

**ARAPAHO NATIONAL WILDLIFE REFUGE**  
Walden, Colorado

also

**BAMFORTH, HUTTON LAKE,  
MORTENSON LAKE and PATHFINDER**  
National Wildlife Refuges  
administered from Walden, Colorado

**ANNUAL NARRATIVE REPORT**  
Calendar Year 1994

U.S. Department of the Interior  
Fish and Wildlife Service  
National Wildlife Refuge System

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REVIEW AND APPROVALS

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Calendar Year 1994

  
\_\_\_\_\_  
Project Leader

2-23-95  
Date

  
\_\_\_\_\_  
Refuge Supervisor

2-24-95  
Date

  
\_\_\_\_\_  
Regional Office Approval

2/27/95  
Date

## INTRODUCTION

Arapaho National Wildlife Refuge was established in 1967 primarily to furnish waterfowl and other migratory birds with a suitable place to nest and rear their young. The refuge was created to offset, in part, losses of breeding and nesting habitat in the prairie wetland region of the Midwest. Most of the land was purchased with funds derived from the sale of Duck Stamps.

Arapaho National Wildlife Refuge (NWR) is located in an intermountain glacial basin immediately south of Walden, the county seat of Jackson County, Colorado. The basin is approximately 30 miles wide and 45 miles long. Since it is the most northern of four such "parks" in Colorado, it is known locally as "North Park".

The Ute Indians referred to North Park as "Cow Lodge" and "Bull Pen." They were the first visitors to the area and remained only during the summer months to hunt bison, abandoning the valley during the long, snowy and icy winters. Their small numbers and nomadic life style left but a small imprint on the land.



94 NR1

11/94

BR

The first recorded exploratory footsteps to appear in North Park belonged to Jacques Bijeau in the year 1820. Like many of his French countrymen, Bijeau was lured by the promise of profit in trapping beaver. In 1844, Lieutenant John F. Fremont transversed the park from Northgate to Willow Creek Pass and recorded the following in his journal:

"The valley narrowed as we ascended and presently divided into a gorge, through which the river passes as through a gate - a beautiful circular valley of 30 miles in diameter, walled in all around with snowy mountains, rich with water and grass, fringed with pine on the mountain sides below the snow, and a paradise to all grazing animals."

Others like James O. Pinkham, came to exploit mineral wealth. Miners preferred the summer months for their endeavors. The first residents to brave the cold were Jacob Fordyce and his family. They stayed during the winter of 1878, two years after Colorado became a state and a full 50 years after the first explorers entered the valley.

The high elevation and northern latitude provides North Park with a unique climate. The refuge elevation ranges from 8,100 to 8,700 feet. North Park is classified climatically as a cold desert. Winters are very cold and normally have 60 inches or more of snow while the surrounding mountains receive at least 120 inches of snowfall. Extreme low temperatures of minus 50 degrees Fahrenheit have been recorded. Summers are cool and dry with high temperatures in the 80's and the average lows near 40 degrees Fahrenheit. Mean annual precipitation is only 9.6 inches and the mean annual temperature is 36.5 degrees Fahrenheit. There is an average of only 30 consecutive frost-free days each year.

Jackson County was formed in 1909 and supports a rural population of approximately 1,800 people of which about half live in Walden, one mile north of the refuge. The economy of North Park relies on four main resources. The largest and most stable of these is ranching followed by lumbering. Tourism and recreation are growing activities in North Park while mining currently is in a slump. Nearly one-half of the North Park population lives on ranches which indicates the importance of ranching to the economic stability of North Park.

The refuge currently encompasses 23,267 acres and when all of the proposed land exchanges are complete, the refuge will consist of approximately 22,440 acres. The refuge, excluding the recent Stelbar acquisition, presently consists of 7,944 acres of irrigated and sub-irrigated meadows, 9,286 acres of sagebrush-grassland uplands, 771 acres of wetlands, 188 acres of riparian willow and stream habitat, and 64 acres of administrative lands including building sites and roads.

The refuge currently produces an average of about 7,275 ducks (10 year average) and 150 to 300 Canada geese annually although production varies from year to year. The current refuge objective is to produce 11,000 to 12,000 ducks and 500 Canada geese annually. To meet waterfowl production objectives and provide optimum habitat conditions for other species of wildlife, the refuge utilizes several habitat manipulation techniques such as pond development, water level manipulation, irrigation, rest-seasonal grazing systems and prescribed burning to create habitat diversity and maintain vegetative vigor, growth and density.

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## B. CLIMATIC CONDITIONS

Climatic conditions were good early in 1994 with near average precipitation during the first four months of the year. Unfortunately, the total precipitation for the year was below normal for the area, creating drought conditions in July and continuing throughout the rest of the year.

Temperatures for the entire year were slightly warmer than "normal" along with high winds, added to the severity of the drought. The extreme high/low temperatures were 89 and -19 degrees Fahrenheit.

Table I.

### 1993 Weather Data: Walden, Colorado (NOAA)

Month	Precipitation (inches)			Temperatures (degrees fahrenheit)			Normal Average
	1994	Normal	Snow	Max.	Min.	Avg.	
January	0.11	0.51	1.6	43	-19	19.2	15.7
February	0.99	0.46	12.1	46	-17	20.6	18.4
March	0.46	0.61	5.5	59	-1	30.3	24.6
April	1.74	0.87	16.5	69	11	37.7	35.4
May	.34	1.14	.8	76	22	48.2	45.0
June	.58	0.96	-	85	25	56.8	53.6
July	.49	1.06	-	88	28	58.5	59.0
August	.98	1.23	-	89	33	59.5	56.6
September	.79	0.94	.5	79	11	50.0	49.3
October	.24	0.68	.6	68	8	38.6	39.2
November	.70	0.52	6.8	57	-9	25.5	26.8
December	.37	0.51	6.7	45	-15	21.4	18.5
Total	7.79	9.55	51.1				
Extremes				89	-19		

## C. LAND ACQUISITION

### 1. Fee Title

#### Stelbar Acquisition

The proposed Stelbar land acquisition was approved for purchase by the Migratory Bird Commission in March 1, 1993. The actual purchase was finalized on May 26th, completing Phase I of the project.

The North Park Wetlands Project was born at a multi-agency meeting in September, 1990. The primary focus of the meeting was the acquisition of a portion of the Stelbar Ranches (14,470 deeded acres plus associated water rights) which are adjacent to the refuge. The project involved the U.S. Fish and Wildlife Service (FWS), Bureau of Land Management (BLM), Colorado Division of Wildlife (CDOW), the Colorado Chapter of Ducks Unlimited (DU) and ranch manager/owner Blaine Evans. Stelbar Ranch was owned by E.B. Shawver and consisted of three sub-units: Grizzly Creek, Soap Creek and the Illinois River ranches.

Acquisition of the Grizzly Creek, Soap Creek and a small portion of the Illinois River Ranch involved the following phases:

#### **Phase I - Initial Service Acquisition**

- a) The FWS as the lead agency in the partnership would purchase 5,014 acres and Blaine Evans would buy 3,578 acres. The water rights to McFarlane Reservoir and associated direct flow water rights would be split evenly between the Government and Mr. Evans.

#### **Phase II - Land Exchanges, Water and Habitat Management**

- b) Selected newly acquired lands will be exchanged for private, State, and Federal inholdings within the present refuge boundary. Management plans and habitat improvements would be implemented in cooperation with other public agencies and private parties.

Work continued throughout the year to complete the water management agreement and the MOU with the BLM concerning the transfer of lands jurisdiction and water management between the two agencies. We are hoping for approval early in 1995, when they will be presented to the Migratory Bird Commission.

When the project is completed as proposed, the refuge will retain approximately 2,470 acres from the Stelbar acquisition and obtain an additional 1,717 acres from

when they will be presented to the Migratory Bird Commission.

When the project is completed as proposed, the refuge will retain approximately 2,470 acres from the Stelbar acquisition and obtain an additional 1,717 acres from exchanges for a total 4,187 acres. This will leave the refuge with 22,520 acres.

2. Refuge Inholdings

The refuge has leased one tract of State school lands since 1971. Due to recent changes at the State level, negotiations were initiated during the year with the Colorado State Land Board for the purchase of the two tracts totalling 640 acres. We are hopeful that this land purchase will also be complete early in 1995.

#### D. PLANNING

2. Management Plan

The Water Management Plan was updated again this year. No major changes occurred.

4. Compliance with Environmental Mandates

A final Environmental Assessment of Habitat Management Alternatives was completed in August. Compatibility Determinations, Environmental Action Memorandums and an Environmental Evaluation Checklists were also completed for all recreational uses occurring on the refuge.

5. Research and Investigations

The following in-house research project was conducted by Biological Science Technician Teresa Rodriguez.

**Arapaho National Wildlife Refuge and Owl Mountain Partnership  
Riparian/Meadow Management Demonstration Project**

The refuge and the Owl Mountain Partnership initiated a 5-year riparian/meadow management demonstration project on the refuge. We hope to demonstrate to landowners the appropriate management and monitoring techniques of riparian and associated wet meadow areas. The management tools used for this project are high intensity/short duration livestock grazing, animal impact, rest, fencing and fishery habitat improvements. If the **management** tools are deemed successful, we will

The objectives of the project are to restore the woody vegetation community (willows) and stabilize the river banks, and determine species composition and abundance of the fishery resources and aquatic macroinvertebrates neotropical migratory birds (songbirds), small mammals (rodents), and determine nesting densities and success for waterfowl and raptors (hawks and owls). We are particularly interested in monitoring population trends for all these groups.

The project area is located in the north east portion of the refuge that is also known as the Brocker tract. The area is approximately 870 acres in size and includes the Illinois River with a few isolated willow plants. This area was divided into 12 paddocks to test the effects of three different seasonal grazing treatments and rest.

The grazing treatments are early spring, mid-summer, late summer and complete rest with the number of AUM's utilized on each grazed paddock approximately the same. In the northern eight paddocks, each of the four treatments has been assigned to two paddocks and is replicated across the Illinois River. The remaining paddocks are located in an established willow riparian zone and have been assigned a rotation of the same four grazing treatments as described above.

Over the course of the project we hope to begin to understand bio-diversity and its functions in terms of land management and restore a degraded riparian system

Baseline data was gathered from the following activities:

1. In March, 1994 the local Boy Scout Troop #146 and the North Park High School Senior Class assisted refuge personnel with cutting 10,000 willow "slips." In May, the 4-H Livestock Club helped us plant the slips in the project area.
2. Barbed wire fencing was replaced with electric high tensile lines that divide the area into 12 paddocks. Twelve photo points were established paddock to monitor meadow and riparian vegetative changes.
3. The Owl Mountain Partnership's vegetation crew established several, permanent transects in the project area. This information will aid us in determining plant species composition, production, percent cover, frequency, and vegetative structure.
4. The Colorado Division of Wildlife electro-shocked several sections of the Illinois River. They found five native species of fish on the sampling sites. They also ran "kick nets" and obtained samples of aquatic macro invertebrates.



94 NR3 5/94 JR  
 The Jackson County Livestock Club planting willows along the Illinois River.



95 NR4 8/10/94 TMR  
 The CDOW electro-shocking a section of the Illinois River as part of their cost share contribution.



## E. ADMINISTRATION



94 NR6 5 3 12 2 1 10 9 KC  
11 7 8 4 6

EMPLOYEE	POSITION/GRADE	EOD
1. Eugene C. Patten	Refuge Manager, GS-0485-11	7/02/78
2. Jerry Rodriguez	Refuge Operations Specialist, GS-0485-09	6/14/92
3. Richard M. Curtis	Maintenance Worker, WG-4785-08	1/10/93
4. Pamela S. Rizer	Wildlife Biologist, GS-0486-09	1/17/88
5. Terri L. Follett	Administrative Office Assistant, GS-0303-07	5/28/85
6. Brian DeVries	Biological Science Tech, GS-0404-05, TFT	4/18/94 - 11/24/94
7. Teresa Rodriguez	Biological Science Tech, GS-0404-05, TFT	4/18/94 - 11/24/94
8. Jeremie Schroeder	Biological Science Tech, GS-0404-04, TFT	5/31/94 - 11/24/94
9. Jeffrey Lucas *	Biological Science Tech, GS-0404-03, TFT	5/31/94 - 08/18/94
10. Rob Cavallero	Biological Science Tech, GS-0404-03, TFT	6/27/94 - 09/30/94
11. Nancy Windholz	Intern Volunteer	5/22/94 - 07/15/94
12. Julia Nobrega	Volunteer	6/06/94 - 07/01/94

## 1. Personnel

In August, Refuge Assistant Follett received a promotion from a GS-6 to a GS-7. She even received a new title of Administrative Office Assistant to go along with this promotion.

