site for the reintroduction of the world's rarest mammal and not be able to obtain any funding or FTE's. Ironically, the FWS is showing the similar ambivalence with public affairs efforts. The black-footed ferret public affairs program is a BLM effort with input from other agencies. The FWS does not have the public affairs infrastructure or interest to handle a program of this magnitude, a real shame.

A 40-acre inholding located in the middle of a refuge prairie dog colony continued to gravel permittee Don Burke. Three nights were spent searching for black-footed ferrets with the MDFWP and BLM to block clear south Valley County to allow prairie dog control. No control will occur until the north-central Montana reintroduction site is approved.

An Interim Prairie Dog Management was drafted and approved by the regional office. The plan will be finalized after the completion of the black-footed ferret management plan for north-central Montana.

This is the second year of a MDFWP contract with the COE to determine pallid sturgeon status, reproductive success and life cycle requirements in the Missouri River. Two pallid sturgeon were captured in the Fort Peck tailrace in the winter of 1990, and four more in the Missouri River below the mouth of the Yellowstone River in September 1990.

Historically, the Missouri River from the confluence of the Mississippi River to South Dakota was the most suitable habitat for the pallid sturgeon. This river section has been extensively altered for flood control, navigation and power generation. Sections of the Missouri River in North Dakota and Montana and the Yellowstone River in Montana, historically fringe areas, may be the last remaining strongholds.

The two pallids captured in the Fort Peck tailrace were mounted with a combination of radio telemetry/sonic transmitters. The telemetry component is used to track and relocate the fish from an aircraft. This system is effective only when the signal source is less than 15 feet deep. When the signal source is greater than 15 feet, the sonic component must be used, requiring submersion of a hydrophone in the water. It cannot be used from an aircraft and is of limited effectiveness because of the large area in the Missouri/Yellowstone System. Both fish were easily relocated with the sonic component, while still in the tail pool. Unfortunately the sonic receiver broke and was sent to the manufacturer for repair. During this time, the river was flown with the telemetry gear and no signals were detected, indicating the pallids may not have left the deep waters of the tailrace. When the receiver was returned, the sturgeons could not be relocated. Neither sturgeon was relocated during the remainder of the year.

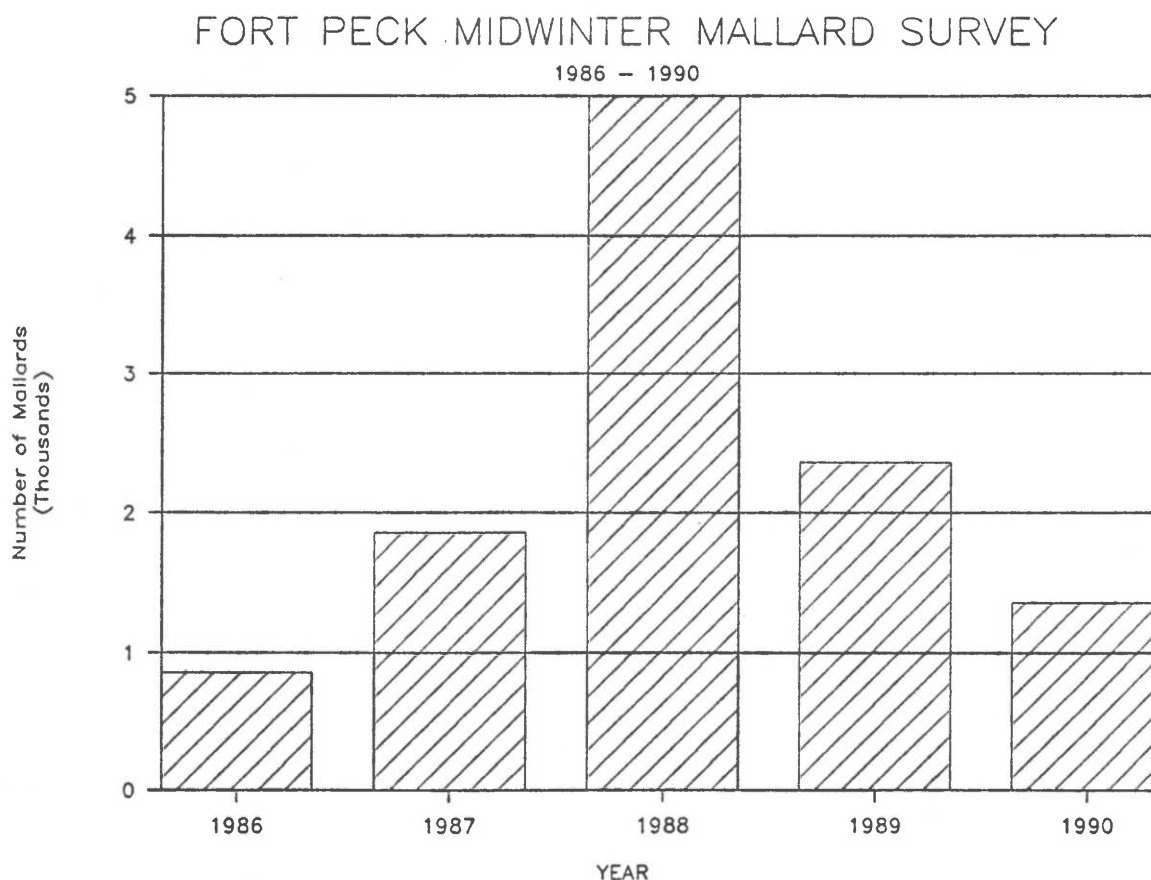
The four pallid sturgeon captured in September were mounted with simple radio telemetry transmitters. One fish was relocated twice, and the other once. Much

of the river is over 15 feet deep, where the signal cannot be detected. Each time the fish have been relocated, the fish were within a mile of original capture.

During the fall, reports of timber wolves in the Billy Creek area were received. These were always secondhand accounts and never reported by the person who supposedly heard or saw the wolves. A pack of five were claimed to have been seen. The scant information was forwarded to the Helena FWE office.

3. Waterfowl

The wintering mallard population was 1,360 birds in 1990 as compared to 2,360 in 1989. Each year the area below Fort Peck Dam is surveyed as part of the USFWS Midwinter Waterfowl Survey.



Approximately 425 Canada geese wintered in the vicinity of Fort Peck Dam.

Waterfowl pair and brood counts on stock water ponds were conducted in Valley and McCone Counties this year. Sixteen of 48 reservoirs were dry. Of the remaining 32 reservoirs, only 23 had waterfowl during the May pair count. There

were a total of 73 indicated breeding pairs, averaging 2.23 pairs per pond on the 32 ponds with water. Valley County had 2.7 pairs per pond and McCone County had 1.8. Broods were observed on only nine ponds. Six duck species were present, with mallards being most numerous.

Waterfowl Breeding Pairs, Valley and McCone County

<u>Species</u>	<u>Pair Number</u>	<u>Pairs/Pond</u>
mallard	25	0.79
gadwall	3	0.09
American wigeon	9	0.27
blue-winged teal	14	0.45
northern shoveler	15	0.45
northern pintail	6	0.18
	-----	-----
TOTAL	73	2.23

Waterfowl Species and Broods, Valley and McCone County

<u>Species</u>	<u># Of Broods</u>	<u>Average Brood Size</u>
mallard	5	4.8
gadwall	1	7.0
American wigeon	3	7.0
blue-winged teal	2	8.5
northern shoveler	1	5.0
	-----	-----
TOTAL	12	6.5

Waterfowl do not play a significant role in overall CMR management. Waterfowl habitat on CMR is of poor or marginal quality with very limited potential. The 240 plus stock ponds, 30 miles of Missouri River, and 1,700 miles of reservoir shoreline, perhaps, produce an estimated 500 Canada geese and 3,500 ducks in excellent years. Placed in perspective, this is only three goose nests and 12 duck nests per township.

5. Shorebirds, Gulls, Terns, and Allied Species

The Caspian tern rookery on Gull Island moved and set up housekeeping on an island off Second Ridge and Bobcat Point. Approximately 200 adult terns were on the Second Ridge island and 50 on the Bobcat Point island.

Because of funding constraints, no colonial bird surveys were completed in 1990.

6. Raptors

Funding and staff time precluded a complete raptor inventory in 1990. A minimum of five osprey and two golden eagle nests were observed.

Active Raptor Nests

	<u>1990*</u>	<u>1989*</u>	<u>1988*</u>	<u>1987*</u>	<u>1986</u>
Osprey	5	9	5	4	7
Golden Eagle	2	4	5	2	3
Prairie Falcon	2	0	4	2	5

* incomplete survey due to funding

Two spring raptor surveys were conducted in coordination with the MDFWP. The routes are located in the eastern and central Garfield County.

7. Other Migratory Birds

A bluebird trail on the refuge along the Pines Road is maintained by Mrs. Barbara Hansen. Of 25 nest boxes available, 23 were used by mountain bluebirds and two were empty. The bluebird nests fledged 123 young, as compared to 117 in 1989.

Migration Chronology on East Unit Arrival Dates 1986-1990*

<u>Species</u>	<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>
Western Meadowlark	3/25	3\25	3/20	2/08	3/28
Great Blue Heron	3/30	4\9	4/3	4/16	4/16
Franklin's Gull	4/10	3\24	4/17	4/18	4/14
White Pelican	4/4	3\24	4/19	4/15	**
Yellow-Headed Blackbird	**	4\29	3/30***	4/24	4/26
Mourning Dove	4/11	4\19	4/13	4/21	4/14
Blue winged Teal	4/28	4\19	4/26	4/18	4/26
Chipping Sparrow	5/4	4\27	4/30	4/30	4/30
Eastern Kingbird	5/19	5\11	5/7	5/20	5/10
Lark Bunting	5/17	5\11	5/10	5/11	5/10

* Information provided by Charles Carlson, National Audubon Society.

** Missed arrival date.

*** Earliest recorded date.

The refuge participated in 4 mourning dove coo counts, 6 breeding bird surveys, and 2 Audubon Christmas Bird counts.

8. Game Animals

a. Deer

Mule deer populations are extremely variable throughout the refuge. Generally speaking, better habitat areas appeared static in 1990 and other

areas were the same or slightly downward. Garfield County continued to have low population levels.

The Sand Creek study area, spring count by MDFWP, revealed an estimated 988 mule deer. Fawn ratios were 47 per 100 adults as compared to 2 in 1989. Density was 9.9 deer per square mile as compared to 8.5 in 1989.

Sand Creek Deer Research Area - March/April Survey

<u>Year</u>	<u>Total Deer*</u>	<u>Fawns/100 Adults</u>	<u>Calculated Density (deer/square mile)</u>
1990-91	988	47	9.9
1989-90	850	02	8.5
1988-89	1,200	48	12.0
1987-88	1,230	62	12.3
1986-87	915	18	9.2

*Estimated population based on marked animals.

The Harpers Ridge, late winter count, area reflected an increased deer population with an observed density of 6.2 mule deer/square mile in 1990 compared to 4.3 in 1989. Fawn ratios increased from 30 fawns per 100 does in 1989 to 34 in 1990.

Harpers Ridge Deer Trend Area - Fall Count

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Does</u>	<u>Observed Density (deer/square mile)</u>	<u>Adult Bucks/100 Does</u>
1990	* no survey due to funding			
1989	91	27	3.0	16.0
1988	173	47	5.8	5.0
1987	103	102	3.6	4.3
1986	135	87	4.5	35.0

Harpers Ridge Deer Trend Area - Late Winter Count

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Adults</u>	<u>Observed Density (deer/square mile)</u>
1990	134	34	6.2
1989	92	30	4.3
1988	141	88	6.7
1987	93	73	4.0
1986	112	-	-

The Skunk Coulee area counts reflected a decreased deer population with an observed density of 6.0 mule deer per square mile in 1990 compared to 9.6 in 1988. Fawn ratios increased from 26 fawns per 100 adults in 1988 to 55 in 1990.

Skunk Coulee Deer Trend Area - Late Winter Count

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Adults</u>	<u>Observed Density (deer/square mile)</u>
1990	190	55	6.0
1989	* no survey due to funding		
1988	303	26	9.6

Skunk Coulee Deer Trend Area - Fall Count

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Does</u>	<u>Observed Density (deer/square mile)</u>
1990	* no survey due to funding		
1989	* no survey due to funding		
1988	162	56	5.1

The winter Sand Arroyo deer trend area (southern McCone County) reflected an increased winter deer population with an observed density of 4.2 mule deer per square mile in 1990 compared to 2.4 in 1989. Fawn ratios increased from 22 fawns per 100 adults in 1989 to 35 in 1990.

Sand Arroyo Deer Trend Area - Fall Count

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Does</u>	<u>Observed Density (deer/square mile)</u>	<u>Adult Bucks/100 Does</u>
1990	* no survey due to funding			
1989	86	66	1.9	6.4
1988	70	83	1.5	2.9
1987	40	111	0.8	0.0

Sand Arroyo Deer Trend Area - Winter

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Adults</u>	<u>Observed Density (deer/square mile)</u>
1990	196	35	4.2
1989	111	22	2.4
1988	118	48	2.5
1987	111	36	2.3

Northern McCone County is more productive, has less vehicle access and a higher mule deer density. This area is represented by the Bobcat Creek Deer trend area. In the last three years this area has shown a gradual increase in density and in adult bucks per 100 does during the fall count, most likely a result of the limited buck hunting regulations in this area.

Bobcat Creek Deer Trend Area - Fall

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Does</u>	<u>Observed Density (deer/square mile)</u>	<u>Adult Bucks/100 Does</u>
1990	92	104	9.4	42
1989	73	100	5.1	32
1988	62	105	4.3	25

Bobcat Creek Deer Trend Area - Winter

<u>Year</u>	<u>Total Deer</u>	<u>Fawns/100 Adults</u>	<u>Observed Density (deer/square mile)</u>
1990	84	45	5.8
1989	* no survey due to funding		
1988	71	-	4.5

Hell Creek Allotment Trend Area - Winter

<u>Year</u>	<u>Total Deer</u>	<u>Observed Density (deer/square mile)</u>
1980	* no survey due to funding	
1989	94	2.3
1988	4	0.1
1987	14	0.4
1986	21	0.7

Gilbert Creek Allotment Trend Area - Winter

<u>Year</u>	<u>Total Deer</u>	<u>Observed Density (deer/square mile)</u>
1990	* no survey due to funding	
1989	27	0.7
1988	30	1.0
1987	21	0.7
1986	70	1.9

Haxby Point Allotment Trend Area - Winter

<u>Year</u>	<u>Total Deer</u>	<u>Observed Density (deer/square mile)</u>
1990	* no survey due to funding	
1989	96	13.3
1988**	32	4.4
1987	37	3.2
1986	41	3.2

** survey boundaries changed in 1988

Grass Coulee Allotment Trend Area - Winter

<u>Year</u>	<u>Total Deer</u>	<u>Observed Density (deer/square mile)</u>
1990	* no survey due to funding	
1989	41	1.7
1988	81	3.4

b. Elk

The MDFWP statewide elk management planning effort that stalled in 1989 continued in the same manner through 1990. Apparently, efforts will resume in 1991 to get the planning process moving.

The 1989-90 winter elk population was 1041 elk on the north side of the Missouri River and Fort Peck Reservoir. Elk surveys are not conducted on the south side of the Missouri River due to the habitat immensity. Elk numbers and distribution appear to be expanding off-refuge on the south side of the Missouri River. Regular sightings are made in the Crooked Creek to Blood Creek area and from Armell's Creek to the Judith River.

Winter Elk Surveys

<u>Winter</u>	<u>HU 621/623</u>	<u>HU 622</u>	<u>HU 631/632</u>	<u>Total</u>
*1990-91	506	259	-	765
1989-90	686	125	230	1041
1988-89	- 731 -		238	969
*1987-88	457	11	-	468
1986-87	354	381	221	958

* MDFWP survey incomplete

Shifts in elk distribution occur each winter and the refuge goal is to maintain an over-wintering population of 1,500. Bulls comprised 18% of the elk survey in 1990.

c. Bighorn Sheep

Twenty-seven sheep were released in 1980 after being captured from the Sun River herd near Augusta, Montana. The transplant has split into two groups, one in the Mickey-Brandon Buttes and the other in the Larb Hills. The December survey count in 1990 was 119 as compared to 93 in 1989.

Maximum Bighorn Sheep Counts - Mickey-Brandon Buttes

<u>Year</u>	<u>Total</u>
1990	119
1989	93
1988	78
1987	90
1986	92

d. Antelope

Antelope habitat is limited on the refuge and the best habitat lies in the eastern portions of the refuge, especially Garfield and McCone Counties. Western portions contain little antelope habitat except for the U.L. Bend NWR. The refuge is not large enough to contain a single herd unit, so most antelope move on and off the refuge throughout the year. Due to funding restraints, no antelope surveys have been conducted since 1986 when 4,500 animals were sighted.



Antelope buck, Musselshell Trail Habitat Unit. WCH

10. Other Resident Wildlife

In 1989, 26 routes of about 10 to 15 miles in length were established throughout the refuge. The routes were intensively censused at one-mile intervals. This technique provided a systematic approach to grouse censusing on the refuge.

Sharp-Tailed Grouse Dancing Ground Counts

	<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
No. of Grounds Surveyed	47	71	59	35	32	53
No. of Birds Present	390	196	784	309	148	188
Birds/Ground	8.3	2.8	13.2	8.8	4.4	3.5

Sage Grouse Strutting Ground Counts

	<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
No. of Grounds Surveyed	18	12	11	9	7	11
No. of Birds Present	199	129	100	189	109	49
Birds/Ground	11.1	10.8	15.7	21.0	15.6	4.4

Sharp-tailed grouse lek counts in 1990 were 8.3 birds per lek as compared to 2.8 in 1989. The increase reflects better habitat over portions of the refuge. Breeding populations in 1989 were the lowest in many years.

Sage grouse numbers appeared to remain stable and did not display the increases as did sharp-tailed grouse. Lek counts in 1990 were 11.1 birds per lek as compared to 10.8 in 1989.



Displaying sage grouse, Nichols Coulee Habitat Unit. WCH

A beaver cache count is conducted yearly along the Missouri River.

Beaver Cache Counts

<u>Year</u>	<u>Number of Caches</u>
1990	83
1989	119
1988	*
1987	75
1986	39

* no survey conducted

Dr. Craig Knowles examined northern pocket gopher densities within a portion of a prairie dog colony excluded from grazing for 12 years. Densities within the excluded portion were 60.8/km while densities outside of the enclosure were 4.5/km. Forb and grass production were greater within the enclosure than the grazed area outside. The paper was presented at the annual Montana Chapter Wildlife Society Meeting.

Three refuge employees participated in the Lewistown Christmas Bird Count. Forty species and 2,184 individual birds were observed.

11. Fishery Resources

During 1990 MDFWP continued the lake trout creel census. Three hundred fourteen (314) anglers were censused in the spring and 578 in the fall. Lake trout size continued to increase with the well established cisco forage base. The catch rate in 1990 was similar to 1989. MDFWP has some concern over the catch rate decrease in the fall for the last two years.

Lake Trout Survey Data

	<u>Average Length</u>	<u>Average Weight</u>	<u>Average Time/ Fish Caught</u>
1990 (spring)	27.1 inches	8.7 pounds	6.7 hours
(fall)	26.6 inches	7.6 pounds	10.0 hours
1989 (spring)	25.8 inches	7.7 pounds	5.6 hours
(fall)	25.8 inches	7.2 pounds	11.1 hours
1988 (spring)	24.3 inches	5.8 pounds	6.7 hours
(fall)	25.0 inches	6.9 pounds	3.8 hours
1987 (spring)	22.1 inches	4.0 pounds	5.8 hours
(fall)	23.6 inches	5.6 pounds	4.7 hours
1986 (spring)	21.0 inches	3.0 pounds	3.8 hours
(fall)	22.1 inches	3.8 pounds	3.4 hours

The reservoir salmon fishery is a put-and-take operation and relies on a yearly infusion of fingerlings. No stocking occurred in 1989 or 1990 because of disease in Michigan hatcheries, Montana's fish source, and no extra fish were available from North Dakota. To continue the salmon fishery a disease-free source must be located or eggs collected from reservoir fish. It is unlikely MDFWP will collect eggs due to funding and staff time constraints. The fishery future is uncertain.

MDFWP randomly sampled the entire reservoir at all recreation areas and by weekly aerial surveys, to achieve an accurate assessment of fishing pressure on Fort Peck Reservoir. A report is forthcoming as data analysis is not completed.

Commercial fishing on Fort Peck Lake is almost over. Only one commercial fishing permit was issued by MDFWP and the catch was hardly worth the effort. A summary follows:

Commercial Fishing Summary 1986-1990 (pounds)

<u>Species</u>	<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>
Buffalo	1,470	-0-	38,342	4,526	12,115
Carp	-0-	-0-	2,276	-0-	103
Drum	-0-	-0-	-0-	-0-	-0-
River Carpsucker	183	-0-	610	500	47
Goldeye	1,305	6,289	36,792	129,990	222,000
	-----	-----	-----	-----	-----
TOTAL	2,958	6,289	78,020	135,016	234,265

Commercial catch of goldeye has declined since 1981, a classic example of over exploitation. Limited market exists for any other commercially legal fish.

12. Wildlife Propagation and Stocking

Fish Stocking by the MDFWP occurred in the following locations:

Fish Stocking Summary - 1990

<u>Location</u>	<u>Number</u>	<u>Size</u>	<u>Species</u>
Main Duck Creek	1.6 million	Fry	Walleye
North Fork of Rock Ck.	1.7 million	Fry	Walleye
Marina area	1.4 million	Fry	Walleye
McGuire Creek	2.0 million	Fry	Walleye
Hell Creek	1.0 million	Fry	Walleye
Pines	1.9 million	Fry	Walleye
Hell Creek	102,598	Fg1	Walleye
Spillway Bay	125,134	Fg1	Walleye
Snow Creek	126,344	Fg1	Walleye
Bear Creek	126,915	Fg1	Walleye
Gilbert Creek	83,850	Fg1	Walleye
Box Creek	114,936	Fg1	Walleye

<u>Location</u>	<u>Number</u>	<u>Size</u>	<u>Species</u>
Sand Arroyo	62,400	Fg1	Walleye
Cattle/Crooked Creek	65,563	Fg1	Walleye
Sutherland	29,920	Fg1	Walleye
Hell Creek	9,000	Fg1	Northern Pike
S. Frk. Rock Cr.	9,000	Fg1	Northern Pike

13. Surplus Animal Disposal

The buffalo calf in the Lewistown Exhibition Pasture was sold during the National Bison Range auction in October for \$752.

15. Animal Control

One coyote damage complaint was received in the Snap Creek habitat unit.

Coyote Depredation Complaints

	<u>1990</u>	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>
Number of Complaints	1	1	0	3	1
Claimed Livestock Loss	unk	5 sheep	0	34 sheep	33 sheep
Coyotes Killed	unk	0	0	3	4

Complaints were received over beavers cutting cottonwood trees in the Fort Peck cabin area. Five beavers were removed from the spillway area to prevent the loss of cottonwood trees near the COE Flat Lake Recreation Area and boat ramp.

H. PUBLIC USE

1. General

Numerous requests were made for slide shows, 16mm movies, and VCR tapes on a variety of subjects including waterfowl, wetlands, the National Wildlife Refuge System, and hunting. Field trips to the Buffalo Exhibition Pasture and environmental education programs were provided by the refuge staff.

The refuge display at the Montana Outdoor Recreation Exposition in Billings attracted considerable attention. The exposition was attended by 19,000 people.

Benton Lake NWR coordinated an educational booth at the Montana State Fair in Great Falls. CMR staff assisted with booth staffing.

Numerous tours and presentations were given:

- One-minute radio spots were presented on the Glasgow and Wolf Point radio stations concerning refuge hunting regulations.

- The Yellowstone Valley Audubon Society annual refuge tour was held at Fort Peck.
- A presentation on the refuge was given to the Circle Pioneer Historical Circle.
- An article was written about wintering Bald Eagles at Fort Peck and distributed to the local newspapers.
- The Roy High School was provided with botanical specimens for use in classroom instruction. An invitation was extended to the school to use the refuge and staff for biology field trips.
- A presentation was given to 15, sixth-grade students at Stanford on "Careers in Wildlife."
- A presentation was given to 82 students and faculty at the Judith Gap Public School.
- A ten-minute, taped, radio show on the farm bill program was completed for a Miles City radio station.
- A total of 53 Earth Day packets were given to the local schools.
- Sixty "Take Pride in America" book markers were given to the Lewistown Special Olympics.
- Supplied the Lewistown Public Library with films to launch the Earth Day Activities and staffed a Wildlife Week/Earth Day exhibit at the Lewistown Boy Scout Camporee with 150 people viewing the exhibit. Assisted the BLM by putting a Wildlife Week display in their office for their Wildlife Week program.
- Manager Getman gave a presentation to 115 students promoting the Take Pride in America and Earth Day Programs.
- Manager Getman presented a program on "Wetlands and Their Values" to over 100 members of the Sweet Grass County Conservation District.
- For the Environmental Education Program, 55 children toured the refuge discussing the Take Pride in America Program and National Fishing Week.
- Twenty-two children from the Magic Forest Day Care Center were provided with an environmental education tour of the buffalo exhibition pasture.
- Sand Creek personnel gave a tour of the refuge to approximately 30 children from the Fort Belknap Reservation.
- John Martin presented two programs on raptor ecology to the Fergus County High School in Lewistown. Approximately 34 students were in attendance.
- A presentation on refuge management was given to ten graduate students and Dr. Mackie from Montana State University.

Cindy Osmundson began a new endeavor called the Educational Outreach Program. Through this program, teachers and group leaders can arrange for presentations by refuge staff. This program has been well received and is expanding daily.

The refuge received 203 hunting and 139 recreation requests requiring correspondence in 1990, a 34 and 76 percent increase over 1989.

In 1989 a crippled great horned owl was received from a Billings veterinarian by Realtor John Martin to use for presentations. John has a strong personal interest in raptors and can convey his interest to others. The owl is well traveled and at the close of 1990 had participated in over 959 public contacts in one-half to one hour presentations given to numerous civic groups, scouts and school groups.

5. Interpretive Tour Route

The 20-mile tour route is located near the west end of the refuge. The tour route has 13 stops. Much of the use is associated with elk viewing in the closed area during the fall months.

Watchable Wildlife signs were received from the Defenders of Wildlife. The signs are part of a viewing program corresponding to a book on Montana's watchable wildlife. Sites on the refuge include the Wildlife Tour Route, Manning Corral prairie dog town, UL Bend NWR and other locations.

8. Hunting

CMR is open to hunting in accordance with FWS and MDFWP regulations for big game, upland and migratory game birds, and coyote. Regulations for CMR are complex as the refuge falls into three MDFWP regions and eight hunting units. Season lengths, bag limits, and other regulations may vary by region and unit and sometimes are very confusing.

Two block management areas established in 1989 by MDFWP in south Valley County to resolve hunter access problems and landowner complaints continued in the 1990 hunting season. In one unit the management area was posted and the hunters were given a map. The map showed closed areas around private dwellings, restricted vehicle access to established roads, banned open fires and restricted camping on private land to specific areas. MDFWP was responsible for law enforcement.

In the other area the landowner was paid a two dollar stipend per hunter. MDFWP provided sign-up sheets and the landowner handled everything else.

The Chain Buttes block management area adjacent to the refuge in Petroleum County was initiated by BLM and MDFWP in response to landowner complaints concerning road travel by hunters. The program got off to a rough start. BLM posted the closed roads on Friday afternoon before the archery season. Confusion reigned as hunters discovered the road driven to a campsite the day before was closed the next day. Signing was poor as closed roads, not open, were posted and disappearing signs caused the next guy to screw up. BLM maps of the area were poor xerox copies. Even with the initial problems, compliance by the public was very good. Reactions from hunter were mixed with no strong consensus, although those opposed were quite vocal.

The block management program should achieve several objectives. Limiting off-road vehicle travel will alleviate landowner concerns resulting in private lands remaining open for recreation. Reduced access will provide additional security cover allowing for some older age class mule deer and elk. The lack of large bucks is a frequent hunter gripe.

a. Archery Big Game (elk, mule and white-tailed deer, and antelope)

Elk continue to be the primary attraction for archers on CMR. Limited archery deer and antelope hunting occurs.

Hunting pressure was light opening weekend due to the 90 degree temperatures. Pressure increased significantly during the second and third weeks of September corresponding with the peak of rut. The majority of the hunting pressure was concentrated around the riverbottoms where the elk utilized heavy willow growth for security habitat.

From time to time, the Refuge will receive reports of mountain lion sightings or reports of tracks along the Missouri River. Confirmation of lions utilizing Knox Bottoms was received in September. An elk-hunting archer occupying a tree stand along the Missouri River killed an adult female lion supposedly stalking him in his tree stand. The elk hunter watched the cat approach and circle the tree and crouch directly in front of him. Incidentally, the hunter, tree stand and nearby area were bathed in "doe in heat perfume." The hunter yelled at the cat and waved an arm. Failing to scare the cat, the archer launched a vigorous expulsion of arrows in self-defense. The cat succumbed during the barrage. The hunter, terrified of the cat, did not exit the tree stand until late at night when his friends came to find him. The dead cat was found the next day. MDFWP did not cite the individual because of the circumstances.



A female cougar was killed on Knox Bottom by an archer who felt his life was threatened. Cougar sightings or sign are rare on the refuge. UNK

In another archery related incident a bow hunter was shot at, by another bowhunter, in the Crooked Creek area. The bowhunter was leaving his tree stand while at the same time blowing on his cow call as not to spook elk. As he walked with his bow over his shoulder, an arrow struck his bow, inches from his neck. Although the name of the bozo was obtained, the hunter was so shaken, he could not remember it.

Elk archery permits in Valley County were restricted to 350 via the state drawing. In 1988 and '89, on the CMR in Valley County, an archer could not hunt deer or antelope with a bow unless he possessed an elk archery tag. This regulation was dropped for the 1990 hunting season. Of the 350 permits, 100 were applied for and received in HU 632, but there were only 147 applications in HU 631.

Archery elk permit numbers in Phillips County were again unlimited as in 1989 but with the caveat that the permit had to be applied for prior to June. The south side of the river again did not have a permit system and remained wide open to archery hunting.

Elk Archery Hunters

<u>Year</u>	<u>No. of Hunters</u>	<u>Recreation Days</u>	<u>Harvest</u>	<u>% Success</u>
1990	not available			
1989*	763	5,232	103	13.5
1988	1,281	8,355	103	8.0
1987	1,290	8,645	142	5.7
1986	1,257	6,436	65	5.5

* HU 621,622,623,631,632 only, does not include HU 410, 700

In an attempt to reduce the deer/human/vehicle encounters around Fort Peck, the usual "No Hunting Zone" around the townsite, powerhouse, and spillway area were opened to deer archery hunting. This area was only opened during the archery season and there were no extra antlerless mule deer "B" archery licenses available this year.

b. Rifle Big Game (elk, mule and white-tailed deer, antelope, and bighorn sheep)

In 1990, 395 rifle elk tags were issued and an estimated 316 elk were harvested for a 80 percent success rate. The hunt is an extremely prized hunt, and hunters spent an estimated 1,500 hunter days pursuing elk. Those with either-sex permits select for mature bulls and the bulk of the bull harvest was branch-antlered bulls.

Elk Rifle Hunters

<u>Year</u>	<u>Tags Issued</u>	<u>Recreation Days</u>	<u>Harvest</u>	<u>% Success</u>
1990	395	*	*	*
1989	435	1,602	348	80
1988	340	1,240	275	81
1987	220	810	162	85
1986	185	567	138	75

* not available

Tooth collection envelopes were sent to all rifle elk permit holders in refuge hunting districts. Response was excellent and 223 teeth were received. Of the returns 153 were antlerless elk, 68 were antlered and 2 unknown. Of the sampled bull elk, 4 were spikes, 21 were raghorns and 43 were 6x6 or better. Age results have not been received from the laboratory.

Deer regulations varied by hunting district. Over-the-counter, white-tailed deer tags were valid in all refuge hunting districts. Over-the-counter, mule deer tags were valid in all hunting districts but Region 4. All "A" tag hunting was either-sex.

Teeth were obtained from 68 mule deer by refuge staff during the fall hunting season. Antlerless deer comprised 27 and antlered 41. Six of the antlered deer were yearlings, 11 adolescents and 24, 4x4 or better. Seven of the bucks had spreads greater than 20 inches. Age results have not been received from the laboratory.

In an effort to increase older age mule deer classes, 200 antlered mule deer permits were issued by the MDFWP for Hunting Unit 650 west of Highway 24 (includes portions of the refuge). To hunt mule deer bucks on the refuge in McCone County one needed a special permit. This is a highly controversial limited buck permit regulation since establishment in 1987. The MDFWP is not in favor of the trophy unit, while it has gained support from a local sportsmen group.

Data indicate some increase in adult bucks per 100 does in the Sand Arroyo Deer Trend Area (0 AdB/100 Does 1987 to 6.4 in 1989) and in the Bobcat Creek Deer Trend Area (from 25 AdB/100 Does in 1988 to 42 in 1990). These two areas represent differing ends of the deer habitat spectrum on the west side of Highway 24 in HU 650; excellent habitat is represented in Bobcat Creek and mediocre habitat in Sand Arroyo.

According to MDFWP, although 200 mule deer buck permits are in the trophy unit, phone surveys indicate only about half of the permit holders hunt and those hunting are selective. If they don't find a trophy-sized mule deer buck, they opt not to harvest a small buck. In addition, hunting pressure may have increased on the east side of the highway, due to loss of hunting opportunity on the west side of the highway, leading to an influx of mule deer bucks into the trophy portion of the unit.

The number of applicants reflects the interest in having an opportunity to harvest larger deer. Applicants jumped from 150 the first year to 519 the second, and 652 the third and 782 in 1990.

Deer harvest on the refuge is unknown. Since refuge lands are a portion of eight hunting units in three regions, it is impossible to distinguish refuge harvest from other lands in the MDFWP conducted survey.



Mule deer buck harvested in the HU 650 limited deer permit area. DLM

Region 7 of the MDFWP continued non-specific area management during the 1990 antelope season. Eleven thousand (11,000) either-sex antelope tags were issued for the region through application and one additional doe/fawn license could be purchased by the successful applicants as well as any hunter who did not have an either-sex tag.

Five Rocky Mountain bighorn sheep permits were issued in 1990. Five rams were harvested.



