

BROWNS PARK NATIONAL WILDLIFE REFUGE
Maybell, Colorado

ANNUAL NARRATIVE REPORT
Calendar Year 1988

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

REVIEW AND APPROVALS

BROWNS PARK NATIONAL WILDLIFE REFUGE

Maybell, Colorado

ANNUAL NARRATIVE REPORT

Calendar Year 1988

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Refuge Manager

3/06/89
Date

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Associate Manager, Zone 1 Review

3/10/89
Date

Ralph F. Fries
Regional Office Approval

3/10/89
Date

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INTRODUCTION

Browns Park National Wildlife Refuge is located in an isolated mountain valley in extreme northwestern Colorado. It lies along both sides of the Green River, entirely within Moffat County, 25 miles below Flaming Gorge Dam. It contains 13,455 acres of river bottomland and adjacent benchland. The Utah-Colorado state line delineates the western boundary and to the south it shares a mutual boundary with Dinosaur National Monument. The remainder of the refuge shares a mutual boundary with the Bureau of Land Management lands. The refuge is 53 miles northwest of Maybell, Colorado on State Highway 318, 50 miles northeast of Vernal, Utah over Diamond Mountain, and 95 miles south of Rock Springs, Wyoming via State Highway 430 or 70 miles via State Highway 191 and Clay Basin, Utah.

The primary purpose of Browns Park Refuge is to provide high quality nesting and migration habitat for the Great Basin Canada goose, ducks, and other migratory birds. Before Flaming Gorge Dam was constructed in 1962, the Green River flooded annually, creating excellent waterfowl nesting, feeding and resting marshes in the backwater sloughs and old stream meanders. The dam stopped the flooding, eliminating much of this waterfowl habitat. Pumping from the Green River, along with water diverted from Beaver Creek, now maintains nine marsh units comprising approximately 1,430 acres. The river covers approximately 1,000 acres along with sedimentary river bottomlands, well vegetated grasslands interspersed with cottonwood, willows, salt cedar, greasewood and sage covering approximately 4,000 acres. The remainder of the refuge is alluvial benchlands (6,000 acres) and steep rocky mountain slopes. Elevations vary from 5,355 to 6,200 feet above sea level.

On August 20, 1963, the Migratory Bird Conservation Commission approved acquisition of Browns Park National Wildlife Refuge to develop and manage waterfowl habitat in that portion of Browns Park within the State of Colorado. The private land was purchased with funds from the Migratory Bird Hunting Stamp Act. On July 13, 1965, the first tract of private land was acquired. At this time, 5,356 acres have been purchased at a cost of \$622,976, 6,794 acres have been withdrawn from public domain lands, and 1,305 acres are leased from the State of Colorado (state school sections). There is one private inholding on the refuge, a 200 acre tract of grassland and cottonwood groves located at the southeast end of the refuge.

ANNUAL NARRATIVE REPORT

BROWNS PARK NATIONAL WILDLIFE REFUGE

1988

A. HIGHLIGHTS

New Assistant Refuge Manager arrived early January.
(Section E.1)

First on-station Refuge Assistant hired May 23.
(Section E.1)

First time visits were made by ARW Nelson B. Kverno and
DRW Ralph Fries. (Section J.3)

Cattle grazing on the refuge reduced by 18 percent. Further
reductions planned. (Section F.7)

Following several complaints by the grazing permittee,
resulting in several congressionals along with a visit to the
Director's Office in Washington, a grazing review team was
established by Director Dunkle. (Section F.7)

A Government Accounting Office (GAO) auditor visited the
refuge to determine if grazing is compatible with refuge
objectives. (Section F.7)

Safety administrative and operational inspections were held
during the year. (Section E.6, 8)

Wildfire rages on adjacent BLM land. (Section J.3)

B. CLIMATIC CONDITIONS

Total precipitation for 1988 was 4.63 inches, 3.14 inches
less than in 1987 and 4.36 inches below the 10 year average
of 8.99 inches. This was the least precipitation recorded in
16 years. The coldest temperature was 22 degrees F.
below zero in December, while the highest temperature
recorded for the year was 101 degrees F. in June.

The year began with the marshes frozen over. The Green River
remained open, except during a couple of the colder days of
January when it became partially frozen over. The lack of
snow allowed us to mow cattails and bulrush in several dry
marshes. By February some of the marshes had started to thaw
and geese were grazing the upland areas. Due to run-off, the
Green River ran red with clay and silt from Red Creek
drainage, which enters the river in Utah at the extreme
northern end of Browns Park. This siltation from spring run-

off and from thundershower activity in the drainage, plus low Green River flows, hampered pumping operations.

Refuge staff installed two thermographs in the Green River to record low water levels due to subnormal spring run-off. Flaming Gorge Dam releases were fluctuating from 800 to 4,200 cfs, but only averaging 1,100 cfs.

The month of June, besides having the high temperature of the year with 101 degrees F. on June 24 and 25, also had the highest monthly total precipitation with 1.15 inches, including one-quarter inch of hail on June 29. There was considerable lightning with the few storms we had.

By July, the refuge was unable to irrigate any of the three Beaver Creek meadows due to inadequate stream flow. The permittee irrigating meadows on State land above the refuge was within compliance of existing water rights. It was simply a matter of not enough water to go around.

September's high temperature was 94 degrees F. The first frost occurred September 15 and the first killing frost September 16. October's fall weather was too mild to bring deer down into the Park. The first snowfall of the season was on November 14 when a total of .13 inches of moisture was received. All pumping was shut down by November 22 because most of the marshes were frozen over. In December, a total of .55 inches of moisture was received in the form of snow. In the latter part of December the Green River was completely frozen over, the first time since 1961 when Flaming Gorge Dam was completed. The "freeze-over" was due to low river flows, rather than colder than normal winter weather. Waterfowl that normally winter along the open Green River flowing through the refuge, for the most part, departed after freeze-up. Open water at the upper end of the Utah Browns Park Waterfowl Management Area attracted them to that area.



Smoke from the Yellowstone fires frequently hazed summer skies. 8/88 Photo 1 JLG



December -- Green River partially frozen. 12/88 Photo 2 JLG



A young of the year mule deer buck fell victim to the hazards of thin ice on the Green River. 12/88 Photo 3 JLG



The rescue was made by Refuge Manager Gamble. 12/88 Photo 4 CTH

C. LAND ACQUISITION

1. Fee Title

It is doubtful that the refuge will be able to acquire the only remaining private inholding within the immediate future. The inholding consists of 200 acres of grassland and cottonwood groves located at the southeast end of the refuge. The owner (Wright Dickinson) is our grazing permittee and uses the area as winter pasture for cattle. Mr. Dickinson has one of the largest ranching interests in the valley and is currently expanding his operation. He is not expected to become a "willing seller" regarding his refuge inholding anytime soon.

D. PLANNING

2. Management Plans

The Grassland Management Plan is still undergoing revision. This plan cannot be finalized until the controversial grazing program (see Section F.7) is solidified.

Revision of the station Safety Plan was initiated.

E. ADMINISTRATION

1. Personnel



5. 2. 3. 1. 4.
12/88 Photo 5 JLG



6.
12/88 Photo 6 JLG

PERSONNEL

1. Jerre L. Gamble, Refuge Manager, GS-11, EOD 09-23-87, PFT.
2. Theodore D. Ondler, Assistant Refuge Manager, GS-09, EOD 01-12-88, PFT.
3. Carole T. Henry, Refuge Assistant, GS-05, EOD 05-23-88, PPT.
4. Robert E. Harding, Maintenance Worker, WG-08, EOD 04-18-82, PFT.
5. Lynn A. Barber, Engineering Equipment Operator, WG-08, EOD 03-05-84, PFT.
6. John Cook, Maintenance Worker, WG-06, EOD 06-19-88, Temp.
7. Ruth Harding, Volunteer
8. Rodell Eggit, Volunteer
9. Carole T. Henry, Volunteer
10. Joan Moon, Volunteer

Theodore D. Ondler entered on duty January 12 as the new Assistant Manager. Ted transferred from Tamarac NWR in Minnesota where he had served as the primary assistant manager.

Carole T. Henry entered on duty May 23 as the new Refuge Assistant. Carole is a welcome addition to the Browns Park staff. This is the first time in the history of the refuge that Browns Park has had clerical staff on station. Carole previously served as the secretary at Blackwater NWR for 12 years.

	PERMANENT		TEMPORARY		<u>Total</u> FTE
	<u>Full-</u> <u>time</u>	<u>Part-</u> <u>time</u>	<u>Full-</u> <u>time</u>	<u>Part-</u> <u>time</u>	
FY 1988	4	1		1	4.7
FY 1987	4*	4 (Volunteers)	3		5
FY 1986	4*	3 (Volunteers)	3		5
FY 1985	4*	4 (Volunteers)	2		5
FY 1984	4*	4 (Volunteers)	2		5

*Did not include Refuge Assistant stationed at the U.S. Fish and Wildlife Service in Vernal, Utah.