This year's seasonal employees consisted of the following individuals; Brian DeVries (Biological Science Technician, GS-5) returned for his second seasonal stint at Arapaho NWR. Brian again proved invaluable with his bird identification skills and returning knowledge of Arapaho's programs. Jeremie Schroeder (Biological Science Technician, GS-4) also returned for his second year and was hired on as the YCC Crew Leader. Teresa Rodriguez (Biological Science Technician GS-5) was hired to head up the Riparian/Meadow Management Demonstration Project along with Rob Cavallaro (Biological Science Technician GS-3) whose staff hours we shared with the Owl Mountain Partnership. They both were invaluable with their knowledge and previous work experiences. Jeffrey Lucas (Biological Science Technician GS-3) rounded out our seasonal positions. Even though this was his first seasonal appointment with the FWS he was very helpful and willing when it came to completing the various biological and maintenance projects on and off the refuge.

Nancy Windholz, a student intern from Colorado State University, volunteered her services for the summer. She assisted with a variety of biological and maintenance projects (see Section E.4).

Table II.  
**Refuge 5-Year Staffing Summary**

Year	PFT	PPT	Temporary	Volunteer
1994	5	0	5	2
1993	5	0	3	1
1992	5	0	3	1
1991	5	0	4	1
1990	5	0	4	0

## 2. Youth Programs

This year's YCC program ran from June 13 through August 12, 1994. The crew consisted of five (one female and four males) enrollees with Biological Technician Jeremie Schroeder as the crew leader. One crew member was terminated the second week due to poor work attendance.



### Arapaho NWR Projects

- a. Litter pick-up of a 6-mile stretch of highway under the Adopt-A-Highway program.
- b. Remove old fence and stack yards.
- c. Construct electric fence and repair existing fence.
- d. Transplant vegetation to nesting islands.
- d. Waterfowl nest search in meadows and sagebrush uplands.
- e. Install sign posts, and pour concrete for the nature trail.
- f. Beaver dam survey and remove old dams.
- g. Assist with construction of new storage building
- h. General facilities maintenance - i.e. trash removal, grounds and vehicle maintenance, etc.

### U.S. Forest Service Projects

- a. Construct a buck and rail fence around a campground.
- b. Build turnpikes on several trails.

### Projects for Other Agencies

- a. Construct barbed wire and buck and rail fences - CDPR
- b. Removal of slash piles under powerlines - CSF
- c. Clean up old dump site - BLM

### Environmental Projects

- a. The educational highlight of the program was a field trip to the CDOW's Foothills Wildlife Research Center in Fort Collins. The YCC toured the facility and observed captive bighorn sheep, elk, deer, pronghorn antelope and waterfowl. They learned that research studies of captive animals produce information that can be used to better manage wild populations of wildlife.

During the summer, the enrollees also learned to identify some species of waterfowl and other wildlife, and learned about conservation and management of our wildlife resources.



94 NR8 7/94  
YCC working on the Nature Trail.

JR



94 NR9 6/21/94  
YCC nest dragging the hard way.

JR

#### 4. Volunteer Programs

As previously mentioned (Section E.1), the refuge hosted a student intern volunteer from Colorado State University. Nancy Windholz spent seven weeks assisting with a wide variety of wildlife, habitat, and maintenance projects. The refuge provided housing and paid a subsistence allowance of \$15 per day. This has always been a valuable and worthwhile endeavor for both the refuge and the university.

We were also fortunate to have high school student Julia Nobrega volunteer for three weeks in June. Julia was a foreign exchange student from Brazil, living with the Curtis family during her six month stay in the USA. She assisted with various activities from working with the YCC, to assisting in biological/maintenance and office projects. This was a great experience for Julia as well as the staff.

In mid-June we hosted the Church of Jesus Christ Latter Day Saints youth group consisting of 120 high school students and sponsors. As part of their yearly summer camp they are required to give eight hours each of community environmental service. When contacted, the refuge was a little overwhelmed at the idea of trying to do an educational as well as a worthwhile project on the refuge. But the staff persevered and survived an entire day of waterfowl nest surveys completed on areas that are next to impossible to traverse with ATV's.



94 NR10 6/17/94 TMR  
Refuge and BLM staff explaining to youth group  
the purpose of the days planned activities.



94 NR11

6/17/94

TMR

A portion of the youth group  
walking nest surveys on the  
uplands.

In July, a Boy Scout Troop from Missouri volunteered a day of their services. They requested the refuge to give them a worthwhile and needed work project allowing them to fulfill requirements for an Environmental Awareness and FWS Service Badge. The Scouts spent the entire day with Brian DeVries, beginning with an environmental discussion followed by an exhausting day of willow removal. The willows had encroached around several water control structures limiting access and full use of the structure. This activity saved the staff numerous hours of labor.

## 5. Funding

Table III.

**Refuge 5-year Funding Summary**

Fund	FY91	FY92	FY93	FY94	FY95
1260-0000	335,000	369,000a	370,000a	317,000a	375,000a
1261-60YC	18,300b	13,200b	14,000b	10,200b	6,400
8610-0000	1,250	2,035	2,870	3,800	5,200
7201-6012	75,000	75,000c	63,200	38,477c	8,000c
1120-606B	10,000	10,000	10,000	12,500	15,000
9120-0000	1,400	13,000	4,000	3,900	2,000
<b>TOTAL</b>	<b>441,951</b>	<b>476,035</b>	<b>450,070</b>	<b>385,877</b>	<b>411,600</b>

- a. Includes ARMM &/or RP &/or FLEX &/or Cost Share monies.
- b. Includes \$\$ from the USFS.
- c. Carryover from the previous year.

## 6. Safety

The refuge had one accident during the year, Maintenance Worker Curtis strained his lower back moving a snowmobile, resulting in several lost time days with medical attention.

All new employees were instructed in the proper operation of the 4x4 ATV's. The instruction consisted of setting up an obstacle course per owner's manual and reviewing all machine parts and maintenance.

Safety meetings were conducted each month with a different employee acting as chairperson. The meetings featured a safety film and a short discussion. Topics for both are as follows:

<u>Month</u>	<u>Film</u>	<u>Discussion</u>
January	Safety Check Your Vehicle	Vehicle Safety
February	John Deere Consolidated Safety	Equipment Safety
March	Watch Your Load	Lawn Mower Safety
April	Vortices in Wildland Fires	Prescribed Burning
May	When Lightning Strikes	Tornado Safety
June	A Positive Safe Attitude	Day Pack Safety Items
July	A New Way to Lift	General Safety
August	Accidents Made Easy	Fall Proof the Home
October	Housekeeping Means Safety	General Safety
November	Ladder Safety	Unsafe Practices
December	Outdoor Safety & Critters	Outdoor Safety & Plants

#### 7. Technical Assistance

Patten traveled to Pathfinder Miracle Mile and to Bosler, Wyoming to conduct an annual field inspection of the McQuire and Long conservation easements.

One private land Wildlife Extension Agreement for construction of small wetland was signed and completed during the fall. The refuge supplied materials and manpower for the pond on the Thompson property, encompassing 1.06 surface acres.



Administrative Support Assistant Follett spent numerous hours working with field (both refuge and fisheries) staff answering questions and solving problems to computer configuration problems/errors. Also assisted with various computer software and technical questions from other stations in the Region. This year also saw the addition of technical support to the Owl Mountain Partnership with the implementation of GIS technology.

Following is a list of services or assistance provided by Arapaho NWR staff to various agencies throughout the year:

A. BLM

1. Memorandum of Understanding - in place document which governs the sharing of heavy equipment to the benefit of both agencies.
2. Wetland management technical assistance was given for the 18 Island Reservoir.
3. Provided expertise on a waterfowl/grazing conflict area in conjunction with the Owl Mountain Partnership staff to come to an agreement on the best way to serve both the wildlife/land and the grazing permittee interests.

B. USFS

1. Temporary housing - the Case Cookhouse is used by temporary and volunteer USFS employees.
2. Memorandum of Understanding - an agreement to work with the Forest Service and other agencies towards a centralized visitor center in Jackson County.

C. CDOW

1. Law Enforcement - mutual assistance provided in law enforcement and bag checks during fishing, upland game, waterfowl, and big game seasons.
2. Committee Member - Rodriguez served on the North Park Habitat Partnership Program Committee. The program was formed to resolve big game forage and fence conflicts with ranchers.
3. Refuge staff assisted in aerial waterfowl and big game surveys.

E. Jackson County Fire Department

1. Cooperative Agreement - mutual assistance provided in fire protection and suppression.

8. Other

A check for \$31,802.00 was presented to Jackson County as the Revenue Sharing payment for FY93. The County returned the check received for FY92, indicating they could not distribute the funds to the local units of government, as mandated by Public Law 95-469 of October 17, 1978, per legal counsel. The County finally accepted the monies, but continues to express objection to the FWS as to their authority to pass payment. On December 17, 1993 the Regional Solicitor sought counsel with the Attorney General of Colorado for a final decision on the matter. As of December FY94 we are still waiting for a response!

## F. HABITAT MANAGEMENT

1. General

Weather conditions were near normal in the early spring of 1993, but with a poor snowpack and little to no precipitation, wetland conditions deteriorated rapidly.

2. Wetlands

The Illinois River opened March 21st, running approximately 120 cfs. Flows fluctuated between 70 cfs to 115 cfs during April and May resulting in a very low spring run-off. Water levels dropped drastically in mid-June with flows varying from 13 cfs to 42 cfs for approximately 30 days. Water flow continued to drop into July with an average flow of eight cfs through the end of August. The Illinois River quit flowing about a mile north of the headquarters in mid-July and the east branch of the river was totally dry on into freeze-up. September and October flows remained low, averaging 12 cfs until the river iced over in mid-November. The wetlands were severely affected by this occurrence and coupled with extremely low snowfall into December, the outlook for 1995 is bleak.

The Water Management Plan incorporates planned draw downs of specific ponds each year when possible, to enhance emergent and submergent vegetation and encourage invertebrates. During the last few years we have stayed on the planned draw down schedule. This year, the inadequate moisture conditions resulted in numerous unscheduled draw downs, leaving nearly 75 percent of the refuge ponds over 50 percent dry. We hope to receive an adequate snowpack early in the coming year making this condition short-lived.



water rights on the river. A total of 18,670 acre feet of water was diverted for irrigation and to recharge wetlands. This amount is a 48% decline from last year flows.

b. Uplands

The sagebrush uplands are managed primarily to provide a diversity of grasses, forbs and shrubs as habitat for various species of wildlife such as the Brewer's sparrow, sage grouse and pronghorn antelope. Livestock grazing is the primary management tool utilized to manage the uplands.

Upland conditions were fair considering weather conditions.

7. Grazing

After several years of snow and wind, the residual vegetation tends to mat down, inhibiting new plant growth and ultimately reducing the quality of cover for most wildlife species. Livestock grazing is the primary habitat manipulation tool the refuge uses to restore plant vigor and enhance community diversity.



94 NR15                      6/9/94                      ECP  
A non-grazed/burned field showing matted,  
residual vegetation.



Table IV.

## SUMMARY OF 1994 GENERAL GRAZING PROGRAM

Unit	Upland	Meadow	Total	AUM's/		
	Acres	Acres	Acres	AUM's	Acre	Permittee
Anderson HRM	495	122	617	685.65	.89	Burr
Hampton HRM	1089	1483	2572	2141.82	.83	Swift
A1	329	40	369	85.54	.23	Swift
A2c	158	31	189	49.31	.26	Swift
A3	231	43	274	164.68	.60	Hudspeth
A5	115	334	449	463.9	1.03	Stephens
A8	915	15	930	173.08	.18	Hudspeth
B18a	61	35	96	105.74	1.10	Swift
B18c	92	20	112	74.40	.66	Swift
B19	16	75	91	64.79	.71	Swift
B20	--	129	129	136.24	1.06	Swift
C1	300	11	311	67.34	.21	Hudspeth
C2&3	301	265	566	451.18	.79	Stephens
C4	33	470	503	733.50	1.45	Burr
C6	--	236	236	188.32	.79	Willford
C10	190	3	193	61.11	.31	Willford
C11	167	253	420	155.35	.36	Stephens
C19	110	--	110	3.00	.03	Anderson
D2	167	308	475	157.40	.33	Burr
D3	230	208	438	243.89	.55	Burr
D4	123	28	151	47.39	.31	Stephens
D5	378	--	378	37.72	.09	Burr
D6	148	127	275	311.42	1.13	Burr
E2	120	500	620	569.20	.91	Burr
F1&2	155	46	201	175.61	.87	Stephens
F3&4	139	40	179	66.61	.37	Stephens
Totals	6062	4822	10884	7414.19	.68	

In 1995 grazing fees will be \$7.24 per AUM, dropping .31 cents from last year. The 1994 fall beef price of \$74.98 per CWT represents a \$11.80 decrease from the 1993 base survey price of \$86.78 per CWT. This fee is calculated from the 1994 base survey rate of \$7.65 per AUM and the last 3-year average fall beef price.