A successful bighorn sheep permit holder. UNK

c. Upland Game (sharp-tailed and sage grouse, ring-necked pheasant, Hungarian partridge, and turkey)

Suppressed populations resulting from previous years' drought persisted in 1990. Although populations began to rebound, there were just not enough birds to fill the vacant habitat on the refuge. Other than a few limited areas like U.L. Bend NWR and Fort Peck, most grouse hunting on CMR is incidental to big game hunting.

While ring-necked pheasants can be found in riparian areas along the Missouri and Musselshell Rivers and below Fort Peck Dam, pheasant numbers are not high enough to entice many hunters.

d. Other (waterfowl, dove, and coyote)

Most mourning doves have left Montana by the opening of the season. Dove hunting on the refuge is almost insignificant. Waterfowl hunters were also far and few between. Steel shot, coupled with publicity about low populations and the perceived high fees associated with state and federal duck stamps, turned all but diehards away. Some jump shooting occurred below Fort Peck Dam for mallards.

Coyote hunting occurs on the refuge during the fall and winter months. Most hunting is "target of opportunity" while big game hunting. Poor pelt prices virtually eliminated late-season hunting.

9. Fishing

Paddlefishing continues to be a popular activity along the Missouri River. Fishermen are spending more time during the week and earlier in the year to avoid weekend crowds (especially Memorial Day weekend). People now fish in early April where several years ago, it was rare to see anyone before May 1. Campgrounds are occupied all week long and the maintenance of sanitary facilities is quite burdensome. Paddlefish in excess of 100 pounds are taken but most average around 50 pounds. An estimated 1,500 visits were made for paddlefishing on the refuge.



Paddlefishing camps at the James Kipp Campground in May. SJD

The intensive efforts of the MDFWP in planting cisco, spot-tailed shiner, walleye, northern pike, small-mouth bass, and salmon are showing results. Walleye fishing in the Big Dry Arm between Nelson Creek and Rock Creek consistently produces limits in the 2-3 pound category. Several fish in the 6-10 pound class were taken in the past year. Northern pike in excess of 20 pounds were not uncommon. Small-mouth bass are caught regularly in the Hell Creek and Devils Creek Areas.

This was the second year there was a chinook salmon run at the face of the Fort Peck Dam. The average fish weighed around 13.6 pounds with an average length of 31.9 inches. A record fish was caught in September and weighed 26.23 pounds and was 36.25 inches in length.

The third annual Montana Governor's Cup Walleye Tournament was held in July. One hundred sixty-two (162) teams participated this year as compared to 150 in 1989, and 130 in 1988. The aggregate, ten-fish weight of 36.3 pounds won the \$8077 purse. Forty-five percent of the walleyes weighed were successfully released. The remainder did not die in vain and were consumed in the annual fish fry.

Falling reservoir levels have resulted in boat launching difficulties throughout the refuge. No where is the problem as pronounced as at Crooked Creek Bay at the Fort Musselshell Marina. The boat ramp is at least two miles from water. Several tours of the site were held by local politicians, agency folks and congressional aides. Alternatives were examined but the low water levels preclude any facility in Fergus or Petroleum County, a bitter pill for locals. Even with normal pool levels the future of Crooked Creek Bay is dubious. Most likely the COE will improve facilities elsewhere to compensate politically for Crooked Creek.



The Crooked Creek Recreation Area and Fort Musselshell Marina. It is over two miles to water from the boat ramp. SJD

17. Law Enforcement

Cooperation between state wardens and refuge officers is emphasized throughout the year. Refuge officers are ex officio state wardens. State wardens working the refuge stay in close communication during the hunting seasons. Each August, a law enforcement refresher at Sand Creek is attended by state wardens and refuge officers from eastern Montana who meet for two days to discuss the upcoming season and enforcement policies. Refuge officers qualify with their Service weapons at this time.

In 1990 refuge law enforcement violations numbered 15 as compared to 17 in 1989. Following is a listing of violations and fines for CMR in 1990 (violations reflect those issued or initiated by refuge officers, not those initiated and issued solely by state officers):

<u>Violation</u>	<u>Number</u>	<u>Fine</u>
Off-road vehicle travel	3	\$ 300
Improperly tagged animal	2	\$ 100
No hunter orange	3	\$ 60
Take deer in wrong area	3	\$ 150
Shine artificial light	1	\$ 100
Discharge firearm	1	\$ 50
Fish without license	1	\$ 50
Take protected species	1	\$ 50
	--	-----
Totals	15	\$ 860

Everett Russell was involved in a Search and Rescue effort on December 8 on the Fred Robinson Bridge. An abandoned vehicle and suicide note at the scene had LE officials wondering what to do next. Rumor has it the individual involved turned up alive and well somewhere west of the Refuge.

While negotiating to purchase a 440-acre inholding in return for a limited airstrip easement on adjacent FWS land, a landowner built the airstrip on FWS land before the terms were agreed. The landowner was told the airstrip was unauthorized and in violation of Federal Regulations and would have to be removed (large tractor tires, picnic table and rock pyramid). The landowner realized his mistake, which resulted from a misunderstanding on his part, and was cooperative. In hopes negotiations to purchase the land would continue, the landowner was not given a citation. After the incident was resolved, he put the airstrip on his own land and no longer wanted to sell.



The illegal airstrip on refuge lands near a private inholding. JMA

A Refuge entrance sign was vandalized on Highway 24. During the same time period a COE shelter house in the Bear Creek Recreation Area was also vandalized. At least one person has been charged with the shelter house incident, but no connection has been made between the shelter house and the entrance sign vandalism.

A mount of a fox with a duck in its mouth, illegally purchased in North Dakota, was picked up from a Park Grove resident and sent to SA Swain in North Dakota.

Ten refuge officers had a law enforcement physical prior to Marana training. The physical averaged \$352 per officer.

19. Concessions

The refuge began the permitting of outfitters operating on the refuge in 1989. Outfitters are not assigned areas of the refuge and must operate under the same rules and regulations as does the general public. Camping is restricted to two weeks in a 30-day period. Thirty-four outfitter permits were issued in 1990. Liability insurance listing the U.S. Government as co-insured is required.

I. EQUIPMENT AND FACILITIES

1. New Construction

A major component of livestock management is fencing. Consequently, fencing activities are frequent.

- A ten-acre vegetative exclosure was constructed in the Skunk Coulee Habitat Unit.
- About one-half mile of fence was constructed in the Bear Creek Habitat Unit.
- About 1.1 miles of fence were constructed in the Bug Creek Habitat Unit. A cable was stretched across McGuire Creek to facilitate the water gap.
- The gap between the Department of Energy and the Fort Peck Wildlife Station wareyard was fenced.
- The Bobcat Creek Habitat Unit was completed with the installation of 4.85 miles of boundary fence.
- Sixteen miles of fence in the Bug Creek Habitat Unit were staked in preparation for fencing.
- Two, ten-acre upland and one, 95-acre riparian exclosure were constructed in Gilbert Creek Habitat Unit.
- The Snow Creek Habitat Unit boundary fence was completed by B & B Fencing contract in July.
- Two miles of boundary fence were constructed in the Two Calf Habitat Unit. Materials were delivered to the site via helicopter. Permanent staff members completed the fence during the fall months after losing our seasonal fire-fighters/fence builders. This HMP is now fully implemented.
- One 12-foot cattle guard was installed on refuge road 206 by McCone County in the new fence across McGuire Creek in the Bug Creek Habitat Unit.
- Preliminary work was done on the Rock Creek fence contract.
- The proposed Gilbert Creek fence was walked and the contract information was submitted to Lewistown.
- The buffalo fence at the Lewistown headquarters is being moved to provide viewing opportunity by the public. The changes will enlarge one pasture and will allow access to live water in the other.
- A fence was constructed around the new well in the Bobcat Creek Habitat Unit.

The solar-powered pump jack installed on the well drilled in accordance with the Bobcat Creek HMP in 1989 went through four motors and three relay switches and still does not function. Contracting in the regional office is now negotiating with the contractor to replace the solar powered pump with a windmill.

2. Rehabilitation

The developed spring in Penick Coulee was rehabilitated in August 1990 with the aid of BLM. Approximately 60 feet of Elgin interceptor drain pipe were added to the existing water collection pipes to catch more water from the natural seep and divert it to a stock tank. Flow was found to be about 0.5 gallons per minute, not appreciably more than prior to the rehabilitation effort.



The Lewistown buffalo fence was relocated to utilize the pasture more efficiently and to facilitate viewing by the general public. WCH

Maintenance of fences for livestock management is a continual task.

- An eight-foot cattle guard was installed in refuge road 351, leading to a riparian exclosure in the Fort Peck Habitat Unit.
- An old cattle guard was removed and the hole covered in refuge road 527 in Fort Peck Common Habitat Unit.
- Due to falling water levels, electric fence was installed and maintained near the spillway in the Bear Creek Habitat Unit and in the South and North Forks of Rock Creek to protect a riparian exclosure from livestock grazing.
- Permittees Walt Collins and Charlie Ferguson installed and maintained approximately one mile of electric fence each in Bug Creek and Sand Arroyo Habitat Units.
- Water gaps at the Bear Creek Recreation Area were repaired.
- Exclosure fence around Duck Creek Reservoir in Silver Dollar Habitat Unit was repaired.
- One wire from around Junction Reservoir exclosure was removed. The remaining four wires were re-spaced.
- Three miles of existing "off-boundary" boundary fence were removed in the Snow Creek Habitat Unit.

- The Snow Creek, Squaw Creek and Musselshell River riparian exclosures were repaired several times after runoff events blew out portions of the water gaps. A total of 24 staff days was spent at these locations.
- 3.2 miles of old fence were removed by contract in the Bobcat Creek Habitat Unit by contract.
- One mile of old fence was removed in the Nelson Creek Habitat Unit.
- Two wires from the south side of the refuge horse pasture in Fort Peck were removed. The remaining four wires were properly spaced and stays were installed.

Road maintenance occurred throughout the refuge.

- Refuge road 425 (Bone Trail) was repaired.
- The three-mile Refuge portion of the Reynold's Hill Road was graveled over a two-month period in the spring. Soft roads and spring rain showers prevented a more timely completion of the project. Total volume of gravel used was in excess of 7,000 cubic yards. An all-weather road now exists to Fourchette Bay on the north side of Fort Peck Reservoir. Retired maintenance worker, Floyd Emery, was hired temporarily to assist with the project.
- The tour route and Route 201 to Rock Creek were graded.
- The Boyce Coulee Bridge was replaced with 80 feet of 36 inch CMP. The shaky bridge was deemed unsound as a result of continued erosion at its base.



The road crossing on Boyce Coulee was rerouted to bypass a failing bridge. UNK

A great amount of other miscellaneous work was completed during the year:

- The horse corrals were cleaned and sanded.
- Three, eight-foot cattle guard frames were constructed.
- Plates were welded on three cattle guards to prevent dirt from falling in the pit.

- Wire and a pole enclosure were built around the solar well and a catch basin was constructed below the overflow.
- Gravel from the old airstrip at Slippery Ann was stripped and stockpiled to use for a bunkhouse parking lot.
- Refuge residences at Sand Creek received new refrigerators. Quarters #2 received a new storm door.
- The Sand Creek Office and both residences received a coat of exterior paint.
- Conduit was installed into the COE new fiberglass radio building at Fort Peck. BLM moved the FWS radio repeater to the new building.
- Island and dike repair work were completed on the goose display pond at Sand Creek.
- A slide area along the auto tour route was reshaped and ditched to prevent water and mud from washing across the auto tour.

A used boat was received from Flint Hills NWR for use in piping plover/least tern surveys on Fort Peck Reservoir. The boat is a 19 foot Monarch with a six cylinder Chevrolet motor. The boat is in very good repair and runs well.



Two underground storage tanks were removed at the Lewistown headquarters. The gasoline tank was leaking and required considerable dirt removal. WCH

4. Equipment Utilization and Maintenance

Refuge personnel and equipment were kept busy all summer supporting the Farm Bill/Wildlife Extension Program in Montana. The refuge transport was available and assisted Montana refuges throughout the year moving equipment.

- Fire equipment was hauled from Missoula to Billings and from Missoula to Miles City.

- Picked up and delivered fencing materials at Seedskaadee NWR for the Bison Range.
- Delivered the self-propelled scraper to Medicine Lake NWR.
- Hauled a sprayer from Benton Lake NWR to Lee Metcalf NWR.
- Picked up two fuel tanks and one water tank from the National Bison Range and used fence material from Benton Lake NWR.
- Hauled the JD road grader to Great Falls for repairs and picked up the D-3 dozer.

5. Communication Systems

Funding for a new high-band radio system was available this year through fire equipment funding, but was not obtained because the station could not get a frequency assignment. There is a lot of competition among various government agencies for high-band frequencies and the Interior committee processing these requests has an average turn-around per request of 15 months. Money is again available in 1991 and our local Congressman has taken an interest and has promised to get things moving. We have been very lucky in not having any serious situations where functional radio communication is a life or death necessity.

6. Computer Systems

Computers are a routine part of business on CMR. The refuge has ten personal computers and a Prime mini-computer. All are interconnected, including the machines at the three field stations. Most of the staff do their own word processing and editing on a computer. CMR personnel have also developed database and spreadsheet applications that are very useful and serve as a valuable and organized foundation.

CMR's Geographical Information System (GIS) is firmly in place and producing many products for refuge management. Completion of the digitizing for almost three dozen data themes for 65, 7.5-minute quadrangles was completed this fall. This is a major milestone in the GIS program culminating over three years of effort. This information is now available on a refuge-wide basis.

Examples of GIS applications include: range site productivity maps for habitat monitoring applications; field maps with wildlife resources and physical features plotted directly on USGS topographical quadrangles; sharp-tailed and sage grouse population monitoring surveys; black-footed ferret recovery efforts and prairie dog management; cattle monitoring surveys; raptor nest location maps; cultural site and natural area location maps; and CMR mineral withdrawal maps and acreage calculations for verification with manually-derived figures; and for public display.

The MOSS software package has been the standard for CMR's GIS applications. MOSS has severe limitations, but as a public domain package is available free of charge. Plans are to secure a permanent copy of PC-ARC/INFO along with appropriate hardware.

J. OTHER ITEMS

3. Items of Interest

January: Manager Foster traveled to Denver, Great Falls, Minot, Marana, and Pierre, while on the Refuge Compatibility Review team, to interview Managers.

Manager Malone attended a Yellowstone Valley Audubon Chapter meeting.

Manager Getman attended a SCS sponsored meeting, "Common Ground, Wildlife vs. Agriculture and How to Bridge the Gap," to give a presentation on the Wildlife Extension Program.

Manager Malone attended the MDFWP Commissioners meeting in Helena.

Biologist Haglan attended a Montana Watchable Wildlife Working Group meeting in Helena.

Managers Alfonso and Mackey attended the annual Wittmayer Grazing Association meeting.

Manager Malone gave a presentation on refuge planning procedures at a Coordinated Resource Management Planning meeting with the Society for Range Management in Miles City.

Managers Williams, Russell, and Buelna, Biologists Haglan and Macomber, and Biological Technician Spence attended annual LE training at Marana.

Maintenance Worker Christenson certified one employee at Lee Metcalf NWR for equipment operation use.

Manager Getman attended a Phillips Resource Area prairie dog meeting in Malta.

Managers Alfonso and Mackey attended a meeting with the COE and MDFWP concerning the deer archery season around Fort Peck.

February: Realtors Johnson and Martin attended a realty meeting in Bismarck.

Dennis Mackey began law enforcement training in Georgia.

Systems Analyst Matchett and Refuge Assistant Moline attended PC ARC/INFO training in Ft. Collins.

Managers Williams and Russell attended the annual Square Butte Grazing Association meeting.

Manager Malone attended the Central Flyway Wing Bee in Santa Fe.

Managers Foster, Malone, and Getman, Biologists Haglan and Macomber, Systems Analyst Matchett, and Realtor Martin attended a land ethics workshop in Lewistown and then a presentation by the National Guard on the Montana Training Center slated for Valley County.

Biologist Haglan attended a Fergus County Weed Board meeting.

Managers Alfonso, Getman and Knudsen attended annual LE training at Marana.

A number of staff members attended the Montana project leaders and the MTWS chapter meeting in Lewistown.

March: Manager Foster attended a block management meeting with MDFWP and the BLM to discuss off-road travel management in the Chain Butte Area.

Administrative Officer Lewis, Refuge Assistant Moline, and Clerk Patton attended a one-day GSA procedure workshop in Great Falls.

Biologist Haglan attended a Contaminate Symposium in Bismarck.

Manager Foster and Biologist Haglan met with the Museum of the Rockies and the COE concerning the removal of the T. rex fossil from the refuge.

Manager Alfonso is a member of the BLM off-road vehicle working group.

The Project Leaders meeting in Denver was attended by Managers Foster, Malone, Alfonso, and Williams and Realtor Johnson.

Biologist Macomber attended two weeks of Wildfire Investigation training in Georgia.

April: Biologist Haglan attended the Montana Watchable Wildlife Working Group meeting.

Fifteen employees completed their renewal of the Basic Life Support B CPR course.

Maintenance Worker Willmore attended fire training at the National Elk Refuge.

Manager Alfonso attended a working group meeting on BLM's off-road policy.

Manager Knudsen attended a BLM interagency meeting in Miles City.

Manager Malone attended the Yellowstone Audubon Society Chapter board of directors meeting to discuss the refuge's mineral withdrawal and their upcoming refuge tour.

Biologist Macomber and Systems Analyst Matchett attended a meeting in Ft. Collins on the Landsat Imagery project.

Manager Foster gave a presentation on the Prairie Pothole Joint Venture Program to the BIA.

Biologist Macomber instructed at the National Elk Refuge fire training session.

Manager Foster and Biologist Haglan met with Endangered Species and the BLM on black-footed ferret reintroduction.

May: Manager Foster, Biologist Haglan and Systems Analyst Matchett attended several meetings with BLM and FWE on black-footed ferrets in Lewistown.

Manager Buelna spent two weeks on the annual Waterfowl Breeding Bird Survey. She traveled to parts of North Dakota, South Dakota and Montana.

Realtor Johnson attended flight training in Kalispell.

Manager Foster attended an interagency meeting in Jordan on the impact of Fort Peck water levels on recreation.

Systems Analyst Matchett attend an interagency GIS meeting in Billings.

A state DU meeting in Great Falls was attended by Realtor Johnson.

Managers Foster and Getman and Realtor Johnson attended a waterfowl tour at the National Bison Range.

Managers Alfonso and Mackey, Biologist Haglan, and Biological Technician Spence attended a piping plover meeting in Malta.

A mineral withdrawal meeting was attended by Manager Foster and Realtor Johnson.

June: Biologist Haglan attended a Montana Watchable Wildlife Working Group meeting at the Bear Tooth Game Range near Helena.

A meeting for the reintroduction of black-footed ferrets was held at the Lewistown BLM. Staff members from Fish and Wildlife Enhancement and Biologist Haglan attended.

Manager Foster and Systems Analyst Matchett attended the First National U.S. Fish and Wildlife Service Geographic Information Systems Workshop in Fort Collins, Colorado. Systems Analyst Matchett presented a paper on the history and applications of GIS.

Realtor Johnson attended realty training in Washington, D.C.

Rhoda Lewis from the Regional Office was given a tour of northeastern Montana by Realtor Martin. While Rhoda was in Lewistown, she spoke to staff members from various refuges in Montana about historic preservation.

Assistant Manager Getman and Biological Technician Zachmeier attended a farm bill workshop in Billings sponsored by SCS.

Maintenance Worker Christenson attended 24 hours of diesel training in Missoula.

Manager Getman and Biological Technician Zachmeier met with DU personnel from the Bismarck Field Office to inspect several potential projects.

SCS employees from the state office and the Washington, D.C., office along with Manager Getman inspected several interagency CRP wildlife extension projects.

July: Biologist Haglan attended several black-footed ferret meetings. He also met with landowners to get their responses to the reintroduction of the ferrets.

An interagency GIS meeting in Bozeman was attended by Systems Analyst Matchett.

Managers Foster, Williams, and Delehanty, Realtor Johnson, Congressman Marlenee, Assistant Secretary of the Army Robert Page, General Witherspoon, Bill Harris (Owner/Operator of Crooked Creek Recreation Area) and interested parties met at the Crooked Creek Recreation Area to discuss the low-water situation.

The Fort Peck Game Range held their annual meeting with Manager Foster and Realtor Johnson attending.

Biologist Haglan attended Habitat Evaluation Procedures Training in Fort Collins.

Refuge Assistant Moline attended Cartographic Output System (COS) training in Billings.

August: The annual law enforcement refresher at the Sand Creek Station was held.

Managers Foster, Getman and Williams and Realty Specialist Johnson attended the Project Leaders Meeting in Missoula.

Clerk Patton and Refuge Assistant Moline attended a one-day course on Proof Reading and Editing Skills.

Managers Foster and Getman attended the Predation Symposium training in Jamestown, North Dakota.

September: Managers Alfonso, Berg and Foster attended the Fort Peck Interagency Council meeting in Glasgow.

Managers Foster, Getman and Williams and Realtor Johnson attended a project leaders meeting in Missoula.

Manager Berg attended a Smith and Wesson Armorer's School in Rapid City.

Manager Delehanty attended basic fire training.

October: Biologist Haglan and Systems Analyst Matchett attended a black-footed ferret meeting in Malta.

Managers Getman and Foster, Deputy Berg and Realtor Johnson assisted with the Lewistown Chapter of Ducks Unlimited annual fund raiser banquet.

John Foster attended a social hosted by the BLM Director Cy Jamison. The event was an effort by BLM to inform national outdoor writers, land managers and politicians of the new BLM thrust recognizing public use and wildlife as an integral part of natural resource management.

Administrative Officer Lewis and Clerk Patton attended a four-day Word Perfect and dBase workshop sponsored by the BLM in Lewistown.

Sub-station Managers attended an administrative session put on by Administrative Officer Billie Lewis.

Manager Malone met with the BLM about the refuge's locatable mineral withdrawal.

Manager Getman and Realtor Johnson met with FmHA on the Bratsky acquisition near Bridger.

Manager Russell assisted Special Agent Hanlon on LE patrol in the Bob Marshall Wilderness Area.

Realtors Johnson and Martin attended a realty meeting in Bismarck, North Dakota.

Several staff members attended different BLM meetings on the National Guard proposal.

A tour was give to Mitch King, PPJV coordinator.

November: Manager Foster gave a PPJV presentation to the Fort Belknap and Fort Peck Indian Reservations.

December: Manager Foster attended an Access Working Group meeting on access to public lands in northern Fergus and Petroleum Counties.

The Third Annual Montana GIS User's Conference in Missoula during December was attended by Deputy Manager Berg, Biologist Haglan, and Systems Analyst Matchett.

Systems Analyst Matchett assisted Red Rock Lakes NWR with the Trumpeter Swan capture program. Severe cold weather prevented any actual captures, but he did assist with daily feeding and census work.

Staff members attended meetings with MDFWP, Region 4, in Lewistown and Regions 6 and 7 in Malta to discuss hunting season proposals and exchange other information.

Biologist Macomber attended a Valley County Weed/Range meeting.

Regional Review Appraiser Shelton visited the station.

Refuge Assistant Moline attended a two-day Lotus workshop given by BLM in Lewistown.

Manager Getman and Realtor Johnson attended an interagency meeting involving FWS, MDFWP, SCS and Montana State Lands on implementation of the Upland Game Bird Habitat Program in Fergus County.

Manager Berg attended training for firearm instructors in Marana, Arizona.

Arrangements were made for the February 4-8 Project Leaders Meeting in Billings. Staff for Senator Baucus and Representative Marlenee were contacted and plan to attend part of the meeting.

ARD Skip Ladd visited the refuge and was given a brief tour of the Sand Creek Unit.

4. Credits

This report was rough-drafted by Jim Alfonso, Bill Berg, Steve Delehanty, Bill Haglan, Brad Knudsen, Dennis Macomber and Randy Matchett. Editing and final draft were by Bill Haglan. John Foster and Bill Berg provided proofing. Rhonda Moline prepared the graphs illustrated and the final copy.



Sunset on Fort Peck Reservoir. BAK

HALSTONE &
HALBREED NWR'S

HAILSTONE AND HALFBREED LAKE NATIONAL WILDLIFE REFUGES

Rapelje, Montana

ANNUAL NARRATIVE REPORT

Calendar Year 1990

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

The narrative reports for Hailstone and Halfbreed Lake NWR's are combined together in this document. The refuges are part of the Big Lake Complex, a large drainage basin area beginning with Hailstone to the north and ending at the state-owned and managed Big Lake to the south. Halfbreed is in the central part of the complex, receiving the freshest water and most of the migratory bird use. This complex is one of the most productive areas in central Montana for waterfowl. Both areas were established by Executive Order as refuges and breeding grounds for migratory birds and other wildlife.

Hailstone NWR is located five miles northeast of Rapelje, Montana. It has a complex ownership and administrative pattern with 160 acres of fee title refuge, 760 acres of refuge easement, and 1,828 acres of Waterfowl Production Area (WPA). The habitat component valuable to waterfowl and other wildlife on this site is a 300-acre reservoir. Historically the area surrounding this refuge was shortgrass prairie, but over the years it has been plowed and planted to wheat. Hailstone NWR was managed as a no-hunting refuge easement from the mid-1930's until 1980 when the WPA was acquired.

Halfbreed Lake NWR is located six miles east of Rapelje, Montana. It initially was managed as a flowage and no-hunting refuge easement. In 1987, 3,246 acres were purchased in fee title, which included most of the original easement. The Refuge now includes 3,246 acres in fee title, 640 acres of state land, where FWS has acquired the grazing lease, and 400 acres of private land that is still covered by the original refuge easement.

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K. FEEDBACK

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L. INFORMATION PACKET (inside back cover)

A. HIGHLIGHTS

Data were collected by the Montana Cooperative Wildlife Research Unit to evaluate upland habitat conditions, duck nest density, and duck nest success on Hailstone and Halfbreed NWR's (Section D.5).

An 85-acre winter wheat field was planted to DNC (Section F.5).

B. CLIMATIC CONDITIONS

The region has moderately cold winters with typical January minimums near 0 degrees F and occasional cold periods exceeding -20 degrees F. Summers are pleasant with daytime temperatures averaging 80 degrees with infrequent hot periods of 100+ temperatures. Low humidity and continuously strong winds cause rapid loss of soil moisture and high evaporation rates for wetlands and lakes. Average annual precipitation is 14 inches with about 70 percent occurring from April to September. Surface runoff often exceeds 50 percent of the precipitation due to heavy textured soils and minimal ground cover.

Precipitation in 1990 was 19.13 inches or 36 percent above the average annual rate. The majority of the rain fell during the period from April - June. August was unusually wet. The average summer (June, July, August) temperature was 66.3 degrees.

C. LAND ACQUISITION

1. Fee Title

The FWS has been working to acquire 3,480 acres in fee title along the west boundary of Halfbreed NWR. This acquisition is needed to develop this refuge to its maximum potential for waterfowl. There is an ideal location on the Refuge to build a water control structure to improve waterfowl breeding pair and brood habitat. Ducks Unlimited has surveyed the site and developed a proposed project to provide semi-permanent water on an additional 414 acres. This project would back water onto private land during years of above normal precipitation. This acquisition is necessary for this project to be constructed.

Approval from Congress was received this year to pursue this acquisition. Realty and refuge personnel met with the adjacent landowner to determine if he would be interested in selling this property. Unfortunately, he is not a willing seller at this time. An alternate plan to obtain a flowage easement on that portion of his property that would be periodically flooded was developed and presented to him. This would at least facilitate the DU project. An easement has not been obtained, although there is still a chance that he will sell.

D. PLANNING

4. Compliance with Environmental and Cultural Resource Mandates

A request was received from Frontier Geophysical for a Special Use Permit to conduct oil and gas seismic work on Hailstone NWR. Their proposed route extended onto the Refuge about 0.5 mile. This is a situation where surface ownership is controlled by FWS and the subsurface mineral rights are controlled by the previous landowner. An Intra-Service Section 7 Evaluation was completed on this action to comply with the Endangered Species Act. The seismic work was completed in April, but with less than satisfactory compliance with the special conditions of the permit.

5. Research and Investigations

Personnel from the Montana Cooperative Wildlife Research Unit continued their work on a project entitled "The use of artificial nests as an index to natural nest success in upland nesting ducks." The objective of this study is to evaluate the potential for using predation on artificial nests as an index to predation on natural nests. Data were collected for this study in 1989 and 1990 on 11 plots at 7 sites across Montana.

Fifty artificial nests, each containing three brown chicken eggs were placed on each plot. Nests were constructed at random points along transects by scraping an opening in the litter and inserting the eggs. The eggs were partially covered with the disturbed litter to obstruct vision from above. One half of the nests on each plot were scented by placing a commercial scent disk in the nest. Two trials were completed on each plot, one early in the nesting season (May 20-June 10) and one late in the nesting season (June 10-July 1). Each trial was exposed for 21 days and checked at the completion. Nests were considered depredated if one or more of the eggs were missing or destroyed. Natural nests were located on each plot using a cable-chain drag pulled between two vehicles. Where cable-chain drags were unsuitable, plots were searched using boom drags attached to all-terrain vehicles.

Nest success was calculated for artificial and natural nest samples using the Mayfield method. Regression analysis was then used to determine the relationship between the two samples. Chi-squared analysis was used to determine if a significant difference existed between the scented and unscented samples.

Preliminary results suggest a strong linear relationship between artificial and natural nest success; however, substantial variation occurred. Further data analysis will be performed this winter and reported upon completion of the study in June 1991.

6. Other

Both Hailstone and Halfbreed NWR's have dams that impound water. Both of these structures are in poor condition with hazard analysis rating factors of

415 for Hailstone and 295 for Halfbreed. Each year they are inspected to determine if the condition is declining. A Low Hazard Dam Analysis report was completed and submitted to the Regional Office for both structures. No additional damage or condition decline was detected at either structure this year.

E. ADMINISTRATION

1. Personnel

An assistant refuge manager stationed at the Charles M. Russell NWR complex in Lewistown is in charge of managing the five satellite refuges (25,881 acres), the CMR Wetland Management District, and is the complex's Private Lands Coordinator for a 20-county area in southeastern Montana. About 75% of this position's time is spent on the Farm Bill program with the remaining 25% involved with refuge activities. Cindy Osmundson, Cooperative Education Student/Refuge Manager Trainee, began work at this station on May 7 and provided valuable assistance with the biological and management programs on the satellite refuges and WPA's. Support services and other manpower assistance are provided by other CMR personnel as needed.

4. Volunteers Program

The Yellowstone Valley Audubon Society at Billings has established a program to help with bird surveys and other activities that require assistance on any of the satellite refuges. This year Bill Roney was the chairman of this program and conducted biweekly waterfowl and shorebird counts on Hailstone and Halfbreed NWR's. These surveys provided valuable seasonal species and relative abundance information that was used for management purposes, shorebird questionnaires, and will help with development of a new satellite refuge bird list.

5. Funding

There was no funding allocated for projects in 1990. Funding for personnel is incorporated in the CMR budget.

F. HABITAT MANAGEMENT

2. Wetlands

Hailstone NWR contains a reservoir with a maximum depth of 15 feet that usually contains water, even in the driest years. Spring runoff filled the reservoir to 50% of capacity by April. The water level receded throughout the summer and was 25% of capacity at freeze-up in December.

Halfbreed NWR contains three large wetlands that are connected within one watershed system. Halfbreed Lake at the upper end is a productive 248-acre,

type IV wetland with a good interspersed of open water and stands of emergent vegetation. The other two are shallow type IV's with less emergent vegetation. Grass Lake (375 acres) is in the middle and Goose Lake (220 acres) is on the lower end. Halfbreed Lake was at 50% of capacity in April, receded to 15% of capacity by fall, and remained at that level until freeze-up. Grass Lake and Goose Lake were 40% of capacity in April, but receded throughout the summer and fall. At freeze-up only 5% of these basins contained water. All three wetlands contained water to provide good breeding pair habitat, but only poor quality brood habitat.



Water conditions were poor during the fall and provided minimal habitat for migrating birds on Halfbreed Lake. MG

4. Croplands

When Halfbreed NWR was purchased in fee title in 1987, it included an 85-acre winter wheat field. The landowner retained agricultural use through 1988. Plans were to seed this field to a mixture of western and slender wheatgrass, Ladak alfalfa, and yellow sweetclover in the spring of 1989. However, a field inspection in 1989 revealed that it was not in a suitable condition for planting due to an abundance of volunteer winter wheat and noxious weeds. Therefore, a cooperative farming agreement was developed to control the weeds and allow for harvest of the volunteer wheat crop. The field was spiked in the fall following harvest then disked and harrowed twice in the spring of 1990 to reduce the number of weeds and prepare the soil for planting. Rainfall from mid-April through May caused muddy field conditions and seed planting was impossible until June 6. Following planting, the weather turned hot and no rain fell until August which resulted in only fair germination of the alfalfa and sweetclover and poor germination of the wheatgrasses. Annual

weeds became a problem and were clipped with a combine (with the sieves closed) so the weed seeds and mulch could be removed from the field.

5. Grasslands

Field transects using the Robel Pole were established on each refuge in 1987. Hailstone NWR has one transect and Halfbreed NWR has three. These transects were conducted in mid-April prior to spring plant growth to measure the residual vegetation. Results of these transects are listed below:

Average Robel Reading in Inches

<u>Year</u>	<u>Hailstone NWR</u>	<u>Halfbreed NWR</u>		
	<u>A</u>	<u>A</u>	<u>B</u>	<u>C</u>
1987	1.34	.56	.70	.87
1988	No readings were collected.			
1989	2.06	.35	.71	.35
1990	1.88	1.01	1.40	.22

Grasslands on Hailstone NWR have not been grazed since 1980. Cover conditions through the 1980's were generally poor due to a decade of drought. The drought and poor growing conditions have hindered vegetation response and cover conditions have not improved to the degree expected following the removal of livestock.

Grasslands on Halfbreed NWR have not been grazed since 1986. After decades of overgrazing, rest has promoted a lush growth of annual forbs and some perennial grasses. This trend should continue and result in adequate cover conditions for nesting waterfowl.

G. WILDLIFE

1. Wildlife Diversity

Species diversity and abundance on these refuges are influenced by the presence of wetland habitats. These wetlands provide important nesting areas for many species of waterfowl, marsh birds, water birds, and shorebirds.