4. Volunteer Programs

This past year we had four volunteers in the U.S. Fish and Wildlife Service volunteer program. They were Rodell Eggit, Joan Moon, Carole Henry, and Ruth Harding.

Rodell Eggit, who lives west of the refuge on Taylor Flats in Utah, provided us with valuable carpentry skills. Rodell completed one kiosk near refuge headquarters and partially completed another kiosk on the auto tour route.

Joan Moon of Rock Springs, Wyoming assisted with robel measurements on refuge vegetation transects.

Carole Henry provided valuable clerical assistance prior to coming on-board as a paid member of the staff.

Ruth Harding cumulatively spent many hours recording daily weather data at the National Weather Service recording station. She also assisted many refuge visitors by answering their questions.

5. Funding

Funding in 1262 for FY 1988 was inadequate due to increased repair costs to lift pumps and electric motors. The operation of the lift pumps is essential to the maintenance on eight of the nine marsh units on the refuge.

Operational costs during the year also increased substantially. Electricity costs were approximately \$3,000 higher than the previous year. Telephone service (basic rate) increased by 600 percent during the year (see Section I.5).

Although we received a slight increase in funding for FY 1989, increased fixed costs and the addition of a PPT refuge assistant will more than offset the increase.

<u>FY</u>	<u>ACTIVITY</u>	<u>AMOUNT</u>	<u>TOTAL</u>
1989	1261	\$110,000	\$238,500
	1262	69,000	
	1262 (Flex Main.)	43,000	
	6860	5,000	
	8610 (With Carry Over)	11,500	
1988	1261	147,000	227,400
	1262	65,000	
	6860	5,000	
	8610	10,400	
1987	1260*	225,000	239,400
	6860	5,000	
	8610	9,400	
1986	1260**	211,900	224,900
	6860	5,000	
	8610	8,000	
1985	1260***	172,000	185,700
	6860	5,000	
	1994	8,700	

* Includes \$73,000 for ARMMs and \$10,000 Resource Problems

** Includes \$56,900 for ARMMs

*** Includes \$35,000 for ARMMs

6. Safety

No lost time accidents occurred this year. The lost time record is now 5,197 accident free work days. Although it did not result in any lost time, Robert Harding sustained a back injury while nest dragging on a four wheel ATV. Nest dragging with an ATV over uneven terrain and high brush or grass has some inherent risks.

Assistant Manager Ted Ondler was assigned to serve as the station safety committee chairman. Lynn Barber and Carole Henry are the committee members.

Station safety meetings were held quarterly. Topics included the following: 1) Demonstration of the safe and proper operation of the fire pumper unit. 2) CPR training and certification of all staff members. 3) Review of station safety plan and inspection of vehicles for presence and condition of fire extinguishers, first aid kits, and accident forms. 4) Chain saw safety and safe operation of wood stoves.

A formal safety and environmental health inspection was conducted by Regional Safety Manager Mike Martinez and Regional Safety Technician Marsha Bartling. The inspection was conducted from December 12-15. It was a very worthwhile learning experience for all staff members.

Employees Lynn Barber and John Cook completed eight hours of defensive driver training in Vernal, Utah.

All staff members received base line hearing tests. The testing was conducted by an audiologist in Craig, Colorado.

F. HABITAT MANAGEMENT

1. General

Dry conditions persisted during the year as a result of less than normal precipitation.

The two meadows adjacent to Beaver Creek were not adequately irrigated due to insufficient flow. (See Section F.11)

Flow in Vermillion Creek ceased by mid-July.

Green River water levels were lower than normal throughout the year. Decreased discharges from Flaming Gorge Dam, located 25 miles upriver, were due to less than normal snowpack and subsequent run-off.

Continued loss of cottonwood trees along the Green River is due to substantially lower water levels in the river and the absence of seasonal flooding. The only cottonwood regeneration occurring is along ditches where water is pumped to maintain marshes.

2. Wetlands

Before the Flaming Gorge Dam was completed during the early 1960's, seasonal flooding of the bottomlands created excellent waterfowl habitat. After the dam was completed, the flooding ceased, thus eliminating the natural waterfowl nesting areas. Since the establishment of the refuge, pumping from the river along with a diversion ditch from Beaver Creek presently create approximately 1,430 acres of marsh. There are currently nine marshes on the refuge.

During January and February, portions of Horseshoe and Spitzie Marshes were mowed. The purpose of the mowing coupled with maintaining higher than normal water levels prior to the growing season was to increase interspersion in the marshes. The desired effect was only partially achieved due to pump failure prior to the end of the growing season. By the end of April all marshes had been pumped to prescribed levels except Nelson Marsh which was in draw down status throughout the year. Spitzie and Hoy Marshes were not maintained at prescribed water levels throughout the growing season due to pump failures.

Water levels in Horseshoe and Warren Marshes were allowed to drop after July because of budget constraints.

Hog Lake water levels were sustained by using a Crisafulli pump while the electric motor and lift pump were being repaired.

Water levels were maintained in the Grimes Marsh from early April until mid-July. After that period, the marsh was allowed to dry up because of the permeability of the marsh bottom.

The Butch Cassidy Marsh remained at lower than optimum water levels during the summer--fall period due to low flows in Beaver Creek from dry conditions. Irrigating the meadows along Beaver Creek was stopped to leave as much water as possible in the creek in order to maintain the fisheries as well as the marsh. However, the permittee on the State property to the north continued to divert all the water possible out of the creek for irrigation which did not help our cause. (See Section F.11)

Green River water levels remained low due to less than normal run-off this spring. Flaming Gorge Dam releases fluctuated from 800 to 4,200 cfs but only averaged about 1,100 cfs.



Spitzie Marsh during draw down revealing several nesting islands and structures. Green River and Flynn Marsh in background.
5/88 Photo 7 JLG

3. Forests

Narrow and broadleaved trees grow along Beaver and Vermillion Creeks. There are several groves of broadleaf cottonwoods in the bottoms along the Green River. Since the establishment of Flaming Gorge Reservoir in the early 1960's, there has been less cottonwood regeneration due to the lack of seasonal river flooding. Care is taken to protect the existing trees and to encourage new tree growth. Beaver numbers are controlled where excessive tree damage occurs. (See Section G.15)

5. Grasslands

Refuge grasslands are located on benches, river bottoms adjacent to marsh units, and in meadows along Beaver Creek. The meadows along Beaver Creek are irrigated (gravity flow) from the creek. Due to less than normal precipitation and lack of subsequent run-off, the meadows were not adequately irrigated due to insufficient flows.



Livestock grazing is utilized to maintain
refuge grasslands. 3\88 Photo 8 TDO

Allowing controlled winter grazing of cattle on the refuge removes dead grass, improves cycling of nutrients and structural diversity of post-grazing vegetation in grazed units.

6. Other Habitat

Roadways and dikes were mowed to improve visibility for maintenance purposes and for benefit of visitors.

7. Grazing

The winter grazing plan implemented on December 1, 1987 was continued through March 31, 1988. From January 1, 1988 through March 31, 1988, four bottomland units (A, C, E, 7 NW\S) totaling 1,825 acres were grazed on the north side of the Green River. A total of 337 cows grazed the four units on a scheduled rest--rotation system through the period.

From January 1, 1988 through March 31, 1988, three bottomland units (G, H, J) totaling 1,180 acres were grazed on the south side of the Green River. During the period, 143 cows utilized Unit G, 76 Unit H, and 97 grazed Unit J.

This concluded the second and final year where it was agreed upon, as a trial basis, to graze refuge land on the north side of the Green River using a short duration, rest-rotation system. Refuge land on the south side was to be

grazed with cattle being scattered throughout the grazed units, not utilizing a rest--rotation system. The two different grazing systems were to be compared after two years.



Cattle being moved onto refuge by grazing permittees. 12/88 Photo 9 TDO

A range use and condition evaluation (post 1987--1988 grazing season) was conducted on May 17 and 18. The following persons were in attendance. Refuge Supervisor Barney Schranck, Staff Specialist Steve Berlinger, Refuge Manager Jerre Gamble, permittees Wright Dickinson, Jr. and Jeanie Dickinson, Range Specialist-Consultant Dr. Wayne Cook, CSU Extension Range Specialist Roy Roth, Colorado Division of Wildlife Habitat Biologist John Toolen, District Wildlife Manager Brad Petch, and National Wildlife Federation, Colorado Chapter Officer Reed Kelly.

Conclusions reached that were generally agreed upon by the Evaluation Team:

1. No overgrazing of upland or bottomland units occurred.
2. Poor condition of shrubs on south side of Green River caused by excessive use by mule deer.
3. No significant difference in range conditions comparing short duration, rest--rotation grazing on the north side of the Green River with the system of scattering cattle throughout units on the south side.
4. Rest--rotation grazing may not significantly impact range conditions when employed during the dormant season.

Conclusions reached by permittee:

1. Short duration, rest--rotation grazing involves moving cattle too often causing considerable stress on cattle. Reference was made to cattle "slipping several condition scores" during winter grazing on the refuge.
2. Short duration, rest--rotation grazing is costly to the permittee in terms of supplying additional manpower to move cattle as required and in supplying additional protein blocks due to cattle being stressed by excessive movement.
3. Permittee would prefer to graze cattle scattered throughout all units on refuge involving no cattle movement as he was allowed to do prior to the two year experiment utilizing rest--rotation grazing.