#### 8. Haying

One cooperative farming agreement was issued for haying 138 acres of meadow on the Anderson tract. The refuge's harvest, 25 percent, was 45 tons (approximately 1275 bales). The haying operation serves several purposes as follows:

- a. Provides a wet hayed meadow on the refuge each spring to attract migratory birds and waterfowl.
- b. Provides a resident elk herd of 200 to 225 animals plus another 500 to 600 non-resident wintering elk, and up to 100 mule deer a winter food source and at the same time reduces big game damage to haystacks on adjacent private lands.
- c. Provides the refuge with hay for use as nesting material in goose and duck nest structures.
- d. Provides a source of hay on a cooperative basis with the CDOW in preventing or minimizing big game damage complaints from other landowners in the County as the need arises.

#### 9. Fire Management

The Fire Management Plan addresses prescribed burning as a grassland management tool to be utilized on an expanding scale as the local community becomes more receptive to its use. However, the extensive use of grazing (especially HRM practices) has reduced the need for prescribed burning on the refuge in recent years. Prescribed burning in the future will be confined to those areas that have a predominance of unpalatable vegetation and require removal of duff, and areas where the decadent willows require rejuvenation to improve browse for moose and deer.

Two prescribed burns were planned for the year but were not completed due to the state-wide fire ban.

## 10. Pest Control

Canada thistle is the primary noxious weed found on the refuge although yellow toadflax has also been identified on one area in the southwest corner of the refuge. Historically, efforts to control Canada thistle were limited to spraying 2,4-D herbicide. These efforts were minimally successful and in 1988, all chemical spraying was eliminated and biological control was undertaken.

The initial agent released was the stem mining weevil, *Ceutorhynchus litura* and later the Canada thistle stem gall fly, *Urophora cardui*. These agents have been distributed to eight different sights, with several of these areas having both agents released together. All of the sights, with the exception of the Allard bridge, have either larva present or evidence of the plant deterioration that we feel is directly attributed to the agents.

## G. WILDLIFE

### 1. Wildlife Diversity

Although the refuge's primary objective is the production of waterfowl, the protection, maintenance and perpetuation of all other indigenous wildlife and plant communities is also important. Most habitat management techniques such as prescribed burning, grazing, irrigation, pond construction, and plant seeding benefit all native plant and animal species.

### 2. Endangered and/or Threatened Species

One bald eagle sighting was reported this year in February.

Two peregrine falcons were observed on two separate occasions in October. The pair seemed to enjoy the smorgasbord of wildlife available at Arapaho, as they were seen feeding on ducks on the first sighting and doves the second.

Greater sandhill cranes are listed as an endangered species by the State of Colorado. Unconfirmed reports indicate nesting in North Park (but not on the refuge). Several flocks of cranes (from 14 to 100+ birds) were observed on the refuge this fall.

River otter tracks and slides were documented for a second year on the Illinois River. Two separate sightings of tracks were made, one in January and the other in March. River otters are listed as an endangered species by the State of Colorado. We are still trying to achieve photo documentation of the otter.

### 3. Waterfowl

#### a. Ducks

The first waterfowl of the year, a mallard and an American widgeon, were sighted on March 6th on the West Fish Hatchery Pond. By mid-April the population was approximately 5,350, peaking in late July at over 7,300, over a thousand ducks more than last year.

Breeding pair counts were conducted on May 10th and again on May 24th. The results of 2.49 pairs per wetland acre was slightly lower than last years 2.57. This change is not significant when compared to previous data, considering that water levels have varied substantially during the past years. Water fluctuation has played a major role through the years in pairs per wetland acre.

The first duck broods of the year were observed on June 15th, roughly a week earlier than last year. Based on past experience, we started nest dragging this year on June 19th and were very successful in finding a variety of nests that represented all species found on the refuge.

This was the sixth year nest dragging was used to monitor nest success/predation rates and the effects of short term, high density grazing. The emphasis was on the impact of grazing. We located 123 nests with a Mayfield success rate of 32.7 percent. Results are summarized in Table V.

There are 16 elevated nest baskets on the refuge along the Illinois River. These structures were installed to increase mallard production, but they have had little success as far as mallards are concerned. However, several Canada geese were successful in these structures.

Based on our brood counts, duck production on the refuge was estimated at 7396 (Table VI). This represents the highest number of young raised since 1988, even though we still are unable to achieve the levels recorded in the mid 1980's as shown in Figure 1. Although this year's precipitation was considerably lower than previous years, water along with warm temperatures were available during the critical waterfowl breeding and nesting season.

Table V.

**1994 Nest Data**

Approximately 1,123 acres dragged or walked.  
 104 Nests located = 1 nest/10.8 acres or .09 nests/1 acre.

<u>FATE</u>	<u>NUMBER</u>	<u>PERCENT</u>
Success	60	57.7%
Predated	35	33.7%
Abandon	<u>9</u>	<u>8.7%</u>
	104	100.0%

<u>SPECIES</u>	<u>#</u> <u>Nests</u>	<u>Percent</u>	<u>Brood</u>	<u>#</u> <u>Percent</u>
Mallard	11	10.6%	22	3.5%
Pintail	5	4.8%	17	2.7%
Gadwall	35	33.7%	254	40.5%
Widgeon	9	8.7%	49	7.8%
Cinn/BWT	8	7.7%	66	10.5%
GWT	1	1.0%	17	2.7%
Shoveler	5	4.8%	37	5.9%
L. Scaup	21	20.2%	125	19.9%
Redhead	6	5.8%	23	3.7%
<u>Ruddy</u>	<u>3</u>	<u>2.9%</u>	<u>17</u>	<u>2.7%</u>
TOTAL	104	100.0%	627	100.0%

<u>SPECIES</u>	<u>#</u> <u>NEST</u>	<u>#</u> <u>SUCCESS</u>	<u>#</u> <u>PREDATED</u>	<u>#</u> <u>ABANDON</u>	<u>APPARENT</u> <u>SUCCESS</u>	<u>MAYFIELD</u> <u>SUCCESS</u>
Mallard	11	4	5	2	36.4%	4.6%
Pintail	5	1	4	0	20.0%	10.7%
Gadwall	35	25	7	3	71.4%	55.0%
Widgeon	9	4	5	0	44.4%	20.4%
Cinn/BWT	8	5	3	0	62.5%	17.3%
GWT	1	0	0	1	0.0%	0.0%
Shoveler	5	4	0	1	80.0%	55.6%
L. Scaup	21	11	9	1	52.4%	32.0%
Redhead	6	4	1	1	66.7%	12.8%
<u>Ruddy</u>	<u>3</u>	<u>2</u>	<u>1</u>	<u>0</u>	<u>66.7%</u>	<u>50.9%</u>
TOTAL	104	60	35	9	57.7%	32.7%

For all nests: Mayfield  
 $Nu = 44.0$   
 $E = 1,359.5$   
 $h = 34.0$

Table VI

Arapaho National Wildlife Refuge  
ESTIMATED DUCK AND CANADA GOOSE PRODUCTION 1974-1994

Species	74	75	76	77	78	79	80	81	82	83	84	85	86	87	88	89	90	91	92	93	94
BW/Cinn Teal	196	218	402	507	421	376	82	174	193	996	696	1154	857	1551	719	570	389	606	361	483	1036
Canvasback	0	7	0	0	7	23	0	0	0	5	30	0	0	0	0	0	0	0	0	0	7
Gadwall	247	337	483	446	856	476	291	663	1414	1536	2394	2863	2293	1695	2383	1127	758	1259	1190	1379	2321
GW Teal	244	295	354	352	500	219	13	247	737	713	507	302	455	450	588	577	138	173	248	313	291
Mallard	650	517	566	363	663	245	48	435	922	408	414	249	383	617	418	358	158	438	246	315	342
Pintail	555	472	661	275	400	373	63	430	1291	958	1626	733	782	782	738	389	214	516	213	130	351
Redhead	52	20	85	128	289	190	49	25	328	491	182	300	563	216	199	66	117	283	77	157	227
Ring-neck	0	0	0	0	0	8	0	0	7	0	7	0	0	0	0	0	0	0	0	0	0
Ruddy	50	59	77	76	138	13	9	12	178	242	316	364	527	267	641	160	89	242	87	325	151
L. Scaup	570	410	635	156	510	474	291	77	748	1046	1174	1266	1638	1193	1194	707	331	1080	518	1169	1266
N. Shoveler	247	167	113	210	515	80	187	233	859	1340	688	968	552	1393	1010	1044	355	868	750	740	678
Am. Wigeon	345	412	402	224	821	98	137	263	1045	1497	1012	1557	1423	1205	1528	1077	547	875	896	449	727
Unidentified	0	0	0	0	0	0	0	0	7	0	7	0	0	0	14	0	78	29	5	0	0
Total Ducks	3156	2914	3778	2737	5120	2575	1170	2559	7729	9232	9053	9756	9473	9369	9432	6075	3178	6369	4591	5460	7397
Canada Goose	4	0	7	0	21	48	114	100	125	127	148	212	253	300	457	225	275	200	160	110	330
C. Merganser	8	0	8	8	13	0	0	0	40	0	0	10	30	30	0	0	25	0	0	0	0
Totals	3168	2914	3793	2745	5154	2623	2317	2659	7894	9359	9201	9978	9756	9699	9889	6300	4391	6569	4751	5570	7727

Figure 1:

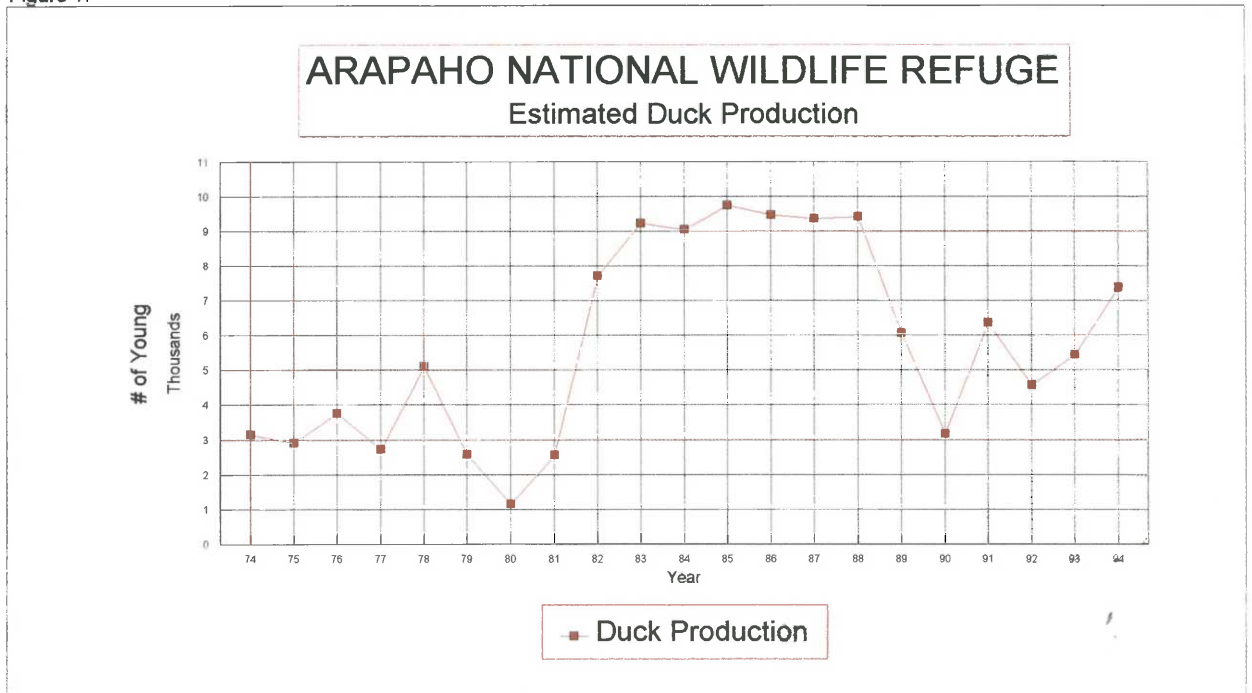
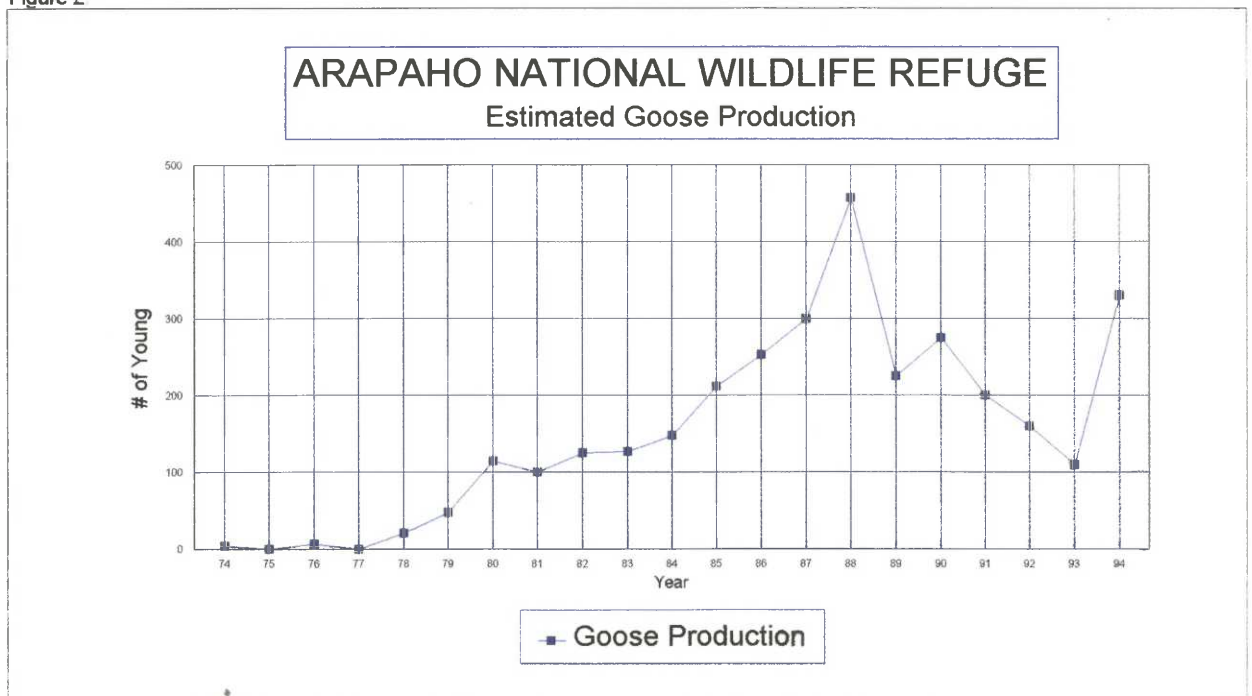


Figure 2:



The refuges' fall population of ducks averaged 3,450 in mid September, dropping to approximately 2,000 in mid October and by mid November all water was frozen and the ducks had migrated south.

b. Geese

The first Canada geese were sighted on the refuge March 4. Waterfowl counts showed roughly 400 geese on the refuge in April, peaking in mid June with over 550 birds.

Of the 108 elevated nest structures available for geese in 1994, 63 were occupied resulting in a 71 percent utilization rate. Utilization of the structures has fluctuated for the past several years (80 percent plus in '86 and '88; 71 percent or less in 89, 90, 91, 92 and 93), the reasons for the variations in use are unknown. Nest success rates on the structures used was 84 percent, this rate also fluctuates but has remained between 70 to 85 percent for the last seven years. Canada geese used four mallard nesting structures this year, with 100 percent success. Canada geese nesting on islands had a 60 percent success rate while shoreline nests were heavily predated.

The first goose brood was observed on May 19th. Goose production for the year was estimated to be 330 goslings (Table VI). Production increased two fold this year, this may be attributed to the wet and warm spring season (Figure 2).

The goose population peaked in July at nearly 500 birds. Fall numbers of geese decreased in September to approximately 360 birds, remaining unchanged throughout October and early November when all of the ponds froze.

4. Marsh and Water Birds

The refuge has one large black-crowned night heron colony on Smith Pond and two smaller colonies on Marsh and Rat Ditch Ponds. These colonies are surveyed once a year to estimate the population size. This year 50 active nests were found indicating a continuing population decline throughout the years on Smith Pond, while the other two colonies indicate that the herons are utilizing new sites on the refuge.

Numerous eared grebe colonies were found on several ponds. These colonies consisted of small nesting groups, usually under twenty nests. Pied billed grebe sightings are increasing as several broods were observed this year.



94 NR17 7/19/94 PR  
This young pelican must be working towards the Presidential Fitness Award. "Feel the burn!"



94 NR18 7/19/94 PR  
Herd 'em up, move 'em out!!

White-faced ibis were seen on five different occasions this summer, in groups of up to 40 birds. No evidence of nesting has been observed on the refuge.

Double-crested cormorants were observed several times this summer. They are not known to nest on the refuge, but do nest on Walden Reservoir.

Over the last several years, White pelicans have become a common sight on the refuge. This is attributed to the fact that the colony on McFarlane Reservoir is increasing, according to the CDOW who monitors the colony. On the refuge, the pelicans fed almost exclusively on the Illinois River this summer, taking advantage of the low water levels.

A small colony of great blue herons nest on the refuge. The colony is found along the Illinois River in a group of cottonwood trees.

Other marsh and water birds observed included sora and Virginia rails. One western grebe was observed on '76 Pond in April.

#### 5. Shorebirds, Gulls, Terns and Allied Species

Some of the more common members of this group observed during the year were: American avocet, Forster's tern, killdeer, common snipe, long-billed dowitchers, Wilson's phalaropes, Greater and Lesser yellowlegs and a number of peeps. Black terns continue to nest on the East Fish Hatchery Pond, only two active nests were found. Rare sightings included two Snowy egrets along the Illinois River and three Greater and Lesser black-necked stilts on the Brocker tract.



94 NR19                      6/94                      JR  
This young killdeer is a good example of nature's  
camouflage.



94 NR20                      6/94                      JR  
One of the many, but seldom observed, snipe  
nests.

## 6. Raptors

The two most common raptors, observed daily in the summer, are Swainson's hawks and golden eagles. Other common raptors found are: Northern harriers, American kestrels, short-eared owls, rough-legged hawks, and turkey vultures. Record sightings were made of red-tailed and Ferruginous hawks, both uncommon species for Arapaho. Rare spring and fall sightings included the Merlin and Cooper's hawk. An injured sharp-shinned hawk, the second ever observed on Arapaho NWR, was found on the northern section of the refuge. The injured bird was taken into our new raptor rehabilitation center in Walden, where it recovered and was returned to the wild.

Prairie falcons were sighted occasionally throughout the spring, summer and fall.

The refuge has a pair of resident great horned owls. These owls live in the Case barn where disturbance is minimal. Great horned owls are seen frequently around the headquarters but the location of their nests is not known.

No burrowing owls were observed nesting on the refuge, but one sighting was made in the fall.

Three saw-whet owls were discovered along the Illinois River during month of July, which was another rare sighting for Arapaho.



94 NR21

6/94

RC

"Hey, aren't you a little big for this Swainson's nest?"

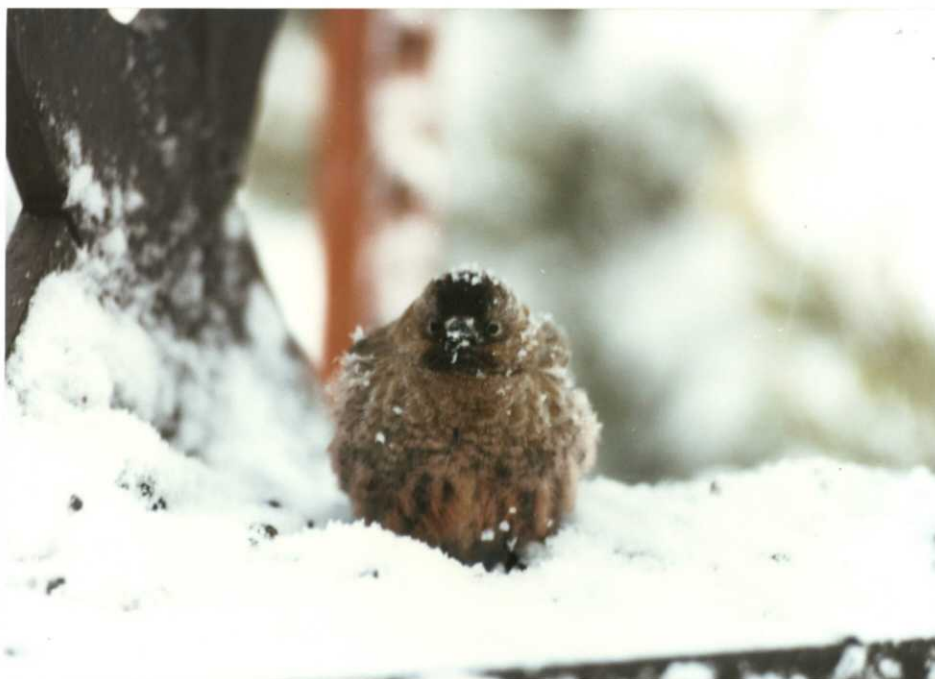
## 7. Other Migratory Birds

Rosy finches, black capped chickadees, American tree sparrows and dark-eyed juncos again took advantage of our bird feeders during the winter months.

Numerous mountain bluebirds utilized the nest boxes this year, while American tree swallows took up residency in other vacant housing.

Rufous and broad-tailed hummingbirds are common visitors to the nectar feeders at the headquarters during the summer. A rare treat at the refuge during July was the first documented sighting of calliope hummingbirds. Up to four individuals were seen on the feeders at one time.

Several uncommon sightings this year include: Thirty-five water pipets, one American dipper, two gray catbirds, three Northern orioles, and four green-tailed towhees.

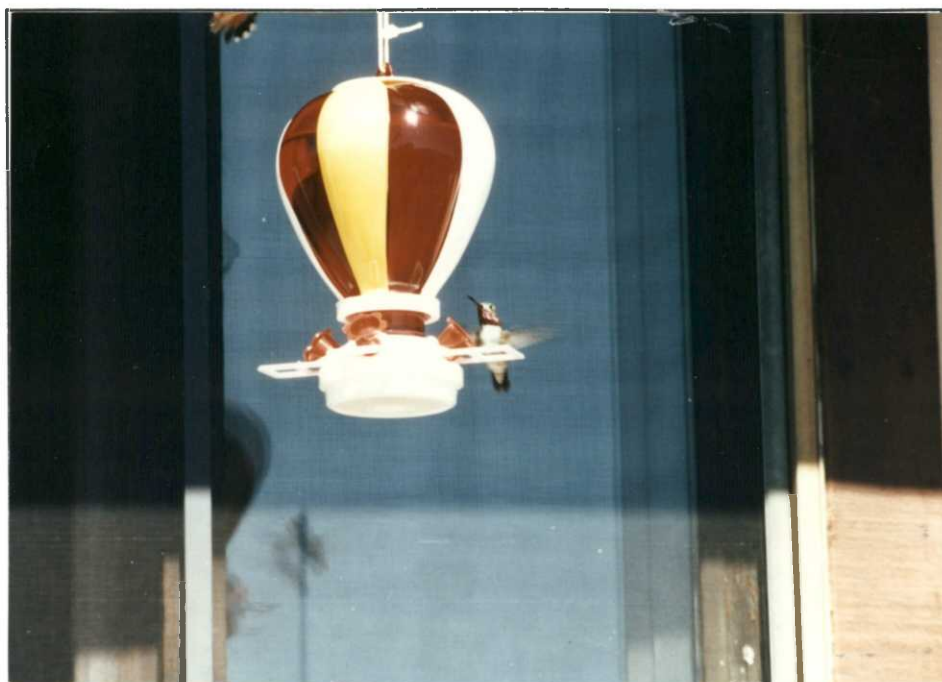


94 NR22

2/94

JR

"Brrr....., it sure looks warm in there with you."



94 NR23

7/94

TR

A new species for the refuge was the Calliope hummingbird.