2. Endangered and Threatened Species

Federally listed Threatened and Endangered Species that have been observed on the Refuge include: bald eagle and peregrine falcon. The black-footed ferret is a potential resident of refuge prairie dog towns. Ferret searches conducted in the mid-1960's found no ferrets.

The State of Montana maintains a list of (entitled Montana Candidate List) species considered to be candidates for the Federal Threatened and Endangered Species List. The following species are on the Montana Candidate List and have been observed on the Refuge: Swainson's hawk, ferruginous hawk, and long-billed curlew. Habitat requirements and distribution of the following members of the Montana Candidate List are such that they may occur on the Refuge: Preble's shrew, spotted bat, swift fox, long-billed curlew, and mountain plover.

3. Waterfowl

Breeding pair counts conducted in May 1990 found 120 indicated pairs on Hailstone NWR and 1,354 indicated pairs on Halfbreed NWR. About 500 Canada geese used the Halfbreed NWR from July-August. Waterfowl species observed include: mallard, northern pintail, blue-winged teal, gadwall, northern shoveler, American wigeon, lesser scaup, redhead, canvasback, cinnamon teal, ruddy, green-winged teal, bufflehead, ring-necked duck, and snow geese.

Brood counts revealed an extremely low number (Halfbreed - 18, Hailstone - 0) of broods. Average brood size was 5.5 ducklings on Halfbreed. The nesting study conducted by the Montana Cooperative Wildlife Research Unit found a low number of nests (Halfbreed - 9, Hailstone - 4) and low (Mayfield) nest success (Halfbreed - 18%, Hailstone - 0%). These data suggest that even though large numbers of breeding pairs are using Halfbreed and Hailstone NWR in the spring, nest success and duckling survival to the fledgling stage are low. Reasons for these differences are not fully understood and warrant further investigation.

4. Marsh and Water Birds

The Refuges are commonly used by marsh and water birds. Observed species include: common loon, western and eared grebes, red-breasted merganser, Wilson's and red-necked phalaropes, great blue heron, black tern, and various gulls. All three North American jaeger species have been observed on the Refuges: long-tailed, parasitic, and pomarine.

5. Shorebirds, Gulls, Terns, and Allied Species

Use of the areas by shorebirds (etc.) is high. Observed species include: semipalmated, least, pectoral, and Baird's sandpipers; greater and lesser yellowlegs; killdeer; American avocets; long-billed dowitchers; sanderling; black-bellied, lesser golden and semipalmated plovers; sprague's and water pipits; marbled godwit; and willet.

8. Game Mammals

Game mammals inhabiting the Refuges are antelope and mule deer. Numbers of antelope are thought to be fair, while mule deer numbers are probably low.

10. Other Resident Wildlife

Upland game birds and other non-migratory birds are rarely observed on the Refuge. A variety of non-game mammals inhabit these refuges: yellow-bellied marmot, thirteen-lined ground squirrel, jackrabbits, and black-tailed prairie dog. Rattlesnakes den in the rocky outcroppings on Hailstone Refuge.

17. Disease Prevention and Control

Halfbreed and Hailstone NWR were monitored for outbreaks of botulism. There was no evidence of an outbreak this year.

H. PUBLIC USE

1. General

Visitor use opportunities on Hailstone include: hunting, bird and other wildlife observations, hiking, photography and non-motorized boating. Halfbreed is closed to all public use except organized field trips and environmental education programs.

8. Hunting

Hailstone NWR is open for hunting of all State classified game animals (big game, small game, waterfowl, and upland birds). Waterfowl and antelope hunting are the predominate uses. Halfbreed NWR is closed to hunting since it serves as an important resting area during the fall migration for waterfowl. Large numbers of ducks and Canada geese concentrate here in November. This closure helps keep the birds in the area longer and allows more opportunity for hunting by pass shooting as birds leave the Refuge to feed and through decoy hunting on nearby grain fields.

11. Wildlife Observation

Hailstone is featured in the Montana Wildlife Viewing Guide (published for distribution in the spring of 1990). The Guide describes the Refuge as "a large alkaline lake in wide-open, shortgrass prairie country dominated by rocky outcroppings and small grassy hills. This medium-sized refuge is noted primarily for its waterfowl and shorebirds..." Additional wildlife listed as occurring on the Refuge include: antelope, sharp-tailed grouse, black-tailed prairie dogs, golden eagles, and peregrine falcons.

Directions for reaching the Refuge from Billings, MT are included in the Guide. Three directional "Wildlife Viewing" signs were installed along the route from Billings to the Refuge. One of these signs has been repeatedly vandalized.



The Defenders of Wildlife coordinated a unique, multi-agency project to guide people to 113 of the best and most easily accessible wildlife viewing sites in Montana. CO

17. Law Enforcement

No enforcement patrols were carried out on these refuges in 1990 because of budget and personnel constraints and a greater need for enforcement in other areas.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

About 1.5 miles of boundary fence, adjacent to agriculture fields on both refuges, were cleaned of tumbleweeds and trash. These fences were covered to the extent that extensive damage would occur if snow would drift over them. Boundary signs were replaced as needed on Halfbreed NWR.

J. OTHER ITEMS

4. Credits

Cindy Osmundson wrote sections B, G, and H. Mike Getman wrote the remaining sections. Final editing and printout work were completed by Rhonda Moline.

LAKE MASON NWR

LAKE MASON NATIONAL WILDLIFE REFUGE

Roundup, Montana

ANNUAL NARRATIVE REPORT

Calendar Year 1990

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

Lake Mason NWR is located eight miles northwest of Roundup, Montana. It is divided into three units: Lake Mason, Willow Creek, and the North Unit. The Refuge includes 16,630 acres; 11,128 acres in fee title and 5,502 acres in refuge easements.

Flowage easements on Willow Creek were acquired in 1937-38. Then in 1941, Executive Order 8770 established the Lake Mason Unit as a NWR with the objective of providing breeding grounds for migratory birds and other wildlife. In 1959, scattered Bankhead-Jones Land Use parcels were acquired from the BLM on the North Unit. Land consolidation efforts that began in 1980 have resulted in manageable parcels on the Lake Mason and North Units.

Lake Mason is a natural marsh of about 1,300 acres surrounded by rolling shortgrass prairie hills. Wheat cultivation occurs to the north and east and oil development to the south and west.

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K. FEEDBACK

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L. INFORMATION PACKET (inside back cover)

A. HIGHLIGHTS

The Pole Creek Grazing Association and Kombol land exchanges were finalized (Section C.1).

Water did not enter Lake Mason due to upstream water diversions and poor runoff conditions (Section F.2).

The Montana Water Rights Bureau began the adjudication process for water rights (Section F.11).

B. CLIMATIC CONDITIONS

In 1990, precipitation was near the average annual rate at 11.64 inches. Although the precipitation rate was average in the spring, September received an unusually high rate of precipitation. The average summer (June, July, August) temperature was 68.6 degrees.

C. LAND ACQUISITION

1. Fee Title

A land exchange with Joe Kombol, a landowner adjacent to the North Unit, was completed to further consolidate land ownership for management purposes. Lands of equal value were exchanged. FWS divested 400 acres and acquired 360 acres.

A second land exchange involved the Pole Creek Grazing Association on the Lake Mason Unit. Prior to this exchange, grazing on property owned by Pole Creek within the refuge boundary resulted in frequent livestock trespass and negative impacts to refuge habitat. FWS divested 160 acres and acquired 135 acres of higher quality waterfowl habitat that eliminated this inholding.

D. PLANNING

2. Management Plan

Inventories of the satellite refuges to develop long-term management strategies have never been done. This year an effort was initiated using the Resource Inventory Plan (RIP) card system to accomplish this. The North Unit of this refuge was ranked as the area in most need of this to determine whether or not to retain it as a refuge (See Section F.1). This inventory was conducted and a report was written. An inventory of the Lake Mason Unit will be performed in 1991. The Willow Creek Unit will not be inventoried due to plans to dispose of it.

E. ADMINISTRATION

1. Personnel

Please refer to Section E.1 in the Hailstone/Halfbreed Lake NWR narrative report for a complete description of this information.

5. Funding

There is no station budget for this refuge. Any funding needs are obligated from the CMR budget.

8. Other Items

Personnel from the U.S. Department of Interior, Office of Inspector General (OIG), conducted an audit to determine if underutilized properties exist in the National Wildlife Refuge System of Region 6. The Northern and Willow Creek Units of this refuge were included in this audit. OIG personnel met with members of the refuge staff to collect information on the wildlife resources, management potential and problems, and made comparisons of wildlife benefits to cost of management for these units. A final report is expected in April 1991. Tentative recommendations will not be site specific, but rather indicate the need for FWS to develop a system that evaluates properties within the National Wildlife Refuge System to determine if they are underutilized. It will also require incorporation of methods to fully utilize or dispose of them as determined through the evaluation.

F. HABITAT MANAGEMENT

1. General

Historically, these units were unconsolidated parcels surrounded by private and BLM holdings. Overgrazing was common since these tracts were within larger private pastures or BLM allotments. During those times, residual vegetation for wildlife was scarce. There was minimal opportunity for FWS to improve management on these properties until land exchanges consolidated tracts into manageable units. Significant progress has been made by Realty during the last ten years to improve this situation. For management purposes, these properties have been categorized into the Refuge units as listed below. It should be noted that these units have been arranged by management potential and are different than the classification used in previous narrative reports.

Lake Mason NWR consists of three units.

The North Unit contains 5,323 acres of Bankhead-Jones Act lands in one contiguous parcel.

The Willow Creek Unit contains 4,260 acres in refuge easement and 2,240 acres in fee title (includes 2,160-acre Willow Creek parcel and 80-acre Lone parcel).

The Lake Mason Unit contains 3,565 acres in fee title and 1,242 acres in refuge easements which includes a 1,288-acre lake.

The Lake Mason Unit is the only unit that has a fence around the entire boundary. The North Unit lacks six miles of fence to have its boundary enclosed and the Willow Creek and Lone parcels have no boundary fencing. The easements assist in the protection of refuge water rights and do not include any land management rights. The presence of boundary fencing correlates directly to the ability of FWS to control livestock grazing on these units.



The highest priority project for the North Unit is to complete six miles of boundary fence to obtain control of livestock grazing. CO

Long-term management strategies for the North and Willow Creek Units were not developed until this year. Philosophies varied from intensively managing these units for wildlife to using them in land exchanges to obtain State Lands within the Charles M. Russell NWR boundary. These units were reviewed for management potential, benefit to the wildlife resource, and cost to manage. The final decision was to retain ownership of the easements, the Lake Mason Unit, and the North Unit. The Willow Creek Unit (including the Lone parcel) will be available for future land exchanges. The Lake Mason Unit, the only unit within the Executive Order boundary, will be managed as outlined in the Order objective "of providing breeding grounds for migratory birds and other wildlife." The objective for the North Unit will consist of managing for biodiversity and non-game species.

2. Wetlands

Lake Mason (on the Lake Mason Unit) went dry in 1987 and has remained in that condition. Although annual precipitation was average, there was no spring runoff.

5. Grasslands

Field transects on the Lake Mason Unit using the Robel Pole were established in 1979. These transects are conducted in mid-April prior to spring plant growth to measure the residual vegetation. Results of these transects are listed below:

Average Robel Reading in Inches

<u>Year</u>	<u>Transect</u>		
	<u>A</u>	<u>B</u>	<u>C</u>
1990	3.45	1.23	1.73
1989	.48	.62	.66
1988	No readings were collected.		

The 1990 Robel Readings are the highest recorded since measurements have been collected. The increase from 1989 to 1990 is mainly from elimination of trespass livestock with the Pole Creek land exchange and from education of a refuge neighbor on keeping his livestock off the Refuge. Robel transects will be installed on the North Unit in the future.

7. Grazing

Livestock grazing is not allowed on the Lake Mason Unit. Grazing occurs on the Willow Creek and Lone parcels since they lie within a BLM allotment and cannot be regulated without a boundary fence. Grazing cannot be entirely controlled on the North Unit until the remainder of the boundary is fenced. Grazing permits were issued as follows for the North Unit:

<u>Total Revenue</u> <u>Collected</u>	<u>AUM's</u>	<u>Nonuse</u> <u>AUM's</u>
\$5,467.46	593	769

11. Water Rights

Water rights are the most important issue facing the management of wildlife on the Refuge now. Illegal water diversions on Willow Creek upstream from Lake

Mason have prevented water from entering it in recent years. Attempts to work with those landowners have been unsuccessful. A successful resolution to this conflict has not been obtainable since water rights in this drainage have not been adjudicated. The Montana Water Right's Bureau (WRB) is currently in the adjudication process. A Temporary Preliminary Decree was issued on this drainage and all affected parties were able to review the decrees and file objections if conflicts with their Statement Of Claims occurred.



This livestock reservoir/water spreader system, located four miles upstream from Lake Mason, diverts the entire flow of water from Willow Creek with only irrigation return flows available for use on the Refuge. Incidentally, this water right is junior to the Service's Berrigan Right. MG

In September, Cheryl Williss (Water Right's Specialist) and Meg Estep-Johnson (Hydrologist) from the Regional Office field inspected the claims that potentially affected FWS water rights. The entire Willow Creek drainage was flown to observe, document, and photograph all points of diversion and places of use. Measurements were made of headgate structures to determine their flow capacity and irrigated fields were mapped to determine if they were within the amounts listed on the claims. Impoundments on Willow Creek were inspected to determine if they had adequate control structures for bypassing downstream, senior water claims. Impoundment capacities were also estimated to determine if they were within the limits of their claim.

Following this field inspection, Cheryl compiled a list of all activities that were not within the limits of the claims. Approximately 20-25 objections were sent to the Solicitor for review prior to submission to the WRB. The WRB will evaluate all objections and attempt to resolve as many as possible through a phone conference including the objector, the individual holding the claim that is being objected to, and the WRB. Situations that cannot be resolved in this

manner will then be heard in State Water Court for final ruling. This entire procedure is complex and time consuming. It may take 2-5 years to complete this adjudication.

Adjudication will result in a listing of valid water rights. All unsubstantiated claims will be dropped. This in conjunction with a mean annual flow estimation will provide a perspective on the amount of water that can be expected to enter Lake Mason. Under the current list of claims, a flow of 43.52 cfs must occur in Willow Creek before water can be diverted into Lake Mason. The mean annual flow estimate shows that only 300 acre-feet of water will enter Lake Mason which is inadequate to fill or maintain water in this lake with a capacity at 4,000 acre-feet. Some claims currently listed as senior to the Berrigan claim (the most senior FWS claim) will likely be unsubstantiated and will be deleted. This may allow more water to be diverted under the Berrigan claim. It will be very important to evaluate this situation once the adjudication is completed. It is likely that adequate flows will not be available for diversion during years with normal runoff flows which would justify a sub-impoundment in Lake Mason to better utilize the water available. Only during years of good-excellent runoff will more water be available for diversion.

There may be a need to have diversions on this drainage monitored by a ditch rider also. This will probably be necessary if the amount of flow that can be diverted under FWS rights would justify this additional expense. Monitoring may be necessary to ensure that FWS receives the quantity of water legally entitled to.

In 1990, spring runoff was minimal and none was available for diversion into Lake Mason. The diversion structure was inspected throughout the spring and early summer to make sure that any flows would be properly diverted into Lake Mason. Over the last few years, the adjacent landowner has illegally tampered with boards in the diversion structure. This individual had been contacted repeatedly about this tampering and was informed of the consequences if it could be verified that he was doing it. This year no tampering occurred. It was likely due to the absence of runoff rather than adherence to our warnings. This monitoring will be needed annually.

G. Wildlife

1. Wildlife Diversity

Habitat diversity has decreased due to the lack of water on the Refuge. Diversity and abundance of species have most certainly decreased in response to the decrease in habitat diversity.

2. Endangered and Threatened Species

The following Federally listed Threatened and Endangered Species have been observed on the Refuge: bald eagle and peregrine falcon. The black-footed

ferret is a potential refuge resident, however, searches conducted in the 1970's found no ferrets.

The State of Montana maintains a list (entitled Montana Candidate List) of species considered to be candidates for the Federal Threatened and Endangered Species List. The following species are on the Montana Candidate List and have been observed on the Refuge: Swainson's hawk, ferruginous hawk, mountain plover, and long-billed curlew. Habitat requirements and distribution of the following members of the Montana Candidate List are such that they may occur on the Refuge: Preble's shrew, spotted bat, and swift fox.

3. Waterfowl

Lake Mason was dry. The Unit was not used for waterfowl production or as a staging area for spring and fall migration. A 4.5-acre reservoir in the North Unit was used by waterfowl this spring and summer. Vegetation surrounding the reservoir appeared to be adequate for waterfowl nesting. Species observed included: mallard, northern pintail, American wigeon, blue-winged teal, northern shoveler, and gadwall.

4. Marsh and Water Birds

There has been a severe loss of habitat for marsh and water birds due to the failure of the lake to receive and retain water. The long-term effect of this habitat loss on marsh and water bird populations is unknown.

5. Shorebirds, Gulls, Terns, and Allied Species

As with marsh and water birds, shorebirds, gulls, terns, etc., have also suffered a habitat loss. Shorebirds were observed at the reservoir in the North Unit. These species included: killdeer, spotted sandpiper, and willet.

6. Raptors

Although the Refuge appears to be heavily used by raptors, nesting sites are virtually unavailable. Installation of artificial structures is being considered. The following raptors have been observed: ferruginous hawk, Swainson's hawk, northern harrier, red-tailed hawk, peregrine falcon, prairie falcon, and golden eagle.

7. Other Migratory Birds

Passerine birds have not been inventoried on the Refuge. The following species have been observed: McCown's longspur, bobolink, and lark bunting.

8. Game Mammals

Pronghorn are the most numerous game mammal on all units of the Refuge. White-tailed and mule deer have been observed on the North Unit, but numbers and use by these animals are probably low. Censuses and population estimates of game mammals are not routinely done on this refuge.

10. Other Resident Wildlife

Four species of upland game birds occur on the Refuge. Sage grouse are common on the North Unit. Several broods and hatched nests were observed early this summer. Although the exact location of a lek has not been documented, males have been observed strutting early in the mating season. The area will be searched for leks and monitored, if leks are located, in the spring of 1991.

Sharp-tailed grouse have occasionally been seen throughout the Lake Mason Unit. Hungarian partridge and mourning doves are numerous on all units.

Upland non-game birds observed on the Refuge include: long-billed curlew, upland sandpiper, and mountain plover. The North Unit was originally established for the nesting of long-billed curlews. Long-billed curlews appear to be abundant on the North Unit, but no monitoring of nesting has been done.

H. PUBLIC USE

1. General

Visitor use opportunities on the Refuge include hunting, bird and other wildlife observations, hiking, photography and non-motorized boating. With Lake Mason virtually dry for the past four years, the Refuge is used less by wildlife. As a result, fewer people visit the Refuge.

8. Hunting

The southern portion of the Lake Mason Unit and all other units are open to hunting. Traditionally, the Lake Mason Unit has been one of the most popular and productive areas in central Montana for waterfowl hunting. No waterfowl hunting was known to have occurred in 1990 since the Lake was dry.

Sage grouse and pronghorn are hunted in the open areas. Hunting pressure and success rates are unknown; however, low hunting pressure is probable.

11. Wildlife Observation

Lake Mason National Wildlife Refuge is featured in the Montana Wildlife Viewing Guide (published for distribution in the spring of 1990). The guide describes the Refuge as a "productive prairie marsh that attracts large

nesting populations of waterfowl and shorebirds..." Additional wildlife listed as occurring on the Refuge include: Canada geese, white pelicans, bald eagles, peregrine falcons, burrowing owls, pronghorn, coyotes, red fox, bobcat, prairie dogs, prairie rattlesnakes, and horned lizards.

Directions for reaching the Refuge from Roundup, MT are included in the guide. Five directional "Wildlife Viewing" signs were installed along the route from Roundup to the Refuge.

17. Law Enforcement

No enforcement patrols were conducted in 1990. Weekend patrols scheduled for the pronghorn season were cancelled, as directed by the Regional Office, because a budget was not approved in October.

I. OTHER

4. Credits

Cindy Osmundson wrote sections B, G, and H. Mike Getman wrote the other sections. Final editing and printout work were completed by Rhonda Moline.

WAR HORSE NWR

WAR HORSE NATIONAL WILDLIFE REFUGE

Winnett, Montana

ANNUAL NARRATIVE REPORT

Calendar Year 1990

U.S. Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

War Horse NWR consists of three separate upland units near Winnett, MT: War Horse, 1,112 acres; Wild Horse, 440 acres; and Yellow Water, 1,640 acres. These units consist of scattered FWS landholdings adjacent to a lake (Wild Horse) or reservoirs (War Horse and Yellow Water) constructed for the purpose of irrigation. These refuge lands were transferred to the FWS in 1958 under provisions of the Coordination and Conservation Act of 1934 for the management of migratory birds.

Water levels in these lakes and reservoirs are dependent on annual precipitation. These units provide quality habitat for waterfowl and shorebirds when there is adequate water. However, in dry years they are of minimal value to migratory birds. It's a boom or bust situation.

The uplands are dominated with a sagebrush/shortgrass prairie complex. Refuge properties are not fenced and are within BLM grazing allotments. The uplands are heavily grazed and residual vegetation for nesting is in poor condition. The acreage of land FWS controls in fee title and the configuration of it virtually prevents management opportunities due to high costs and low benefits. Adjacent landowners depend on reservoirs for watering sites for their livestock and are reluctant to consider land sales or exchanges. Unless land consolidation occurs, there is little that can be done for wildlife on these units.

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K. FEEDBACK

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L. INFORMATION PACKET (inside back cover)

A. HIGHLIGHTS

A cooperative grazing management program was developed on War Horse with an adjacent landowner through the Great Plains Conservation Program administered by the SCS (Section F.5).

B. CLIMATIC CONDITIONS

The 1990 precipitation rate was average with 11.64 inches received. More precipitation was received during August than any other month. Average summer (June, July, August) temperature was 68.6 degrees.

E. ADMINISTRATION

1. Personnel

Please refer to Section E.1 in the Hailstone/Halfbreed Lake NWR narrative report for a complete description of this information.

5. Funding

There was no funding allocated for projects in 1990. Funding for personnel is incorporated in the CMR budget.

8. OTHER ITEMS

Personnel from the U.S. Department of Interior, Office of Inspector General (OIG), conducted an audit to determine if underutilized properties exist in the National Wildlife Refuge System of Region 6. The Wild Horse, War Horse, and Yellow Water Units of this Refuge were included in this audit. OIG personnel met with members of the refuge staff to collect information on the wildlife resources, management potential and problems, and made comparisons of wildlife benefits to cost of management for these units. A final report is expected in April 1991. Tentative recommendations will not be site specific, but rather indicate the need for FWS to develop a system that evaluates properties within the National Wildlife Refuge System to determine if they are underutilized. It will also require incorporation of methods to fully utilize or dispose of refuges as determined through the evaluation.

F. HABITAT MANAGEMENT

1. General

War Horse NWR consists of three separate lakes: Wild Horse Lake, War Horse Reservoir, and Yellow Water Reservoir. The FWS lands are acquired Bankhead-Jones Act parcels intermingled among larger tracts of BLM and private lands.

The boundaries are not fenced and this scattered pattern of land ownership precludes any favorable habitat management for wildlife.

2. Wetlands

Wild Horse Lake is a shallow, alkaline depression with minimal habitat values for wildlife. It receives water from spring runoff and is generally dry by midsummer except in years of abundant flows. This condition generally prevents use of the lake by waterfowl for production as it lacks adequate brood habitat. The lake basin was 10% wet in April and was dry by mid-July. There is no shoreline vegetation due to fluctuating water levels and heavy grazing pressure. Submergent vegetation growth was poor this year due to the shallow water levels. There is no method of maintaining or managing the water level in the lake.



Only 10% of Wild Horse Lake contained water in April. This lake is used mainly as a feeding and resting area for waterfowl during the spring migration. MG

War Horse and Yellow Water Reservoirs are state-owned, irrigation projects. FWS does not have control over the water levels. War Horse is an abandoned irrigation project and was dry the entire year. Yellow Water Reservoir, as usual, was in better condition. The basin was 60% wet in April and 30% wet at freeze up. Emergent shoreline vegetation is non-existent on either unit due to fluctuating water levels and livestock grazing. Without any control of livestock, the shoreline vegetation will continue to be in poor condition for wildlife use. There was good submergent vegetation growth in Yellow Water and it received considerable bird use during the fall.

3. Forests

A 225-acre stand of ponderosa pine/Rocky Mountain juniper lies on the south side of War Horse Reservoir. It is a key area for up to 200 mule deer during the winter.

5. Grasslands

Any positive grassland management on Wild Horse or Yellow Water is nearly impossible due to the variation in parcel size (120 to almost 640 acres) and the intermixed configuration with adjacent BLM and private lands. The cost to fence these parcels is prohibitive. Without control of grazing on FWS lands, there are few practical management solutions without land acquisition or exchange.

7. Grazing

FWS lands are in pastures where BLM and private lands dominate, making separate management of FWS lands impractical. Grazing management consists of issuing permits annually under the forage allocations established by BLM.

However, an improved system was implemented on War Horse this year. The permittee for War Horse entered the Great Plains Conservation program with the SCS to incorporate a deferred-rotation grazing system that includes refuge, BLM, and private properties. Several stock water projects will be built on private land that will more evenly distribute livestock and facilitate seasonal pasture use. Historically, the refuge properties have been fall grazed on an annual basis. This system should have benefits to mule deer and result in improved nesting cover conditions for ground nesting birds.

Grazing permits issued for 1989 are summarized below:

	<u>Total Revenue</u>	<u>AUM's</u>	<u>Nonuse</u>
War Horse	\$1650.38	179	71
Yellow Water	\$3153.24	342	61
Wild Horse	\$ 709.94	77	0
	-----	---	---
Totals	\$5513.56	598	132

G. WILDLIFE

1. Wildlife Diversity

In the past, water has attracted and held a diversity of water birds. As water levels decreased or disappeared completely, the wildlife diversity also decreased.

2. Endangered and Threatened Species

The following Federally listed Threatened and Endangered Species have been observed: bald eagle and peregrine falcon. Bald eagles concentrated at War Horse during fish die-offs in the mid-1980's and commonly feed on fish from Yellow Water Reservoir.

The State of Montana maintains a list (entitled Montana Candidate List) of species considered to be candidates for the Federal Threatened and Endangered Species List. The following species occur on the Montana Candidate List and may occur on the Refuge: Preble's shrew, swift fox, Swainson's hawk, ferruginous hawk, mountain plover, and long-billed curlew.

3. Waterfowl

Breeding pair counts were conducted on Wild Horse and Yellow Water Refuges on May 17, 1990. War Horse Refuge was dry on that date. 1990 breeding pair counts were as follows: Wild Horse NWR - 122, War Horse NWR - 0, and Yellow Water NWR - 405. The total number of indicated breeding pairs was greater in 1990 than 1989 (1990 total = 527, 1989 total = 266); however, the sampling effort was greater in 1990. Species observed include: mallard, northern pintail, blue-winged teal, gadwall, northern shoveler, wigeon, lesser scaup, redhead, ruddy, green-winged teal, bufflehead, ring-necked duck, and Canada geese.

Brood counts were not conducted on these refuges this year. Hens nesting on Wild Horse were probably unable to raise their young to flight stage since the wetland went dry and the distance to the nearest brood habitat was excessive. Brood habitat was available at Yellow Water. Although brood survival was not assessed at Yellow Water, it is believed that young did reach the fledgling stage.

4. Marsh and Water Birds

All three areas are used by marsh and water birds when adequate water is available. While conducting the waterfowl breeding pair counts, the following species were observed: double-crested cormorants, great blue herons, American white pelicans and American avocets.

8. Game Mammals

Pronghorn and mule deer are common on all three refuges. Mule deer are particularly numerous in the ponderosa pine/Rocky Mountain juniper habitat on War Horse NWR.

10. Other Resident Wildlife

Sage grouse, sharp-tailed grouse and Hungarian partridge inhabit all three refuges.



The Winnett area, including Yellow Water Reservoir, contains some of the best sage grouse habitat in Montana. DM

11. Fisheries Resources

The Montana Department of Fish, Wildlife and Parks annually stock Yellow Water Reservoir with trout. The Fish and Wildlife Service does not monitor the fish population in this reservoir. The lakes on War Horse and Wild Horse Refuges do not currently support a fisheries resource due to low water levels. In the past, when water levels were better, War Horse supported a good population of large-mouth bass.

H. PUBLIC USE

1. General

Visitor use opportunities on the refuges include: hunting, bird watching, photography, and hiking. In addition, fishing and canoeing opportunities are present on Yellow Water NWR. Local residents are the primary visitors to the refuges. The Fish and Wildlife Service has not promoted the areas for public use. The areas have potential to be enjoyable wildlife areas, but time and a lack of funding have prevented fulfillment of this potential.

8. Hunting

All three units are open to the hunting of State classified game animals (big game, small game, waterfowl, upland birds). Sage grouse, pronghorn, and deer are the most frequently hunted species on the Refuge. No waterfowl hunting was known to have occurred in 1990. Overall hunting pressure is assumed to be relatively low. Hunter success is thought to be fair to good.

9. Fishing

Yellow Water Reservoir has a reputation as a good trout fishing reservoir. Creel censuses have not been done on the reservoir and fisherman success is unknown.

17. Law Enforcement

No enforcement patrols were carried out on these refuges in 1990 because of budget and personnel constraints and a greater need for enforcement in other areas.

J. OTHER ITEMS

4. Credits

Cynthia Osmundson wrote sections B, G and H. Mike Getman wrote the other sections. Final editing and printout work were completed by Rhonda Moline.

SPIDEL &
TEN WPA'S

TEW WATERFOWL PRODUCTION AREA
SPIDEL WATERFOWL PRODUCTION AREA

Broadview, Montana

ANNUAL NARRATIVE REPORT

Calendar Year 1990

U.S Department of the Interior
Fish and Wildlife Service
NATIONAL WILDLIFE REFUGE SYSTEM

The Spidel WPA was purchased in 1980 and consists of 1,246 fee title acres. A grazing lease to 160 acres on adjacent state land was acquired in 1986. Spidel WPA is located three miles northeast of Broadview, Montana. It contains a natural marsh of about 700 acres. The Tew WPA was also purchased in 1980 and consists of 538 acres. It is located 15 miles northeast of Broadview, Montana, and contains three small wetlands which are about 20, 30, and 80 acres in size.

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K. FEEDBACK

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L. INFORMATION PACKET

NTR

A. HIGHLIGHTS

Although precipitation was slightly above normal, there was insufficient runoff to fill the wetlands on these WPA's to provide brood habitat (Section F.2).

DU inspected the wetland on the Spidel WPA and developed a proposed project to improve the brood habitat conditions (Section F.2).

B. CLIMATIC CONDITIONS

The area received slightly above (7%) normal precipitation with 12.16 inches falling during the year. The majority of the rain fell from April - June, with August receiving an unusually high amount of precipitation. The average summer (June, July, August) temperature was 67.2 degrees.

D. PLANNING

2. Management Plan

Inventories of the WPA's in the District to develop long-term management strategies have never been done. This year an effort was initiated using the Resource Inventory Plan (RIP card) system to accomplish this. The inventory was conducted and a report was written for the Spidel WPA. The Tew WPA is scheduled for completion in 1991.

E. ADMINISTRATION

1. Personnel

Please refer to Section E.1 in the Hailstone/Halfbreed Lake NWR narrative report for a complete description of this information.

4. Volunteers Program

Bill Roney from the Yellowstone Valley Audubon Society at Billings volunteered to conduct monthly bird surveys at the Tew and Spidel WPA's. These surveys provided seasonal species and relative abundance information for management purposes, shorebird questionnaires, and preparing a satellite bird list.

5. Funding

There was no funding allocated for projects in 1990. Funding for personnel was through the CMR budget.

F. HABITAT MANAGEMENT

2. Wetlands

The wetlands on the Tew WPA did not receive any spring runoff and were not utilized by waterfowl during migration or for nesting. Runoff was better for the wetland on the Spidel WPA which was 50% of capacity by mid-April. However, by Mid-July the basin was dry.

A significant problem on Spidel is the lack of adequate brood habitat on a regular basis. Spring runoff usually fills the basin to a certain degree and is heavily used during the spring migration by breeding pairs. However, in years of below normal runoff, the pond is dry by mid-summer and does not provide brood habitat for waterfowl and shorebirds that attempt to nest. Several sub-impoundment proposals were developed to concentrate runoff in a smaller area to reduce evaporation losses and submitted to Ducks Unlimited for their review. The wetland has an "hour-glass" shape and there is a potential to place a dike to impound runoff in one bay rather than over the entire basin. DU engineers surveyed both bays to determine which one would provide the most benefits. To complicate the situation, the FWS does not own the entire wetland basin and a county road crosses the northwest corner of the basin. Collection of water in the north bay would require the least amount of diking, but to achieve adequate water depths, it would inundate a 0.5 mile section of county road. Although Golden Valley County has proposed to close this road and reroute it outside the wetland basin, they will not tolerate this proposal unless impacts to the road are mitigated. Mitigation costs to achieve this renders this proposal unsuitable. The other alternative is to impound water in the south bay to avoid flooding of the road. This is feasible, but will require more diking and a flowage easement on 40 acres where a portion of the basin extends onto private land. Work will proceed to facilitate project development.

5. Grasslands

The condition of residual vegetation on Tew is good, but only fair on Spidel. A colony of Richardson's ground squirrels on the north end of the Spidel WPA has had a negative impact on the condition of waterfowl nesting cover. Plans to install several raptor perches in this area to control their distribution biologically will be attempted. A fence in poor condition along the east boundary has not successfully kept livestock out and has had a negative effect on nesting cover.

G. WILDLIFE

1. Wildlife Diversity

Water has attracted and held a diversity of water birds. As water levels decreased and disappeared completely, the wildlife diversity also decreased.

2. Endangered and Threatened Species

A peregrine falcon was observed on Spidel WPA in August. The peregrine falcon is on the Federal Threatened and Endangered Species List.

The State of Montana maintains a list (entitled Montana Candidate List) of species considered to be candidates for the Federal Threatened and Endangered Species List. Habitat requirements and distribution of the following members of the Montana Candidate List are such that they may occur on the refuge: Preble's shrew, spotted bat, swift fox, and long-billed curlew.