Conclusions reached by Refuge Management:

1. Not enough residual vegetation remained to meet nesting requirements of early upland duck nesting species. This is considered to be a direct result of too much grazing being allowed on the refuge.

2. A significant reduction (approximately 35 percent) in AUMs needs to be realized to provide sufficient carryover of residual vegetation to meet the needs of early upland duck nesting species.
3. A minimum of 50 percent of bottomland units adjacent to marshes need to be rested each year to provide sufficient nesting cover for early upland duck nesting species.

A meeting was held August 4 at refuge headquarters with grazing permittee Wright, Sr., Wright, Jr., and Jeanie Dickinson. Refuge Supervisor Barney Schranck, Refuge Manager Jerre Gamble, and Assistant Manager Theodore Ondler represented the Service. The refuge objective is to reduce AUMs from the current level of 2,300 down to approximately 1,600 annually. Three grazing options were presented for the 1988\1989 winter grazing season. Each option presented involved a reduction in AUMs. The permittee tentatively selected a grazing option that would show a 700 AUM reduction over a three year period. Other grazing issues included location and size of water gaps and construction of boundary fence around grazing Unit 8.

Major concessions had been made to benefit the permittee such as reducing cattle movement by 50 percent. The permittee was still not satisfied with options presented as alternatives to rest--rotation grazing. The proposal to rest half of refuge bottomlands every year to leave nesting cover for waterfowl meant a significant reduction in AUMs. This remains the main point of contention. As mentioned earlier in this section, prior to the two year rest--rotation grazing experiment, the permittee was allowed to scatter cattle throughout the refuge to maximize forage utilization by cattle. It is the opinion of present refuge management that this system allowed excessive grazing of refuge bottomlands resulting in not enough residual cover remaining for early upland duck nesting species.

During late summer and early fall, the permittee generated several congressionals and made a trip to our Nation's capital to meet with Director Dunkle. As a result of this meeting, Director Dunkle requested a special grazing team to review and evaluate the refuge grazing program.

Dr. Chris Allison, Extension Range Specialist, New Mexico State University at Las Cruces, New Mexico and Dr. Harold Geetz, Professor of Range Science, Colorado State University at Fort Collins represented interests of refuge permittee Dickinson. Mr. Phillip Urness, Professor of Range Science, Utah State University, Logan, Utah and Dr. Richard Mackie,

Professor of Wildlife Management, Montana State University, Bozeman, Montana represented the interests of the Fish and Wildlife Service. The review and evaluation was conducted on October 18 and 19 with a written report completed mid-December. The Review Team's report included the following recommendations:

1. Seeding pastures in some bottomland units to improve nesting cover for waterfowl and forage for cattle.
2. Approximately half of the bottomlands would be rested each year improving cover for upland nesting waterfowl. This would require a significant reduction in AUMs.
3. Combine upland and bottomland grazing units to reduce the number of cattle moves required. This would minimize stress placed on cattle.
4. Eliminate short duration grazing which has no validity within the context of winter dormancy.
5. Refuge Management should determine which units are grazed and rested.
6. Allow permittee flexibility to adjust stocking rates in grazed units.

All of the Review Team's recommendations listed have been implemented except seeding pastures in refuge bottomland. Introducing non-native grasses to "native prairie" conflicts with agency policy. Also, our experience shows that wherever soil has been disturbed on the refuge, an invasion of whitetop, a noxious weed, results.

Congressional awareness concerning our grazing program resulted in a Government Accounting Office (GAO) audit. Lamar White from the Washington, D.C. Natural Resources Division of GAO was at the refuge on October 28. The purpose of his visit was to review the refuge grazing program with regard to compatibility with refuge purposes and objectives. The GAO report is due out next June.

A continued but gradual reduction in AUMs is planned over the next two years. This will be accomplished by reducing AUMs by approximately 200--300 during each of the next two years. After this two year period, approximately 1,600 AUMs will be available annually. This number of AUMs will represent the desired amount of grazing allowed in order to rest and thereby leave residual cover in approximately half of the bottomlands annually to benefit early upland duck nesting species. The other half of bottomlands grazed annually should prove, as they have in the past, ideal for late nesting species that prefer shorter vegetation such as blue-winged teal.

AUM Summary

Wright Dickinson (permittee) 12/01/87--03/31/88
2,383 AUMs (cattle) x \$5.35/AUM = \$12,749.05

Jerre L. Gamble (employee) 04/13/88--12/31/88
15.2 AUMs (horses) x \$8.85/AUM = \$134.52

Theodore D. Ondler (employee) 03/12/88--12/31/88
20.6 AUMs (horses) x \$8.85/AUM = \$182.39

Robert Harding (employee) 01/01/88--12/31/88
50.28 AUMs (horses) x \$8.85/AUM = \$444.98

Robel pole readings and photo points were taken during the year to monitor changes in vegetation.

9. Fire Management

No prescribed burning took place during the year.

A lightning strike during the afternoon of April 17 started a juniper tree on fire near refuge headquarters. Staff extinguished the fire.

On June 25 a wildfire, started by lightning, raged three miles northeast of refuge headquarters on adjacent BLM land.



Approximately 60 interagency firefighters utilized the refuge headquarters area as a base of operations. 6/88 Photo 10 REH



The fire, which burned approximately 1,000 acres, was mopped-up by mid-day on June 27. Refuge shop complex in foreground.
6/88 Photo 11 REH



A helicopter was used to transport firefighters and water to an otherwise inaccessible site.
6/88 Photo 12 JLG

10. Pest Control

Mormon crickets were seen during late spring in some of the draws on the south side of the Green River. Large numbers of crickets were observed on Diamond Mountain, located south of the refuge. Since the crickets tend to forage on much of the vegetation along their path, the BLM annually applies pesticides on the heaviest cricket concentrations. Nosema locustae, a biological agent applied in a bait formula, was also utilized on BLM land adjacent to the refuge. Normally, the crickets never reach refuge lands. However, during the last three years, they have been seen on the refuge along the south side of the Green River in the vicinity of the Nelson and Warren Marshes. Fortunately, they were not very numerous making control unnecessary. Various birds and fish apparently enjoyed feeding on them.

11. Water Rights

Vermillion Creek flows approximately 1 1/4 miles through the east end of the refuge before emptying into the Green River. During 1987, the Raftopoulos brothers, adjacent landowners and ranchers located upstream, filed for water rights on Vermillion Creek. Because the Service had not previously filed for water rights on Vermillion Creek (a major oversight on the part of the Service) application for surface water rights were filed late in 1987.

The Fish and Wildlife Service originally requested the Department of Justice to file an objection against the Raftopoulos brothers' claim to protect the historic use of Vermillion Creek water at the Browns Park NWR. Because Colorado law provides that water rights adjudicated in a given calendar year are junior to all rights adjudicated in previous years, regardless of the appropriation date (37-92-306 C.R.S.), it was critical that a Service application for water rights in Vermillion Creek be filed in 1987, the same year as the Raftopoulos filing. Most of the refuge lands through which Vermillion Creek flows were reserved from the public domain by Public Land Order No. 4973 of December 11, 1970. Therefore, the Service requested approval from the Solicitor's Office in Washington, D.C. for an application for a State appropriative right, with an alternative claim for a reserved right, to maintain instream flow through the refuge. The Solicitor's Office denied this request to submit a reserved right claim, and recommended filing an application for a State appropriative right.

The Service filed Case No. 87CW135, claiming minimum streamflow of 10 cfs in Vermillion Creek, on December 31, 1987. Numerous objections were received, with most of them citing 37-92-102(3) C.R.S. which vests the Colorado Water

Conservation Board with the exclusive authority to appropriate instream flows. The Referee's Ruling of March 16, 1988 denied this application on the grounds that the amount of water was excessive and there was no proof of beneficial use of water. The United States did not appeal this ruling.

Members of the Regional Office water rights staff met in April with personnel from the Colorado Water Conservation Board and the Colorado Division of Wildlife to discuss a possible instream flow filing by the Board to preserve the environment to a reasonable degree within the boundaries of the refuge. In May, Service hydrologists completed channel cross-sections and stream measurements on Vermillion Creek. However, because water flows were so low this year, this data was not sufficient to substantiate an instream flow claim, and additional work will need to be done in the future should we elect to continue with this process.

Because the Service was unable to sustain a water right claim under its 1987 filing, which would have established a priority senior to the Raftopoulos brothers' claim, there is no longer any reason to continue the United States' objection. The most we could hope to achieve would be a change in their appropriation date to something later than 1974. While there might be some satisfaction from that change, it would be of no practical effect. Regardless of which appropriation date they are finally awarded, their 1987 adjudication date makes their water right senior to any right which the United States might be awarded for the refuge in a subsequent adjudication.

Beaver Creek flows approximately 2 1/2 miles through the west end of the refuge before emptying into the Green River.