#### 8. Game Animals

During the winter, approximately 500 elk were present on the refuge consisting of three different herds. The resident herd of approximately 120 elk were seldom seen on the Illinois River bottoms south of the headquarters this year. With the opening of the big game seasons, the refuge remained unusually quiet which we attributed to the mild weather conditions this fall.

Various numbers of moose were sighted throughout the year along the Illinois River. Moose are common during the summer and fall, attracting many visitors. According to the CDOW, the North Park moose population is healthy and being maintained at the 500-600 desired population level.

Mule deer were found in the willows along the Illinois River throughout the year, with several large bucks spotted during the late summer and fall. While mule deer are more common, white-tailed deer are also observed occasionally.

Pronghorn antelope continue to be year round residents on the refuge with their numbers remaining stable the past several years. This winter the herds seemed to be more dispersed, most likely due to the mild weather conditions.

## 10. Other Resident Wildlife

The refuge receives many visitors throughout the spring and summer in search of sage grouse. Sage grouse are most visible during the spring on their leks. The refuge has no leks but offers the visitors information on several that are nearby. Sightings of sage grouse during the summer and fall increased which we attribute to dry weather conditions causing the grouse to concentrate near wet areas.

The refuge beaver population continues to do well with 25 active dams counted in a July census. During low water years, beaver have caused problems with our water flow, making our water management program a real challenge. Conflicts were reduced this summer and fall by live-trapping a highly populated area.

A predator abundance survey was conducted in September, with three transects of thirty stations set for two nights. This year, only 16 coyote visited the stations. These numbers show no radical change from the previous years, but this was the first year that only coyotes visited the scent stations.

The refuge porcupine population continues to do well based on observations and willow use. Occasional observations of weasel and skunks were reported along with one rare sighting of a mink.

Other resident wildlife include: white-tailed jackrabbit, Nuttall's cottontail, white-tailed prairie dog, Richardson's ground squirrel, and other small rodents. The cottontail and jackrabbit populations are still on an upward swing, while the prairie dog and ground squirrel populations remain stable.

During June, two wandering garter snakes were observed on the Brocker tract.

## 11. Fishery Resource

The Illinois River is the refuge's only fisheries resource. Brown trout are the primary game fish although a few rainbow trout are also present. In low water years the northern section of the river dries up and is unable to sustain a fisheries. This year this section of the river dried up early and remained dry late into the fall. Beaver dams in the southern section of the river helped maintain the population of brown trout.



have also noticed a large influx of public use at the Brocker Overlook, accessible from Highway #14, which is part of the Colorado Scenic Byway Trail. To date we have not installed a traffic counter at this site, so we have no accurate means of determining actual public use at this site.

#### 4. Interpretive Foot Trails

Work continued on the refuge 0.5 mile nature trail accessible to the physically challenged. The staff along with the YCC spent several days tilling, hand raking and resurfacing the trail. We are still searching for the perfect hardening material that survives the climatic conditions as well as high water periods during the spring thaw.

#### 5. Interpretive Tour Route

The refuge maintains a six-mile, self-guided auto tour route on the west side of the refuge. The best waterfowl viewing areas are located on the tour route as are interpretive stops relating to white-tailed prairie dogs, pronghorn antelope, and other fauna and flora.

For the second year in a row the refuge tour route received a record number of visitors in July with 1,625 vehicles utilizing the auto tour.



94 NR25                      11/06/94                      ECP  
Jackson County Sheriff investigating the  
vandalism at the Case kiosk.

Arapaho experienced it's first serious vandalism on the auto tour route, resulting in damage to several signs, theft of one sign and destruction of the pamphlet dispenser. The Sheriff's Office was notified but the perpetrators were never apprehended, although the stolen sign was found in front of a residence in Walden and recovered by Arapaho's sly and slippery Project Leader.

6. Interpretive Exhibits/Demonstrations

The refuge's three interpretive kiosks are a popular attraction to refuge visitors. The kiosks have interpretive panels that describe activities from wildlife viewing opportunities to habitat management programs. There are also pamphlet dispensers at each kiosk.

7. Other Interpretive Programs

The following programs and/or tours were given by refuge personnel during the year:

- March - Patten gave a talk to North Park Stockgrowers at their annual meeting.
- May - DeVries and Rizor participated in the annual Arbor\Earth Day Program for approximately 190 students at the Walden Elementary School. They discussed aquatic invertebrates and the role they play in the environment.
- Rizor gave a tour of the refuge to a reporter from the Fort Collins Coloradoan newspaper.
- July - Patten, T. Rodriguez, and Cavallaro gave a presentation to over 30 members of the Colorado State Chapter of the Wildlife Society.
- DeVries gave a talk to a Boy Scout Troop from Missouri about the refuge.
- Rizor conducted a short tour of the refuge Canada thistle biological control areas to a group of local ranchers and Colorado State Extension Office personnel.
- August - Patten gave a tour to Istvan Gyarmathy of Hungary, and two Jefferson County Open Space employees on various refuge habitat manipulation techniques.

Patten showed Sue Lieberman, Acting DARD, on detail from Washington D. C., a tour of the refuge.

- October - J and T Rodriguez assisted in the Boy Scout Fall Camporee at the Colorado State Forest, assisting 300 scouts working on wildlife merit badges, build bird houses.
- November - Rizer presented a slide show to the Walden Girl Scout Troop, about the refuge and being a biologist.
- December - Curtis entertained youth of all ages playing Santa Claus for the North Park Day Care Center and the Lion's Club Roving Christmas Tree.

Four news releases were submitted to the Jackson County newspaper during the year as follows: recruitment for the YCC program; Rodriguez's Boy Scout of America award; Historic Background of North Park; and the trapping permit process. A news release announcing the availability of the draft Arapaho Habitat Management Environmental Assessment for review was sent to local area newspapers.



94 NR26 7/28/94 RC  
Colorado Wildlife Society Tour at the Brocker  
Overlook.

## 8. Hunting

Duck and coot hunting season ran October 1 - 15. Habitat conditions were poor resulting in concentrations of birds to the few areas with water. Hunting pressure remained average to that of previous years. Bag check data was collected on the opening weekend, the results are as follows:

Total hunters checked:	068.0
Total hours hunted:	169.5
Hours/hunter:	002.5
Total birds harvested:	068.0
Number of birds/hunter:	001.0
Number of birds/hour:	000.4

## Species composition of bag checks:

Gadwall	25	( 37%)
L. Scaup	8	( 12%)
Widgeon	1	( 1%)
Mallard	16	( 23%)
Cinn\BWT	3	( 5%)
Shoveler	3	( 5%)
GWT	8	( 12%)
Pintail	3	( 3%)
Redhead	0	( 0%)
Common Merganser	1	( 1%)
Hooded Merganser	1	( 1%)
Total	<u>68</u>	(100%)

The refuge Canada goose season was open October 1 through October 14. Hunting pressure was low the opening weekend with only three geese counted in conjunction with the waterfowl bag checks.

Pronghorn antelope archery season opened on August 15 and ended September 20. Hunting pressure on the refuge was low with approximately ten hunter visits, success is unknown.

The pronghorn antelope rifle season opened September 24 and extended through September 30. The refuge is in a permit only area and makes up a small portion of the hunting unit. Approximately twenty-five hunters harvested seven animals on the refuge, up slightly from last year.



Sage grouse season ran from September 1 through October 2. The daily bag limit this year was three birds with a possession limit of nine. Hunter bag checks were conducted during the opening weekend with 20 hunters spending 83 hours in an unsuccessful harvest. These results show a continuing decline in hunter and harvest numbers. The North Park sage grouse population appears to be in a continuing decline, with no conclusive theory as to why.

## 9. Fishing

The Illinois River is open to fishing on the refuge year-round except June and July, when it is closed to minimize disturbance to nesting waterfowl. We estimate that there were 70 fishing visits to the refuge in 1994.

Creel checks were conducted throughout the season. Thirty-two fish were caught by 21 anglers, fishing a total of 57 hours. The average visit was 2.71 hours which is slightly less than the last several years but near normal for previous years. Several fish over 16" were checked with the majority of fish measuring from 12-14 inches. Lure fishing was preferred by 62 percent of the fishermen using artificial lures. Bait fishermen and fly fishermen each made up 19 percent of the user group. Brown trout were the predominant fish caught, along with chubs, and suckers, and one rainbow trout.



94 NR29 9/23/94 ECP  
Some refuge staff just have a hard time  
identifying with good trout habitat.

With the north end of the river drying up mid-summer and flows dropping very low in the southern part of the river, fishing wasn't at its best this year. The few die-hard anglers found few places to wet their line.

#### 10. Trapping

In previous years the refuge was divided into two trapping units, using the Hunting Management Units (HMU), HMU A, and HMU's B. In 1990 due to a lack of interest and low fur prices, the refuge units were combined and one permit was issued. Again in 1994, only one trapping permit was issued combining both refuge units. The trapper must purchase a \$25.00 refuge trapping permit and allows him/her to keep all animals harvested. For the second year, the refuge issued a novice youth trapping permit to a local youth, waiving the \$25.00 fee due to his inexperience and allowing him to harvest only muskrat. There were 210 muskrat removed, and the youth trapper harvested 80 of these.

#### 17. Law Enforcement

During the year, Officers Patten and Rodriguez renewed their CDOW commissions allowing all of the year's violations to be processed through the State system. Most of our law enforcement efforts were conducted during the weekends and involved the pronghorn antelope, sage grouse and waterfowl seasons on the refuge, and deer and elk seasons off of the refuge. The following table is a summary of the penalty assessments issued during the year:

Table VII.

#### PENALTY ASSESSMENT, ARAPAHO NWR - 1993

<u>Date</u>	<u>Violation</u>	<u>Officer</u>	<u>Disposition</u>
9/23/94	Unlawfully hunted antelope outside of established season	Patten	\$100(fine) \$37 (surcharge)
9/24/94	Unlawfully hunted antelope in a closed area	Rodriguez	\$100(fine) \$37(surcharge)
10/15/94	Unlawfully entered private land to take wildlife Unlawfully possessed wildlife	Rodriguez	\$100(fine) \$37(surcharge) \$1000(fine) \$137(surcharge)
10/23/94	Unlawfully hunted with vehicle Unlawfully possessed wildlife	Rodriguez	\$200(fine) \$74 (surcharge) \$1000(fine) \$370(surcharge)
<b>TOTAL</b>			<b>\$2500(fines)</b>
<b>\$692 (surcharge)</b>			

## I. EQUIPMENT AND FACILITIES

### 1. New Construction

A MMS funded water diversion structure project for the outlet of MacFarlane was approved for FY95. Regional Office Engineer Kim Eichmann spent a day in December, at the refuge, discussing construction ideas for the structure. If contracts are awarded in a timely fashion this project should be completed in 1995.

During the spring and summer months construction continued on the equipment storage building at refuge headquarters. Lacking the necessary equipment the refuge was again able to borrow the County's crane, allowing us to complete the framework early in the spring. The staff along with help from the YCC crew completed the construction in July, with only the doors left to install. At year end we were still awaiting the necessary parts, (parts were never received with original delivery) needed to hang the doors. Hopefully, the building will be totally enclosed by the coming spring.



94 NR30

8/94

BD

Refuge staff putting the finishing touches to the new storage building.



## 2. Rehabilitation

Refuge work crews converted approximately seven miles of temporary electric fence to a more durable, permanent high tensil line. Additional various lines of barbed wire were also converted to high tensil electric fence.

Eisemann and Old Road Pond dikes were again rehabed, replacing water control structures and filling breaches in dikes, hopefully for the last time.

Local contractor Glenn E. Sessions and Sons completed the installation of six new parshall flumes, eliminating leaking problems. The flumes were located at the Home, Hubbard #1, Riddle, Dryer, Oklahoma #2, and Midland Ditches.

The Anderson Drain and Contour dikes were rehabed, resetting several take-outs and a water control structure.

Due to dry weather conditions we were able to complete Diversion Pond extending the dike and placing rip-rap.



94 NR33

8/94

JR

Completion of new flume.



94 NR34

11/94

ECP

Hubbard #2 headgate at completion.



94 NR35

9/94

JR

A shovel and a strong back are often a necessity on the refuge as seen here at the Home headgate.



94 NR36                      9/26/94                      PR  
 Maintenance Worker striving for heavy equipment  
 certification.

We replaced the leaking Home ditch headgate with no major problems, but replacing the Hubbard #2 river headgate ended up to be a bigger job than we bargained for. The Case 1450 was buried in the mud while preparing the site for the headgate. The refuge staff spent several days in a futile attempt to pull the dozer from the muck. We finally were forced to hire a contractor with a heavy duty equipment winch truck to literally jerk the dozer out of the mud. In the process not only was the contractor's winch broken but all of the seals and bearings in the dozer's transmission had to be replaced at a cost of \$8,192.