3. Waterfowl

Tew WPA was dry in May. Breeding pair counts were conducted on the Spidel WPA. A total of 1,156 pairs were counted. Spidel marsh was dry by July. Hens that nested on Spidel WPA were probably unable to raise their young to flight stage since once the wetland was dry, the distance to the nearest brood habitat was excessive. The significance of this loss of recruitment is difficult to assess. No broods were observed on the WPA. Waterfowl species observed include: mallard, northern pintail, American wigeon, blue-winged teal, green-winged teal, northern shoveler, gadwall, redhead, lesser scaup, Canada geese, and Ross' geese.

4. Marsh and Water Birds

There has been a severe loss of breeding habitat for marsh and water birds due to the failure of the wetlands to receive and retain water. The long-term effect of this habitat loss is unknown. The following species have been observed on the Spidel WPA: Wilson's phalarope, great blue heron, black-crowned night heron, white pelican, American coot, and eared grebe.

5. Shorebirds, Gulls, Terns and Allied Species

Shorebirds (etc.) have suffered a habitat loss similar to that of marsh and water birds. Species observed on Spidel WPA include: American avocet, killdeer, marbled godwit, black-necked stilt, black tern, ring-billed gull, California gull, and Franklin's gull.

6. Raptors

Raptor nesting sites are virtually unavailable on the WPA's. Installation of artificial structures is being considered. In addition to providing needed nesting sites, structures would provide an additional benefit, their inhabitants would help control periodic peaks in the number of ground squirrels.

7. Other Migratory Birds

Passerine birds have not been systematically inventoried on the WPA's. However, a list of species observed is maintained.

8. Game Mammals

Pronghorn and mule deer are relatively numerous on the WPA's. Censuses and population estimates of game mammals are not routinely conducted.

10. Other Resident Wildlife

Six upland game bird species inhabit the Spidel WPA. These include: sandhill cranes, Hungarian partridge, mourning dove, ring-necked pheasant, sharp-tailed grouse, and sage grouse. Additional residents of the WPA's include: coyote, red fox, badger, raccoon, jackrabbit, cottontail, and Richardson's ground squirrel.

17. Disease Prevention and Control

The wetland on the Spidel WPA has a history of botulism. This year the marsh went dry in July, prior to optimal conditions for a botulism outbreak.

H. PUBLIC USE

1. General

Visitor use opportunities on the WPA's include: hunting, bird watching, photography and hiking. The Fish and Wildlife Service has not promoted the areas for public use. The areas have potential to be enjoyable wildlife viewing areas, but time and a lack of funding have prevented fulfillment of this potential.

8. Hunting

No waterfowl hunting occurred on these WPA's due to limited water in the wetlands. A few hunters presumably pursued upland game birds and game mammals. The amount of hunting and hunter success are unknown.

11. Wildlife Observation

Spidel WPA is a popular location for bird watching. The Yellowstone Valley Audubon Society (Billings) conducted several field trips to Spidel.

17. Law Enforcement

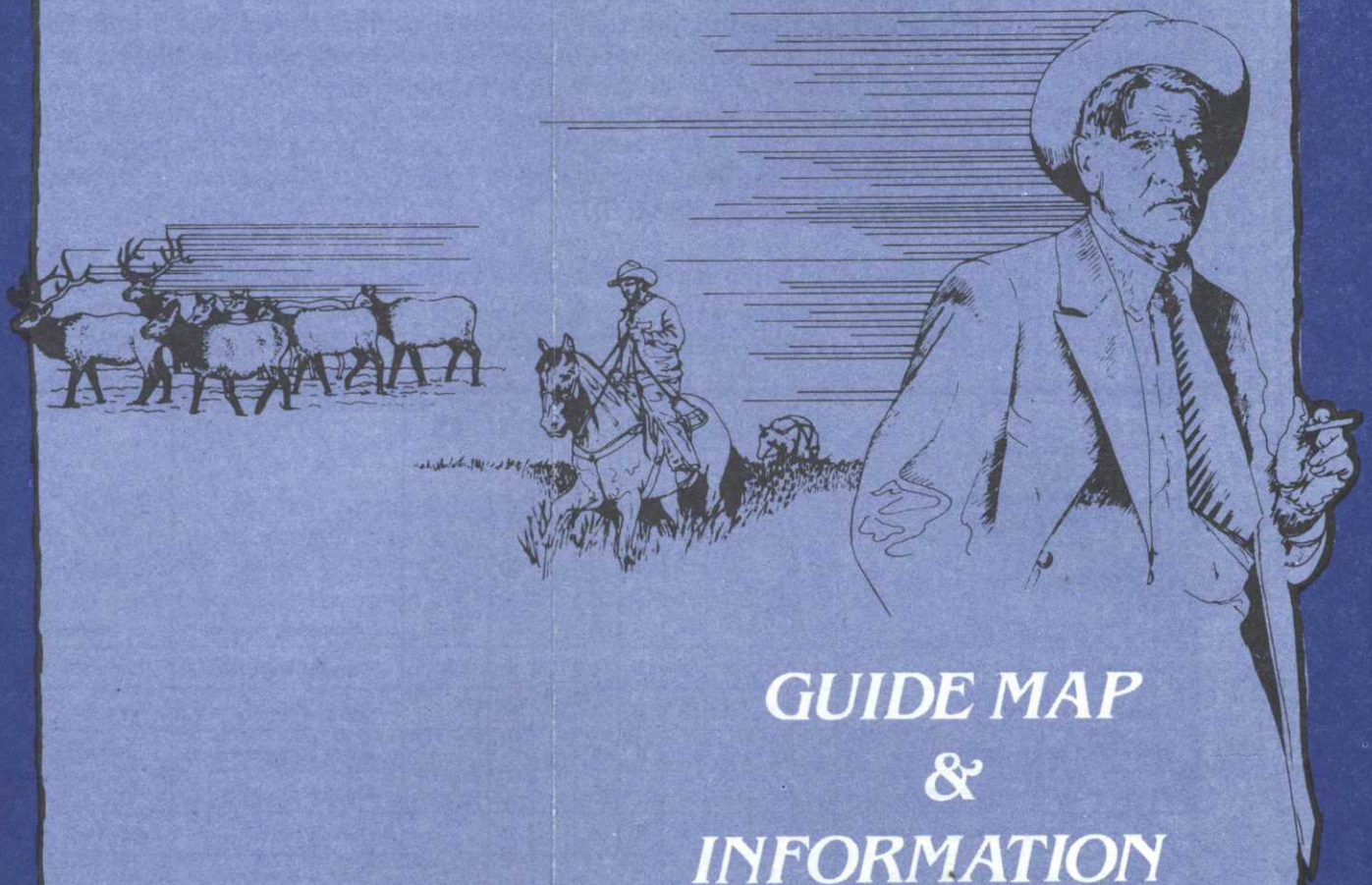
No enforcement patrols were carried out on these Refuges in 1990 because of budget and personnel constraints and a greater need for enforcement in other areas.

J. OTHER ITEMS

4. Credits

Cindy Osmundson wrote sections B, G, and H. Mike Getman wrote the remaining sections. Final editing and printout work were completed by Rhonda Moline.

**CHARLES
M.
RUSSELL**
NATIONAL WILDLIFE REFUGE
MONTANA



**GUIDE MAP
&
INFORMATION**



RF6-61520-1

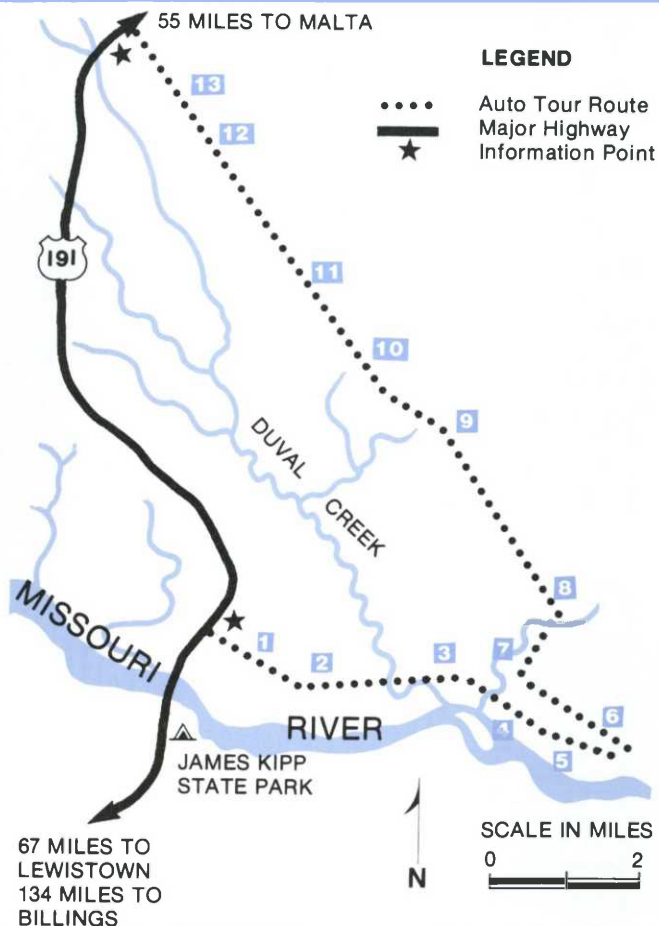
This map is current and in effect until modified by the Refuge manager.



REVISED 1989

We hope you enjoyed your visit. If you do not want to keep this guide, please deposit it in the box at the end of the road.

Questions about public lands administered by BLM should be addressed to: Bureau of Land Management, Airport Road, Lewiston, Montana 59457. If you have any questions about Charles M. Russell NWR, contact the Headquarters Office, P.O. Box 110, Lewistown, Montana 59457, 406/538-8706, or any refuge officer. Arrangements for group tours can be made.



CHARLES M. RUSSELL

NATIONAL
WILDLIFE REFUGE

SELF-GUIDED AUTO TOUR



U.S. FISH AND WILDLIFE SERVICE
Department of the Interior



RF-6-61520-10



Reprint July 1990

☆ U.S. GOVERNMENT PRINTING OFFICE: 1990—773-177/20025

Welcome to the Charles M. Russell National Wildlife Refuge (NWR). The Refuge provides a unique blend of the wildlife, wildlands, history, and scenic vistas of the Missouri Breaks. Along the 20-mile drive is a land nearly the same as that viewed by the cowboy artist - Charles M. Russell - for whom the Refuge is named. We hope that this tour will help you understand the delicate interactions between man's activities, wildlife, and the land in this area.

Posts numbered 1 through 13 along the tour route correspond to the numbered paragraphs in this pamphlet. The driving time for the entire route is approximately 2 hours. If you have less time available, a shorter trip to Stop #6 and back is recommended. This trip takes approximately 1 hour.

There are no facilities along the route other than primitive campsites and toilets. The road is gravelled and can be travelled during wet weather.

Nature provides the clockwork for wildlife events. The best time to observe wildlife is early morning and late evening.

First stop .9 mile



THE END OF A LEGEND

Below you is the last section of the free-flowing Missouri River. The legendary Missouri once flowed freely 2,500 miles through the heart of the continent. The rich bottomlands along the river, such as you see before you, supported vast numbers of wildlife. Passing through this area on May 24, 1805, Captains Lewis and Clark recorded, "The buffalo is scarce today, but the elk, deer, and antelope are very numerous . . . We saw five (grizzly) bears."

The Fort Peck Dam and Reservoir, built in 1937, provides water storage, power generation, boating, and fishing. Much of the land that supported an abundance of wildlife in Lewis and Clark's day is now under water. The remaining habitat has become even more important for wildlife because so little remains.

Next stop .4 mile



OPENING THE LAND

The Missouri River was the main route of travel during the early settlement of Montana. The first steamboat churned upstream in 1859. Early settlements, forts, trading posts, freight landings, and woodyards sprang up along the Missouri's banks. The steamboats and keel boats that brought freight and trade goods up the Missouri returned to St. Louis with hides, gold, and colorful stories of this new frontier.

Large ranches like the Circle C and the Long X were established and divided the ranges for grazing. Men hired to operate the ranches, as well as new settlers, were soon looking for homesteads of their own. Rich river bottoms with their abundant forage led them to homestead places like the one on Bell Bottom in the distance.

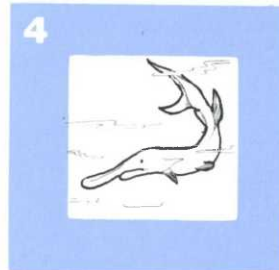
Purchase of land for the reservoir, the depression, and competition with larger ranches soon saw much of the land come under government ownership.
Next stop 2.5 miles



ISLAND FOOTPATH

If you would like to take a closer look, walk across the dike to Jones' Island, where you will find a footpath. The large cottonwood trees provide excellent opportunities to view and hear a variety of songbirds. If you see piles of cut willow branches near the water's edge, they are most likely the work of a beaver. Great blue herons and cormorants are often seen in this area. Shrubs and trees such as rose, snowberry, willow, and cottonwood provide food and cover for wildlife.

As you walk through the river bottom, look for ice scars on the upstream sides of the large cottonwood trees. The river often floods in the spring. As the ice goes out, large ice jams moved by the floodwaters grind against objects that are normally high and dry. The Missouri is truly a "living river" - carving out its banks, depositing rich silt, and constantly changing channels. Next stop 1.2 miles



BOTTOMLANDS

This is a good place to stop and walk along the river. During the spring (April-June) many anglers come to this and other favorite spots to fish for paddlefish. This prehistoric fish has no true bone development, only a cartilage skeleton, similar to

your nose and ears. Paddlefish average 40 pounds, but are known to exceed 140 pounds in these waters. Paddlefish exist in only a few North American rivers. Other fish often caught from the Missouri include sauger, channel catfish, walleye, and northern pike. Next stop .7 mile

5



MONARCH OF THE BREAKS

As the cottonwoods flame golden in the crisp September air, as many as 60 elk may be seen here. September is the beginning of the rut or mating season for elk. During this season, if you sit quietly during the evening hours, you

may hear the low hoarse bellows and clear high tones of bugling elk. The native plains elk was eliminated from this area by the early 1900's. The present elk herd was established through the cooperation of the State of Montana, private individuals, and the U.S. Fish and Wildlife Service. Elk are truly one of the success stories of the Refuge and man's efforts to manage wildlife populations. The bottomlands provide important winter habitat for elk. The same thickets provide food and cover for white-tailed deer. Immediately after sunrise, or just before sunset, white-tailed deer may often be observed in this area. Next stop .3 mile

6



ANOTHER SUCCESS STORY

The Lewis and Clark journals refer to an abundance of Canada geese. By the 1930's, overhunting had practically eliminated geese from this area. In 1956, 71 goslings from Bowdoin National Wildlife Refuge were released here.

That effort has proved successful and Canada geese again nest up and down the river.

When the geese were reintroduced, the impoundments before you were created to provide improved habitat to help ensure their survival. Floating nesting structures and tree platforms were constructed to protect the nests from predators. The man-made impoundments also provide habitat for numerous shore and wading birds. Next stop 1.6 miles

7



FORMATION OF THE LAND

Some of the exposed rock on the Refuge was formed 80 million years ago. Shallow seas and the deposit of sediment dominated the area for the next 22 million years. During the following 55 million years, sediments were

eroded away as glaciers advanced and retreated over the area. The most recent glacier retreated northward about 10,000 years ago.

When these great Pleistocene glaciers spread over northern Montana, the Missouri River was forced from its channel (now the Milk River, 60 miles north) and crowded southward. The mighty river carved out its present channel by cutting along the face of the glacier where you now stand. As the glaciers melted and began their retreat, the resulting streams flowed across the fragile soils, eroding the deep steep-walled coulees that are now called the "Breaks" or "Badlands" of the Missouri.

Many of the geological formations visible here are composed of brownish-gray Bearpaw Shale, which is very unstable. As you look across the river to the southeast, notice the large landslides on the skyline. Landslides are common in the Bearpaw Shale formation. Next stop 1.1 miles

(Continued on other side) →

8



SIMPLICITY ON A GRAND SCALE

From this spot you can see the Little Rocky Mountains to the north, the Snowy Mountains and Judith Mountains to the southwest, and the Bearpaw Mountains to the northwest.

Olaus J. Murie, who was largely responsible for the creation of the Refuge, wrote in 1935:

"This region as a whole is extremely picturesque. There is glamour of early explorations over it all, the romance of historic events. A camp out in the badlands, with the jumble of carved and stratified buttes, perhaps mellowed by the setting sun or set off by cloud formations at dawn, leave nothing to be desired. In such a setting the sight of a group of antelope on a ridge, or a sharp-tailed grouse whirring from the head of a coulee completes the picture. An occasional prairie dog or burrowing owl are interesting details that belong to the whole Simplicity on a grand scale is the keynote of this whole outdoor picture."
Next stop 3.0 miles

9



CATTLE GRAZING

Grazing is the dominant land use around the Charles M. Russell NWR and it can often be utilized as a wildlife management tool. Grazing, mechanical disturbance, or fire may be used to remove old vegetation and increase plant vigor. Some wildlife

such as prairie dogs and killdeer do not do well with dense grasses or cover; whereas, sharp-tailed grouse and elk require abundant cover. What may be good habitat management for one species could cause another species to decline. On the Refuge some areas have been set aside to be managed for prairie dogs and the species associated with light cover. Other areas are left with abundant cover for species like the sharp-tailed grouse. Elk, bighorn sheep, and sharp-tailed grouse are examples of wildlife species that can be carefully regulated. Next stop 2.3 miles

10



SPRINGTIME DANCERS

The area east of the road is a traditional sharp-tailed grouse dancing ground. From late March to mid-May and late September and October, male sharp-tailed grouse gather here at daybreak. With a hooting or cooing sound and

short rapid stamping steps, they attempt to attract females. Sometimes two males pair off in battle. With wings and tails spread, they rush each other and stop short beak-to-beak. This display is repeated again and again.

"Sharptails" are important game birds throughout the plains of the central United States. These birds are closely associated with grasslands and are dependent on good grass cover. They need 8 to 10 inches of plant cover for nesting; during the winter they utilize shrubs for food and cover. Next stop .9 mile

11



FISH AND WILDLIFE SERVICE AND BUREAU OF LAND MANAGEMENT

You are now passing from the Refuge onto lands managed by the Bureau of Land Management (BLM). These two agencies are part of the U.S. Department of the

Interior. Charles M. Russell NWR objectives include protection of endangered species, resident wildlife, migratory birds, and their habitats. The Refuge preserves historical, archeological, and paleontological resources. Activities such as hunting, fishing, cattle grazing, and wildlife observation are permitted on the Refuge. However, these activities are allowed only after the primary purpose of the Refuge - wildlife management - has been met.

BLM manages public lands for several major programs such as minerals, timber, grazing, recreation, cultural resources (history, archaeology, and paleontology), and wildlife habitat including threatened and endangered species. Next stop 2.2 miles

12



TRADITIONAL HUNTING GROUNDS

This area has long been - and still is - a choice hunting ground. Until the late 1800's tribes of Crow, Blackfeet, Sioux, and others travelled into this area to hunt. These tribes depended on the abundant game for food, clothing, shelter, and religious articles.

The Bell Ridge Reservoir to the east is an example of multiple use management by the BLM. Reservoirs can help facilitate cattle distribution. In this area, cattle are watered by well and the reservoir has been fenced to exclude cattle. It is stocked with rainbow trout by the Montana Department of Fish, Wildlife and Parks. Next stop 2.5 miles

13



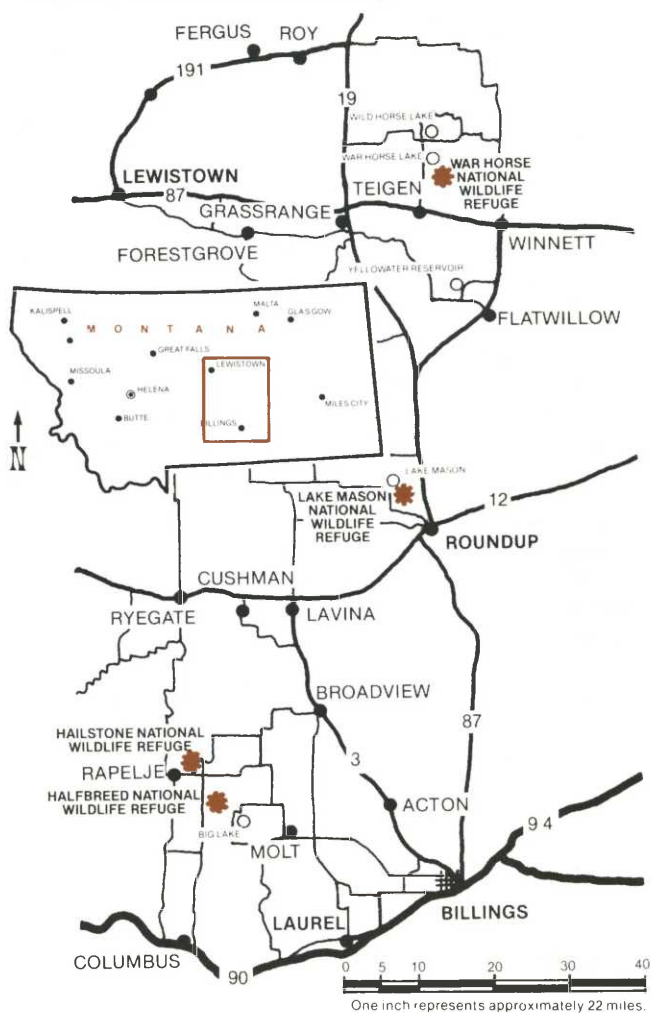
THE FUTURE

At one time this area was filled with huge herds of migrating bison. Naturalist Ernest Thompson Seton estimated there were 60 million bison in North America in 1800. Antelope, elk, Audubon's bighorn sheep, plains grizzly, wolf, coyote, prairie dog, and a

myriad of other animals completed the scene. By the late 1800's only a few scattered herds of bison remained. The Audubon's bighorn sheep, plains grizzly, and prairie wolf disappeared forever. Elk and antelope almost followed their fate. Thousands of acres of habitat were lost as the great reservoirs flooded the Missouri bottomlands and uplands were converted to agricultural use.

The Charles M. Russell NWR is a major contributor to the wildlife and wildlands of the area. However, the ultimate force in determining the future for wildlife management will rest with the desires of our society. You have an important role to play, and have taken the first step to understand this land and its wildlife. What will you do now?

A FINAL REMINDER: *The map provided is a guide. Stop locally and inquire about directions and road conditions. Roads are often impossible during winter months. We recommend that visitors to these refuges carry shovels, tire chains, emergency food and water, first aid kit and insect repellent. Due to the often intermingled Federal and private land patterns, **BE SURE TO SECURE LANDOWNER'S PERMISSION BEFORE CROSSING PRIVATE LAND.** Landowners are sensitive to use of their land. Leave gates as they are found and exercise courtesy.*



hail- stone

half- breed

lake mason

war horse

NATIONAL WILDLIFE REFUGES

U.S. FISH AND WILDLIFE SERVICE
Department of the Interior



RF6-61521,22,23,25-1



September, 1979

★ GPO 1979-680-982

hail-stone

As the sun slowly warms the earth on its annual journey northward, the shortgrass prairies of Central Montana come to life. The melodious song of the meadowlark, thumping ritual of the sage grouse and wingbeats of thousands of waterfowl fill the air. Set aside for wildlife habitat and stop-over staging areas, four refuges help provide for the needs of waterfowl and other wildlife in the short-grass region of Central Montana. These refuges are part of a system of over 390 National Wildlife Refuges administered by the U.S. Fish and Wildlife Service. Because of intermingled Federal and private land-ownership, visitors to these refuges should be certain to obtain landowner's permission before crossing private land.

This refuge is located in the Hailstone Basin approximately 35 miles west of Billings, Montana, and consists of 1,913 acres of Federal and 767 acres of private lands. President Franklin D. Roosevelt, by an Executive Order in 1942, created this refuge primarily as a breeding ground for waterfowl and other wildlife.

Hailstone Creek and its tributaries furnish the entire water supply for the 660-acre Hailstone Lake. The upland areas of the refuge are vegetated with sagebrush, grease-wood and native grasses. Each year some cropland is planted with grasses to provide dense nesting cover. The refuge is open to hunting but there are no public recreation facilities. Because of occasional dry spells there are no fish in the lake.

Common wildlife species include: horned grebe, eared grebe, white pelican, double-crested cormorant, great blue heron, mallard, gadwall, green-winged teal, redhead, canvas-back, golden eagle, killdeer, American avocet, northern phalarope, Wilson's phalarope, California gull, ring-billed gull, black-tailed prairie dog and pronghorn.

half-breed



The southernmost of the four refuges, Half-breed National Wildlife Refuge was also established by Executive Order of President Franklin D. Roosevelt in 1942. It is approximately five miles south of Hailstone National Wildlife Refuge. The refuge was established primarily as a breeding and nesting area for migratory birds, but serves equally well for the protection of resident wildlife.

The refuge includes an excellent marsh and parts of two shallow lakes. Upland areas of the refuge are generally vegetated with sage-brush, greasewood, salt grass, western wheat-grass and foxtail barley.

The ref This Refuge is presently ent
LA CLOSED TO ALL PUBLIC ENTRY in
SE accordance with the terms of
RE its recent acquisition by the
ther US Government. March 1988
periodically affords opportunities to observe
activities of the black-necked stilt.

Common wildlife species include: horned grebe, eared grebe, Canada goose, mallard, gadwall, blue-winged teal, sharp-tailed grouse, sage grouse, Gray partridge, spotted sandpiper, solitary sandpiper, greater yellowlegs, lesser yellowlegs, Baird's sandpiper, long-eared owl, short-eared owl, coyote and pronghorn.

lake mason



The Lake Mason National Wildlife Refuge consists of Lake Mason, Lake Miller and several thousand acres of scattered lands along Flat Willow Creek. The 18,600-acre refuge was established by President Franklin D. Roosevelt by Executive Order in 1941. The refuge is located approximately six miles northwest of Roundup, Montana.

Lake Mason is of great importance to waterfowl and upland birds as a production area and as a high quality migration rest stop. It has an excellent interspersed of emergent vegetation and marsh lands. Native shortgrass prairie uplands surround the lake. Along Flat Willow Creek riparian habitat predominates.

There are no public use facilities on the refuge. Of special interest at Lake Mason, are the upland areas north of the lake that are set aside for long-billed curlews. Black rails occasionally visit the area. The refuge is open to hunting and provides an excellent opportunity for photography with the scenic Snowy and Crazy Mountains as a backdrop.

Common wildlife species include: horned grebe, eared grebe, white pelican, double-crested cormorant, great blue heron, mallard, gadwall, pintail, blue-winged teal, cinnamon teal, American wigeon, northern shoveler, redhead, canvasback, lesser scaup, ruddy duck, red-tailed hawk, marsh hawk, golden eagle, sage grouse, spotted sandpiper, willet, Baird's sandpiper, American avocet, California gull, ring-billed gull, short-eared owl, muskrat, mule deer and pronghorn.

war horse



Three impoundments, Wild Horse Lake, War Horse Lake and Yellow Water Reservoir, comprise the War Horse National Wildlife Refuge. These three bodies of water are located near Winnett, Montana. The refuge lands were transferred to the U.S. Fish and Wildlife Service in 1958 by President Dwight D. Eisenhower, under provisions of the Coordination and Conservation Act of 1934.

The upland habitat around the lakes is sage-brush/grasslands. Each year hunters take advantage of concentrations of waterfowl on War Horse Lake. Upland game birds, antelope and coyotes also provide hunters with additional opportunities near this refuge. When the ice goes out in spring, migrating bald eagles often concentrate on War Horse Lake to feed. The lake, when stocked, provides fishing opportunities for northern pike and large-mouth bass. Wild Horse Lake is an improved natural depression which holds water seven out of ten years. When the 900-acre lake holds water, it has a high waterfowl population and a considerable production of dabbling ducks. Yellow Water Reservoir, south of Winnett, Montana, is widely known for its rainbow trout, stocked by the State of Montana Fish and Game Department.

There are primitive pit toilets and a primitive small boat launching site at War Horse Lake and Yellow Water Reservoir.

Common wildlife at War Horse Lake and Yellow Water Reservoir include: horned grebe, eared grebe, white pelican, double-crested cormorant, Canada goose, mallard, gadwall, pintail, green-winged teal, red-tailed hawk, ferruginous hawk, golden eagle, American kestrel, sharp-tailed grouse, sage grouse, greater yellowlegs, lesser yellowlegs, California gull, ring-billed gull, great-horned owl, white-tailed jackrabbit, raccoon, coyote, pronghorn and mule deer.

REGULATIONS:

- *Help us keep costs down and keep these areas attractive - please take litter home.*
- *All plants and animals are protected — Molesting, disturbing, injuring, destroying or removing any plant or animal is prohibited (except legally taken game during established hunting or fishing seasons).*
- *Vehicle travel is restricted to established roads. Off-road travel is prohibited - it damages soil and destroys vegetation.*
- *Hunting and possession of firearms are prohibited except during prescribed seasons — ask for hunting information at refuge office.*
- *All other uses not expressly permitted are prohibited; when in doubt as to any regulation contact the refuge office.*

Where to write:

Refuge Manager
Charles M. Russell National Wildlife Refuge
P.O. Box 110
Lewiston, Montana 59457

With natural energy resources becoming more scarce, exercise good planning for your visit. Save gas now so that your children's children may visit these refuges and develop an understanding of these places of rest, food and cover for wildlife's sake!

CHARLES M. RUSSELL

NATIONAL WILDLIFE REFUGE



U.S. FISH AND WILDLIFE SERVICE
Department of the Interior



RF-6 61520-1



October, 1983

*U.S.G.P.O. 578-317-1982





Mule and white-tailed deer are common refuge residents.



Prairie dogs, a burrowing rodent, are found in towns and are characterized by their barking when alarmed.

Introduction to CMR National Wildlife Refuge

Extending 125 airline miles up the Missouri River from Fort Peck Dam in north-central Montana, Charles M. Russell National Wildlife Refuge contains approximately 1,100,000 acres, in addition to the 245,000-acre Fort Peck Reservoir. It includes native prairies, forested coulees, river bottoms, and badlands so often portrayed in the paintings of the colorful, early-day artist for whom this refuge is named.



A CHANGING LAND

The land along the Missouri is rich in history of native Americans, frontiersmen, and wildlife. Big game animals recorded here by Lewis and Clark in May of 1805 included American bison, elk, mule and white-tailed deer, pronghorn antelope, and bighorn sheep. There were also grizzly bears, wolves, mountain lions, bobcats, and coyotes. Ducks, geese, and swans were abundant as were such upland birds as sharp-tailed and sage grouse. Trappers and fur traders were attracted by the beaver along the Missouri and its tributary streams.

Slowly, the country and its wildlife changed. Hide hunters decimated the buffalo herds. Elk were eliminated from the prairies and Audubon bighorn sheep vanished into extinction. As domestic cattle replaced the buffalo, wolves and the plains grizzly bear were destroyed because of their predatory ways. Plows destroyed much of the prairie habitat of many of the smaller birds and mammals. A portion of the Missouri River breaks and badlands, however, escaped many of these influences of settlement because of rough terrain and inaccessibility of the area. Remnant populations of some wildlife species were still present when the area was established as a national game range in 1936. (Charles M. Russell was later converted to a National Wildlife Refuge in 1976.)



Each spring sharp-tailed grouse gather on dancing grounds to begin their courtship rituals to attract a mate.

INCREASING WILDLIFE POPULATIONS

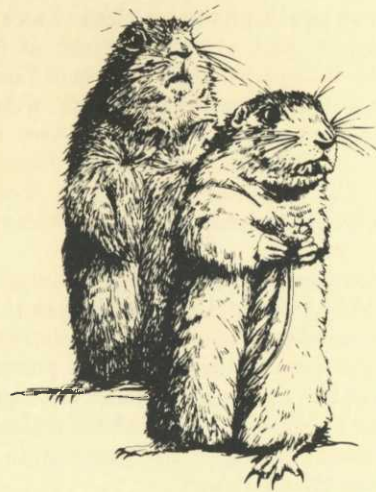
With protection and management, mule deer have increased to provide many hours of public enjoyment. Where the backwaters of the reservoir have not inundated their river bottom habitat, white-tailed deer have also prospered. Rocky Mountain bighorn have been stocked in Two Calf Creek and Mickey Brandon Buttes to replace the extinct Audubon sheep. Elk were restored to their hereditary range from Yellowstone National Park in 1951 and now inhabit much of the refuge. Pronghorn still find refuge here on their far-ranging movements. During severe winters the refuge provides food and shelter for pronghorn.

About 236 species of birds have been identified in the area since 1936. Double-crested cormorant and great blue heron rookeries occur on islands and in flooded timber along Fort Peck Reservoir. Many species of raptors, such as golden eagles, prairie falcons, ospreys, and American kestrels nest on the refuge. Each spring sharp-tailed grouse gather on traditional dancing grounds or "leks" and begin their courtship rituals. Armed with binoculars and a bird guide, a visit to the refuge will provide a rewarding experience to the novice as well as the expert birder.



Coyotes are found throughout the refuge and their howling may be heard during twilight hours.

Although a highly controversial animal, prairie dogs play an important role in the ecosystem and "dog towns" are an important focal point for many wildlife species on the refuge. These "barking dogs" live in colonies of a few to several hundred acres. Mountain plovers select nesting sites and rear their young in association with prairie dog towns. Burrowing owls use abandoned holes for housing. Coyotes, bobcats, badgers, and raptors feed on prairie dogs throughout the year.





Hunting is one of the many popular recreational activities permitted on the refuge.

RECREATIONAL OPPORTUNITIES

Recreational areas have been developed at the Pines and Fort Peck. Camping, picnicking, and boat launching facilities are available at Rock Creek State Park on the eastern part of the reservoir; at Nelson Creek Recreation Area on the Big Dry Arm of Fort Peck Reservoir; at Hell Creek State Park, north of Jordan, Montana; at Crooked Creek Recreation Area on the western part of Fort Peck Reservoir; and at James Kipp State Park on U.S. Highway 191 at the Robinson Bridge. Corps of Engineers recreational facilities are also available at Fort Peck.

Fishing and boating are popular recreational activities on Fort Peck Reservoir and along the Missouri River. Walleye, sauger, northern pike, paddlefish, catfish, ling, and lake trout are some of the fish species present.

Other recreational activities include photography, wildlife observation, hiking, and horseback riding. Both hiking and horseback riding permit exploration of the more remote areas of the refuge.