During September the Refuge Manager met with Mr. Jack Leonard, Moffat County Water Commissioner. The purpose of the meeting was to clarify water rights and priority allocations on Beaver Creek.

Our grazing permittee is also a permittee on Colorado Division of Wildlife land upstream from the refuge. In the past, including 1988, the permittee has exceeded the allocation of water from Beaver Creek. Consequently there was a shortage of water for irrigating the meadows on the refuge. Refuge staff met with representatives of the Colorado Division of Wildlife during September of this year. We indicated that we are going to exercise our water rights beginning in 1989. This will impact the management plan for the Beaver Creek State Management Area. The State's plan had

called for improving the alfalfa fields on the Beaver Creek meadows. This will not be possible because of increased demands on available water by the refuge. The first priority withdrawal from Beaver Creek is Thomas Doodle #1 ditch for 1.66 cfs. This water right is reserved for the State of Colorado. The next seven priority (numbers two through eight) water rights are reserved by the U.S. Fish and Wildlife Service. This priority allocation totals 18.5 cfs. The refuge's total allocation on Beaver Creek is 37.25 cfs.

12. Wilderness and Special Areas

There are four National Historic Sites registered in Moffat County, Colorado. Three of them are located on the refuge. One is the Two-Bar Ranch, headquarters of one of the largest cattle and sheep ranch operations in the West during the late 1800's. It is protected from vandals and is being allowed to yield to the effects of nature without interference.



Two-Bar Ranch -- undisturbed.
12/88 Photo 13 JLG



Lodore Hall with community cemetery
in foreground. 10/88 Photo 14 JLG

Lodore Hall, built in 1911, was the first district funded school in the area. It presently serves as the Community Hall for Browns Park residents. The Browns Park Homemaker's Club has a Special Use Permit for the building and grounds with the stipulation that they maintain and repair the building when needed.

The third National Historic Site on the refuge is the White-Indian Contact Site. It is believed to be the site of Fort Davy Crocket, an old fur trading post. The area was partially excavated by Scientific Applications in 1980, then re-covered by refuge personnel. Since then, it has been protected from further disturbance.

G. WILDLIFE

2. Endangered and/or Threatened Species

Bald eagles are frequently seen on the refuge throughout the winter months. Bald eagle numbers peaked in March when there were 12-15 birds present.

Peregrine falcons were occasionally observed on the refuge. There is currently an ongoing peregrine falcon restoration project in nearby Dinosaur National Monument.

Restricted releases of water from Flaming Gorge Reservoir are part of ongoing studies on endangered fish species. The Colorado Fisheries Project is primarily concerned with the Colorado River squawfish found in the Green River. Two other federally listed fish species also found in the Green River are the humpback chub and the bonytail chub. During April, a crew from the Colorado Division of Wildlife electroshocked portions of the Green River flowing through the refuge. No specimens of endangered fish species were observed during this survey.

3. Waterfowl

Approximately 500 Canada geese and 200 ducks remained throughout the winter.

Peak numbers of spring migrants were recorded in April, 5,300 ducks and geese.

The 1988 duck breeding pair count was conducted on May 9. The survey area included the Green River, Beaver Creek, and all of the marshes on the refuge. Data was tabulated in the same manner as in the past using the modified Hammond's formula. For dabbling ducks: pairs, single females and single males were counted as pairs. For the divers, only pairs actually observed were counted as pairs. A total of 444 pairs of dabblers, 159 individual dabblers and 217 pairs of divers were observed.

Gadwall, mallard, blue-winged/cinnamon teal, and baldpate (in that order), represented the most abundant dabblers. Redheads, lesser scaup, ring-necked duck, and ruddy ducks (in that order), were the most abundant diving ducks.

Estimated duck production (based on pair counts) again declined for the second year in a row. Possible reasons for this decline could be different observers or just plain fewer ducks. The estimated duck production was 2,475 ducks.

The goose nesting survey was conducted April 14-18. A total of 420 Canada geese were observed. Geese observed included 69 pairs and 225 unpaired geese. A total of 68 nests were found, of which 9 had been destroyed by predators or abandoned, leaving 59 active nests. The average brood size was 5.7 goslings/brood. Fifty-nine nests x 5.7 goslings = 336 goslings produced.



One of 42 platform nesting structures
utilized by geese. 4/88 Photo 15 JLG



One of 48 hay bales placed (on the ice) during
February 1987. Approximately 1/3 of the bales
tipped over, an additional 1/3 destroyed by cattle
while the remaining 1/3 are still utilized by
nesting waterfowl. 4/88 Photo 16 JLG



This goose decided to nest on a cliff located approximately 20 feet above the Green River.
4/88 Photo 17 JLG

Table 1. Waterfowl Production for 1972 Through 1988

<u>YEAR</u>	<u>GEESE</u>	<u>DUCKS</u>	<u>COOTS</u>
1972	139	2,285	1,100
1973	150	3,200	5,700
1974	150	3,275	2,000
1975	250 (69)	3,200	2,000
1976	150 (61)	3,100	500
1977	225 (75)	3,060 (1,001)	1,500
1978	290 (85)	2,450 (807)	4,300
1979	225 (73)	2,725 (953)	3,150
1980	170 (60)	2,855 (955)	2,280
1981	245 (72)	4,025 (1,391)	2,500
1982	264 (76)	4,318 (1,427)	2,600
1983	305 (106)	4,406 (2,491)	3,600
1984	296 (107)	4,112 (1,376)	2,330
1985	277 (145)	4,036 (1,396)	1,772
1986	334 (106)	6,382 (1,957)	3,000
1987	357 (151)	3,789 (1,027)	2,500
1988	336 (69)	2,475 (820)	1,900

Breeding pair counts in parenthesis.

During the 1987 waterfowl nesting season, nests were located by dragging but were neither candled nor was a Mayfield analysis completed. The current objectives of nest dragging are as follows: 1) identify high use nesting habitats; 2) calculate current production; 3) provide insight for future management including assessing the need for predator control; 4) compare nesting vegetation preference\success of grazed and non-grazed habitat.

Eight marshes were searched commencing on three occasions (5\19\88, 6\16\88, 7\11\88). A total of 342 acres of habitat were dragged on each of three occasions. The areas searched consisted of 168 acres that were not grazed during the 1987-88 winter grazing season and 174 acres that were grazed during the winter of 1987-88.

Table 2. Areas Searched by Dragging

	Acres	Times Searched	No. Nests Located	No. Successful Nests
Not Grazed Winter 1987-88				
Hoy Unit	50.70	3	8	3
Spitzie Unit	46.05	3	4	2
Nelson Unit *	54.74	3	0	0
Butch Cassidy Unit	16.15	3	1	0
Grazed Winter 1987-88				
Hog Lake Unit	48.68	3	3	3
Flynn Unit	59.99	3	14	10
Warren Unit	33.12	3	8	4
Horseshoe Unit	32.52	3	4	1
Totals	341.95		42	23

* The Nelson Unit was not flooded during the 1988 waterfowl nesting season due to mechanical failure of the pump.

A total of 54 nests were located in 1988. Of these 54 nests, 22 were blue-winged teal or cinnamon teal, 14 gadwall, 12 mallard, 2 northern shoveler, 2 pintail, and 2 green-winged teal. Nest success was calculated for all combined duck

species using three different methods. Nest success was also calculated comparing grazed and ungrazed habitat using three different methods. It will be necessary to gather several years data to have a sample size that is adequate for statistical validity.

Table 3

<u>Species</u>	All Duck Nests	BWT\ CINN	<u>Gadwall</u>	<u>Mallard</u>	<u>Shoveler</u>	<u>Pintail</u>
Total # Nests	54	22	14	12	2	2
# Nests Usable for Mayfield	42					
Apparent Nest Success	53.7%					
Shortcut Mayfield Nest Success	29.4%					
Mayfield Nest Success	26.9%					
Grazed Habitat Apparent Nest Success	62.1%					
Grazed Habitat Short- cut Mayfield	36.7%					
Grazed Habitat Mayfield	37.8%					
Not Grazed Habitat Apparent Nest Success	38.5%					
Not Grazed Habitat Short- cut Mayfield	16.1%					
Not Grazed Habitat Mayfield	7.9%					

A total of 12 of the 54 nests were not included in the analysis because they did not meet the necessary criteria. Of the 42 nests included in the analysis, 18 nests were destroyed by predators. Raccoon, striped skunk, bull snake, and unknown predators accounted for 21 percent, 11 percent, 2 percent, and 7 percent respectively, of the depredation.



This is the second year nest dragging was done on the refuge. 6/88 Photo 18 JLG

The peak of the fall migration occurred in late September and early October.

The arrival of 90 tundra swans on November 19 marked the end of fall migration. Most marshes on the refuge were frozen by late November.

4. Marsh and Water Birds

There is an active great blue heron rookery located on the eastern end of the refuge, adjacent to the Green River. Great blue herons first began arriving in late March. An estimated 30 young were produced.

At least two of the refuge marshes had nesting black-crowned night herons. They arrived on the refuge April 14.