Over the winter months the engine in the front-end loader was rebuilt by a shop in Laramie, Wyoming for a cost of \$6,700.

Without the availability of MMS funding to defray the costly equipment repairs the refuge would have been hard pressed to keep our heavy equipment running.

### 3. Major Maintenance

With over 100 miles of boundary and interior fences on the refuge, we are kept busy repairing and replacing barbed wire and electric fences, gates, river crossings and cleaning cattleguards.

#### 4. Equipment Utilization and Replacement

In April, three underground fuel storage tanks were removed, destroyed and hauled to Wyoming for disposal. The two above ground storage tanks, received late in 1993, were installed and put into operation. Due to costs and practicality, we only replaced the unleaded and diesel fuel tanks and gave up our regular fuel which really isn't a great sacrifice these days with the emission standards.

Ending a four year tug-of-war, we received a long awaited Wagner towed scraper in May. Two scrapers and thousands of dollars later, we finally received an **industrial, heavy-duty scraper** that our Case 1450 is capable of towing.

We received one 4x4 Chevy crewcab pickup for our YCC program in June, replacing a 4x2 Dodge, and giving us a more practical and much needed, year-around, multi-use vehicle. The 1985 4x4 Dodge service truck was replaced with a new 4x4 Chevy service truck.

#### 5. Computer Systems

Several new items were purchased for the office this year. An Altek single quad digitizing table, a Trimble Navigator GPS Pathfinder unit and a Hewlett Packard DeskJet 1200C color printer were received to complement the existing GIS system. Numerous software applications were received from the Regional Office for various uses at the field level.

#### 6. Other

A 1980 GMC tractor and two 25 ton lowboy trailers were picked up on excess property along with an IBM selectric typewriter and a thermal paper fax machine (loaned to the Owl Mountain Partnership).

### **J. OTHER ITEMS**

#### 1. Cooperative Programs

##### **Owl Mountain Partnership**

##### Background

The Owl Mountain Project is a partnership to develop an integrated, prototype, decision making process for resolving a variety of resource conflicts, using the principles of ecosystem management.

The project area lies within North Park and encompasses approximately 375 square miles of which 67 percent is public land and 33 percent is private land. Public lands are administered by the U.S. Forest Service, the Bureau of Land Management, the U.S. Fish and Wildlife Service, the National Park Service, the Colorado State Land Board, the Colorado Division of Wildlife, the Colorado Division of Parks and Outdoor Recreation and the Colorado State Forest Service. There are 25 major ranch operations, two outfitting businesses, a KOA campground, two small communities and Walden, the county seat.

#### Purpose

The purpose for the Fish and Wildlife Service to enter into a cooperative effort is to promote the concept of ecosystem management on FWS administered lands and adjoining lands referred to as Owl Ridge in the North Park area of Colorado. The objective is to create a partnership with the general public, public land agencies, private landowners, public land users and business communities for resolving vegetation resource conflicts using an ecosystem approach to landscape management.

FWS's involvement is to:

- a) Provide a representative on the Project Steering Committee to assist in reviews, site inspections of projects, inventories, studies, and related activities as necessary in providing technical support to the project.
- b) Provide any available support and information.
- c) Provide matching funds and financial administration for cost sharing of GIS mapping, resource inventorying and monitoring of resources and implementing selected ecosystem management practices.

Owl Mountain Partnership involvement is to:

- a) Coordinate the development and implementation of the Owl Mountain Project plan through the project steering committee.
- b) Consult regularly with the FWS in an effort to provide the FWS with GIS mapping of the refuge.
- c) Provide personnel, equipment and support services, to inventory and monitor specific plant communities and their associated wildlife (big game) populations on the refuge and adjacent land areas.

- d) Encourage partners to implement those selected resource management practices that are economical, practical, and consistent with the Owl Mountain Partnership ecosystem project plan.

#### Mission Statement

The mission of the Owl Mountain Partnership Project is to serve the economic, cultural and social needs of the community, while developing adaptive long-term landscape management programs, policies and practices that ensure the ecosystem sustainability.

The Owl Mountain Partnership is a project of public land management agencies, landowners and other interests formed to develop an integrated prototype decision making process using the principles of ecosystem management.

Goal #1 - To create partnerships that build trust and teamwork to achieve ecosystem health and resolve conflicts which will serve the economic, cultural and social needs of the community.

Goal #2 - To develop and implement an adaptive ecosystem management plan across political, administrative and ownership boundaries, based on identified issues and needs.

Goal #3 - To document the implementation process of ecosystem management and communicate knowledge gained from the project to partners and the public.

Owl Mountain Partnership activities for 1994 were as follows:

- 1) Patten served as a steering committee member to the project.
- 2) Staff contributed many hours to various aspects of the project.
- 3) Planned and implemented a Riparian Meadow Demonstration project on the refuge.
- 4) Arapaho continued to be an active participant in the GIS portion of the project acting as a centralized location for all digitized data and corresponding documentation. Staff hosted a GPS training in conjunction with BLM State Office staff.
- 5) Staff lent expertise to resolve grazing/waterfowl management on the BLM's Hebron Slough area within the project area.

- 6) Provided various equipment and manpower to assist in the manipulation\construction of habitat projects.
- 7) Owl Mountain Partnership vegetation crews conducted ten vegetative transects on the refuge. They found 155 species including: 44 grass/grass-like species, 18 shrubs and 93 forbs.

#### Bureau of Land Management

Towards the continuing cultivation of our association with the BLM, we assisted in several activities during the year. Using refuge equipment, refuge staff assisted BLM staff with the resetting of a parshall flume and the drilling of fence post holes.

#### Colorado Division of Wildlife

We have a good rapport and working relationship with the CDOW. Part of the present refuge was once a State Fish Hatchery where a free-flowing spring feeds two small ponds before entering an irrigation ditch and continuing on to other refuge impoundments. During the field season the CDOW parks several travel trailers at the "Fish Hatchery" where their personnel stay for research or law enforcement purposes.

Our staff assists the CDOW with: aerial wildlife surveys, law enforcement, facility use and equipment assistance. Our YCC program also worked with the CDOW's Youth in Natural Resources on various projects.

## 2. Other Economic Uses

A special use permit was issued in July of 1991 to Dave Farrand, owner of the Double R Ranch, for the construction and maintenance of a water line. The water line runs from a spring outlet on the refuge Fish Hatchery tract to the BLM grazing allotment. The permit allows for the use of spring water to fill a water trough on the BLM allotment for approximately 30 days during the grazing season. This permit was issued for two years at the cost of \$175. The permit was re-evaluated and re-issued in July 1993 for another 18 months at a cost of \$110. It will again be re-evaluated in 1995.

### 3. Items of Interest

#### Community Involvement

Patten, Rodriguez and Rizor attended numerous Owl Mountain Partnership and North Park Habitat Partnership Program meetings.

Patten and Curtis continue to support and participate in the Jackson County Lion's Club. Patten is also a member of the North Park Oddfellows Lodge.

Rodriguez was active in the local Boy Scout Troop.

The refuge staff participated in the Colorado 'Adopt-A-Highway' program. Once during the year, members of the staff picked up litter along a six mile stretch of Highway #125.

Patten, Rodriguez and Rizor attended various interagency meetings during the year to inform the other agencies what was going on at the refuge and to keep abreast on what other agencies are doing.

Rodriguez, T. Rodriguez, DeVries and Schroeder were active members of the Jackson County Ducks Unlimited Committee.

#### Personnel Training/Meetings Attended

##### January

Patten - attended the Colorado Wildlife Societies Annual Meeting in Fort Collins

Patten, Rizor,  
Rodriguez - traveled to Denver to attend a Water Management Training Course sponsored by the CDOW.

##### February

Patten - attended an Environmental Issues Seminar in North Platte, NE.

Patten, Rodriguez - attended mandatory annual 40 hour Law Enforcement In-Service Refresher in Arizona.

##### March

Follett, Rizor - attended a 32 hour Introduction to PCArc-Info Course at the Colorado State University in Fort Collins.

- Curtis - traveled to Denver to attend a mandatory 16 hour New Employee Orientation Training.
- Rodriguez - traveled to Denver for an eight hour Hantivirus Training and fitting of safety equipment.
- April  
Follett - attended S130/190 Fire Training and Standards for Survival at Arrowwood NWR, ND.
- Patten - met with North Park Soil Conservation District, Corp of Engineers, and the SCS to inspect for possible contamination along the old railroad bed within the refuge boundary.
- May  
Rizor - completed a BLM sponsored Fire Behavior 290 Training in Craig, CO.
- June  
DeVries - attended a BLM sponsored S130/190 Fire Training in Craig, CO.
- August  
Patten, Rodriguez - completed firearm re-qualification at the refuge along with Brown's Park NWR staff and assisted by Steve Knode from the RO.
- Rizor,  
T Rodriguez - participated in the Grassland Ecology and Ecosystem Management workshop in Valentine, NE.
- September  
Rizor - attended a CDOW's Watchable Wildlife meeting in Walden.
- October  
Patten - participated in the North Platte/Kansas River Ecosystem Project Leaders meeting in North Platte, NE.
- Patten, Rodriguez - met with all local conservation officers to plan strategies for hunting seasons.

Follett - attended a GIS Coordination Meeting with various agency representatives in Fort Collins, CO.

#### November

Follett - attended a GIS meeting at the BLM Regional/State offices in Denver, CO.

#### December

Patten - attended an Intermountain West Joint Venture meeting in Grand Junction, CO.

Rizor - met with representatives from the U.S. Forest Service to update their priority species list.

Follett, Rizor - participated in a two day GPS Training given by State BLM employees at the refuge.

#### Awards

In April, Rodriguez traveled to the RO to accept a special brown-nosing achievement award for his volunteer work with the Boy Scouts of America. This award originated at the Washington level and was presented by Regional Director Ralph Morgenwick.

#### 4. Credits

Follett and Rizor - All Sections, Satellite refuges, Word Processing, Editing and Assembly.

Patten and Rodriguez - Editing.

Photos - As noted.

## BAMFORTH NATIONAL WILDLIFE REFUGE WYOMING

Administered by Arapaho NWR Complex  
PO Box 457, Walden, Colorado

### Introduction

Bamforth National Wildlife Refuge, located in the southern part of Albany County, Wyoming is small; the total number of acres is 1,166 consisting of 960 acres of grassland and 206 acres of marsh and water areas. A maximum of 206 acres of marsh and water areas is possible only under excellent runoff conditions during years when precipitation in the watershed is high.

The principal use of the refuge and surrounding lands is grazing of cattle. There is no possibility of growing grains for waterfowl food because of the high alkalinity of the soil and undependable water supply.

The refuge is broken up into three disconnected parcels of land, which would make posting costs high, enforcement of hunting regulations impractical, and effective management almost impossible.

No development of the area has been done in the past, nor is any planned for the future, due to the lack of an adequate water supply.

Waterfowl use of Bamforth NWR is sporadic, with only limited production.

### 1994 Activities

One grazing permit for 99 AUM's at a rate of \$2.00/AUM is issued on an annual basis to a neighboring rancher. In exchange for the reduced grazing fee, the permittee is responsible for irrigating refuge lands when the water is available (which, due to a poor water right, is not much).

The refuge issued a special use permit to Dr. Pugesek to continue his study, at Bamforth NWR, of California gulls during the 1994 season. The Wyoming Game and Fish also issued a special use permit for the study as it encompasses state lands.

Dr. Pugesek submits an annual report providing information about all observed wildlife on the refuge. The following is a brief synopsis of this report: There were 2,431 California gull nests representing a 37 percent reduction of nests from 1993. White pelicans continued to nest, with approximately 650 adults producing between 300 to 400

young. Double-crested cormorants numbers varied from 31 to 96 individuals, with twelve nests being observed. Five pair of snowy egrets nested, with chicks found in all of their nests. Three adult black-crowned night herons were seen but no nests were ever established. Other birds noted include: willet, killdeer, long-billed curlew, American avocet, lark bunting, western meadow lark, horned lark, American kestrel, Northern harrier and golden eagle. Badger and canine tracks were frequently seen in the study area.

During the 1994 season, ninety-two gulls found by the research team were dying at Bamforth Lake with no apparent external injuries. Twenty-six of these gulls were sent to the Wyoming Wildlife Disease Lab for necropsy, where viro, pathological and toxicological tests were performed. Nothing conclusive was proven by the tests, but the research team believed that most, if not all of the gulls that died did so due to scarcity of food.