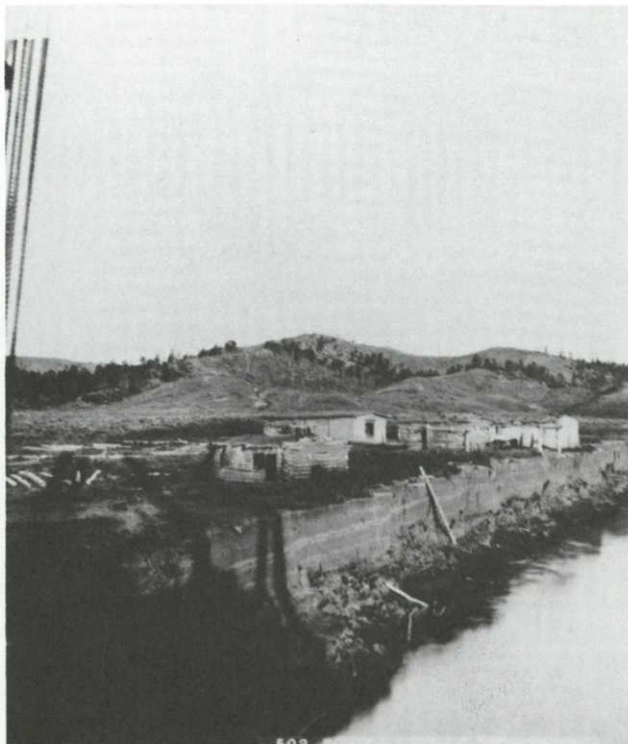
Big game and bird hunting are permitted in specific areas. All recreational activities are subject to both State and Federal regulations.

A number of roads lead into the refuge. Surfaced, all-weather roads are limited to U.S. Highway 191, crossing the western part of the refuge; a graveled auto tour route; and the highways around Fort Peck. Other roads are passable only in dry weather. High-wheeled or 4-wheel drive vehicles are preferable on roads in the breaks and along the river. Local inquiry should be made if travel is contemplated off the main highways, or into Rock Creek and Hell Creek State Parks.

Hotel accommodations and restaurants can be found at Fort Peck, Glasgow, Malta, Lewistown, and Jordan.

The Charles M. Russell National Wildlife Refuge headquarters is located in Lewistown, Montana, with subheadquarters at the Sand Creek Wildlife Station, the Fort Peck Wildlife Station, and the Jordan Wildlife Station.

For further information, contact the Refuge Manager, Charles M. Russell National Wildlife Refuge, Box 110, Lewistown, Montana 59457.



Carroll was a riverbank settlement with short-lived prosperity (photo date—1880). Montana Historical Society photo.

In writing about Charley Russell's friends, his wife, Nancy Russell, wrote: "What a multitude, what a legion they were! Some of them were real saints in his eyes. And some of them were real sinners, too. And he knew it. And never cast a stone. But he would say, "My Brother, when you come to my lodge, the robe will be spread and the pipe lit for you!"

U.S. Department of the Interior
FISH AND WILDLIFE SERVICE



RF-61520



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A HISTORY

CHARLES M. RUSSELL
NATIONAL WILDLIFE
REFUGE

MONTANA





Rocky Point, a tough frontier town, was the rendezvous for trappers, miners, cowboys, and all manner of outlaws (photo date—1885). Montana Historical Society photo.

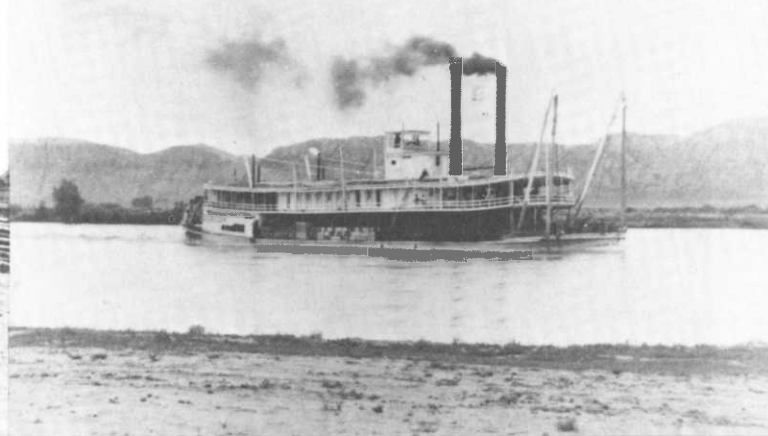
CURRENTS OF CHANGE

The Missouri River is a great slash across northern Montana. It collects meltwater from the western mountains and delivers it through the dry plains of eastern Montana. The rushing waters of the Missouri carved the landscape and shaped the history of Montana.

In early times, the Missouri divided the hunting grounds of Indian tribes. Lewis and Clark followed the Missouri on their famous expedition. In May of 1805 they traversed the section of the Missouri River now surrounded by the Charles M. Russell National Wildlife Refuge and set up camps at several locations along the shores. The Missouri soon became the main route of travel into Montana and remained so until the arrival of the railroads in the 1880's. Traders labored against the current with loads of trade goods, then drifted downstream with loads of furs. Miners and buffalo hunters followed and outlaws were not far behind. The growing commerce along the river required protection and policing. Military posts were established at Ft. Carroll and at Ft. Musselshell. Homesteaders were very dependent upon river travel. The permanent settlement of the land was underway.

THE STEAMBOAT ERA

Steamboats were the major method of travel on the river for nearly 30 years. The standard route spanned the area from St. Louis to Fort Benton, a total of 2,200 river miles. The first steamboat arrived at Fort Benton in 1859. The last freight was unloaded there in 1888. Four hundred passengers and 8,000 tons of freight moved in and out of Fort Benton in 1867. Roughly 80 percent of all the precious metals mined in central



Steamboats, such as the "Benton" pictured above, dominated river traffic for 30 years. Montana Historical Society photo.

Montana before 1875 was transported downriver by riverboats. The richest cargo ever to travel down the Missouri River was on the "Luella" in 1866—\$1¼ million in gold dust. The steamboat pilot houses were armored with boiler iron to protect them from the bullets of would-be robbers.

The fast current and numerous sandbars demanded the full attention of river captains. Scores of boats and cargos were destroyed by the treacherous river.

As the river traffic increased, woodhawkers established camps along the river and supplied firewood to the steamboats. Several riverside settlements soon sprang up. The town of Carroll was a steamboat landing which enjoyed brief prosperity during the low-water years of 1874 and 1875. This prosperity ended when the return of high water allowed the steamboats to continue upriver to Fort Benton.

The Great Northern and Northern Pacific railroads were built across Montana Territory in the 1880's and the Missouri River quickly lost its importance as a transportation route.

FROM OUTLAWS TO SETTLERS

Some of the historic sites are located on what is now the western half of the Charles M. Russell National Wildlife Refuge. Rocky Point was a tough frontier town from the 1860's until the turn of the century. Fights, killings, and hangings were frequent. Rocky Point served legitimate ranchers and businessmen as well as thieves and outlaws. It became the rendezvous and center of trade for woodchoppers, trappers, miners, cowboys, whisky traders and all manner of outlaws, including the infamous Kid Curry and his gang. Many of the outlaws resided in the river bottoms and



Wilder's Ferry, at Rocky Point, served local traffic crossing the river. Montana Historical Society photo.

masqueraded as woodchoppers, Indian traders, and buffalo hunters. Rocky Point also served as a steamboat landing, with infantry companies occasionally stationed there to guard government freight.

The UL Bend has also been called the Great Bend of the Missouri River. Riverboat captains often allowed passengers to leave the boats and walk the two miles across the narrow peninsula for relief from the month-long journey from St. Louis. The steamboats loaded wood and then steamed the 13 miles around the tip of the bend.

The confluence of the Musselshell River with the Missouri River was a significant area. It was a major crossing point of the Missouri for the vast buffalo herds on their annual migrations. Since the site was a major fording point for the Indians of eastern Montana, battles and skirmishes occurred there between Indians and whites. A succession of fur trading posts, woodyards, military camps, ranches, and homesteads occupied the area.

The Musselshell confluence also was a hangout for horse rustlers and other outlaws. Large-scale organized horse stealing rings tormented the ranchers in the Missouri Breaks region in the early 1880's. The gangs raided ranches in Montana, Wyoming, the Dakotas and southern Canada. They drove the livestock to remote areas of the Breaks, "worked" the brands, then drove them to Canada for sale. They would then repeat the process with stolen Canadian livestock. The gangs of outlaws kept guards out day and night watching for law officers and vigilantes.

One of the most famous incidents of "vigilante justice" occurred at the Musselshell confluence in 1884. Granville Stuart, operator of the DHS ranch near Fort Maginnis, led a group of stockmen to the Musselshell to clean out a large horse rustling ring. Two outlaws were



This cabin depicts a typical frontier home. Montana Historical Society photo.

hanged there and two more were hanged at Rocky Point. A few days later the stockmen, who later became known as "Stuart's Stranglers", apprehended more horse thieves at an abandoned woodyard at Bates Point, 15 miles below the mouth of Musselshell. Five outlaws were killed in the ensuing gun battle. Seven men managed to escape but five of these later were captured by soldiers in eastern Montana. These five were returned to the vigilantes and were hanged from cottonwoods that grew in the broad flat bottoms of the Musselshell. The vigilantes' actions received considerable condemnation, but the organized horse rustling business ended in the Missouri Breaks. Granville Stuart was soon named first president of the Montana Stockgrowers Association.

At the far eastern end of the refuge was Old Fort Peck, located about one mile south of the current site of Fort Peck Dam. This was never a military fort, but a stockade built in 1867 by the firm of Durfee and Peck. This company operated several trading posts along the Missouri River. In 1871 the Milk River Indian Agency was moved to Fort Peck from its initial location on the Milk River. This agency served the Assinboine, Brule, Teton, Hunkpapa, and Yanktonai Sioux Tribes. The stockade remained a riverboat landing, trading post, and Indian agency until 1879 when the agency was moved to Poplar Creek and the trading post was abandoned. The main reason for abandonment was the action of the Missouri River which gradually washed away the bluff upon which the fort was built.

Some of the historic sites of the refuge include the Hess homestead, built of planking from a river barge. The Kendall, Bell, and Mauland ranch sites represent the evolution from homesteads to working ranches. They have not been moved, rebuilt, or extensively remodeled.



Granville Stuart led a group of vigilantes known as "Stuart's Stranglers", wiping out organized horse rustling in the Breaks (photo date—1884). Montana Historical Society photo.

The Long-X Ranch, one of the first cattle operations in the Breaks, was in business from the late 1800's until about 1950. The Wiederrick homestead was built in the 1870's. Among others that homesteaded along the river were the McNulty, Knox, Caster, Anderson, Legg, and Doney families. There are also numerous marked and unmarked graves, tipi rings, and bison kill sites throughout the refuge.

ARTISTS AND ENGINEERS

The Cowboy Artist, Charles M. Russell, visited these lands in the 1880's. His painting and sculpture capture for all time the beauty and drama of the land, the wild animals, and the cowboy life of Montana. The Refuge is named for him.

In 1933, Congress authorized the U.S. Army Corps of Engineers and the Public Works Administration to begin construction of Fort Peck Dam and work was completed in 1939. During peak employment, over 10,000 people worked on the dam. The main purposes of the dam were flood control and improvement of navigation. Fort Peck Dam is the world's largest hydraulically earthfilled dam.

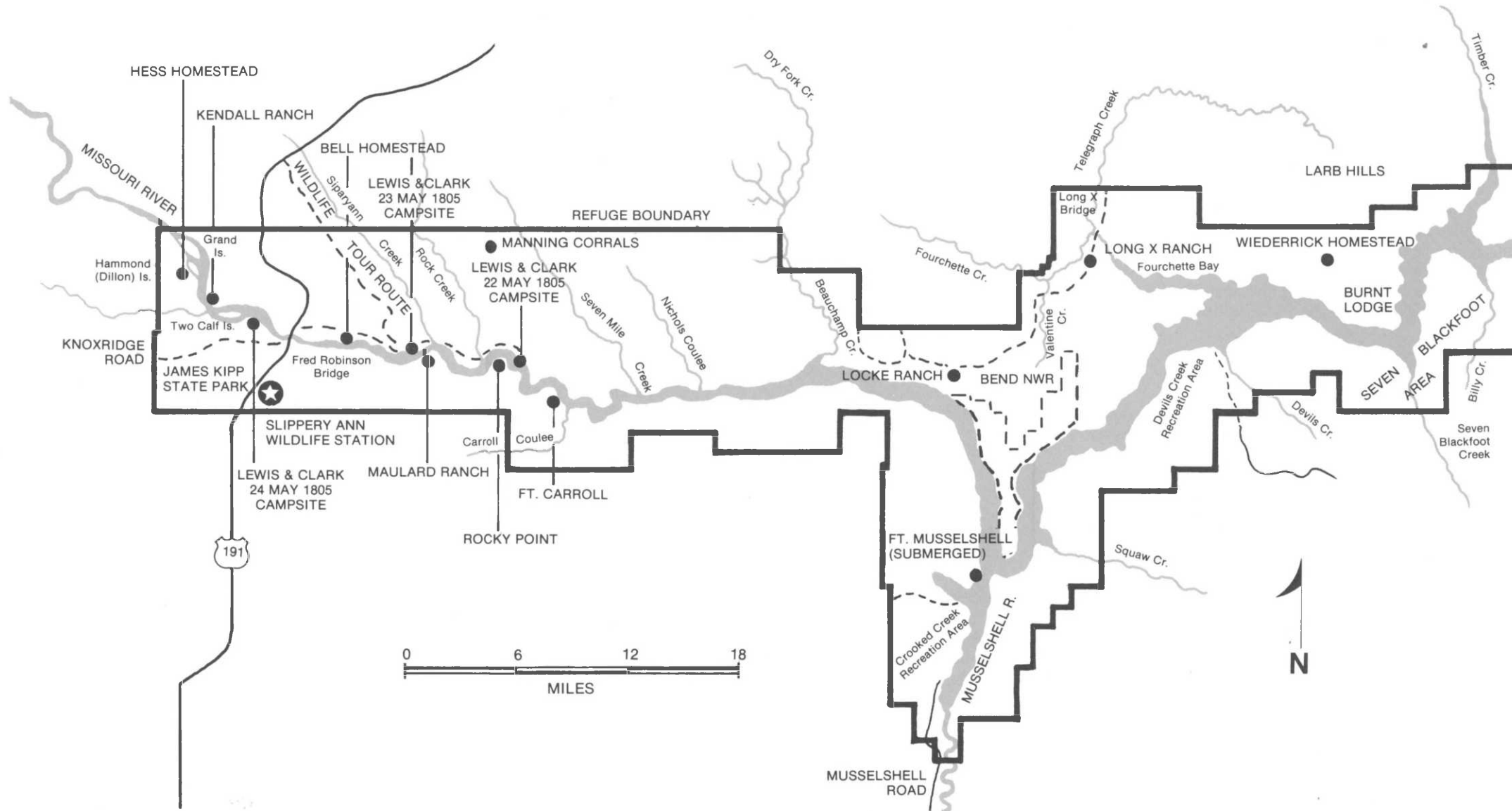
Fort Peck Game Range was established in 1936 and converted to Charles M. Russell National Wildlife Refuge in 1976. After a century of exploration and development, the Refuge was created to restore and preserve some of the original natural beauty of Montana and its wildlife. Refuge managers now preserve on the land the same values that the Cowboy Artist preserved on canvas.

CAUTION

It is unlawful to search for, disturb or remove artifacts or fossils on Refuge lands.

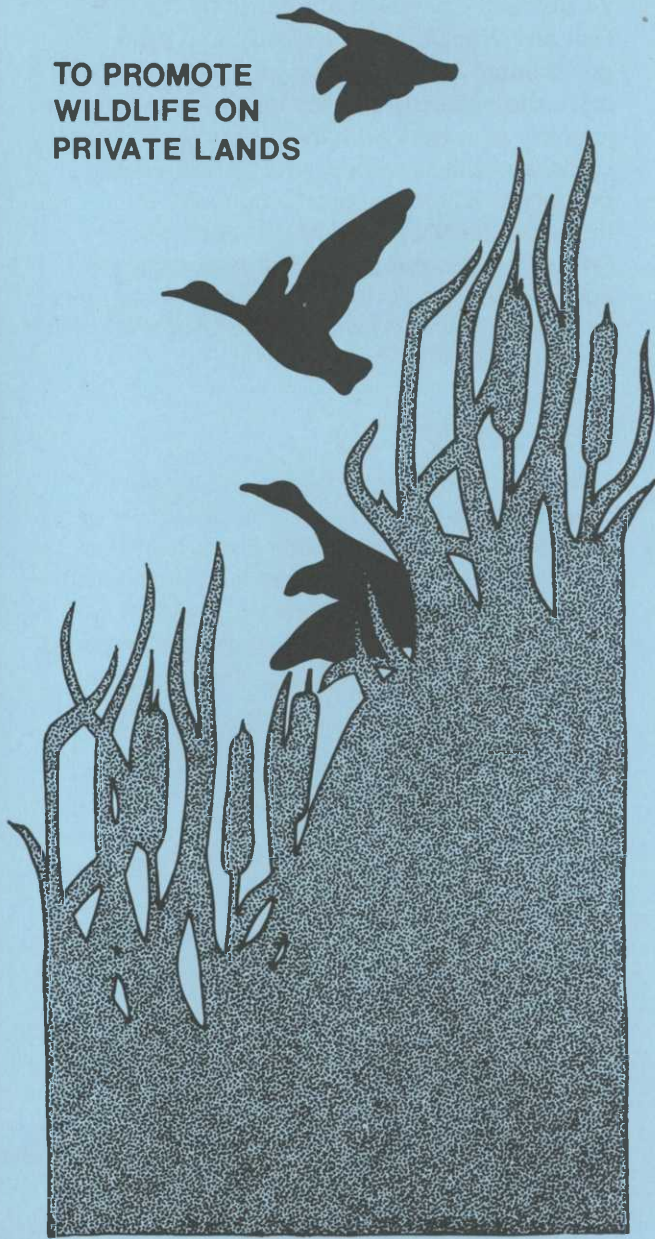
The Montana Historical Society provided valuable assistance in verifying the accuracy of this text.

CHARLES M. RUSSELL N.W.R. WEST UNIT



WILDLIFE EXTENSION PROGRAM

TO PROMOTE
WILDLIFE ON
PRIVATE LANDS



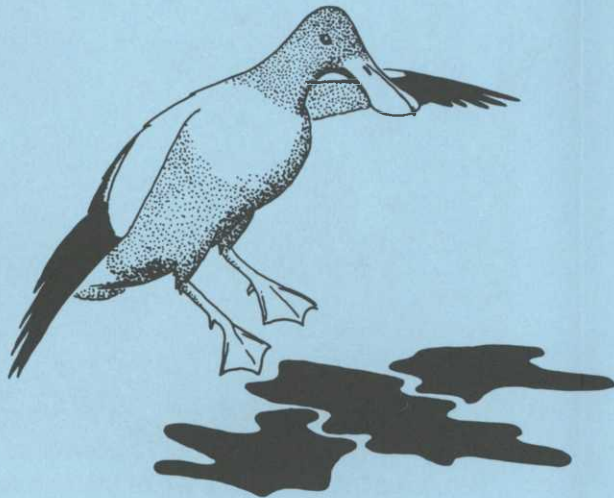
UNITED STATES FISH & WILDLIFE SERVICE

THE PROBLEM

Waterfowl numbers have declined dramatically in recent years. Between 1959 and 1988 waterfowl populations dropped an average of 24 percent. Conservation efforts by the U.S. Fish and Wildlife Service (FWS), and other government or private agencies alone cannot solve the problem. Studies have shown that the majority of waterfowl habitat occurs on private lands, and this is where most waterfowl are produced. Waterfowl production may be thought of as a by-product of agriculture. Private lands are important to waterfowl production. Serious declines in waterfowl numbers cannot be improved without the cooperation of landowners.

THE SOLUTION

The Fish and Wildlife Service is the agency primarily responsible for the management of migratory birds. The **Wildlife Extension Program** was developed to assist landowners with land-use planning and funding for wildlife habitat improvements. This program is intended to work together with existing Farm programs.



PROGRAM BENEFITS

Private landowners in cooperation with FWS can restore and improve drained wetlands or stock ponds on CRP lands or other approved locations. Wetlands are essential for Montana's waterfowl populations. Canada geese and dabbling ducks prefer shallow waters with abundant aquatic plants. Dense grasslands adjacent to wetlands are important places for waterfowl to nest. These areas also provide excellent habitat for pheasants, deer, and other wildlife.

Typical water development projects may include restoration of drained wetlands or non-functional reservoirs. Nesting cover improvement projects may include cost-sharing seed expenses and providing materials for artificial nest structures.

Landowners benefit by improved stockwater and forage, water table stabilization, and increased land values and recreational opportunities.

APPROVED PROJECTS

Generally smaller wetlands and stock ponds will be restored by FWS at no cost to the landowner. For larger projects, cost-sharing is available. In addition, the landowner will receive a one-time payment of \$10.00 for every surface acre of wetland restored or a \$50.00 per wetland minimum, whichever is greater. This payment is in addition to other payments, such as CRP.

LAND-OWNER CONTROL

Landowners retain all rights to control access and hunting on their property.

PROJECTS IN MONTANA

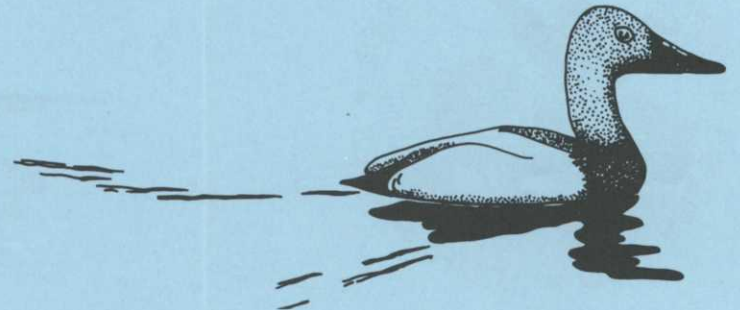
In 1988 the Wildlife Extension Program restored over 55 wetlands. In 1989 over 150 wetlands will be restored; a three-fold increase. Nesting islands have been constructed on many of these restored wetlands. Over 5000 acres of upland habitat have been reseeded through cost-sharing. Over 75 Canada goose nesting structures have been placed on private lands throughout Montana. This is just a beginning of joint FWS-landowner cooperation.

OTHER PROGRAMS

Wetland Conservation Easement — for selected property tracts with wetlands the FWS will negotiate a one-time payment when a landowner agrees not to burn, drain, or fill specified wetlands under terms of the easement.

Acquisition — under some conditions, the FWS will negotiate with a landowner for direct purchase of specified property tracts under fair market conditions.

Other programs may be available through your local SCS/ASCS office or Montana Fish, Wildlife and Parks, Helena, MT.

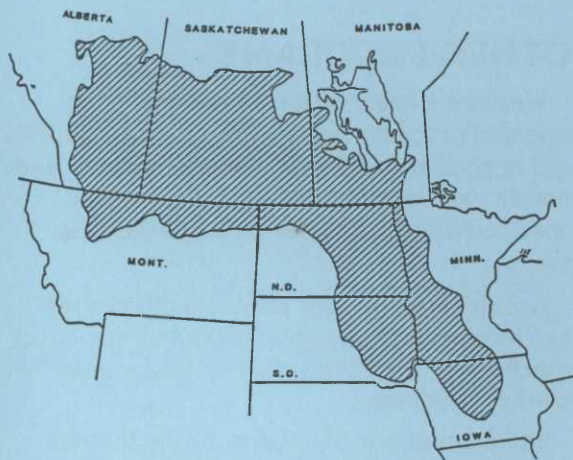


AS PART OF THE . . .

NORTH AMERICAN WATERFOWL MANAGEMENT PLAN

A Strategy for Cooperation

A Map of the Prairie Pothole Region Indicating
Where Most of the Waterfowl are Produced.



FOR MORE INFORMATION CONTACT THE NATIONAL WILDLIFE REFUGE NEAREST YOU.

Benton Lake NWR, Black Eagle, MT
727-7400

Bowdoin NWR, Malta, MT
654-2863

Charles M. Russell NWR, Lewistown, MT
538-8706

Lee Metcalf NWR, Stevensville, MT
777-5552

Medicine Lake NWR, Medicine Lake, MT
789-2305

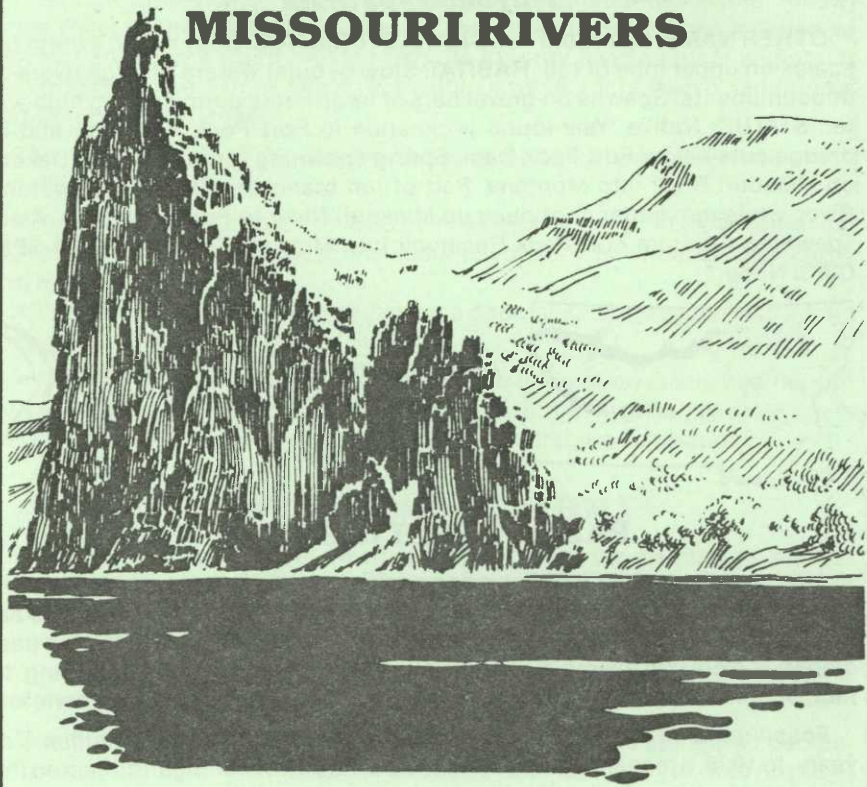
National Bison Range, Moiese, MT
644-2211

Red Rocks Lake NWR, Lima, MT
676-3347



THE PADDLEFISH

**SENIOR CITIZEN OF
THE YELLOWSTONE AND
MISSOURI RIVERS**



*Montana Department of
Fish, Wildlife & Parks*

PRIMED FOR PADDLEFISHING

What makes 3,000 excited anglers flock to a short section of Yellowstone River shoreline and beat the water to a froth by flailing it with heavier-than-usual fishing gear?

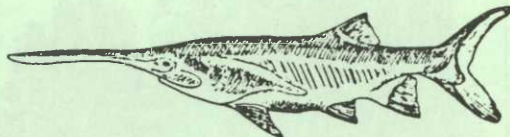
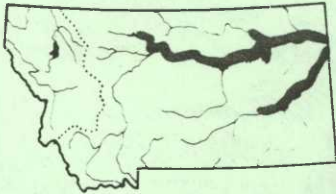
The paddlefish. What else?

During May, June and the early part of July, a special breed of angler travels to a rocky stretch of the river near Glendive at the Intake Diversion Dam. It's here where they rig up their saltwater fishing gear and churn the coffee-colored water for the senior citizen of the Yellowstone—the paddlefish. Paddlefish are also caught in lesser numbers at the mouths of the Tongue and Powder Rivers and the Forsyth Diversion Dam.

PADDLEFISH

Polyodon spathula

OTHER NAME: Spoonbill cat. **CHARACTERISTICS:** Body naked except for scales on upper lobe of tail. **HABITAT:** Slow or quiet waters of large rivers or impoundments. Spawns on gravel bars of large rivers during spring high water. **STATUS:** Native. Year-round population in Fort Peck Reservoir and in dredge cuts below Fort Peck Dam. Spring spawning run from North Dakota up Missouri River into Montana. Part of run branches off into Yellowstone River, while remainder continues up Missouri River to Fort Peck Dam. Also, spawning run from Fort Peck Reservoir into Missouri River. **SIMILAR SPECIES:** None.



PADDLEFISH HISTORY

Although the paddlefish (*Polyodon spathula*) is a relatively recent addition to Montana's list of game fish—it was added in 1963—it survives from an ancient and primitive group. Remarkably adapted to its environment, the paddlefish is a classic example of millions of years of ecological fine tuning. In fact, paddlefish may be the oldest big animals surviving in North America.

Fossil remains reveal that **paddlers** have lived in Montana for millions of years. In 1938, a research group from the University of Michigan collected the skeleton of a large duck-billed dinosaur in McCone County. As the bones of the 65 million-year-old dinosaur were being cleaned, parts of the skeletons of a sturgeon and a paddlefish were found. It was theorized that when the dinosaur died its carcass fell into a body of water. Possibly the two fish, in search of food or shelter, swam into the rib cage, died and were buried there. This paddlefish skeleton is the world's oldest record of paddlefish.

Today, paddlefish live in two parts of the world; the Mississippi River drainage of North America and Yangtze River drainage in China. The Chinese paddlefish (*Psephurus*) reaches lengths of up to 20 feet, possesses a more conically shaped paddle and differs in its food habits from its North American relative.

Hernando De Soto, a 16th century explorer and the first white man to cross the Mississippi River, was the first to note the existence of the paddlefish. De Soto's log describes the "pelefish" as having no scales with the upper jaw resembling a "pele" or "spatula." Thomas Jefferson mentioned the paddlefish when he listed fishes of the Mississippi River. An August 26, 1864, excerpt from the diary of James B. Atkinson, a soldier on the Scully Expedition, states, "Some of the soldiers shot fish in the river, bagging some spoon fish six feet long." The Indian fighters were on the march from Fort Union—near the confluence of the Yellowstone and Missouri Rivers—to Fort Rice, North Dakota.

Although presence of paddlefish had been documented in the Yellowstone River in the early 1900s, interest increased in 1962 when a Glendive resident snagged a weird looking fish. Its identity puzzled local anglers. It was thought to be a freak catch, but within a week, more than 60 additional paddlefish were snagged.

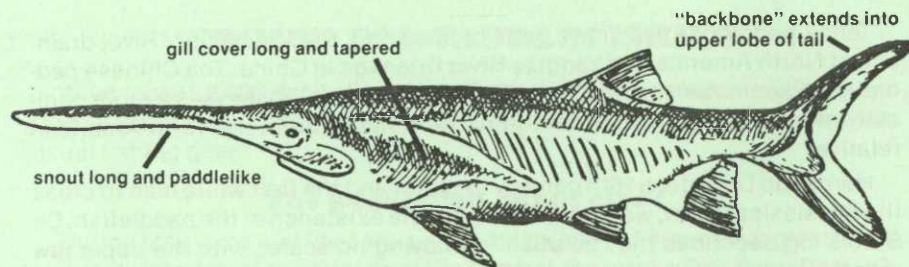
The "rediscovery" of the paddlefish set in motion a chain of events which resulted in:

- The initiation of a study in 1963 by the Department of Fish, Wildlife and Parks to answer specific questions about paddlefish movements, life history and harvest data.
- The emergence of the paddlefish as a popular species which was added to the game fish list in 1963.
- The realization that Montana's paddlefish population is still healthy, but that the species, overall, in many other areas of the Mississippi drainage is rapidly declining because of certain environmental river alterations.

PADDLEFISH ANATOMY

In comparison with other North American fish, the **paddler** is a most unique fish. Paddlefish skin is tough, smooth and scaleless, except for the upper lobe of the tail, where a trace of primitive diamond-shaped scales are found. Its skeleton is cartilaginous and it has a notochord (fore runner of the central nervous system). Jaws of young paddlefish are finely toothed but the teeth are lost by adulthood.

The most striking anatomical feature of the fish is an elongated paddle-shaped snout. This rigid protuberance, up to two feet in length, was once believed to function in digging up bottom organisms for food and to scoop out deep, secure resting holes in the bottoms of muddy rivers. Current thoughts are that the paddle serves as a specialized "antenna" in which there are thousands of tiny, embedded sensory receptors that enable the fish to detect concentrations of food in murky waters, and to detect and react to water currents as well as the varied topography of large river beds.



Below the spatula is a large mouth which when opened looks like the opening on a yawning hippo. Usually, it's open, since a paddlefish feeds by sucking in vast amounts of water enriched with plankton (microscopic plants and animals which are seldom larger than the period at the end of this sentence). The plankton are then filtered through an intricate, comb-like arrangement of gill rakers which serves the paddlefish as baleen does whales.

Other Interesting Facts About the Paddlefish

- **Weight**—The paddlefish ranks number one in the heavyweight division. The state record, a 142½ pound lunker, was caught in 1973 out of the Missouri River.
- **Age**—Tagged individuals are known to have lived for at least 30 years, and the assumption is they can live much longer. Paddlefish are not sexually mature until they are quite old—7 to 8 years for males and 12 to 14 years for females.
- **Spawning**—Spawning runs are triggered by rapid rises in water levels and a water temperature in the mid-50's. Gravel bars which are kept clean by flowing water and are deep enough for the spawning fish are preferred.
- **Fishing Hot Spots**—The most popular paddlefishing site on the Yellowstone River is the Intake area, site of a low diversion dam. Our harvest data shows that three out of four fishermen are successful in snagging paddlefish (see the Intake Fishing Access section for further information).

YELLOWSTONE RIVER ACCESS

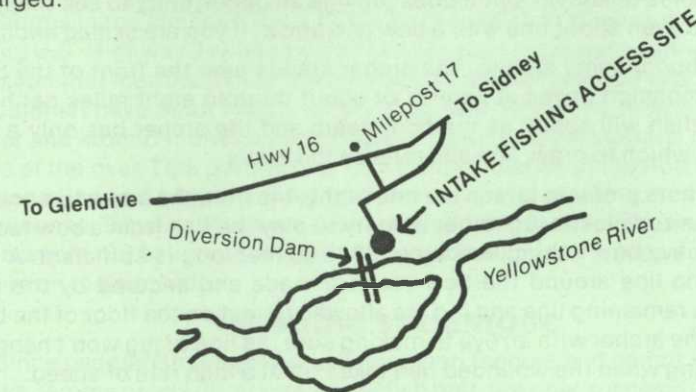
Intake Fishing Access

Location—This 10-acre site is situated in Dawson County, approximately 17 miles northeast of Glendive. Entrance to the area is at milepost 17 on Highway 16 and then 1.2 miles east on a gravel county road.