Approximately 200 white-faced ibis migrated through the area during late April. Nesting on the refuge has not been documented but may occur on Flynn Marsh.

Migrating sandhill cranes were observed flying over the refuge during the spring and fall months. During September a flock of 65 cranes were observed on the Green River.

Snowy egrets were occasionally sighted.

Marsh and water birds often observed were: western grebe, horned grebe, pied-billed grebe, American bittern, and sora rail.

5. Shorebirds, Gulls, Terns, and Allied Species

Black-necked stilt and American avocet were occasionally observed on the refuge marshes during spring and summer. Based on observations of bird behavior, it appeared that American avocets nested on Flynn Marsh this past year.

During late spring, Wilson's phalarope were very abundant.

California and ring-billed gulls were commonly observed along the Green River from March through October.

A total of five Bonaparte's gulls were sighted during late April.

Other birds commonly observed on the refuge were: common snipe, lesser yellowlegs, western willet, spotted sandpiper, and killdeer.

6. Raptors

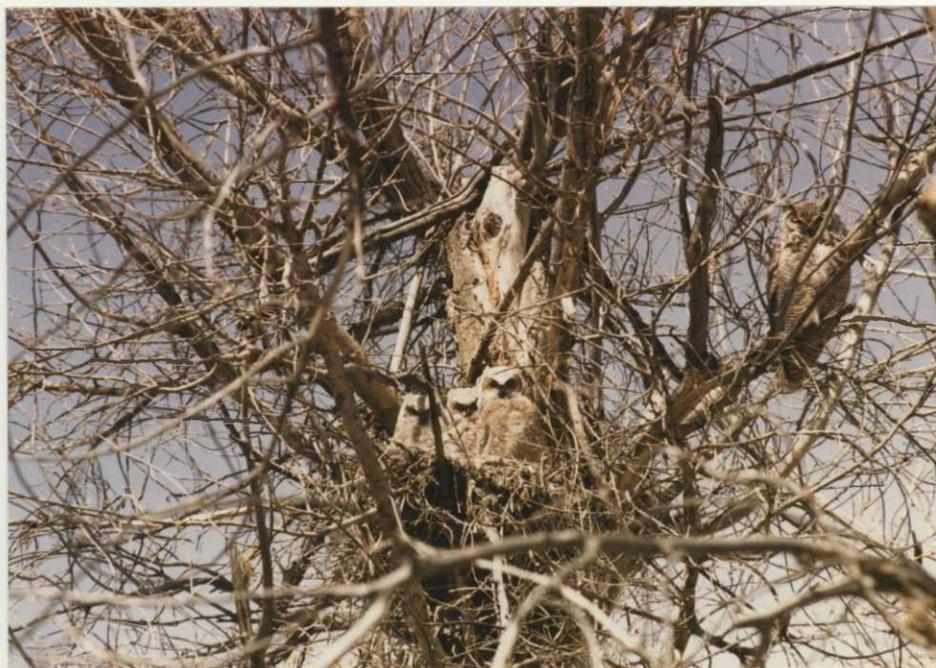


Golden eagle - two incidents of death by electrocution (one on refuge) were noted this year. 10/88 Photo 19 JLG

Golden eagles were seen year round and nested in the vicinity of the refuge. Refuge personnel will be working with the power co-op to construct perches to alleviate the problem of power pole electrocution.

Turkey vultures were commonly observed from March until late fall. Flocks up to 50 in number roost in the heron rookery.

Red-tailed hawks, American kestrel, merlin, northern harriers, and great-horned owls were common during most of the year and nested on the refuge. Rough-legged hawks were often seen during the winter. Cooper's, sharp-shinned, Swainson's, and ferruginous hawks were occasionally observed.



One of five great-horned owl nests found on the refuge this year. 4/88 Photo 20 JLG

7. Other Migratory Birds

Common nighthawks were frequently observed around the refuge residences during the summer months.

Black-chinned and broad-tailed hummingbirds were frequent visitors to feeders at the refuge residences.

Mountain bluebirds were first observed on the refuge in early March.

8. Game Mammals

A herd of 30-40 pronghorn antelope was frequently observed on the refuge or on adjacent BLM lands.

The refuge is a wintering area for mule deer which migrate into the river valley from Cold Springs Mountain to the north and Diamond Mountain to the south. The number of deer showing up on the refuge is dependent on snowfall in higher elevations. The doe/buck ratio is disproportionate (100/1). This may be due to the State allowing any antlered buck to be taken during the third rifle season.



The winter of 1987-88 was moderate resulting in less than 1,000 "mulies" on the refuge. 12/88 Photo 21 JLG

Elk are occasionally seen during February when deep snow forces them down out of the high country. No elk were observed on the refuge this past winter.

10. Other Resident Wildlife



A cow and bull moose were sighted together and separately on several occasions. They are rare in occurrence on the refuge, but are fairly common in the adjacent mountain areas.

9/88 Photo 22 JLG

The cottontail rabbit population appeared to be near the apex of their population cycle. The coyote population was also high. High coyote numbers were quite likely related to the high rabbit numbers. Both white-tailed and black-tailed jackrabbits were present on the refuge. Porcupine, badger, raccoon, and striped skunk were occasionally observed.



Three of the boneyard cotton-tailed rabbit population. 12/88 Photo 23 JLG



A "close enough" badger observation. 9/88 Photo 24 JLG

Sage grouse were present but in low numbers. They were most often observed in the vicinity of Hoy Bottom. There was also a small number of chukar partridge sighted on the south side of the Green River.

Populations of muskrat and beaver existed in refuge marshes and on the Green River. Several beaver lodges were utilized as goose nesting sites. Beaver have played a role in preventing regrowth of cottonwood trees.
(See Section G.15)

11. Fisheries Resources

The Green River, which bisects the refuge, is a popular sport fishery. Rainbow, brown, and cutthroat trout were the species most sought after. Catfish, carp, and suckers are also present in the river.

Beaver Creek provides a sport fishery for brook trout, as well as a few rainbow and cutthroat.

12. Wildlife Propagation and Stocking

Portions of the Green River electroshocked by the Colorado Division of Wildlife revealed a low fish population in segments flowing through the refuge. As a result, the State released 1,750 10-11" rainbow trout in the river July 5 and the same number again on July 20.

15. Animal Control

Several raccoons and skunks were removed in the vicinity of refuge residences.



A total of six beaver were removed where they were damaging cottonwood trees or plugging ditches. Pocket comb placed in left tree trunk for scale.
9/88 Photo 25 JLG

H. PUBLIC USE

1. General

Total refuge visitor use was up substantially this year -- 10,478. Average annual visitor use (over the past three years) was 6,575. A larger number of visitors traveled from Craig, Colorado (85 miles) and the Steamboat Springs, Colorado area (140 miles) and camped on the refuge. Most of the day visitation occurred during spring or early fall.

A pre-Easter service was held at the Lodore Hall in March with approximately 37 people in attendance. The program was set up through the Browns Park Homemaker's Club.

In May, the Browns Park Homemaker's Club held their annual Memorial Day dance. Approximately 350 people attended. At least 40 campers occupied the campgrounds over the holiday weekend.



Crook Campground was filled to capacity over Memorial Day weekend. 5/88 Photo 26 JLG

Refuge Manager Jerre Gamble presented the revenue sharing check to the Moffat County Commissioners on May 10.

5. Interpretive Tour Routes

The interpretive tour route starts at the Crook Campground near the eastern end of the refuge and parallels the Green River for most of its seven mile length. This route is part of a continuous road running east to west, with interpretive signs and overlooks over three marshes. Refuge leaflets, available in boxes along the route, were utilized by an estimated 2,000 visitors.

6. Interpretive Exhibits/Demonstrations

The construction of two kiosks was begun by volunteer Rodell Eggit. The kiosk located at headquarters is complete but awaiting interpretive signs and a special regulation section. The concrete pad was poured for a second kiosk to be located on the auto tour route. (See Section I.1)

7. Other Interpretive Programs

Due to the remoteness of the refuge, the opportunity to present interpretive talks and tours seldom arises. In June, Refuge Manager Gamble discussed refuge objectives, management practices, and wildlife viewing opportunities with rafters who floated the Green River through the refuge.

Refuge leaflets were available at the Browns Park Store (15 miles), the Maybell Store (60 miles), Craig Chamber of Commerce and BLM Office (85 miles). Leaflets were also mailed to the Powell Society in Denver and the Dinosaur National Monument headquarters.

8. Hunting

Hunting was allowed on the refuge under State and Federal regulations. Mule deer and cottontail rabbit may be hunted in all areas except those posted. Ducks, coots, and geese may be hunted along the Green River channel and within 100 yards of each bank. Hog Lake and Butch Cassidy bottoms are also open to waterfowl hunting.

Archery deer season was August 13-31 (bucks only) and September 1-20 (either sex). Muzzleloading season lasted September 7-20. There were few hunters during either season. Four muzzleloader hunters checked accounted for one buck and one doe.