A check in the amount of \$564.00 was presented to Albany County for the 1993 revenue sharing funds

## HUTTON LAKE NATIONAL WILDLIFE REFUGE WYOMING

Administered by Arapaho NWR Complex  
PO Box 457, Walden, Colorado

### Introduction

Hutton Lake National Wildlife Refuge is in Albany County, southeastern Wyoming, 12 miles southwest of Laramie, Wyoming. Established in 1932 primarily as a resting and breeding ground for migratory birds and to provide haven for other indigenous wildlife, the refuge is a satellite of Arapaho National Wildlife Refuge.

Situated in the southern part of the Laramie Plains, a montane, park-like geographic entity surrounded by mountains, the refuge is at an elevation of 7,150 feet. The area embraces 1,968 acres, consisting of 1,408 acres of upland and 560 acres of open water and marsh. The five small lakes on the refuge (Hutton, Creighton, George, Rush and Hoge) are arranged in a half-moon and were developed from natural sumps by private, and later, wildlife interests.

Sand Creek, spawned in Colorado and seasonal nourisher of refuge lakes, snakes a northward course through the west portion of the refuge. Meadowlands, lush with a wide variety of semiaquatic plants, are situated to the west and north, while native grass rangelands, interspersed with greasewood-dominated alkali flats and draws, lie to the east and south.

Efforts were made at Hutton Lake to save and enhance the endangered Wyoming toad (*Bufo hemiophrys baxteri*) population in 1991. A pair of toads (captured from Mortenson Lake NWR) were caged together at Lake George but this breeding venture was unsuccessful. In 1992, fifteen toads from a captive population at Sybille Wildlife Research Unit were confined in several cages on the edge of Lake George. Breeding was successful with two egg masses of approximately 5000 eggs each produced. The adult toads and 46 toadlets were placed back in captivity, with the remaining toadlets left in hopes of creating another wild population. In 1993, seventeen Wyoming toads from Sybille Research Center and seven toads from the Cheyenne Mountain Zoo were placed in two separate cages. No egg masses were laid in the wild, although some clasping was observed. All of the toads were returned to captivity, except for two females (one missing, one dead). Within one week of return to Sybille, several toads started laying eggs producing four egg masses but only a small portion of two egg masses were fertile. These eggs were returned to Lake George and placed in small pools to develop, with fifty-six toadlets surviving into the fall. They were then divided into two groups and placed back at Sybille and Cheyenne Mountain Zoo. A total of forty toads were observed at Lake George during the surveys.

### 1994 Activities

Hutton Lake NWR was visited regularly during the year. Water management activities, waterfowl and shorebird censuses and facilities maintenance activities were a few of the projects undertaken.

The Sand Creek headgate was opened in January and remained open until mid-May. The headgate was opened again in October, with water flowing until the end of the year. Approximately 473 acre feet was diverted this year, a major decline from last years 1,963 acre feet. Water flowing into Rush Lake was diverted to Lake George in order to maintain the Wyoming toad habitat, but very little water was diverted into Creighton Lake, causing this wetland to remain dry. Excess water from Rush Lake was diverted to Hoge Lake in an effort to maintain this wetland with a small amount of water available for Hutton Lake, which continued to drop.

The only water management work that was done on the refuge this year was seeding the Sand Creek flume area, cleaning the ditch between the headgate and the flume, and repairing a breach in the Sand Creek Ditch on the west side of the headgate.



94 NR37

8/94

ED

Rehab work being done on Sand Creek.

Three special use permits were issued to students at the University of Wyoming. A brief synopsis of each follows:

- a) A permit was issued for Hutton and Mortenson Lake NWR's to conduct counts on lakes and marshes to determine correlations between bird use and micro-habitat features. The research was completed during the fall but the final write-up for a Master's of Science Degree is being defended. The refuge will get final copy pending the completion of the permittee's Masters thesis.
  
- b) A two year permit was issued in 1993, to study the dispersal and social structure of white-tailed prairie dogs as it relates to the distribution and maintenance of prairie dog populations. During the spring of 1993, two study sites were established and used as replicated sub-populations of the white-tailed prairie dog colony on the refuge. Animal movements and dispersal were monitored through a combination of trapping, dye marking, and radio telemetry. Sixty-nine individual prairie dogs were marked with fingerling ear tags as well as with a unique dye marking pattern. The animals behavior patterns and locations were documented using thirty minute, direct observation surveys. Ten young-of-the-year prairie dogs were radio collared and monitored daily for two months. Information gathered from the study is being used to access home range size and to estimate daily activity patterns. The final component of the first season was to determine if the quality and/or quantity of food available to prairie dogs varied spatially as distance increased from the colony. Thirty-nine permanent forage plots were established and sampled four times throughout the spring and summer with results pending analysis of forage quality. The winter will be spent analyzing existing data and periodically monitoring marked animals as they emerge from hibernation.

The second year of this project used the existing data collected on social integrations and focused primarily on better understanding of how social interactions potentially influenced the population dynamics both in terms of emigration and immigration. Sixty-nine prairie dogs were trapped and marked with ear tags and dye, while twenty-eight juveniles (which were radio collared, ear tagged and dyed) were introduced to the area. Daily movement patterns were monitored with the introduced animals showing greater movement distances and mortality. All field work was completed this season with the final write-up pending.

- c) A four year permit was issued in 1992 to conduct baseline archaeological investigations. The area has unique plant and animal habitats which are felt to have been utilized differently by past populations. Field work consisted

of verifying and correcting the locations of prior investigations, with several new archeological locations found. All archeological resource areas will be examined again as part of the systematic survey that was begun in 1992.

A final Environmental Assessment for Grassland Management Alternatives was completed in August. Compatibility Determinations, Environmental Action Memorandums and an Environmental Evaluation Checklists were also completed for all recreational uses occurring on the refuge.

One grazing permit was issued during the year, allowing cattle grazing for two weeks to use 250 AUM's at \$3.49/AUM, after July 15th.

The YCC crew constructed a stretch of fence and did general dump site cleanup.

Waterfowl censuses were conducted at various times during the year. Approximately 8,000 ducks and 200 Canada geese were counted during the waterfowl census in mid-April. Waterfowl numbers stabilized in mid-May with 800 ducks and 75 Canada geese. These numbers remained steady until mid October when duck numbers jumped to 1,850 and 165 Canada geese, remaining constant until early November. Based on a mid-July brood count, duck production was calculated and remained steady at 400 and goose production at 40.

Only two male Wyoming toads were found on Lake George during an early spring search by the Wyoming Toad Recovery Team. These toads, which were probably survivors of a group released two years ago, were captured to become part of the captive breeding population. Refuge staff assisted with an unsuccessful search for toads in August. There were no captive breeding efforts conducted on the refuge this year.

Two bald eagles and two golden eagles were observed on the refuge during the year.

A total of six white pelicans were observed on the refuge at various times during the summer. An unusually large number of California gulls, ranging in numbers from 72 to 385 were observed during the summer. Several unusual species observed on the refuge include: common mergansers, Western grebe, 33 marbled godwits, Forester's tern, Franklin gull, long-billed dowitcher, black tern, Bonaparte's gull, and white-faced ibis.

A check in the amount of \$1,060.00 was presented to Albany County in April for the 1993 revenue sharing funds.

## MORTENSON LAKE NATIONAL WILDLIFE REFUGE WYOMING

Administered by Arapaho NWR Complex  
P.O. Box 457  
Walden Colorado 80480

### INTRODUCTION

Mortenson Lake National Wildlife Refuge, established in May 1993, is 1,776 acres and located approximately 15 miles southwest of Laramie Wyoming. The refuge consists of three wetlands; Mortenson, Little Mortenson, and Soda Lakes. These are associated with many other "Laramie plains lakes", a series of high elevation lakes in a short grass prairie ecosystem.

Mortenson Lake is approximately 80 acres and has a well developed wetland complex of hardstem bulrush (*Scirpus acutus*) and Baltic rush (*Juncus balticus*). Little Mortenson Lake is approximately 20 acres and has an unstable water level that is alkaline. The fluctuating water level has limited wetland vegetation development to a narrow band of Baltic rush. Nebraska sedge (*Carex nebrascensis*) and saltgrass (*Distichlis stricta*) occur on seasonally flooded areas adjacent to both lakes. Soda Lake is approximately 70 acres with minimal wetland vegetation and very alkaline. The previous land owner claims that sodium bicarbonate was historically mined from this lake.

Mortenson Lake NWR was established to protect the last known breeding population of Wyoming toads (*Bufo hemiophrys baxteri*). The Wyoming toad, confined to the Laramie plains in southeastern Wyoming is related to the Manitoba toad (*Bufo hemiophrys hemiophrys*) of north central North America. The Wyoming toad was first reported to occur in Wyoming in 1946, but by the mid to late 1970's, the population drastically declined and by 1980 was thought to be extinct. In 1984 the Wyoming toad was listed as a Federally endangered species and in 1987 a small population was discovered within the historical range at Mortenson Lake. In 1988, the Wyoming Toad Recovery Team was established hoping to prevent the toad extinction by addressing toad habitat, reproduction and human impact.

The population has been steadily declining over the years with contributing factors thought to be a fungus disease, combined with red leg, a bacterial disease that has been documented to kill toads in the wild. In 1990, a captive population of toads was initiated using young-of-the-year from Mortenson Lake. Initially, the captive population was sent to Sybille Research Center, north of Laramie, Wyoming. The population was later separated and sent to two additional sites to prevent a major loss from destroying the entire captive population. The Cheyenne Mountain Zoo of Colorado Springs, Colorado

and the Henry Doorly Zoo of Omaha, Nebraska were the additional sites selected, hoping to use their captive population to augment and maintain the wild population. During 1993, there was zero reproduction of Wyoming toads during the year at Mortenson Lake, but approximately 56 survived at Sybille. All adult toads found during searches were removed and placed in captivity.

The Refuge's management objectives is as follows:

**Primary Objectives:**

- 1.) To preserve, restore, and enhance the population of Wyoming toads.

**Secondary Objectives:**

- 1.) Provide habitat for migratory waterfowl, colonial nesting birds, shorebirds, and raptors. Management for these species will only occur if it is compatible with efforts to protect the toad.
- 2.) Maintain natural diversity of plants and animals native to the Laramie plains.

1994 Activities

A final Environmental Assessment for Grassland Management Alternatives was completed in August.

Refuge staff met with FWE personnel throughout the year to discuss water management/facilities and habitat improvement projects.

Staff assisted the Wyoming Toad Recovery Team in two lakeshore searches for the Wyoming toad during the summer.

Wyoming Toad Recovery meetings were attended by refuge staff during the year. Highlights of the topics discussed included: an aggressive captive breeding program; breeding protocol at Sybille Research Center; and captive husbandry protocol.

All breeding activities took place only at Sybille this year with an aggressive approach taken by injecting toads with reproductive hormones. The initial success was high with six egg masses produced (6,000 - 8,000 eggs total). Things progressed well until the tadpoles began to hatch at which time the mortality rate was so high that only 20-30 tadpoles survived. With this devastating loss, a thorough search was completed at Mortenson Lake with only two adult toad found, one male and one female. The female toad, along with several captive males, was placed in a breeding cage at the lake. The toads were all injected with hormones and produced one egg mass, but as it was late in the summer many of the eggs were infertile, with approximately 90 tadpoles surviving. All surviving tadpoles and adult toads were placed back in captivity.

The following is a summary of the Wyoming toad population:

<u>YEAR</u>	<u>EST. POPULATION</u>
1989/90	275 - 677
1991	100 - 373
1992	24 - 210
1993	87 - 110
1994	170 - 190

Several waterfowl counts along with one brood count were conducted on the refuge during the season.

The Mortenson Lake Fishing Club's lease was renewed. This fishing lease was a condition of sale on the Mortenson Lake property by the original landowner, and may continue until January 23, 1999.

The refuge grazing permittee used 315 AUM's of the 450 allotted. The permittee's livestock entered the Meeboer Lake Unit on May 9th using 159 AUM's over a two week period. From September 1st until September 5th, the Soda Lake Unit utilized 20 AUM's while the Mortenson Lake Unit used 136 AUM's from August 6th to September 17th. Due to high selenium in Soda Lake the cows were moved off much earlier than normal.

All water management activities were performed by the grazing permittee. The only water the refuge received this year was supplemental runoff water in the South Canal from an adjacent landowner. The South Canal was turned on in mid-May and flowed sporadically through June with the refuge receiving 135 acre feet of water. A majority of the water was used to fill wetlands on the eastern section of the refuge.