Special Attractions—The featured attraction of the Intake site is snagging for the prehistoric paddlefish. During May, June and early July, anglers travel long distances to churn the coffee-colored water with heavier-than-usual fishing gear.

The Intake site is also noted for its excellent sturgeon, walleye, catfish and sauger fishing. In addition, it attracts agate hunters and birdwatchers and serves as an access for river float trips to the Elk Island Wildlife Management and Recreation Area, 21 miles downstream. A boat ramp provides access to the river.

The site features a small campground with sanitary facilities and interpretive signs. During the paddlefish run, a camping fee of \$5 per night is charged.



MISSOURI RIVER ACCESS

Slippery Ann Area

Location—This is about 20 miles of river between the Fred Robinson Bridge and head of Fort Peck Reservoir; approximately 70 miles southwest of Malta on Highway 191.

Mostly unimproved roads on the north side provide access to downstream portions of the river. Small boats may be launched at several places along the river as well as at a concrete boat ramp at the James Kipp State Park near the Robinson Bridge.

Special Attractions—Most fishermen try snagging paddlefish from the bank, but snagging from a boat also is popular since more water in different locations can be fished. Best fishing generally occurs in April, May and early June, particularly when the river is rising. Males are the first to run, followed later by the larger females. Other game fish such as sauger, walleye, channel catfish and northern pike also can be caught using minnows or chunks of rough fish, such as goldeye or suckers, for bait.

Many species of wildlife including whitetail and mule deer, elk, antelope and sage and sharptail grouse inhabit the area, and opportunities for viewing them are quite good.

Fort Peck Dredge Cuts

Location—Along Highway 117 between Fort Peck and Nashua.

The main dredge cut complex is found on the west side of the highway beginning at the Park Grove Bridge just below the town of Fort Peck. Nelson Dredge Cut is located several miles further downstream on the east side of the highway. Concrete boat ramps are located at both areas.

Special Attractions—A rather unique method of taking paddlefish with bow and arrow in the Fort Peck Dredge Cuts has developed in recent years.

Paddlefish have the peculiar characteristic of resting near the surface in the dredge cuts, particularly during the warm summer months. The reason for this behavior is unknown, but it does provide an opportunity to see these giant fish and even shoot one with a bow and arrow, if you are skilled enough.

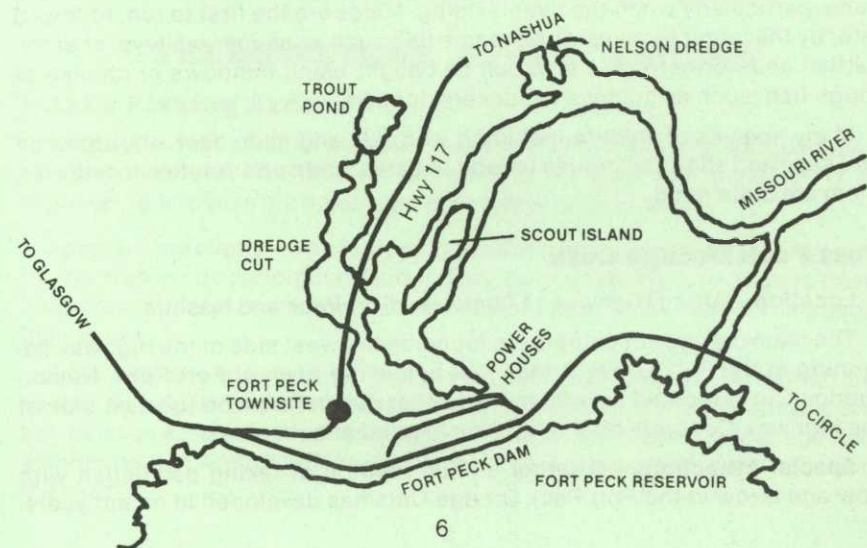
The method is fairly simple. The archer stands near the front of the boat while a companion drives at speeds of about three to eight miles per hour. The paddlefish will spook as the boat nears and the archer has only a few seconds in which to draw, aim and release the arrow.

Most archers prefer to attach the end of the line from the arrow to a one- or two-gallon-sized plastic jug rather than try to play the fish from a bow reel. A chunk of heavy bow fishing line about 30 to 50 feet long is sufficient. A few wraps of the line around the bow reel are made and secured by the reel keeper. The remaining line and jug are allowed to rest on the floor of the bow in front of the archer with an eye to making sure the line or jug won't hang up on something when the wounded fish takes off at a high rate of speed.

The jug is then followed until the fish tires and can be landed by a careful handling of the line. Depending on the size of the fish and where hit, the battle can last from a few minutes to over an hour. Special care must be taken when playing and bringing the **paddler** in as the arrow may pull out if the fish still has sufficient strength to head for deeper water. This results in not only a lost fish, but one that will probably die as well.

The best time to hunt is during calm weather in the late afternoon or early morning hours. Also, the fish are often "up" throughout the day during periods of hot, muggy, cloudy weather. A good pair of polaroid glasses are essential for daylight hunting. Paddlefish also come to the surface at night and archers using various types of light apparatus attached to the boat are able to successfully hunt at this time.

So, if you want to get an extra thrill out of life, try archery paddlefish hunting—it's guaranteed to provide plenty of excitement.



Nashua/Wolf Point Area

Location—During the past few years, fishermen have discovered certain locations in the Missouri River between the towns of Nashua and Wolf Point along U.S. Highway 2 where paddlefish tend to congregate during the spring and summer months. While it would be difficult to describe exact locations, paddlefish have been caught in the area just below the mouth of the Milk River and around the Wiota and Frazer irrigation pump stations on the north side of the river. This portion is within the boundaries of the Fort Peck Indian Reservation and a tribal fishing license is required in addition to a state fishing license. Tribal licenses are available in Poplar and Wolf Point. Boat fishermen would not be required to purchase a tribal license unless they fish from shore on Indian land.

FISHING TECHNIQUE

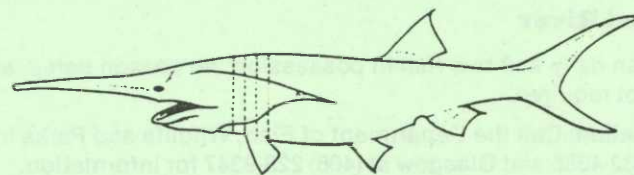
Since paddlefish are essentially plankton feeders and do not feed on minnows, worms or any other traditional fish bait, the only successful method of catching paddlefish is by snagging. You will need several large, size 6/0 to 10/0 treble hooks, 40- to 80-pound test line, a good stocky surf rod 8- to 12-feet in length, a heavy-duty saltwater spinning reel, and a 4- to 6-ounce weight. Many anglers use discarded spark plugs for weights.

Tie the weight to the bottom of the line, attach the treble hook about 12- to 18-inches above, and cast the business end out over the murky waters as far as possible, jerking it back on the retrieve. Brace yourself when the hooks sink into one of these tackle busters.

Snagging hooks and weights on rocks and other submerged materials occurs frequently. So, be prepared to lose some hooks and weights. Bring plenty of spares!

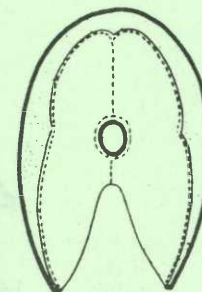
HOW TO CLEAN A PADDLEFISH

Paddlefish are not only exciting to catch, but if cleaned properly, delicious to eat.



First, remove the notochord by cutting around the narrow part of the tail to the soft cord, and then pull the tail and cord away as one unit; remove the head and entrails. Next, slice the body crossways into one- or two-inch steaks.

Lay each steak down flat and trim (along dotted line as shown in drawing) the skin and outer red or darkest meat away from the inner or light colored meat. It is very important to remove all of the dark meat prior to cooking. The flesh is now ready for smoking, frying, deep-frying, broiling or any other method used to prepare fish.



Paddlefish Caviar Recipe

1. By using a colander or screen, separate the paddlefish eggs from the membranes, keeping the eggs on ice.
2. Prepare a brine solution (1 1/8 cups of pickling salt to one quart of cold water) and soak eggs for half a day. The solution must be kept cold while the eggs are soaking.
3. Drain over a colander, put the eggs in small jars and refrigerate immediately.

Enjoy a bit of the caviar spread on your favorite kind of cracker and remember that the same thing from a specialty shop or the gourmet section of your supermarket would cost between \$30-\$90 per 4 ounces for good "top shelf" sturgeon caviar.

REGULATIONS

Yellowstone River

Yellowstone River downstream from mouth of Bighorn River:

From May 15 through July 10 snagging of paddlefish shall be allowed and the snagging of nongame fish prohibited.

Paddlefish limit is two (2) per year: Any paddlefish caught must be tagged immediately and counted in this limit. Two (2) tags per resident licensed angler are available for \$3 from all Montana Department of Fish, Wildlife and Parks offices and from several license dealers in Eastern Montana. See tagging instructions available at those locations.

Boat fishing restriction—The portion of the Yellowstone River, approximately one-fourth mile downstream from the Intake Diversion, as posted, is closed to fishing or snagging from boats from May 15 to July 10, unless opened earlier by special order (see 1986-88 fishing regulations, page 30).

Missouri River

One fish daily and two fish in possession; no season dates, and fish tagging is not required.

Information: Call the Department of Fish, Wildlife and Parks in Miles City at (406) 232-4365 and Glasgow at (406) 228-9347 for information.

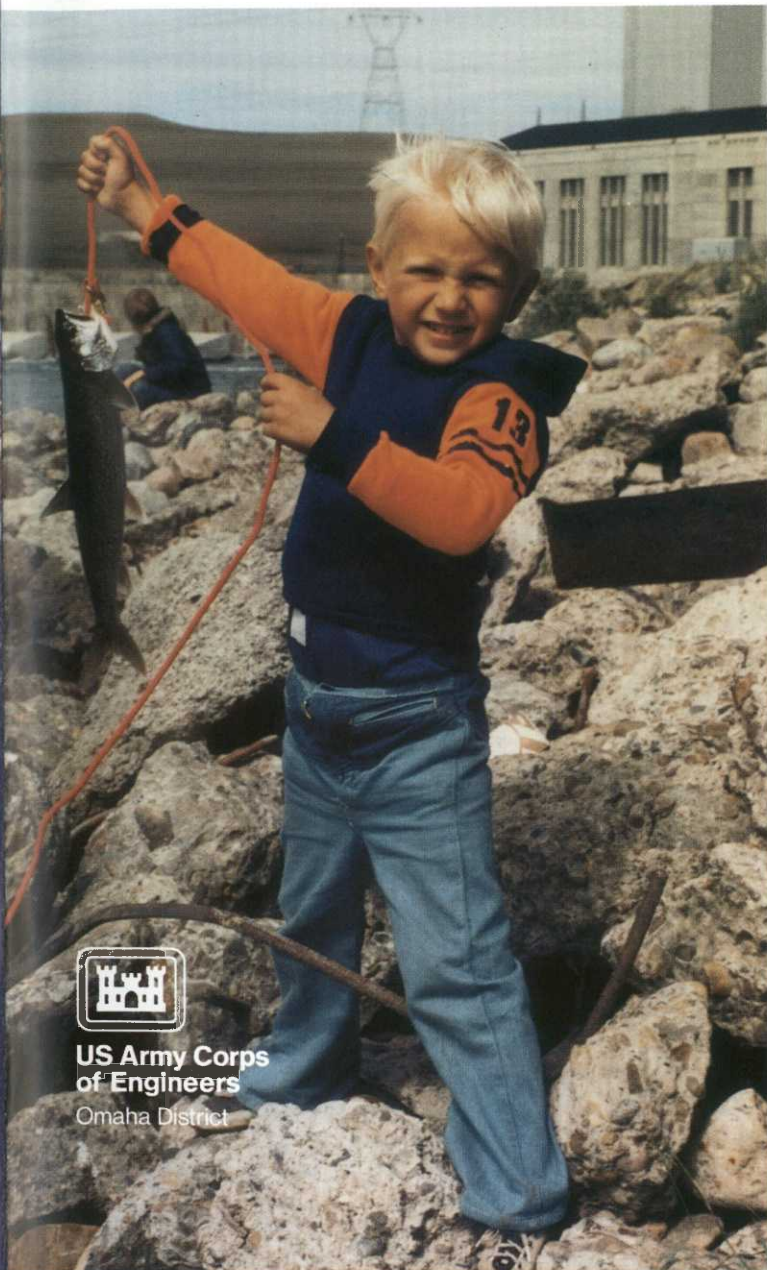
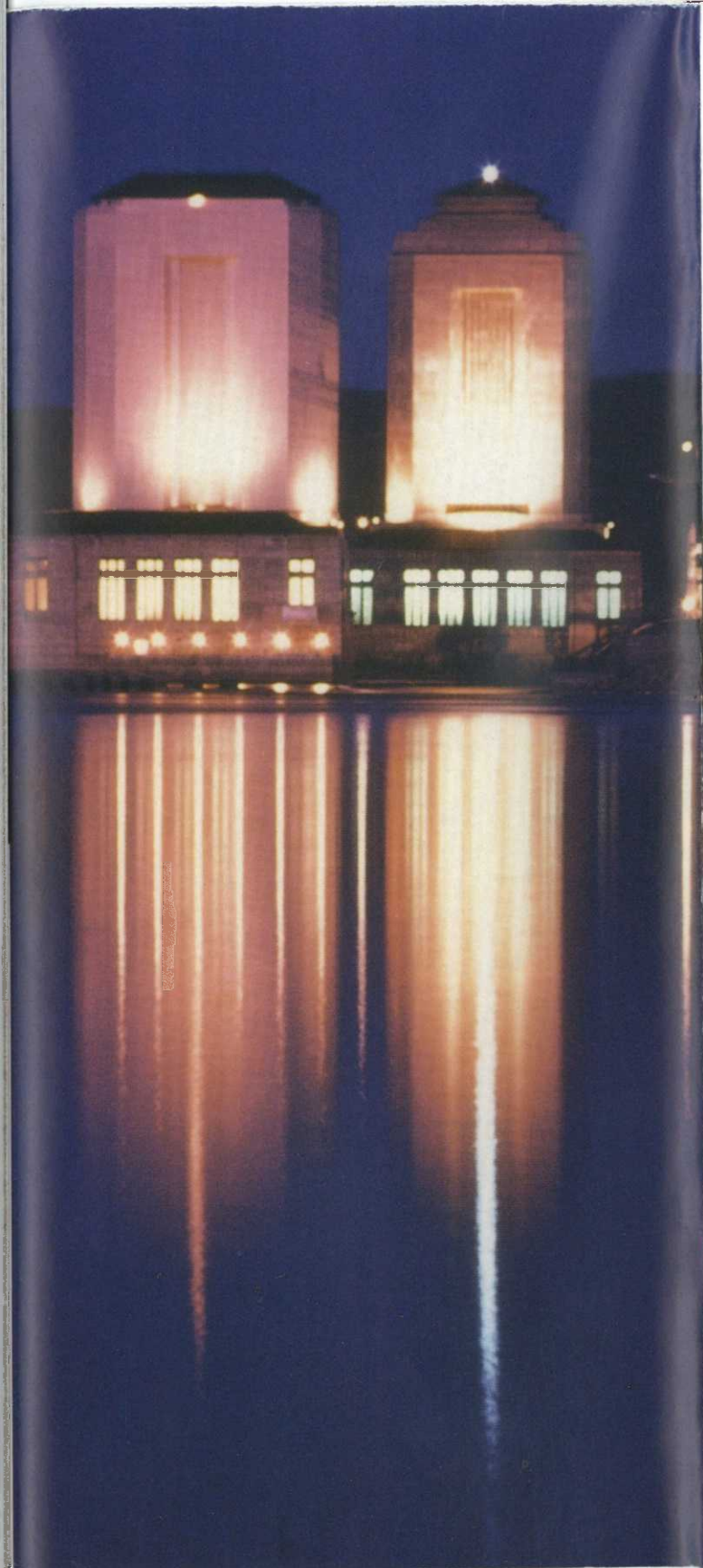


**Montana Department of
Fish, Wildlife & Parks**

1420 East Sixth Avenue, Helena, MT 59620
(406) 444-2535

Fort Peck

Dam and Lake
Montana



US Army Corps
of Engineers
Omaha District



Welcome

The U.S. Army Corps of Engineers and the people of Montana welcome you to Fort Peck Dam and Lake, located on the Missouri River, 18 miles southeast of Glasgow.

Fort Peck is a multi-purpose project regulated for flood control, navigation, power generation, irrigation, public water supply, fish and wildlife conservation, recreation and improvement of water quality.

The primary purposes of the dam at the time of construction were flood control and improvement of navigation on the Missouri. In 1944, it became a part of the famed Pick-Sloan Plan, which encompasses six main stem dams on the upper Missouri River.

The year-round splendor and historic intrigue of Fort Peck challenge each visitor to absorb all the glory and wonder for which the project is renowned.

Model of design

The World Almanac lists the Fort Peck Dam as the largest embankment dam in the United States with the fifth largest man-made reservoir. The dam is also the sixth largest volume dam in the world, and the largest "hydraulic fill" dam in the world.

What exactly is a hydraulic fill dam?

It's a dam comprised of sediment pumped from the river bottom. The complex technique called for slurry to be pumped through miles of huge pipelines to where the centerline of the dam is today. The "core pool," as it was called, ran the length of the dam, with water slowly draining back to the river while impervious material settled and formed the center of the dam.

Railroad cars then hauled rock and fill material via bridges and dumped the cargo on top of the dam for layering.

The Fort Peck Dam served as a model of design for the vast majority of major earth fill dams it preceded.

The embankment of the dam reaches four miles across the Missouri River Valley and contains 126 million cubic yards of earth fill.

The lake is 134 miles long at normal operating level, with 1,520 miles of shoreline.



Town site

The town of Fort Peck is a rare treasure in that progress and modernization have not erased the etchings of time that allow visitors a glimpse back at another era.

Once a small, windswept blot on the map, the coming of the dam workers caused the town of Fort Peck to erupt in a flurry of activity as housing for the multitudes became a prime concern.

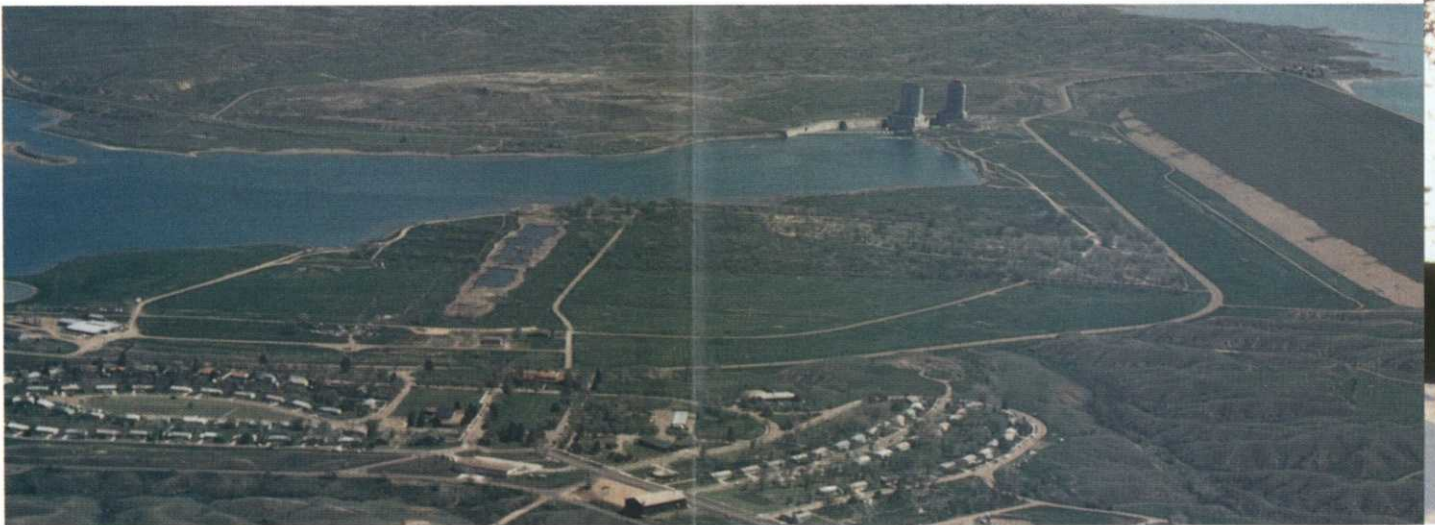
In the spring of 1934, the distinct and comforting sound of hammers meeting steel and saws ripping through lumber could be heard around the dam site. The hired help in Montana lumberyards gladly went to the mills to initiate the birthing process of a newer, bigger town site, a place that thousands of dam workers would call home. Indeed, a site that was once an upland prairie became a thriving and prosperous community, by that day's definition.

Today, the town site, owned by the federal government through 1986, is owned and operated by the 300 residents who call Fort Peck home.

Many of the early buildings—some of which are listed on the National Register of Historic Buildings—still stand, sturdy structural survivors emanating rustic memories.

Even a few moments inside the old theater, the hotel or the administration building are sufficient to pique the curiosity and stoke the fires of wonderment of the average visitor.

Fort Peck has shopping and dining areas, a post office, recreation hall and a community center. A non-denominational chapel brings townspeople together on Sundays, and an elementary school prepares Fort Peck's children for future academic pursuits.



Prehistoric graveyard

As if there aren't enough intriguing aspects about Fort Peck Dam and Lake, it is widely recognized by scientists as one of the most fossiliferous localities in the world.

Between 1907 and 1914, the rich Fort Peck field was revealed to the world through the discoveries of Dr. Barnum Brown, a leading authority on dinosaurs.

His finds include some of the most outstanding fossil discoveries of all time, most of which were assembled at the American Museum of Natural History in New York.

The most spectacular findings include the only skeleton of the *Akylosaurus* ever found, and the skeleton of the *Tyrannosaurus rex*, the flesh-eating king of the dinosaurs.

Although these and other finds are displayed throughout the nation, more than 400 specimens—including the massive skull of a *Triceratops*—are on display at the museum inside the Fort Peck power plant.

A thorough history of the area revealed by museum displays details the origins of these beasts and explains the evolution of the once-tropical Fort Peck area. Incidentally, the museum also displays models and exhibits which focus on the building and operation of the Fort Peck Dam, complete with information concerning the operations and benefits of the dam.

Tours through the museum can be arranged by appointment any time of the year, with daily tours offered in June, July and August.



Benefits

The Fort Peck Dam has weathered well the test of time, adding to its great list of benefits with each passing year.

Just as its construction provided work and breathed life back into thousands of jobless people, so does its stately dominance of the upper Missouri River region continue to translate into benefits for millions of people living on the Great Plains.

Those who built the dam marched onward with the knowledge and expertise gained on that "Big Sky" training ground, applying that wisdom in other regions of the country.

Soon, other flood control and navigation projects sprang from the earth, with nearby residents secure in the knowledge that this structure, like its predecessor, was there for the long haul.

And today, Fort Peck produces more than \$13 million in average annual benefits derived from hydroelectric power, flood control, navigation, irrigation, recreation and rentals of leasing lands.





Safety

The Corps of Engineers encourages you to observe all safety rules and regulations during your stay at Fort Peck. Safety regulations are posted throughout the area. If you have any questions, please contact a ranger.

Have a good time, and please remember that your observance of the safety rules will make your visit a more pleasant and enjoyable experience for yourself and for others.

America's Dam—emergence from a rich history

No other U.S. dam can match the historical impact or pioneer intrigue of Fort Peck

"My god man! It would cost a million dollars to build a dam across there!"

That was the response of Glasgow Mayor Leo B. Coleman when informed by government officials in October 1932 that the Corps of Engineers planned to build a huge earth fill dam across the Missouri. He would have been more accurate to say \$150 million, the approximate cost of building the dam. That figure also represents the approximate amount of revenue it has produced. In short, it's a project that has paid for itself. When President Franklin D. Roosevelt authorized the project in 1933, tens of thousands of Depression-bled people from all over the country swarmed to Montana in hopes of earning a living.

The Fort Peck Dam and town site stand two miles downstream of the old Durfee and Peck trading post, also known as Old Fort Peck.

This area was first charted by Lewis and Clark in 1804, and a stockade built in 1867. The old fort was set on a narrow ledge of shale about 35 feet above the river, its rear wall abutting the hillside.



President Franklin D. Roosevelt traveled the long distance from Washington, D.C. to Fort Peck twice to visit the dam he authorized in 1933.

The front of the stockade was so close to the ledge that it was an effective steamboat landing for the sternwheelers that made frequent trips upstream—that is until 1879 when the Missouri River eroded its ledge foundation and the fort crumbled, plunging into the river. The site of the old stockade is now inundated by Fort Peck Lake. Thanks to one of the largest engineering efforts of all time, fate will not be so unkind to Fort Peck residents and those living downstream of Fort Peck Dam.

The monumental structure is more than just the engineering feat of its day—this dam gave new meaning to the word significance. Not only was it the largest of its kind, it was also the first dam built in the upper Missouri River basin.

Perhaps the most spectacular aspect of the Fort Peck Dam story focuses on the fact that it was built during a period in which America's very fiber was most severely tested and its people most sternly challenged.

Staggering blow

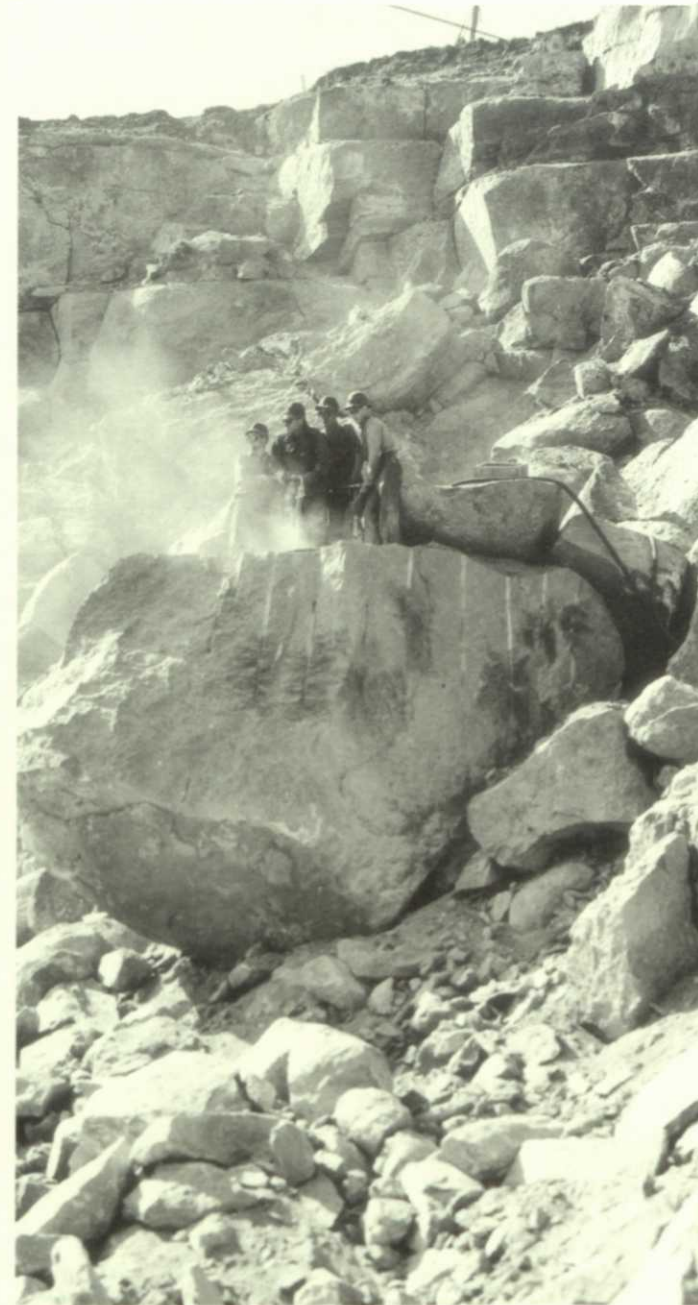
Indeed, the Depression struck Montana a staggering blow which, coupled with the drought years of the early '30s, sent the state reeling. Thousands of hard-working, self-sufficient people saw the land rendered unproductive. Others could find no jobs. It was a time of peak despair and hopelessness with no relief in sight.

That is, not until a godsend flood control project was authorized by FDR.

Direct employment at the dam site enabled some 7,000 men and women to sign on in 1934 and '35. Employment peaked at nearly 11,000 dam workers in 1936, and thousands more swarmed to Montana to set up businesses including food markets, hardware stores, butcher shops, general stores, saloons and brothels.

Eighteen boomtowns sprang up in the vicinity, and the "wild west" was reborn as a tiny and obscure township swelled from a population of a few hundred to nearly 40,000 people. Montana had never seen anything like it.

The Pulitzer Prize-winning writer, Ernie Pyle, who would later die on a World War II battlefield, visited the Fort Peck dam site in 1936. He used these words to describe Wheeler, the



Rock and gravel were hauled by rail from Snake Butte quarry to the Fort Peck Dam site, some 80 miles away.

swingiest of the boomtowns near the dam site:

"You have to see the town of Wheeler to believe it . . . it is today the wildest wild-west town in North America. Except for the autos, it is a genuine throwback to the '80s, to Tombstone and Dodge City."

Wheeler will be gone in three years. There may never be another one. Somebody had better record it for posterity, before it's too late."

Naturally, there were hard times, but a determined and grateful workforce overcame weather obstacles—the temperature reached 60 degrees below zero on Valentine's Day 1935 and zoomed to 120 degrees above zero in June of that same year—and other problems one might associate with undertaking a complex task of such enor-

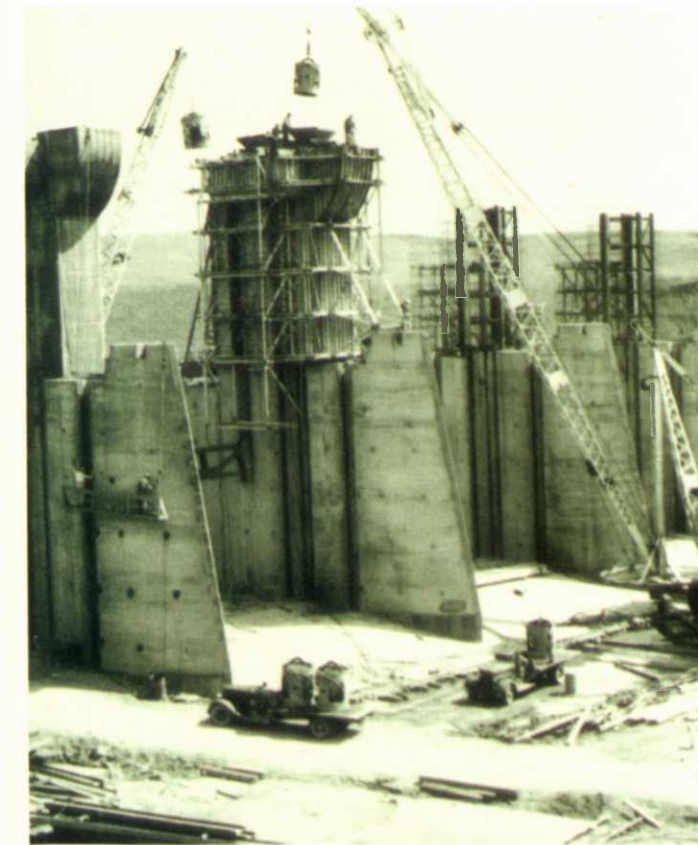


Dredge pipes deliver slurry to the core pool as a train loaded with rock and gravel passes overhead. When the water drained out of the core pool, clay and impervious soils remained to form the core of the dam. The rail bridge is now entombed inside the huge Fort Peck Dam.

mous magnitude.

As Maj. Clark Kittrell, who served as district engineer at Fort Peck in the late 1930s pointed out, "no engineering job of this magnitude had ever been attempted with so short a time for planning." New techniques had to be learned and developed as rapidly as ingenuity would allow. Countless technical problems arose and were solved, and a shipyard—yes, in dry and dusty Montana—had to quickly turn out "the Fort Peck Navy," which would dredge the river bottom and pump the slurry that ultimately formed the dam.