There were three separate rifle deer seasons again this year: October 15-19; October 22-November 2; and November 5-13. The first and second seasons carried restrictions of three point or better on one antler. A limited number of doe licenses were allowed during each season. Hunter participation was low during both seasons. Most hunters passed up the first and second seasons in favor of the third season which had no antler point restriction. A maximum of 140 hunters compared to 188 in 1987 participated in all three seasons. One buck and 0 antlerless deer were harvested the first season; 3 bucks and 17 antlerless deer the second season; and 14 bucks and 15 antlerless deer in the third season.

Cottontail rabbits could be hunted from September 10, 1988 through February 1989. There was a daily bag limit of 10 or a possession limit of 20; both limits were frequently checked in the course of a week's work. Since cottontail season opened prior to the deer and waterfowl seasons, many had added recreation and culinary rewards. In the third deer season alone, of 83 hunters checked, 68 also carried small game licenses.

The delayed goose season ran from October 22 through December 4. Hunting pressure was light with only a total of 14 geese taken.

Browns Park is in the Pacific Flyway. The duck hunting season was split--October 8-14 and November 12, 1988 through January 2, 1989. The hunting of canvasback was closed statewide. Hunting pressure was below average. Fewer than normal ducks were present. Most of the surface area on the hunttable marshes was frozen over by November 22, further restricting hunting on the Green River. Refuge officers checked some 57 separate license holders during the combined waterfowl seasons.

9. Fishing

Approximately 2,600 visitors fished an estimated 10,400 hours this year. Most common in the creel were rainbow and Snake River cutthroat trout, with some brown trout and an occasional catfish. In addition to the Green River, Beaver Creek was also open and offered good brook trout fishing to those willing to walk the stream and fish the deeper "pockets." In past years, the portion of the Green River running through the refuge had been closed to fishing March 1 through June 15 to reduce disturbance to nesting waterfowl. In 1986 it was decided to remove the closure since most of the nests found were not in areas of frequent public use. This was welcomed by the fishing public. Since the closure was removed, fishing pressure almost doubled.



Three happy summer fishermen
displaying their catch.
6/88 Photo 27 REH

11. Wildlife Observation

The Grand Junction Chapter of the Audubon Society spent June 4 on the refuge conducting transects, which were required to compile a Colorado Breeding Bird Atlas.

In April, a cow and bull moose were observed in the Warren Marsh and another was later seen at Beaver Creek.

Approximately 200 white-faced ibis arrived in late April.

Early in September a large bull elk (6x5), a spike, and 13 cows and calves were observed by numerous deer hunters near the refuge boundary.

Sixty-five sandhill cranes were observed on the Green River near Hog Lake.

A total of 91 tundra swans were visible from an overlook near Flynn Marsh for a good part of November.

12. Other Wildlife Oriented Recreation

An estimated 1,394 people visited the refuge spending approximately 15,034 hours camping, boating, and rafting. Considerable interest was shown by the public in wildlife photography.

15. Off-Road Vehicling

Three Violation Notices were written and a number of warnings given for off-road vehicling. Two violations were for fishermen who had cut up an extensive amount of wetland habitat to reach out-of-the-way fishing spots. The third violation followed after an investigation of tire tracks from a four wheel ATV. A foot path and surrounding vegetation leading to and around a campground had been badly damaged.

The greatest impact to the refuge came from damage caused by three and four wheel ATVs. It has become standard practice for refuge officers to talk to any visitor having an ATV. Any track left by these vehicles is an open invitation to the next ATV driver to follow. ATVs and snowmobiles are being used to reach remote areas by lion hunters, trappers, and looters of Indian artifacts.

17. Law Enforcement

Refuge law enforcement was low-key, but highly visible. Special enforcement patrols were performed during the deer and waterfowl hunting seasons. Visitors were often contacted in conjunction with other refuge duties (especially during weekends since a maintenance worker with law enforcement authority worked weekends).

Nine citations were issued for violations. A summary follows:

<u>Month</u>	<u>No. of Violations</u>	<u>Violation</u>	<u>Collateral Paid</u>
March	1	Off-road vehicle	\$ 50.00
April	2	Off-road vehicle	\$ 50.00 ea.
May	1	Camping out-side campground	\$ 50.00
September	1	Uncased firearm (no open seasons)	\$ 50.00
November	1	Unplugged shotgun	\$100.00
	2	Take migratory bird (Tundra swan) during closed season	\$300.00 ea.
December	1	Take migratory game bird (Canada goose) during closed season	\$300.00

A "wanton waste" case involving five out of state individuals who discarded 45 pounds of edible rabbit meat (mostly whole rabbits) was turned over to Colorado State Division of Wildlife personnel for prosecution November, 1987. Refuge Office Harding was responsible for making this case involving interrogation and surveillance. After being notified that they would be issued citations by state officials the following day, the five individuals attempted to flee the state at night. Following a phone call from Refuge Officer Harding, Colorado Division of Wildlife officers apprehended and arrested the five individuals incarcerating them overnight. Three of the five individuals had to relinquish their guns to make bail the following day. This case was adjudicated February of 1988 with the following disposition reported:

\$100.00 fine each
 \$ 37.00 surcharge each
 3 rifles used as bond forfeited to State of Colorado for non-appearance

No other citations were written but several occurrences should be noted.

Six trespass cattle had to be removed from the refuge on June 7 by the owner who lived in Vernal, Utah.

Twenty-three head of cattle got on the refuge during deer season. The owner, permittee Wright Dickinson, Sr., removed the cattle three days after he was notified.

Butch Cassidy Marsh was posted off-limits to fishing from March 1 through June 15 to reduce disturbance by fishermen to nesting waterfowl.

Two violations were written to hunters taking swans they mistook for snow geese. Numerous other hunters had to be diverted from the same pursuit and given warnings. There are plans to post signs as well as information in the new kiosks to properly identify these birds for the public.

Terry Grosz, ARD for law enforcement, and SRA Neill Hartmann visited the refuge.

Refuge Officers from Seedskadee and Ouray Refuges came to Browns Park Refuge to qualify with their weapons. Refuge Manager\Firearms Instructor Gamble and Maurice Wright of the Regional Office served as range officers.

I. EQUIPMENT AND FACILITIES

1. New Construction



Before. Entrance sign to headquarters erected but left unfinished for several years.
11/87 Photo 28 TDO



After. Completed by Assistant Manager Ondler & Maintenance Worker Harding. 12/88 Photo 29 JLG

In August construction of two new kiosks was started by refuge personnel and volunteer Rodell Eggit. By October the kiosk located at the headquarters site was completed. Concrete is ready and waiting for the second kiosk, to be located on the tour road entrance.



New kiosk awaiting informational panels.
12/88 Photo 30 JLG

2. Rehabilitation

The rehabilitation of boundary fence continued throughout 1988. In December of 1987, it was discovered that the supposedly treated wooden posts installed in 1978-79 were rotting off at ground level and falling over. Since the discovery, we have been replacing the posts as needed and as time and manpower permit.

January 1 through March 31 was spent with daily checks of electric fences and energizing systems. Periodic changing of batteries and frequent inspections of the system were required because of wrapped fences caused by mule deer which frequently rendered them inoperable.

In February the satellite systems for the residences were upgraded. Previously, two of the residences were connected to one satellite dish. That system was constantly troublesome or inoperable costing many dollars and requiring many service calls. This system was separated with a complete system installed at one residence and all components except the dish at the other residences. Also, all three satellite systems were fitted with remote dish positioners. In November, due to the continued scrambling of stations including NBC (ABC and CBS soon to follow), video descramblers were provided for the systems. Residents now have the option of purchasing scrambled programming at their own expense and choice of program packages.

The two station firearms range constructed in the fall of 1987 was enlarged to five stations to facilitate qualification of staff from other refuges.

During the summer one of the water diversion control structures on Beaver Creek was rehabilitated. High spring run-off in previous years initiated washout and eventually caused the structure to tip. Because of very low water, due to drought, we had the chance to excavate, upright, and backfill the structure returning it to it's usefulness.



Engineering Equipment Operator Barber utilizing the tree spade loaned by BLM. 4/88 Photo 31 JLG

Eleven cottonwood seedlings were transplanted in the Swinging Bridge Campground and eight pinon pines in the headquarters area. By late fall, nine cottonwoods were thriving but only one pinon survived the summer.

In late November approximately three miles of electric fence was removed and 1/4 mile realigned to facilitate changes in the 1988-89 grazing season.

3. Major Maintenance

The water irrigation pumps in the Nelson and Hog Lake Units were removed and completely rebuilt. Due to excessive corrosion, the inside of the suction tubes were coated with epoxy. The electric motors on both units were also rebuilt.

The pump on the Hoy Unit was removed and motor and pump rebuilt. The pump repair was completed by force account. As near as can be determined, these three pumps were last repaired or reconditioned in 1978.

In May, the Spitzie pump was shutdown because it was producing less than 20 percent flow. Due to low water conditions, the river depositing sediment, and sand creating a sand bar around the pump site, the pump (which was rebuilt and put in operation March 1986) suffered a completely used up impeller in approximately 120 days of pumping. The pump is scheduled for repair and replacement to operation before the 1989 waterfowl nesting season.

The Horseshoe Unit pump electric motor had to be replaced due to a suspected near or direct lightning hit which completely fried the wiring and windings in the motor.

4. Equipment Utilization and Replacement

In March, a new 10 foot wide John Deere rotary mower was purchased. It was a welcome addition to lend assistance to the older six foot rotary which cut a swath narrower than the tractor tires leading to mowing problems.

In May a six yard cable operated pull scraper was transferred from Rock Springs, Wyoming BLM District. A caterpillar dealer in Denver supplied a used cable unit to fit the D-6 dozer to make the scraper unit useable. After the cable unit was mounted, it was discovered that the ROPS unit (added to the 1945 D-6 in 1981) had never been certified leaving the complete unit, dozer and scraper, unserviceable due to safety regulations. The dozer has been parked and the search for a replacement dozer continues.

A D-7 dozer, was excessed to De Lacs NWR in June.

An 8 x 23 foot Taurus travel trailer was made available through excess property and transported from Denver by Equipment Engineering Operator Barber in July. It is being used to house temporary appointees and visitors.

Another welcome addition to the station came in the form of a 1981 IHC five cubic yard dump truck excessed from Ouray NWR. It replaced a similar 1969 Chevy dump truck which suffered numerous mechanical problems.

The Chevy dump truck; an IH tank truck (acquired from Jones Hole National Fish Hatchery); a Chevy one and one-half ton stake bed truck, and a one ton Dodge crew cab pickup (inherited from Bear River NWR) were all sold through GSA.

A 3-M Copier, on surplus for a few years, was donated to the Browns Park Elementary School. The teacher was delighted to receive this teaching aid at no expense and in working condition.

Many other deteriorated or obsolete items such as binoculars, fire pump units, boats, and farm implements were excessed to Colorado and South Dakota State and Federal agencies.

Engineering Equipment Operator Barber and Maintenance Worker Cook traveled to Medicine Lake NWR in Montana to bring back a White Freightliner tractor-truck and Low Boy trailer to be used to move heavy equipment. The use of this acquisition will reduce wear and tear on other tracked equipment.

5. Communication Systems

The saga of Browns Park's telephone service continues. In March the Colorado Public Utilities Commission (PUC) held a hearing in Craig, Colorado on Union Telephone Company's request for discontinuance of service because the 13 Colorado subscribers were causing them to operate at a loss with no funds to upgrade the system. At the hearing the spokesperson for the community, the U.S. Fish and Wildlife Service, and the National Park Service asked the PUC to grant Union Telephone a previously denied rate increase, with which Union Telephone Company agreed to study the feasibility of upgrading service to the Colorado customers.

The PUC denied the request to discontinue service and granted Union Telephone the rate increase. This raised the base phone rate of \$10.40 per month across the board to \$30.84 per month for residences and \$79.59 per month for businesses. The business rate affected two federal agencies, two county agencies, and the Browns Park Store. All 13 subscribers still share the inadequacy of four party lines, unyielding line noise, and many days of no telephone service at all.

Soon after the granting of the rate increase, Union Telephone started construction of a new buried telephone cable system from Dutch John, Utah toward Browns Park. In November, the refuge was contacted by Union Telephone with a request for permission to bury new telephone lines to the headquarters and residences to facilitate the system upgrade. The station granted the company a Special Use Permit to do their work.

As of the end of December 1988, Union Telephone completed upgrading a very serviceable telephone system providing all residents of the Utah portion of Browns Park with private phones. The new construction was halted eight miles from the Colorado/Utah line due to cold winter weather. From all indications, Union Telephone has no intention of extending the new system any farther than the last Utah customer, three miles from the Colorado line. This leaves the 13 present Colorado subscribers (and approximately 10 new ones) waiting with the same old troubles at much higher prices.

6. Computer Systems

A Z-200 PC Series Computer System was delivered from the RO in August, the Fujitsu DL2400 printer was received in October. This is the first computer system for Browns Park NWR and much time has been consumed getting acquainted with it, WordPerfect 5.0, and DBase software programs. Several refuge names were placed in a hat and this station had the luck of the draw to be the recipient of a new color printer. Delivery is expected January 1989.

7. Energy Conservation

A feasibility study initiated in May 1988 looking into the possibility of using gravity flow water from the Green River to maintain eight marsh units is still forthcoming. Electricity to operate the pumps was in excess of \$15,000 for the year and steadily increases. If the study proves favorable, it is conceivable this expense will be diminished.

A woodstove utilized in the shop minimized use of electricity for the hot air heating system.

RO engineers have been contacted for assistance in obtaining better output from the Solaron Energy System incorporated in the design of the headquarters building. With their suggestions, better use of the sun as a heat source will be obtainable.

Essential trips off-station are always planned to make the most efficient use of government vehicles or equipment thereby conserving fuel. Because of the remoteness of the area, manpower is also conserved through effectual planning of off-station errands.

Union Telephone Company assists in efforts in conservation by assuring us of a decrease in electricity consumed through lack of telephone service several days per year!

J. OTHER ITEMS

1. Cooperative Programs

A weather station is maintained at the refuge sub-headquarters. Daily temperatures and precipitation are recorded in cooperation with the National Weather Service.

The refuge has a cooperative agreement with the National Park Service, Dinosaur National Monument, concerning law enforcement and fire fighting. A common boundary is shared with the Park Service on the southeast side of the refuge.

There is a cooperative fire fighting agreement with the Bureau of Land Management. We share a common boundary with the BLM on the north and south sides of the refuge.

3. Items of Interest

Manager Gamble attended basic computer training in Vernal, Utah January 11-15.

Managers Gamble and Ondler attended the project leader's meeting in Lewiston, Montana February 8-11.

Assistant Manager Ondler attended a USDA sponsored public meeting in March in Maybell, Colorado. The purpose of the meeting was to discuss Mormon cricket control.

Managers Gamble and Ondler attended a one day seminar entitled Riparian System Management at Craig, Colorado. The workshop was jointly sponsored by the Craig District Grazing Advisory Board and the Craig District Bureau of Land Management office.

Deputy Assistant Regional Director Ralph Fries and Refuge Supervisor Barney Schranck visited the refuge on April 21.

The Browns Park Homemaker's Club held their annual Memorial Day dance at Lodore Hall. Approximately 350 people attended. No problems occurred this year.

Manager Gamble attended a one week Holistic Resource Management Course in Colorado Springs, Colorado during the week of June 5.

Equipment Operator Barber attended a one week Intermediate Fire Behavior Course (S-390) in Boise, Idaho the week of June 5.

Earthquake tremors were felt on the refuge at 2:03 p.m. on August 14. The quake, measuring 5.6 on the Richter scale, shook central Utah and western Colorado. The epicenter of the quake was 30 miles south of Price, Utah.

Managers Gamble and Ondler attended the project leader's meeting in West Yellowstone, Montana August 30-September 1. With Yellowstone National Park in flames, the trip was a once-in-a-lifetime opportunity.

Refuge Supervisor Barney Schranck conducted an operational inspection on September 21 and 22.

Assistant Regional Director for Refuges and Wildlife Nels Kverno toured the refuge on October 27.

Refuge Assistant Henry attended computer training at the RO during the week of October 24-28. While there she assisted with a Career Exploring Program held the evening of October 26.

Assistant Manager Ondler participated in a panel discussion along with representatives of other northwest Colorado federal land management agencies. The panel discussion, held in Craig, Colorado on November 12 and 13, was part of the twelfth annual Colorado Wilderness and Wild Rivers Conference. The conference was sponsored by the Colorado Environmental Coalition.

4. Credits

Jerre Gamble wrote Sections A, C, D, and F. Ted Ondler wrote Sections E, G, and J. Robert Harding wrote Sections B and H. Lynn Barber and Carole Henry wrote Section I. Carole edited, typed, and assembled the report.

BROWNS PARK

NATIONAL WILDLIFE REFUGE



THE REFUGE

Browns Park National Wildlife Refuge lies on the Green River in the far north-western corner of Colorado, between the Utah-Colorado stateline and Dinosaur National Monument. The Refuge is managed by the U.S. Fish and Wildlife Service as a nesting and resting area for migratory waterfowl.

In pristine times, annual flooding of the Green River maintained the wet meadows preferred by nesting waterfowl. Flaming Gorge Dam now prevents this flooding. Consequently, refuge personnel now pump water from the river to maintain approximately 6,000 acres of developed waterfowl habitat.

This semiarid region receives less than 10 inches of precipitation annually. Ducks, geese, and other water birds travel hundreds of miles to utilize this unique habitat.