Damworkers even overcame a massive slide in 1938, a year after closure was made and just as completion of the dam was in sight. According to the official commission's report, "a section of

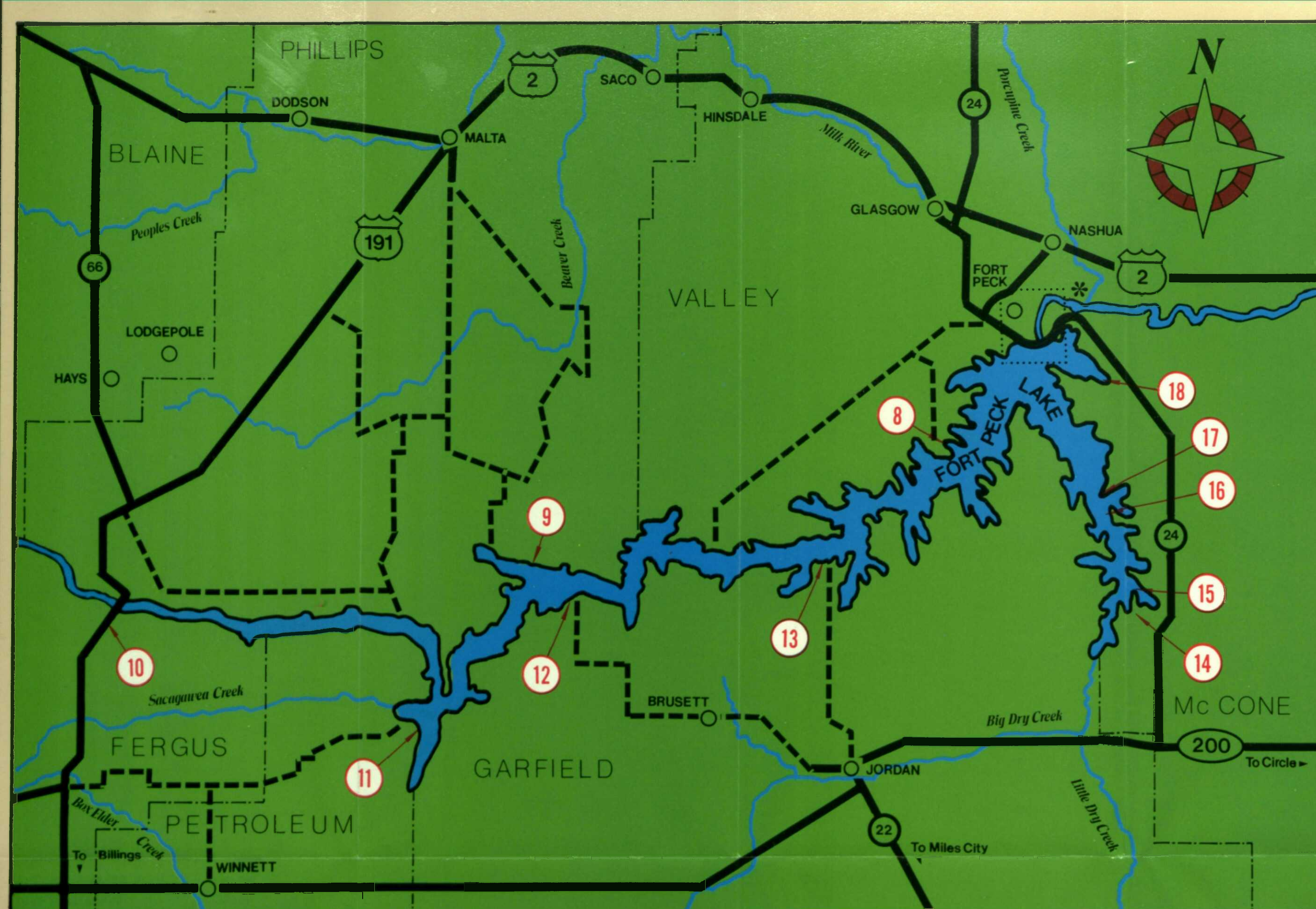


The spillway, located three miles from the dam, appeared on the first cover of LIFE Magazine in 1936.

the dam gave way, with portions of the upstream shell, almost intact, moving into the reservoir" in a swing similar to that of a gate hinged at the east abutment. The moving, muddy hell buried equipment and workers under five million cubic yards of earth fill. Six of the eight men who lost their lives are still buried in the dam.

After the commission studying the slide recommended the dam be completed, the affected area was reconstructed and its base widened. The last load of material was dumped in October 1940, almost seven years to the day after FDR authorized the dam.

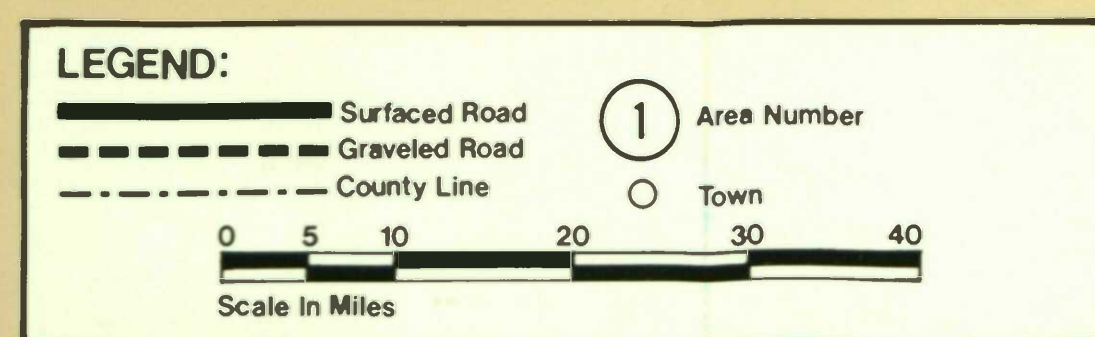
The legacy that is Fort Peck provides visitors a fascinating look into yesteryear, as well as a striking, yet simple, contemporary view of what family enjoyment today is all about.



FORT PECK LAKE

*AREA SHOWN IN CLOSE-UP

AREA NUMBER	RECREATION AREAS	BOAT DOCK	BOAT RAMP	DRINKING WATER	CAMPING	WATER HOOKUPS	ELECTRICAL HOOKUPS	SHOWERS	RESTROOM - FLUSH	RESTROOM - VAULT	PICNIC SHELTERS	TABLES	FIRE PLACES	PLAYGROUND	CONCESSION	BOAT RENTAL	BOAT STORAGE	NATURE TRAIL	SANITARY DUMP STATION	NEAREST LODGING	MILES	MANAGING AGENCY
1	DREDGE CUT TROUT POND	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	3	STATE OF MONTANA
2	SWIMMING BEACH	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	1	CORPS OF ENGINEERS
3	WEST END CAMPGROUND	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	3	CORPS OF ENGINEERS
4	FORT PECK MARINA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	3	CORPS OF ENGINEERS
5	DOWNSTREAM CAMPGROUND	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	3	CORPS OF ENGINEERS
6	POWER PLANTS AND MUSEUM	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	2	CORPS OF ENGINEERS
7	FLAT LAKE	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	4	CORPS OF ENGINEERS
8	THE PINES	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	33	CORPS OF ENGINEERS
9	FOURCHETTE CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	MALTA	71	CORPS OF ENGINEERS
10	JAMES KIPP	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	LEWISTOWN	64	STATE OF MONTANA
11	CROOKED CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	WINNETT	48	PETROLEUM COUNTY
12	DEVILS CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	JORDAN	45	CORPS OF ENGINEERS
13	HELL CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	JORDAN	26	STATE OF MONTANA
14	NELSON CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	49	CORPS OF ENGINEERS
15	MCGUIRE CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	44	CORPS OF ENGINEERS
16	ROCK CREEK MARINA	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	42	CORPS OF ENGINEERS
17	ROCK CREEK STATE PARK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	37	STATE OF MONTANA
18	BEAR CREEK	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	•	FORT PECK	19	CORPS OF ENGINEERS



FURTHER INFORMATION MAY BE OBTAINED FROM:

U. S. ARMY CORPS OF ENGINEERS
Fort Peck Lake
P.O. Box 208
Fort Peck, Montana 59223
406-526-3411

U. S. Army Corps of Engineers
Omaha District
215 N. 17th Street
Omaha, Nebraska 68102



DAM STATISTICS

THE DAM

Type Hydraulic and rolled earth fill
Height 250.5 feet
Length at top (excluding spillway) 21,026 feet
Elevation at top (above sea level) 2280.5 feet
Maximum width at base 3,500 feet
Earth fill 125,628,000 feet
Volume of concrete 1,200,000 cu. yds.
Construction started 1933
Dam closure June 24, 1937
In operation 1940

POWER PLANT

Total capacity 185,250 kw
Turbines 5 Francis turbines

THE LAKE

Drainage area 57,500 sq. mile
Surface at maximum pool 249,000 acres
Maximum normal operating pool 240,000 acres
Length at maximum pool 134 miles
Shoreline (Elev. 2234) 1,520 miles



Recreation

Framed by great clusters of ponderosa pine and rolling grasslands, Fort Peck Lake plays host to more than half a million visitors every year.

The Corps of Engineers has developed modern camping and picnic facilities with fireplaces, electrical outlets, hot showers, restrooms, shelter buildings with stoves and tables, and sanitary garbage disposal.

Recreation opportunities are indicated on the map (left), together with a tabulation of facilities available at each site. One of the favorites is "The Pines," where the evergreens that greeted Lewis and Clark still stand.

Boat launching ramps are provided at all major recreation areas around the lake.

A wide variety of fish attracts anglers to Fort Peck, where a day's catch might include the walleye, northern pike, sauger, small mouth bass, lake trout, chinook salmon, rainbow trout, German brown trout, crappie, perch and channel catfish.

Another activity enjoyed by many at Fort Peck Lake is the snagging of paddlefish, also called spoonbill catfish. Very little is known about this strange creature's life span or spawning habits. A consumer of plankton, the paddlefish will not accept bait and must therefore be snagged.

Today's mammal and bird populations are at a good level, and harvest by hunting provides a quality outdoor experience for thousands of hunters each year.

Fishing and hunting regulations are established and enforced by the state of Montana.

For additional information, inquire at the Fort Peck Lake Office, located in the Administration Building at Fort Peck. Rules and regulations governing public use of Fort Peck Lake are set forth in Part 327, Chapter III, Title 36, Code of Federal Regulations. Copies may be obtained from the Lake Office.



Wildlife

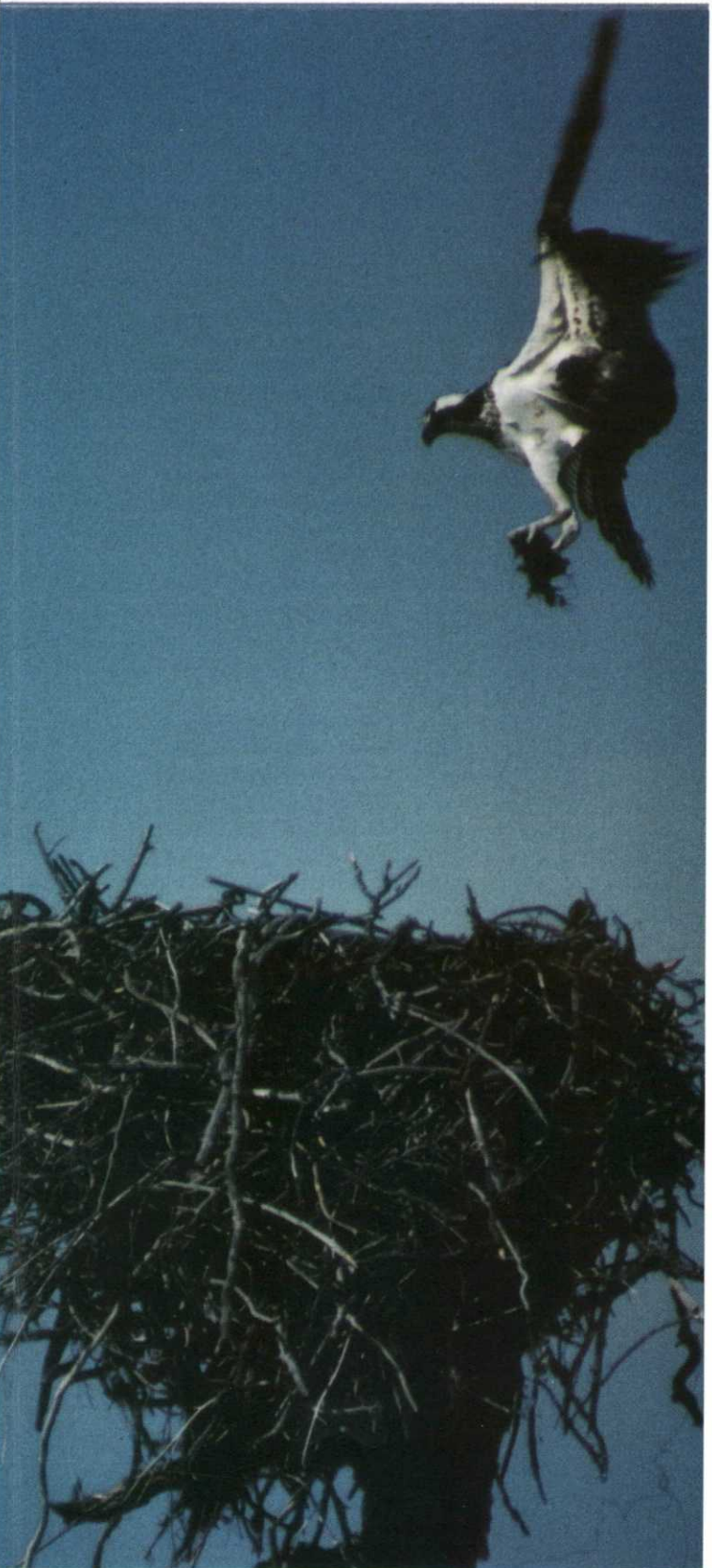
During construction of the dam, deer, antelope and upland bird populations in Montana were at an all-time low. Due to improved wildlife management techniques and the presence of a wildlife refuge, wildlife abounds throughout the project. Today, the Charles M. Russell National Wildlife Range at Fort Peck covers 1.3 million acres around the lake. Named in honor of Montana's famous cowboy-artist, it extends more than 150 miles upriver.

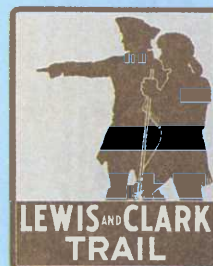
Upland game birds common to the refuge include sharp-tailed grouse, ringnecked pheasant, sage grouse and gray partridge. Canada geese, widgeon, mallards, pintails, gadwall and blue-winged teal are also common species. The golden eagle, osprey and prairie falcon make their homes in the rough areas at Fort Peck, while bald eagles are often seen during spring and fall migration periods.

More than 45 different species of mammals have been recorded at the wildlife refuge, including fox, coyote, bobcat, badger, rabbit, prairie dog and porcupine.

Whitetailed deer, mule deer, elk, antelope and grizzly bears were once the only native big-game animals in the area. In recent years, bighorn sheep have been introduced to the refuge, and elk herds have been replenished following a severe drop in numbers.

In addition, the Corps of Engineers maintains an exhibition pasture displaying deer, elk and buffalo.





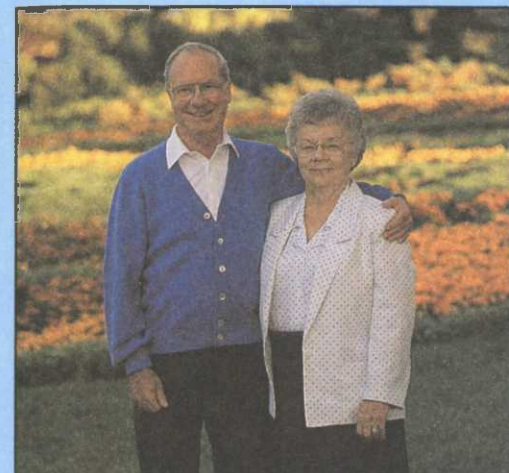
Relive the drama of the nation's westward expansion by retracing the route of the Lewis and Clark Expedition through Montana. In just over 28 months—from May 1804 to September 1806—co-commanders Meriwether Lewis and William Clark traveled more than 8,000 miles on foot, on horse-

back and by boat. Well over a quarter of that distance was spent in Montana where much of the land they explored remains unchanged. Searching for a water route to the Pacific Ocean, they pushed against powerful rivers, across boundless plains, through dense forests and over massive mountain ranges. They charted a vast, new territory and made tremendous contributions to a young nation's knowledge of its western geography, resources and native inhabitants.

One of the best ways to retrace the expedition is by traveling with one of the condensed versions of the Lewis and Clark Journals, which reveal a treasure of knowledge about the deeds of these famous explorers and the land they explored. Follow the Lewis and Clark Trail in Montana along portions of US Highways 2, 12, 87, 89 and 93, State Highways 21, 41, 43, 200, 278, 324 and 434 and Interstate Highways 15, 90 and 94. The highways as well as the state highway map are marked with rectangular signs showing the figures of Lewis and Clark. Among the sites that are readily accessible from these highways are: heroic-size statues and interpretive sites in both Fort Benton (2) and Great Falls (3), Giant Springs Heritage State Park in Great Falls (3), where Clark discovered a huge "fountain or spring"

during and 18-mile portage around the Great Falls of the Missouri; the Gates of the Mountains (4), north of Helena on I-15, where the Missouri flows through a narrow passage flanked by what Lewis described as "the most remarkable cliffs that we have yet seen."; Missouri Headwaters State Park (5), near Three Forks, where the Jefferson, Madison and Gallatin rivers join to form the Missouri; Beaverhead Rock State Monument (6), north of Dillon on Hwy 41, an important landmark; Lemhi Pass (7), west of Hwy 324 in extreme southwestern Montana, where Lewis and Clark crossed the Continental Divide on their westward journey; Travelers Rest (8), near the junction of US 12 and 93 south of Missoula, where the expedition split into two parties on the return trip east; Lolo Hot Springs (9), on US 12 southwest of Missoula, where the expedition camped and bathed; Lolo Pass Visitor Center (10), on US 12 at the Montana-Idaho border, which has a Lewis and Clark interpretive site, and Pompeys Pillar (11), off I-94 east of Billings, where Clark carved his signature in a large rock along the Yellowstone River. Commercial boat tours retrace the route of Lewis and Clark on the Missouri River at the Gates of the Mountains (4), north of Helena, and in the White Cliffs area of the Wild and Scenic Missouri River (1), below Fort Benton.

The National Park Service has published an excellent interpretive map of the Lewis and Clark Trail, which can be obtained from Travel Montana, 1424 9th Ave., Helena, MT 59620, (406) 444-2654 (in Montana) or 1-800-541-1447 (outside). "The Explorers at the Portage," an interpretive map of the expedition's portage route around the Great Falls of the Missouri, is available from the Great Falls Chamber of Commerce, P.O. Box 2127, Great Falls, MT 59403. For more information about the Expedition, write the Lewis and Clark Trail Heritage Foundation, Inc., P.O. Box 3434, Great Falls, MT 59403.

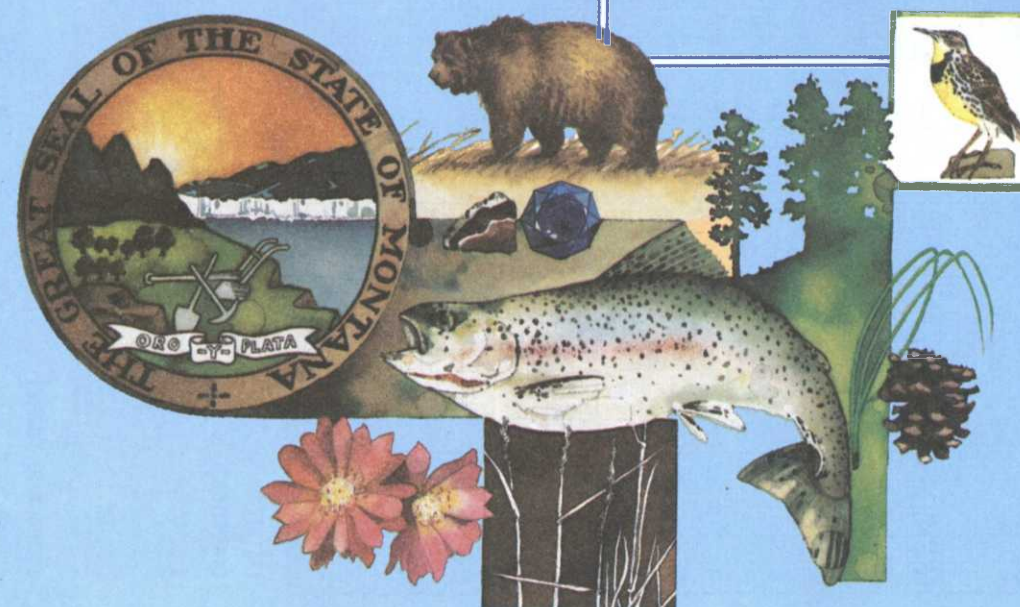


Welcome to Montana ...

We invite you to explore Montana's one-of-a-kind attractions—Glacier and Yellowstone national parks, Custer Battlefield, the Lewis and Clark Trail, scenic Beartooth and Going-to-the-Sun highways, original art by Charlie Russell and other cowboy and contemporary artists, national wilderness areas and state parks, blue-ribbon trout streams, galleries, museums, history and hospitality. We're glad you're here, so take your time and drive carefully. We have so much to share.

Ota Stihl and Stephen

Governor and Mrs. Stan Stephens

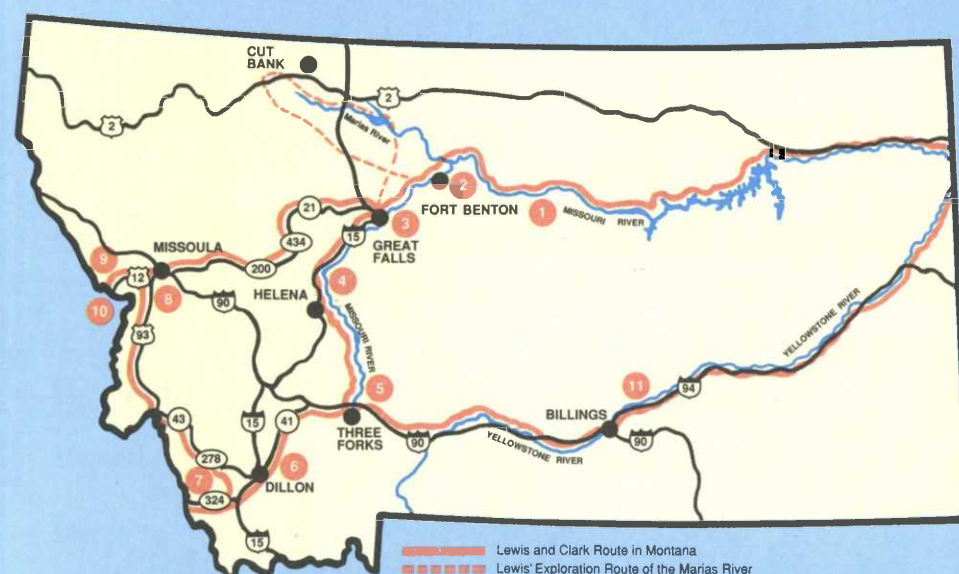


The name MONTANA is derived from the Spanish word for "mountain." While the Rocky Mountains dominate western Montana, isolated mountain ranges and high plains cover the central and eastern portions of the state. Popular nicknames include the Land of the Shining Mountains, the Treasure State and Big Sky Country. Admitted to the Union on November 8, 1889, Montana is the nation's fourth-largest state, averaging 550 miles long and 275 miles wide.

Montana has just over 800,000 residents. About five percent belong to seven North American Indian tribes: the Assiniboine-Sioux, the Assiniboine-Gros Ventres, the Blackfeet, the Chippewa-Cree, the Confederated Salish and Kootenai, the Crow and the Northern Cheyenne.

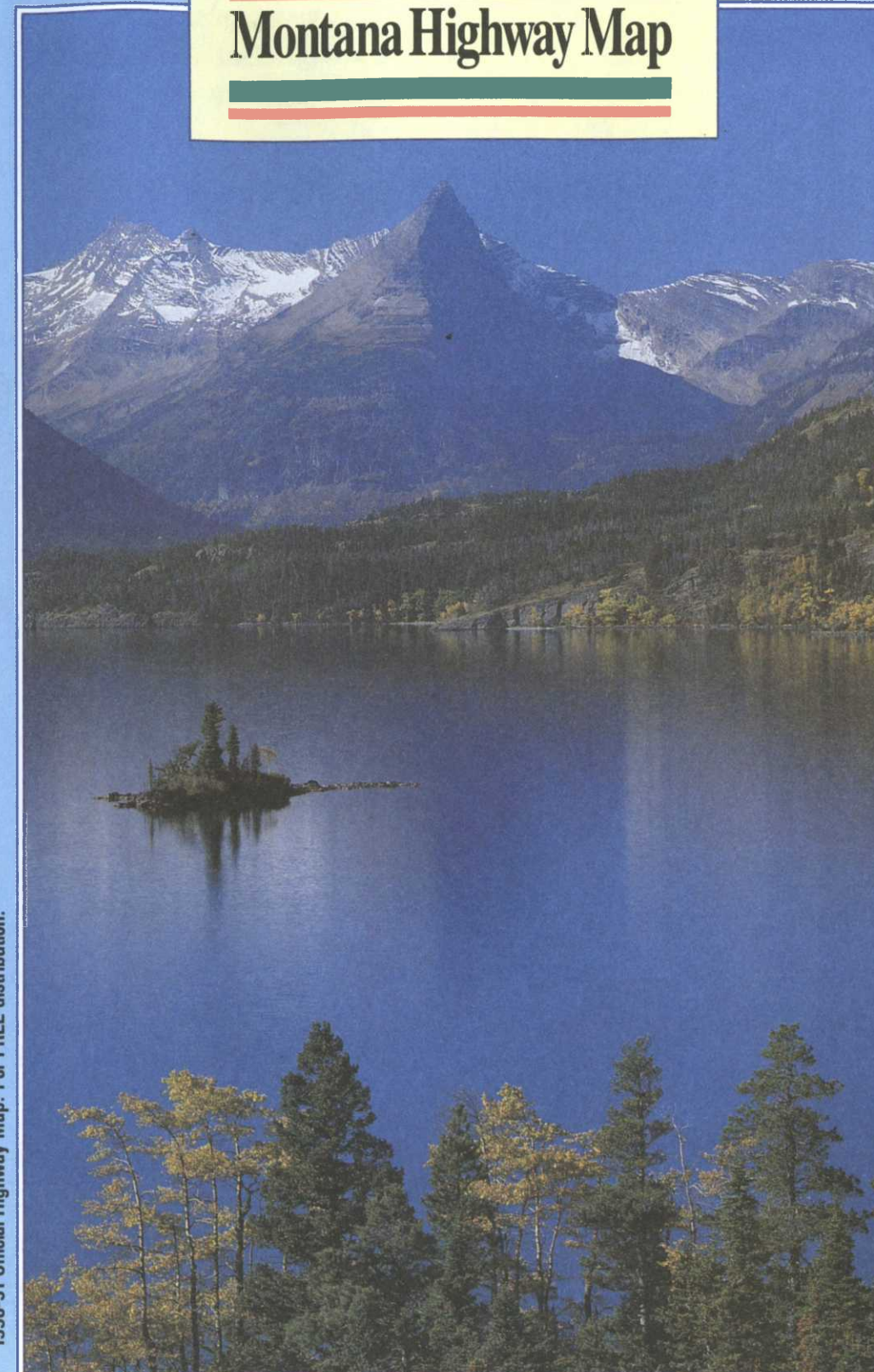
In addition to millions of acres of range and cropland, Montana is richly endowed with natural resources that include water, timber, precious metals, coal, oil and natural gas. Its natural beauty, unlimited outdoor recreation and western lifestyle draw nearly four million visitors each year.

Montana's state symbols, shown below, are the Bitterroot flower, Western Meadowlark, Ponderosa Pine, agate and sapphire gemstones, Bluebunch Wheatgrass, Blackspotted Cutthroat Trout and the Grizzly Bear. In 1985, a dinosaur named Maiasaura or "Good Mother Lizard," became Montana's official state fossil. The official state seal, adopted in 1893, bears the motto "Oro Y Plata," meaning gold and silver in Spanish.

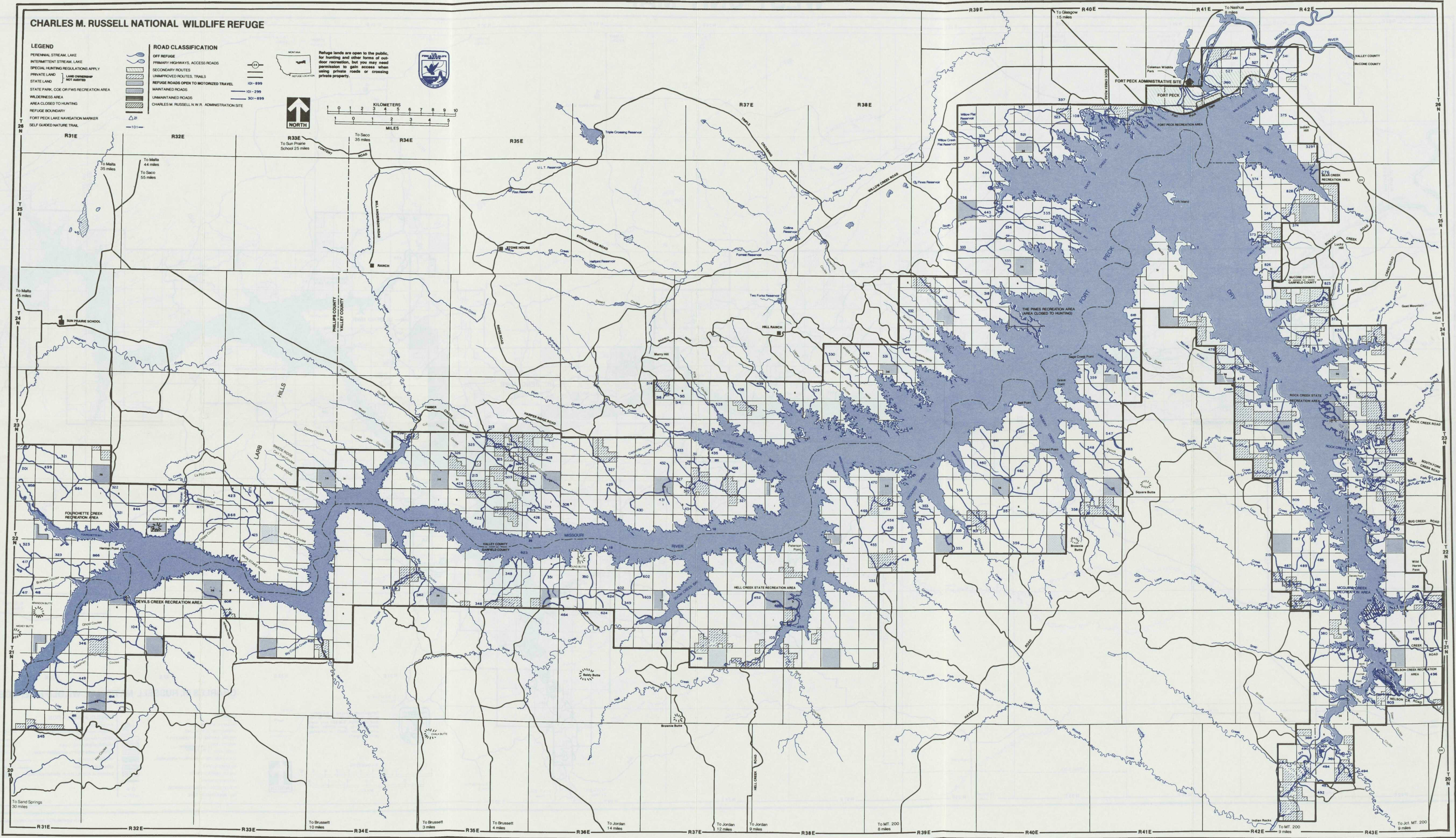


1990-91 Official Highway Map. For FREE distribution.

Montana Highway Map



EAST UNIT MAP





REFUGE REGULATIONS AND INFORMATION
The following regulations apply only to Federal lands within the refuge boundary.
The Charles M. Russell National Wildlife Refuge provides an interesting variety of wildlife and wildlands in a natural setting. Visitors to the Refuge can enjoy the wildlife, historic, and scenic grandeur in nearly the same setting as the Lewis and Clark party during their exploration of the area. A self-guided auto nature trail 1/2 mile north of the Fred Robinson Bridge will assist visitors in developing a better understanding of the Refuge. U.S. Fish and Wildlife Service employees at Lewistown, Fort Peck, Sand Creek and Jordan administrative sites can provide visitors with up-to-date Refuge information.
In order to protect National Wildlife Refuge resources, reduce conflicts of use, and safeguard visitors, it is necessary to establish regulations on the use of the Refuge. When in doubt as to any Refuge regulation, contact a Refuge officer. We invite you to visit any Refuge office to review regulations or discuss any aspect of Refuge operation with us. Your cooperation is necessary to help us properly manage the Refuge and your wildlife resources.
Look for the following signs and symbols as you enjoy the wildlife refuge.

- Refuge office
- Refuge information available
- Scenic view or wildlife viewing area
- Nature trail
- Numbered route open to motor vehicle travel
- A red slash mark across a symbol indicates that activity is not allowed.
- MOTORIZED VEHICLES**
Motorized vehicles are permitted on over 700 miles of designated Refuge roads. Many roads lead into the Refuge. Hard-surfaced, all-weather roads are limited to U.S. Highway 191, which crosses the western part of the Refuge, and several highways around Fort Peck. An auto nature trail and several other roads leading to recreation sites are gravelled. Other Refuge roads are passable only in dry weather. When wet, these roads become extremely slick and travel is impossible. Local inquiries should be made if travel is contemplated off main highways. Some access roads cross private lands. Exercise courtesy and respect private property.
Refuge roads are numbered. Motor vehicles are permitted only on numbered routes. Operation of motor vehicles including all-terrain vehicles, off designated roads is prohibited. Off road travel is not permitted for retrieving downed game. The only exception is that direct off road travel is permitted to temporary campsites within 100 yards of a designated road.
All-terrain vehicles (motorcycles, quadricycles, etc.), like all other motorized vehicles, must be street legal and have a metal license plate. Operators must also possess the proper driver's license. Anyone intending to operate an all-terrain vehicle should contact the Refuge to ensure they fulfill the necessary requirements for legal operation.
Snowmobiles are restricted to numbered roads and the ice of Fort Peck Lake. Landslides, washouts, and other problems may cause the closure of roads. We recommend that all visitors carry shovels, tire chains, first aid kits, emergency food and water.

ROADS, PEOPLE, AND BIG GAME MANAGEMENT
Roads are great for people, but they can cause problems for big game. Research has shown that big game avoid areas along traveled roads. As access and traffic increase, wildlife habitat becomes less effective in sheltering wildlife. Big game animals also become more vulnerable to harvest. Off-road vehicle travel can contribute to the taking of too many animals during the hunting season, which may result in more restrictive hunting seasons and a decrease in "trophy" animals.
The Refuge road policy provides secure feeding and resting areas for wildlife, with reasonable vehicular access for visitors. Visitors are advised to drive only on public roads and refuge trails posted open to vehicular travel. Your support of this policy will benefit wildlife and recreationists. Report any violations to the Refuge or Montana Department of Fish, Wildlife and Parks.

CHARLES M. RUSSELL NATIONAL WILDLIFE REFUGE MONTANA



GUIDE MAP & INFORMATION

This map is current and in effect until modified by the Refuge manager.

REVISED 1989



CAMPING

Camping is permitted on the Refuge. Direct access by motor vehicle is permitted to and from temporary campsites within 100 yards of designated roads. Select the most direct access: avoid damage to soils and vegetation. Camping is limited to two weeks within any 30 day period. Select a safe place for campfires. Build only small fires and make certain that your fire is out when you leave. Help us keep costs down, take all litter and camping refuse home. Be considerate to other campers, restore your campsite to a natural condition when you leave.