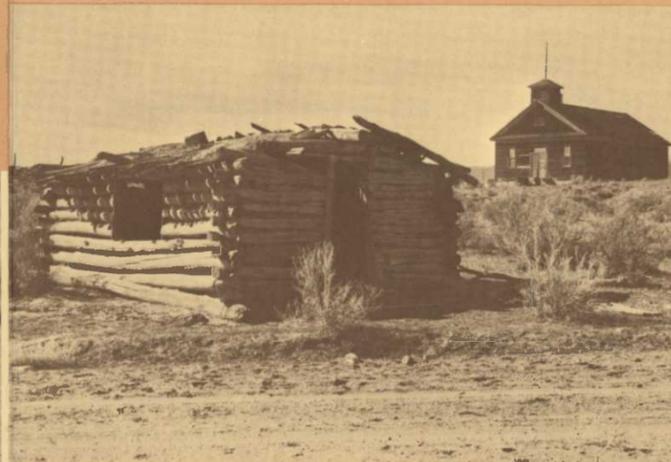
Spitzie Marsh - U.S.F.W.S. photo - J.L. Sellers.



HISTORY

The sheltered valley and abundant wildlife of the Green River lured Indians and fur trappers. "Browns Hole", as it was then called, was a favored winter rendezvous as far back as 1826. By the 1890's, Butch Cassidy and other cattle rustlers used this remote area to rest and hide their stolen herds. Browns Park was the winter headquarters for some of the larger livestock operations in the West, including Ora Haley's Two Bar Ranch.

*Lodore School National Historical Site - U.S.F.W.S. photo - Jim Creasy.
Two-Bar Ranch National Historical Site - U.S.F.W.S. photo - Jim Creasy.*



WILDLIFE

Mallards, redheads, teal, canvasbacks, other ducks, and Great Basin Canada geese nest on the Refuge. About 300 goslings and 2,500 ducklings are hatched annually and production should increase when more habitat is developed. The waterfowl population swells by thousands during the spring and fall migrations. Wading birds, shore birds, song birds, and a variety of hawks and eagles also use the Refuge during various seasons.

Resident species include mule deer, antelope, chukar partridge, and sage grouse. Elk and bighorn sheep occasionally visit the Refuge.



ENJOYING BROWNS PARK

Hikers, sightseers, and photographers are welcome year round. A graveled tour road provides ample opportunities to view wildlife and wildlife habitat.

Primitive camping facilities are provided at Swinging Bridge and Crook Campgrounds. This is remote country. Maybell, Colorado, and Vernal, Utah, are 50 miles away and Dutch John, Utah, is 40 miles. The Browns Park Store is within 5 miles of the refuge.

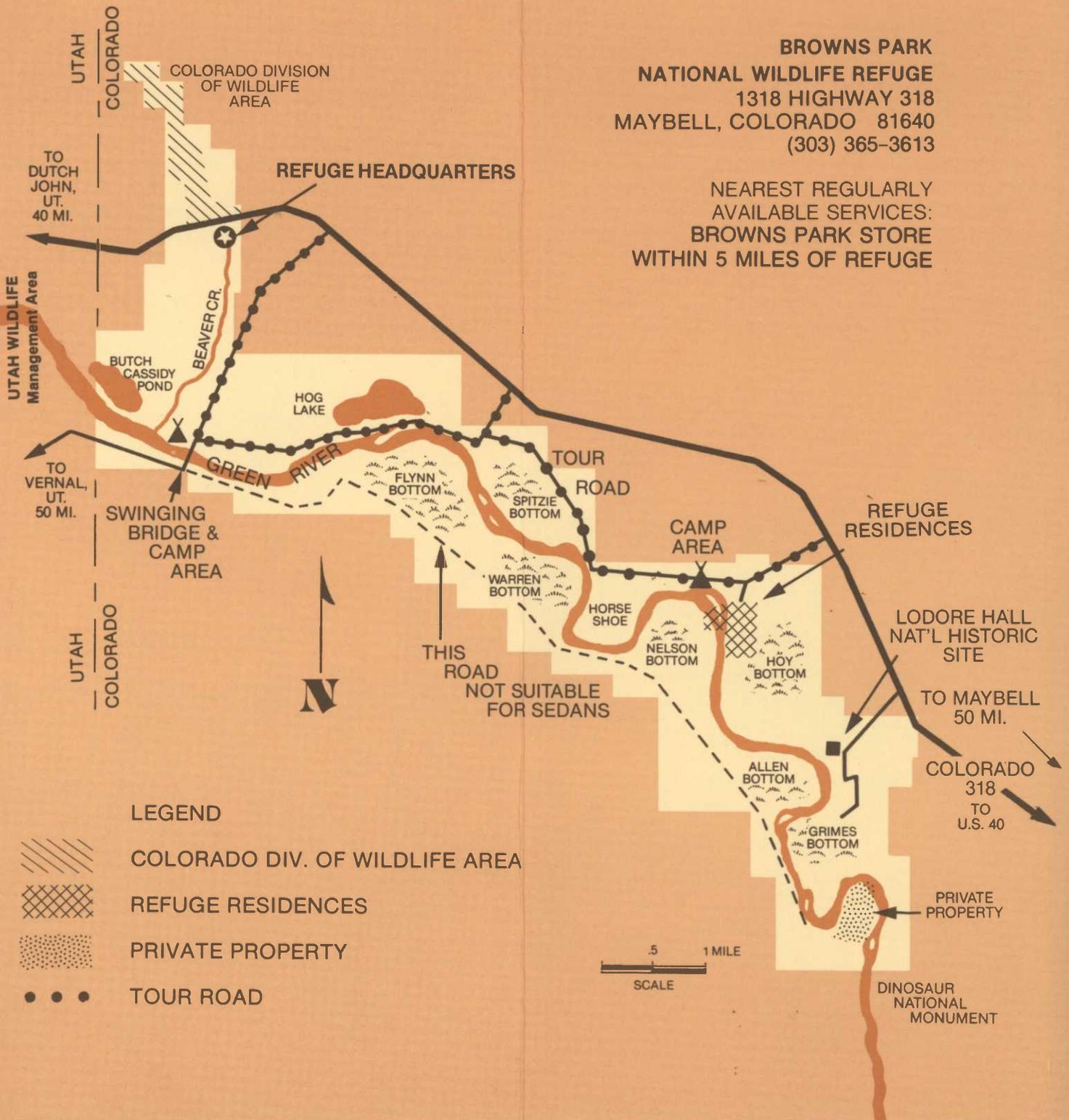
Hunting and fishing are allowed on the Refuge under State and Federal regulations. Deer and cottontails may be hunted in all areas except those posted, "Area Closed". Ducks, coots, and geese may be hunted along the Green River channel and within 100 yards of each bank. Hog Lake and Butch Cassidy Bottoms are open to waterfowl hunting in areas designated by green "Public Hunting Area" signs.

*Left: Canada Goose - U.S.F.W.S. photo - Rex Gary Schmidt. Pronghorn Antelope - U.S.F.W.S. photo - Jim Creasy.
Below: Cattle Crossing Swinging Bridge - U.S.F.W.S. photo - Jim Creasy.*



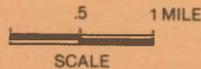
**BROWNS PARK
NATIONAL WILDLIFE REFUGE**
1318 HIGHWAY 318
MAYBELL, COLORADO 81640
(303) 365-3613

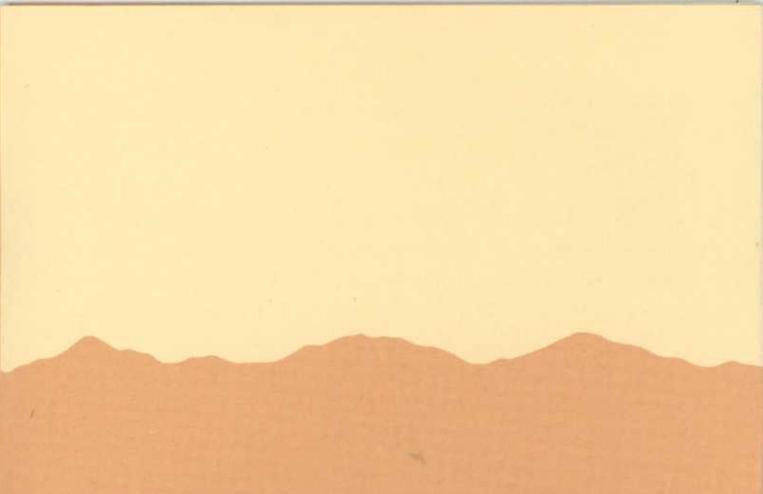
NEAREST REGULARLY
AVAILABLE SERVICES:
BROWNS PARK STORE
WITHIN 5 MILES OF REFUGE



LEGEND

-  COLORADO DIV. OF WILDLIFE AREA
-  REFUGE RESIDENCES
-  PRIVATE PROPERTY
-  TOUR ROAD





GENERAL REFUGE REGULATIONS

- Motor vehicles are allowed only on roads. Closed roads are marked with signs.
- Parking is permitted along roadways. Please do not block roads or gates.
- Pets must be leashed or closely supervised.
- Plants and animals are protected. Do not remove or molest them.
- Please use trash barrels or take litter out with you.
- Boating is permitted on the Green River.
- Camping is allowed only in the Swinging Bridge and Crook Campgrounds.
- Fires are permitted only in camp areas.
- Firearms must be unloaded and cased on the Refuge except during authorized hunting seasons.
- Please contact a refuge officer if you have questions on regulations or on other activities.

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



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