HUNTING

Hunting activities are subject to State and Federal regulations. A Montana hunting license is required. Big game, waterfowl and upland bird hunting are allowed in accordance with state seasons and limits. Coyote hunting is allowed from the first day of the general antelope season through March 1. All other wildlife is protected unless hunting seasons are established. Trapping is not allowed on the Refuge. Any attempt to molest, injure, disturb, or destroy wildlife, except by permitted methods during open hunts, is prohibited. The use of artificial lights to search for or spot wildlife is prohibited. Portable tree stands are permitted. They must be installed after August 1 and removed by December 15. Metal devices used to attach the stand to the tree and screw-in steps are permitted, however the use of nails and wire is not permitted. The construction or use of a stand or ladder permanently affixed to a tree is not permitted.

FIREARMS

Firearms may be carried, unloaded, in vehicles while on the refuge. Firearms or bows, which are legal for the species pursued, may be removed from a vehicle only in conjunction with a legal hunt for which the hunter is licensed. Weapons may not be discharged at any other time. Keep safety in mind—be sure of your target before you pull the trigger.

SPORT FISHING

Sport fishing is permitted on the Refuge. A Montana fishing license is required. State fishing regulations and limits apply to the Refuge. Anglers often take catfish, walleye, northern pike, sauger, perch, bullhead, paddlefish and lake trout on the Missouri River and in the waters of Fort Peck Lake. Ice fishing houses are permitted on Fort Peck Lake from December 1 to March 31. The owner's name and address must be attached to the outside wall of the structure.

BOATING

Boating is permitted on the Refuge. Montana boating laws and regulations apply to all Refuge waters. Boats must have an approved personal flotation device (PFD) available for each occupant. Boaters under the age of 12 must wear a PFD at all times. Extra shear pins, gasoline and a first aid kit are highly recommended as standard equipment. The Missouri River is a unit of the National Wild and Scenic River System from the west Refuge boundary to the Fred Robinson Bridge, and is administered by the Bureau of Land Management. Special boating restrictions (including a no wake speed limit) apply to this segment of the river. General river information and permit requirements for use of the Upper Missouri Wild and Scenic River may be obtained from the Lewistown, Montana office of the Bureau of Land Management.

On the rest of the Missouri River between the Fred Robinson Bridge and Fort Peck Reservoir, water levels in the river dictate what types of boats may be suitable. Canoes are suitable during all seasons. Boats with outboard motors can be safely used during the spring runoff, but low flows during the remainder of the year may make their use dangerous. The upstream shoreline of Fort Peck Reservoir also fluctuates according to the amount of water stored. Boaters should be cautious of sand bars and other hazards during periods of low water levels when boating in the reservoir above the Crooked Creek Recreation Area. The delta at the head of the reservoir is generally impassable to all boats.

HIKING AND HORSEBACK RIDING

Hiking and horseback riding will permit exploration of the more remote areas of the Refuge. Horses can only be fed grain or pellets on the refuge. The feeding of hay is not permitted to prevent introduction of noxious weeds. Back country travel requires special preparations and precautions. There are no marked trails and drinking water is generally unavailable. Expertise with map and compass is recommended. Back country travelers should be familiar with the isolated character of the Refuge, and should be prepared for emergencies. The Refuge is open to winter activities. Conditions vary with rapid weather changes—be prepared. The UL Bend Wilderness is part of the National Wilderness Preservation System. This area of over 20,000 acres has been set aside for non-motorized travel and use. Hiking, horseback riding, photography, hunting, fishing, sight-seeing and camping are among the permitted uses of wilderness areas.

SWIMMING, WATERSKIING, BERRY PICKING, AND PICNICKING

Swimming, waterskiing, berry picking, and picnicking are permitted except at locations closed by signs.

AIRCRAFT

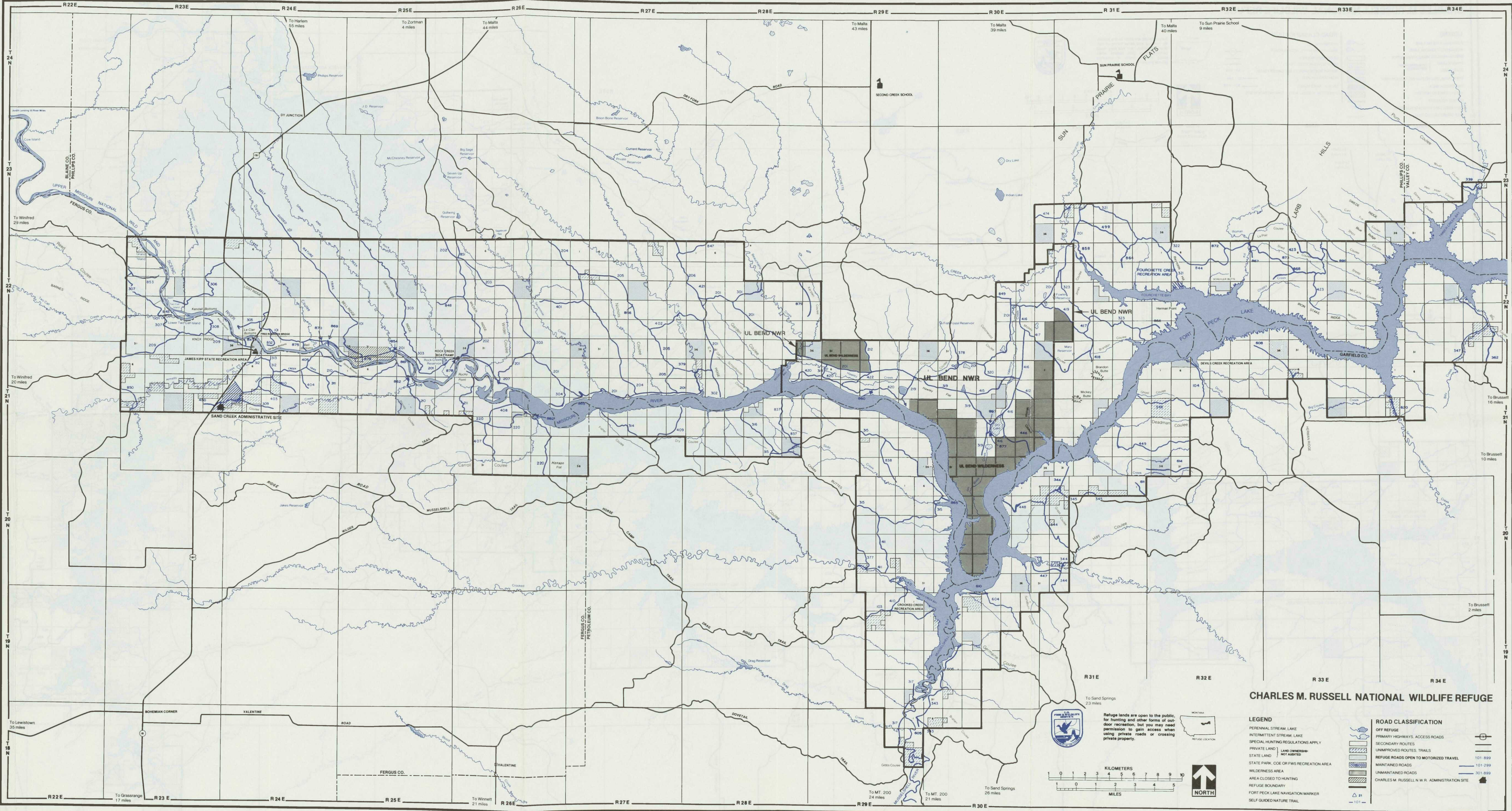
Aircraft may not land on the Refuge. The use of aircraft over refuge lands to harass, drive or hunt wildlife is prohibited.

ARTIFACTS, FOSSILS, AND HISTORIC ITEMS

Artifacts, fossils, and historic items are protected on the Refuge. It is unlawful to search for and remove these objects on Refuge lands. The many old buildings and homesteads are an interesting part of the area's history—leave them as they are for others to enjoy. All other activities not expressly permitted are prohibited; when in doubt as to any regulation contact a Refuge officer or the Refuge manager at: Charles M. Russell National Wildlife Refuge P.O. Box 110 Lewistown, Montana 59457-0110 Telephone Number: (406) 538-8707

PUBLIC RECREATION FACILITIES

AREA	Boat Ramp	Drinking Water	Teller Facilities	Picnic Shelter	Picnic Tables	Fire Calls	Camping	Improved Roads	Gastric Area than 10 miles	Managing Agency	Nearest Services
Fort Peck Recreation Area	X	X	X	X	X	X	X	X	X	Corps of Engineers	Fort Peck
Pines Recreation Area	X	X	X	X	X	X	X	X		Corps of Engineers	Glasgow
Bear Creek Recreation Area			X	X	X	X	X			Corps of Engineers	Fort Peck
McGuire Creek Recreation Area			X							Corps of Engineers	Fort Peck
Rock Creek State Recreation Area	X	X	X	X	X	X	X	X		State of Montana	Fort Peck
Hell Creek State Recreation Area	X	X	X	X	X	X	X	X		State of Montana	Jordan
Devils Creek Recreation Area			X	X	X	X				Corps of Engineers	Jordan
Fourchette Creek Recreation Area	X		X	P	X	X				Corps of Engineers	Malla
Crooked Creek Recreation Area	X	X	X	X	X	X				Corps of Engineers	Jct US 191 & Mt 19
Nelson Creek Recreation Area	X	X	X	X	X	X				Corps of Engineers	Fort Peck
James Kipp State Recreation Area	X	X	X	X	X	X				State of Montana	Jct US 191 & Mt 19
Rock Creek Boat Ramp	X	X	X	X	X	X				US Fish & Wildlife	Jct US 191 & Mt 19
Self Guided Nature Tour Route #101			X					X		US Fish & Wildlife	Jct US 191 & Mt 19



Montana Attractions

Sites listed below are keyed to the highway map, opposite side.

Charlie Russell Country

Cowboys, Plains Indians, the Missouri River Brooks, cattle spreads, grass prairies and the grand Missouri River—this is where the mountains meet the plains, land memorialized by famed western artist Charlie Russell.

C. M. RUSSELL MUSEUM (C-5), 1201 4th Ave. N., Great Falls. The works of Montana's beloved cowboy artist are preserved here, along with collections of western art and history. C.M. Russell's original log cabin studio and home are adjacent.

GIANT SPRINGS HERITAGE STATE PARK (C-5), east side of Great Falls. One of the largest freshwater springs in the world, Giant Springs was discovered by the Lewis and Clark Expedition in 1805. Visit the nearby fish hatchery and visitor center and picnic along the Missouri.

BEARS PAW BATTLEFIELD (B-7), 16 miles south of Chinook. This site marks the surrender of the famed Chief Joseph of the Nez Perce on October 5, 1877, after a 1,700-mile retreat.

FORT BENTON HISTORIC DISTRICT (C-6), Fort Benton. The discovery of gold in 1862 made Fort Benton an important overland connection with Missouri River steamers, playing a significant role in the opening of the Northwest. New Montana Agriculture Center and Museum of the Northern Great Plains were dedicated in 1989.

DINOSAUR DIGS (C-4), Choteau. Hands-on training in dinosaur fossil location and identification at the Old Trail Museum fossil beds near Choteau. At the museum in Choteau: fossil displays, Indian artifacts, farming and pioneer exhibits.

UPPER MISSOURI RIVER (C-6), Part of the National Wild and Scenic River System, this 149-mile stretch of river offers rich wildlife, scenic, historic and recreation values. It stretches from Fort Benton to the Kipp Recreation Area on the west end of the Russell National Wildlife Refuge.

BUFFALO JUMP SITES: Wahkpa Chu' gn (B-7), US 2, Havre. Listed in the National Register as the "Too Deceit for Comfort Site." Umi Pishkun (C-5), off I-15 west of Great Falls. Thought to be the largest prehistoric buffalo kill site in the U.S., interpretive trail.

CHARLES M. RUSSELL ART AUCTION (C-5), Great Falls. Annual March exhibit, sale and auction of some of the West's finest original art, old and new.

STATE FAIR (C-5), Great Falls. Montana's complete summer fair (last Saturday, July-first Saturday August) with exhibits, horse racing, rodeo, nightly entertainment.

WINTER SPORTS: Downhill skiing at Showdown ski area (E-5) and Rocky Mountain Hi ski area (C-4). Groomed cross-country ski and snowmobile trails at King's Hill Winter Sports Area (E-5), next door to Showdown.

Custer Country



Site of the most famous Indian battle in U.S. history. You'll also see cattle ranches, Indian reservations, coal fields, Bighorn Canyon and Pompeys Pillar.

CUSTER BATTLEFIELD NATIONAL MONUMENT (G-9), 15 miles southeast of Hardin. The famous Battle of the Little Bighorn between 12 companies of the U.S. Cavalry and the Sioux and Northern Cheyenne Indians was fought here on June 25-26, 1876. Lt. Col. George A. Custer and about 268 of his force were killed. Visitor center, museum, ranger and self-guided tours.

BIGHORN CANYON NATIONAL RECREATION AREA (G-8), southeast of Billings. Bighorn Lake extends 71 miles, including 47 miles through spectacular Bighorn Canyon. Below Yellowstone Dam, Bighorn River is one of the nation's premier trout rivers.

POMPEYS PILLAR (F-8), 30 miles east of Billings. In 1806, Captain Clark of the Lewis and Clark Expedition carved his signature—still visible—into this massive sandstone block and named it for Sacajawea's baby son.

MAKOSHISHA (D-12), 3 miles southeast of Glendive off US 94. The Sioux Indians named this place Makoshika, meaning "bad earth" or "bad land." Striking scenery, trails, picnic sites.

MEDICINE ROCKS (F-12), near Exalaka on MT 7. A place of "Big Medicine" where Indian hunters conjured up magical spirits.

BIG HORN COUNTRY HISTORICAL MUSEUM AND VISITOR CENTER (F-9), Hardin. Cultural exhibits, restored farmhouse, log cabin, church, gas station, store, school, picnic area, visitor information center.

CHIEF PLENTY COUPS STATE MONUMENT (G-9), Pryor, between Hardin and Billings on Old Hardin Road. On the Crow Reservation and once the home of Chief Plenty Coups. Museum, log home and picnic area.

PICTOGRAPH CAVE (F-8), 7 miles southeast of Billings off I-90. A National Historic Landmark, this major archaeological site preserves the remains of a prehistoric culture. Picnic sites and interpretive area.

RANGE RIDERS MUSEUM (E-11), Miles City. Fort Keogh officers' quarters, Pioneer Memorial Hall, Indian artifacts, Bert Clark gun collection.

BILLINGS (F-8), Montana's largest city. Visitor Center and Cattle Drive Monument, I-90 Exit 450, full information on all area attractions. 2-Bit Horse Drawn Trolley Rides, downtown, summer and holidays. Museums: Yellowstone Art Center, Western Heritage Center, Peter Yegen Museum and Moss Mansion, a restored historical home.

BUCKING HORSE SALE (E-10), Miles City. Annual May rodeo, auction of rodeo stock, wild horse races and pari-mutuel betting.

CROW FAIR (F-9), Crow Agency. Every August, Indian tribes gather for rodeo, parades and dancing.

Glacier Country



Here in Montana's northwest corner, the Rocky Mountains provide a magnificent backdrop for wild rivers, pristine lakes, forests, wildlife, historic sites, golf courses, resorts, dude ranches—and the wonders of Glacier National Park.

GLACIER NATIONAL PARK (A-2), Living glaciers and sparkling lakes, mountain fresh streams, brilliant wild flowers, cascading waterfalls, dense forests and watchable wildlife provide a changing panorama. Going-to-the-Sun highway (open June to October), a spectacular 50-mile drive, crosses the Continental Divide at Logan Pass and traverses the towering Garden Wall. Nearly a thousand miles of trails lead deep into Glacier's back country or to mountain chalets.

NATIONAL BISON RANGE (D-2), off US 93 at Moiese. The Range protects one of the most important remaining herds of American bison. Self-guided auto tour.

FLATHEAD LAKE (C-2), Occupying nearly 200 square miles, Flathead Lake is the largest natural freshwater lake in the western U.S. The quality of the fishing is renowned. East shore highway, bordered by the majestic Mission Mountains, offers 35 miles of unexcelled beauty.

ST. IGNATIUS MISSION (D-2), St. Ignatius. Constructed in 1854, this unique Catholic Church contains 58 original murals on its walls and ceilings.

THE CONRAD MISSION (B-2), Woodland Avenue, Kalispell. Built in 1895 and restored to Victorian elegance, this was the home of C.E. Conrad, Montana pioneer, Missouri River trader, freighter and founder of Kalispell.

MUSEUM OF THE PLAINS INDIAN (B-3), Hwy 2 & 89, west of Browning. Comprehensive collection of Blackfeet Indian tribal artifacts and history of the tribes of the Northern Great Plains. In July, visitors may view Blackfeet Indian games, chanting, dancing and parades during the annual North American Indian Days Celebration.

HISTORICAL MUSEUM AT FORT MISSOULA (D-2), off South Ave., west of Reserve St., Bldg. 22, Missoula. Western Montana history, 12 historic structures on-site.

GIANT CEDARS-ROSS CREEK SCENIC AREA (B-1), MT 56, south of Bull River. Stroll among cedars more than 500 years old and 250 feet tall on this handicapped-accessible .9-mile interpretive trail. Picnic area.

RAVALLI COUNTY HISTORIC SITES (E-2), Bitterroot Valley. St. Mary's Mission was the first Catholic mission in the Northwest, established in Stevensville in 1841. The Day Mansion was built near Hamilton in the late 1800s for Marcus Daly, an Irish immigrant who became one of Montana's colorful "copper kings."

NATIONAL WILDERNESS AREAS. All or part of eight national wilderness areas are located in Glacier Country. Bob Marshall (C-3), Great Bear (B-3), Cabinet (B-1), Battlement (D-2), Selway-Bitterroot (F-2), Welcome Creek (C-2), Missions (C-2) and Anaconda-Pintler (F-2).

Gold West Country



Gold was the prize in this area of Montana and history is still alive in abandoned and restored gold camps. You'll also find the capital city of Helena, historic mining city of Butte and world-famous, blue-ribbon trout streams and rivers.

CAPITAL CITY OF HELENA (E-4), An 1864 gold discovery transformed Helena into the "Queen City of the West" and Montana's capital city. Trace her evolution along Last Chance Gulch, with buildings dating back to the 1870s. St. Helena Cathedral, State Capitol, original Governor's Mansion and many historic homes and buildings.

GRANT-KOHR'S RANCH NATIONAL HISTORIC SITE (E-3), outskirts of Deer Lodge. Once the home of one of the nation's largest and best-known 19th-century ranches, Grant-Kohrs has been preserved as a working ranch with a bunkhouse and numerous outbuildings, wagon collection, Victorian ranch house and visitor center.

VIRGINIA CITY AND NEVADA CITY (G-4), 67 miles southwest of Bozeman on Hwy 287. Virginia City is the site of the richest placer gold discovery ever made (1863) and former territorial capital. Both towns have been restored to show how businesses flourished in the boom days. The Virginia City Players entertain all summer long.

PINTLER SCENIC ROUTE (E-3), 63 miles of Hwy 1 off I-90. Drive through high mountain passes, mining and ghost towns along the shores of Georgetown Lake.

MADISON CANYON EARTHQUAKE AREA (H-5), west of Yellowstone National Park. On August 17, 1959, an awesome earthquake slid half a mountain into the canyon, creating Quake Lake. Memorial, visitor center and scenic vista.

BANNACK (G-3), off Hwy 278 west of Dillon. The site of Montana's first major gold discovery in 1862. A walking tour of this ghost town, Montana's first territorial capital and now a state park, includes Sheriff Henry Plummer's Gallows and the Hotel Meade. **LEWIS AND CLARK CAVERNS (F-4)**, 47 miles east of Butte off I-90. One of the largest limestone caverns in the Northwest. Naturally air conditioned, these spectacular caves are electrically lighted and safe to visit.

BIG HOLE NATIONAL BATTLEFIELD (F-3), 12 miles west of Wisdom on MT 43. Nez Perce Indians and U.S. Army troops fought here in 1877—a dramatic episode in the long struggle to confine the Nez Perce and other Indians to reservations.

BUTTE HISTORIC DISTRICT (F-4), Much of Montana's history was written in mineral-rich Butte. Old architecture, historic mines and monuments recall these colorful times. Walking tours. World Museum of Mining on Hill Robin. Gulch brings a 1905 mining camp back to life.

MONTANA TERRITORIAL PRISON (E-3), Deer Lodge. A castle-like stone structure at the end of Main St. is the site of the West's first territorial prison. Now a museum with daily tours.

MONTANA HISTORICAL SOCIETY (E-4), 225 N. Roberts, Helena. The Montana Homeland exhibit explores the relationship between the people who have inhabited this place called Montana and their environment over a period of 12,000 years. Charles M. Russell art also on display.

TOWNE ANTIQUE FORD COLLECTION (E-3), 1106 Main St., Deer Lodge. Antique Ford auto collection.



Missouri River Country



One of the world's great rivers sets the theme for a vast landscape of prairie, mountains, streams, forests, wildlife and recreation. Here, everything is big—prairies from horizon to horizon, ranches measured in miles.

FORT PECK DAM AND RESERVOIR (B-10), Fort Peck. This huge earth-filled dam forms a reservoir 134 miles long with more than 1,800 miles of shoreline. Beautiful recreation area. Home of the annual Governor's Cup Walleye Tournament. Tours available.

CHARLES M. RUSSELL NATIONAL WILDLIFE REFUGE (C-9), between Hwy 24 and US 191 southwest of Glasgow. A variety of wildlife for viewing and photographing, including a scenic loop wildlife tour of Slippery Ann, 6 miles east of US 191.

BOWDOIN NATIONAL WILDLIFE REFUGE (B-9), 6 miles east of Malta. Established for waterfowl, this refuge protects 208 bird species. Auto, hiking tours available.

MEDICINE LAKE NATIONAL WILDLIFE REFUGE (B-12), 3 miles southeast of Medicine Lake on MT 15. Abundant wildlife, self-guided auto tour. Also the site of Teepee Hills Natural Area, where many teepee rings are preserved.

FOSSIL BEDS (D-10), on Hell Creek, north of Jordan. Paleontologists discovered an almost complete skeleton of Tyrannosaurus, the largest and fiercest carnivorous dinosaur.

WILD HORSE STAMPEDE (B-11), Wolf Point. Since 1901, the Granddaddy of Montana rodeos, July.

THRESHING BEE AND ANTIQUE SHOW (A-11), Scobey. Thresherman's breakfast, old car and tractor display, parade. Dirty Shame Saloon Show—every July. **PEGASUS GOLD'S ZORTMAN MINE (C-8)**, Zortman. One of the largest-producing gold mines in the nation, located in the scenic Little Rocky Mountains. Mine tours available.

POPLAR INDIAN POWWOWS (B-11), Poplar. Traditional celebrations on the Fort Peck Indian Reservation, June-August.

NORTHEAST MONTANA THRESHING BEE & ANTIQUE SHOW (B-12), Culbertson. Annual September event features restored steam engines, old tractors and farm implements, antiques, exhibits.

FORT PECK THEATER COMPANY (B-10), Fort Peck. Musicals and drama every weekend in historic Fort Peck Theater, June-August.

RESTORED PIONEER TOWN OF 1990s (A-11), Scobey. Homestead shack, shops, stores, antique farm machinery, cars and trucks.

MUSEUMS. Tracing northeastern Montana's farm and ranch history, homestead era, Indian cultures, plus art and wildlife exhibits, are located in Wolf Point (B-11), Glasgow (B-10), Malta (B-8), Poplar (B-11), Sidney (C-12), Circle (C-11), Plentywood (A-12).

Yellowstone Country



Savor the world's finest fishing in Yellowstone Country, along with the awesome Beartooth Highway, aptly-named Paradise Valley, remote wilderness areas and Yellowstone National Park.

YELLOWSTONE NATIONAL PARK (H-5), Three of the five entrances to Yellowstone, the world's first national park, are in Montana. Often termed "nature's wonderland," Yellowstone is renowned for spouting geysers, brilliant pools, bubbling caldrons, mountains, canyons, streams and lakes, forests, waterfalls and wildlife.

BEARTOOTH HIGHWAY (G-7), The section of US 212 from Red Lodge, Montana, to Yellowstone National Park. Rated by Charles Kuralt as one of the 10 most scenic highways in America and newly designated a National Forest Scenic Byway. It takes about 3 hours to travel and offers views of the world's most breathtaking mountain scenery at every turn.

MUSEUM OF THE ROCKIES (F-5), Montana State University campus, Bozeman. Best known for its world-class dinosaur collection, the museum has the only public planetarium in a three-state region. Other attractions are homestead history, contemporary Indian culture and the Kirk Hill Nature Area.

MISSOURI HEADWATERS (F-5), Three Forks. Where Lewis and Clark found the Madison, Jefferson and Gallatin rivers joined to form the Missouri. Interpretive displays, campground and picnic areas. Headwaters Heritage Museum in nearby Three Forks.

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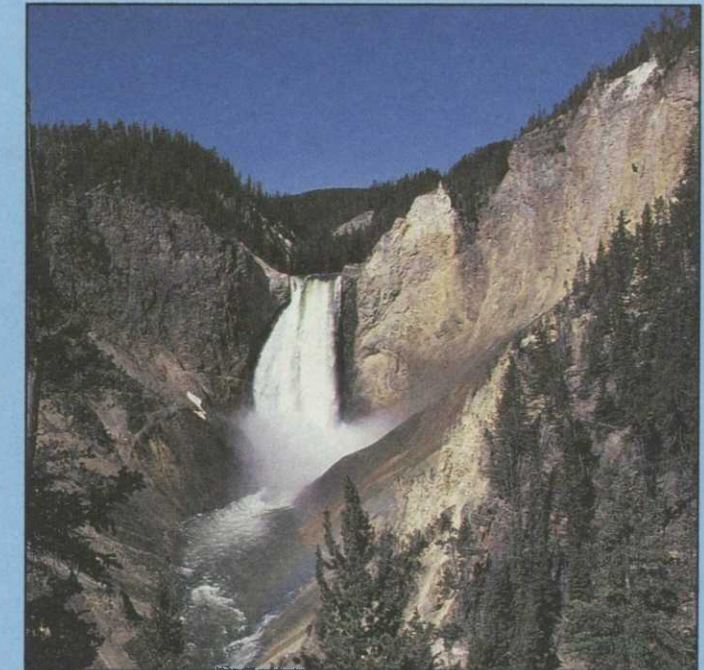
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Yellowstone National Park, famous for its spouting geysers, bubbling caldrons, cascading rivers, canyons and abundant wildlife, lies on Montana's southern border/Courtesy Wyoming Travel Commission

NATURAL BRIDGE (E-6), 28 miles south of Big Timber. Spectacular falls and river canyon. Constrained by a deeply-cut chasm, during high water the river flows over a 100-foot precipice, creating Boulder River Falls.

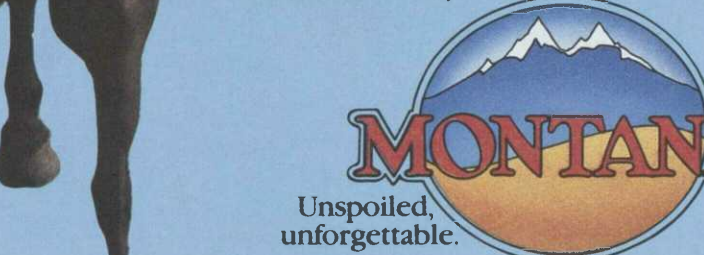
DEPOT CENTER (F-6), Livingston. Restored 1902 Northern Pacific railroad station offers historic and artistic views of the Yellowstone National Park region.

POWDER PERFECT SKIING AT BIG SKY (G-5), Bridger Bowl (F-5) and Red Lodge Mountain (G-7). Montana is famous for its "cold smoke"—deep, dry powder snow. Choose Big Sky for its world-class resort atmosphere. Bridger Bowl for its steep chutes and wide-open bowls or Red Lodge—for its relaxed, friendly feel.

SNOWMOBILE CAPITAL OF THE WORLD (H-5), West Yellowstone. Headquarters for an extensive snowmobile trail system, this lively community offers full service for winter enthusiasts. Gardiner, Cooke City and many other areas in Yellowstone Country have developed snowmobile trails.

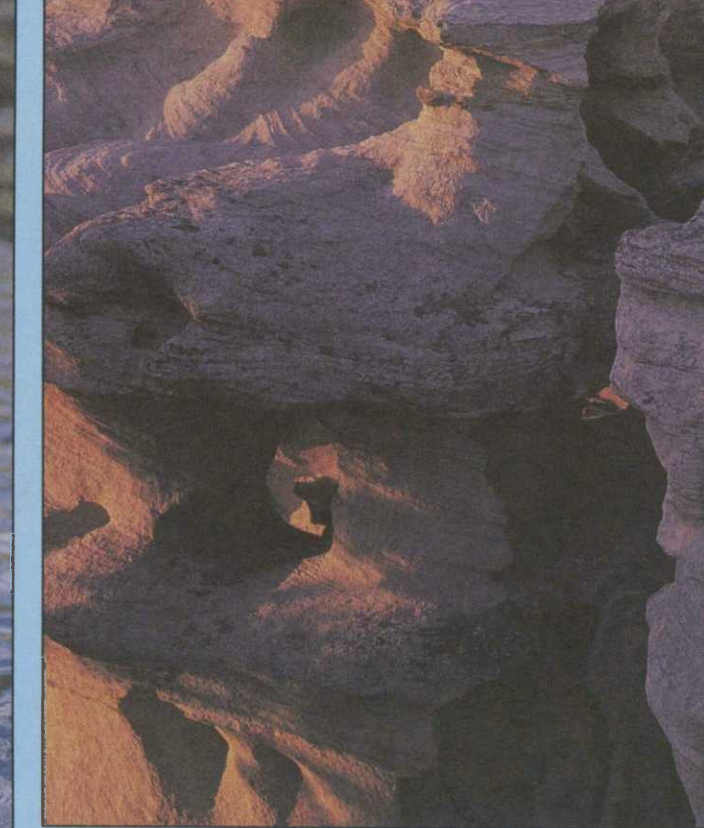
MONTANA COWBOY POETRY GATHERING (F-6), Big Timber. Poets and musicians recite backcountry ballads and rhymes of the range. August.

FESTIVAL OF NATIONS (G-7), Red Lodge. A 9-day August celebration featuring a different nation's food, music, crafts and exhibits each day.



The world-famous Miles City Bucking Horse Sale in May officially kicks off the rodeo season in Montana/Michael Crummett photo

Medicine Rocks State Park, regarded by some Northern Plains Indian tribes as a place of "big medicine," is one of 60 state parks that feature Montana's natural beauty, cultural heritage and recreational opportunities/Doug O'Donney photo



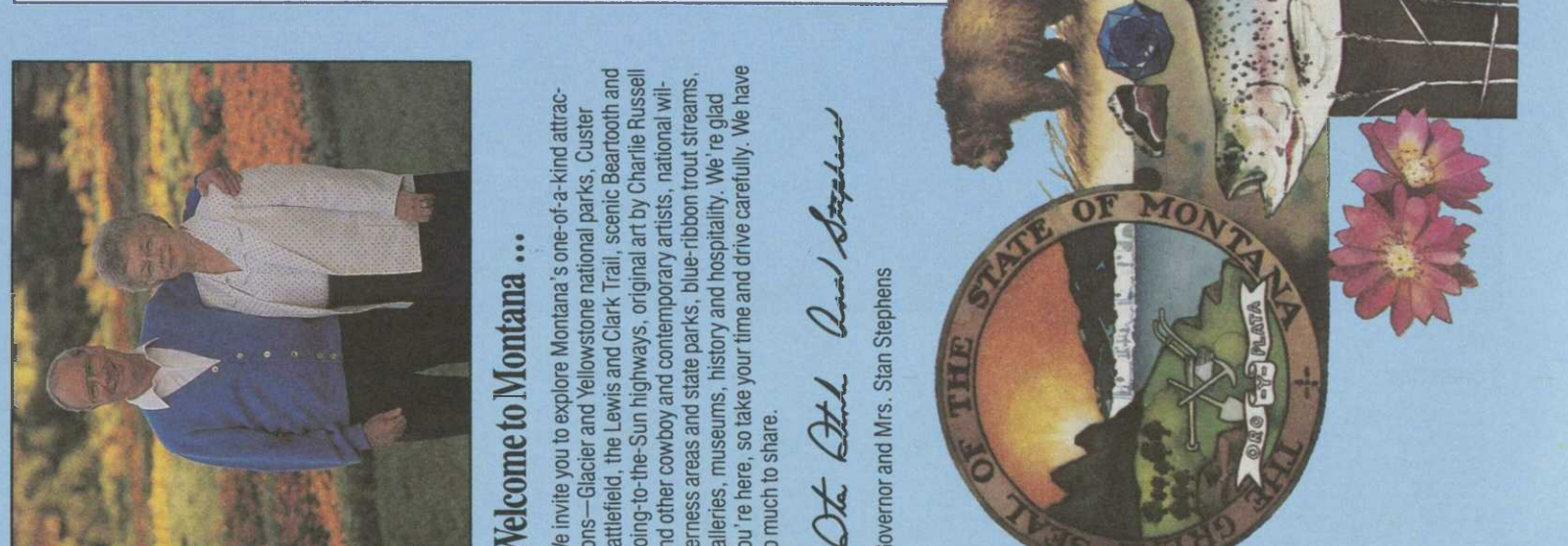
Montana's legendary rivers and lakes offer anglers the opportunity to catch wild trout in a pristine environment/Steve Bly photo

For travel information, contact Travel Montana, Department of Commerce, Helena, MT 59620, 406-444-2654. Nonresidents call toll free 800-541-1447.

Montana Highway Map



1990-91 Official Highway Map. For FREE distribution.



during and 18-mile portage around the Great Falls of the Missouri; the Gates of the Mountains (4), north of the town of Helena, where the river passage flanked by west Lewis described as, "the most remarkable cliffs that we have yet seen." The Lewis and Clark Expedition traveled the river from the mouth of the Missouri to the mouth of the Missouri, passing through the Gates of the Mountains (4), north of the town of Helena, where the river passage flanked by west Lewis described as, "the most remarkable cliffs that we have yet seen." The Lewis and Clark Expedition traveled the river from the mouth of the Missouri to the mouth of the Missouri, passing through the Gates of the Mountains (4), north of the town of Helena, where the river passage flanked by west Lewis described as, "the most remarkable cliffs that we have yet seen." 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