Several water management facilities were rehabilitated on the refuge this year. On Mortenson Lake an outlet control structure was installed, to micro manage water levels, and the ditch check just below the outlet was raised. Two ditch checks and take-outs were installed to facilitate water flow into Soda and Gibbs Lake.

Electric fence was installed around the outlet portion of the Mortenson Lake dike to protect prime toad habitat from being destroyed by cattle. Another section of fence was installed to split the area around the lake, forcing the cattle to concentrate more on the alkali, (to create more open habitat for the toads) and uplands areas.



94 NR38 10/27/94 ECP  
Mortenson Lake outlet control structure.



94 NR39 10/27/94 ECP  
Overlooking Mortenson Lake from the outlet structure.

Patten met with a representative from the Town of Walden regarding construction of a natural gas pipeline from Laramie, Wyoming to Walden that will pass along the boundary of Mortenson Lake National Wildlife Refuge. The US Forest Service took the lead on fulfilling NEPA compliances for this right-of-way.

A check in the amount of \$2,167.00 was presented to Albany County in April for the 1993 revenue sharing funds.

## PATHFINDER NATIONAL WILDLIFE REFUGE WYOMING

Administered by Arapaho NWR Complex  
PO Box 457, Walden, Colorado

### Introduction

Pathfinder National Wildlife Refuge is an overlay on part of the Bureau of Reclamation's Pathfinder Reservoir in south-central Wyoming. This isolated refuge is 50 miles southwest of Casper and 20 miles from the small settlement of Alcova, Wyoming. Refuge headquarters for Pathfinder Refuge is at Arapaho NWR, about 200 miles to the south.

The refuge was established on August 1, 1936, as an overlay on the entire reservoir, but it was reduced to its present four small units containing 16,807 acres, to facilitate more intensive management by Public Land Order in 1965. The largest unit of the refuge lies astraddle of what is known as the Sweetwater Arm of the reservoir. The three smaller units are to the south, at Goose Bay, DeWeese Creek and at the junction of Sage Creek and the North Platte River.

Pathfinder Refuge is an established feeding, resting and nesting ground for both ducks and Canada geese, providing for as many as 8,500 ducks and 500 geese on their annual migrations.

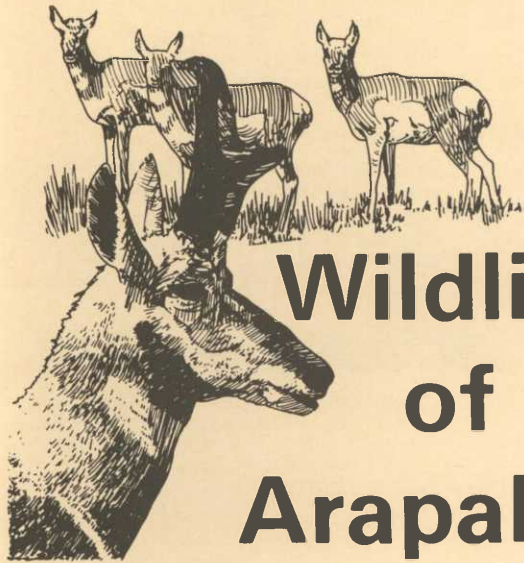
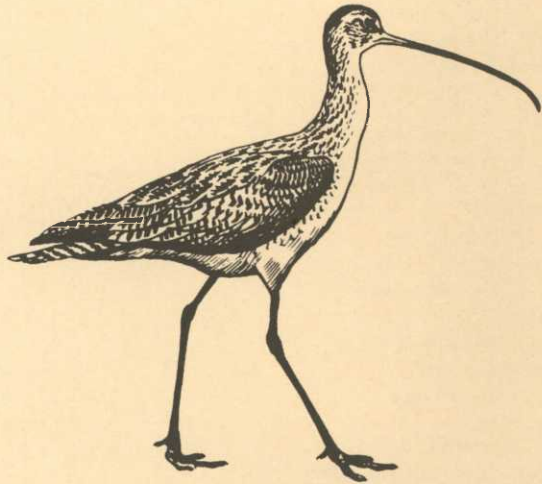
In addition to migratory birds, the refuge provides habitat for hundreds of pronghorn antelope, cottontail rabbits, a few mule deer and sage grouse. It is typical of much of the semi-desert lands of Wyoming, except that the reservoir furnishes more water. Since the reservoir fluctuates as much as 50 feet per year, it is difficult to provide food and cover for waterfowl near the water line.

### 1994 Activities

Compatibility Determinations, Environmental Action Memorandums and an Environmental Evaluation Checklists were completed for all recreational uses occurring on the refuge.

The refuge provided electric fencing material as part of the refuge's contribution to the Miracle Mile Coordinated Resource Management Project on the North Platte River in Wyoming .

A check for \$46,00 was presented to Carbon County as revenue sharing payment for FY93.



# Wildlife of Arapaho

## NATIONAL WILDLIFE REFUGE

Arapaho National Wildlife Refuge provides excellent habitat for the variety of wildlife you can observe here. The irrigated meadows are ideal for nesting waterfowl and other species of birds. The sagebrush flats and knolls are utilized by upland game birds for nesting, and pronghorn antelope, elk, and mule deer feed on the sparse vegetation.

May through October are the best months for observing birds on the refuge and surrounding North Park area. Most mammals can be observed year around.

### CHECKLIST:

The following tabulation lists 187 species of birds, 32 mammals, and 13 other vertebrates which have been observed on the refuge. Species of birds which have been known to nest on the refuge are preceded by • Common names for mammals, fish, reptiles and amphibians are followed by the scientific name and a specific abundance code. Since most birds are migratory, their seasonal occurrence and relative abundance is coded as follows:

**Refuge Manager**  
**Arapaho National Wildlife Refuge**  
**P.O. Box 457**  
**Walden, Colorado 80480**



**UNITED STATES**  
**DEPARTMENT OF THE INTERIOR**  
**U.S. FISH AND WILDLIFE SERVICE**



July 1994

RF6-65520-7

\* U.S. GOVERNMENT PRINTING OFFICE: 1994-573-165

Seasons:  
 S — Spring (March-May)  
 S — Summer (June-August)  
 F — Fall (September-November)  
 W — Winter (December-February)

Seasonal Abundance:

a—abundant occurring in large numbers  
 c—common certain to be seen in suitable habitat  
 u—uncommon present but not certain to be seen  
 o—occasional seen only a few times during a season  
 r—rare seen at intervals of 2- to 5-years  
 x—accidental straggler or out of normal range

BIRDS				
	S	S	F	W
<b>GREBES</b>				
• Eared Grebe	u	c	u	
• Western Grebe	o			
• Pied-billed Grebe	u	u	u	
<b>PELICANS-CORMORANTS</b>				
• White Pelican	r	r		
• Double-crested Cormorant	o	o	o	
<b>HERONS-BITTERNS-IBISES</b>				
• Great Blue Heron	u	c	u	
• Snowy Egret	r	r	r	
• Cattle Egret	o	o	o	
• Black-crowned Night Heron	u	c	u	
• Yellow-crowned Night Heron	r	r		
• Green-backed Heron		x		
• American Bittern	r	u	r	
• White-faced Ibis	o	o	o	
<b>SWANS-GEESE-DUCKS</b>				
• Tundra Swan		r		
• Canada Goose	c	c	c	
• Snow Goose		c	o	
• Mallard	c	a	a	
• Gadwall	c	a	a	
• Northern Pintail	c	c	c	
• Green-winged Teal	c	c	c	
• Blue-winged Teal	c	c	c	
• Cinnamon Teal	c	c	c	
• American Wigeon	c	a	a	
• Northern Shoveler	c	c	c	
• Redhead	u	c	c	
• Ring-necked Duck	u	u	u	
• Canvasback	u	u	u	
• Lesser Scaup	c	c	c	
• Goldeneye	r	r	r	
• Bufflehead	o	r	o	
• Ruddy Duck	o	c	c	
• Wood Duck		x		
• Common Merganser	o	u	u	

VULTURES-HAWKS-EAGLES-FALCONS

	S	S	F	W
• Turkey Vulture	r	c	o	r
• Red-tailed Hawk	o	r	o	
• Swainson's Hawk	u	c	c	
• Rough-legged Hawk	o	o	o	o
• Ferruginous Hawk	u	o	u	u
• Golden Eagle	c	u	u	c
• Bald Eagle	r	r	r	
• Northern Harrier	u	c	c	r
• Osprey		r	r	
• Prairie Falcon	r	o	o	r
• Peregrine Falcon	r	r	r	
• Merlin	r	r	o	
• American Kestrel	u	c	u	
• Northern Goshawk		r	o	
• Cooper's Hawk	o	r		

GROUSE

• Sage Grouse	c	u	c	u
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CRANES

• Sandhill Crane	r	r		
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IBIS

• White-faced Ibis	r	r		
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RAILS-COOTS

• Virginia Rail	o	u	u	
• Sora	u	c	c	
• American Coot	c	c	c	

SHOREBIRDS-GULLS-TERNS

• Killdeer	c	c	c	
• Black-bellied Plover	r			
• Common Snipe	c	c	u	
• Long-billed Curlew	r	o		
• Spotted Sandpiper	o	u	o	
• Willet	u	c	c	
• Marbled Godwit		u		
• Greater Yellowlegs	o	r		
• Lesser Yellowlegs		u	u	
• Least Sandpiper		u	o	
• Western Sandpiper		u	o	
• Upland Sandpiper		x		
• Baird's Sandpiper		u	o	
• Solitary Sandpiper		o		
• Long-billed Dowitcher	u	o	u	
• American Avocet	u	c	r	
• Black-necked Stilt	r	r	r	
• Wilson's Phalarope	u	a	c	
• California Gull	u	u	u	
• Franklin's Gull		r		
• Ring-billed Gull		r		
• Bonaparte's Gull	r			
• Forster's Tern	o	u	o	
• Black Tern	o	u	o	

DOVES

• Mourning Dove	c	c	c	
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OWLS

• Great Horned Owl	u	c	u	u
• Burrowing Owl	r	r	r	

	S	S	F	W
• Long-eared Owl	o	u	o	
• Short-eared Owl	o	u	u	
• Northern Saw-whet Owl	r	r	r	
• Barn Owl		x		

GOATSUCKERS-HUMMINGBIRDS

• Common Nighthawk	u	c	u	
• Broad-tailed Hummingbird	o	u	o	
• Rufus Hummingbird	o	c	u	

KINGFISHERS-WOODPECKERS

• Belted Kingfisher	u	u	o	
• Northern Flicker	o	u	o	
• Hairy Woodpecker	o	o	u	u
• Downy Woodpecker	o	o	u	u
• Lewis's Woodpecker		r		
• Yellow-bellied Sapsucker	r	r		

FLYCATCHERS

• Eastern Kingbird		o	o	
• Western Kingbird	u	u	o	
• Say's Phoebe	o	o	o	
• Olive-sided Flycatcher	r			
• Willow Flycatcher	o	u	o	o
• Western Flycatcher	r			
• Western Wood Pewee	r			

LARKS-SWALLOWS

• Horned Lark	c	u	c	a
• Violet-green Swallow	o	o	c	
• Tree Swallow	o	c	o	
• Bank Swallow	o	u	o	
• Barn Swallow	o	u	o	
• Cliff Swallow	u	c	u	
• Rough-winged Swallow		o		

JAYS-MAGPIES-CROWS

• Steller's Jay	u	r	r	o
• Black-billed Magpie	c	c	c	c
• Common Raven	u	o	o	u
• American Crow	c	c	c	c
• Clark's Nutcracker	r			

CHICKADEES-DIPPERS-WRENS

• Black-capped Chickadee	u	u	o	u
• Mountain Chickadee	u	o	o	u
• American Dipper	o	o	r	
• House Wren	u	u	u	
• Marsh Wren	u	u	u	
• Rock Wren	r	u	r	
• Sedge Wren		x		

NUTHATCHES

• Red-breasted Nuthatch		r		
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MOCKINGBIRDS-THRASHERS-THRUSHES

• Mockingbird	o	o	r	
• Gray Catbird	r	r	r	
• Brown Thrasher	o	o	r	
• Sage Thrasher	u	c	u	
• Robin	u	c	u	
• Hermit Thrush	r	r		
• Swainson's Thrush	r	r	r	

	S	S	F	W
• Veery	r	u	r	
• Ruby-crowned Kinglet	r	o		
• Eastern Bluebird	r	o	r	
• Western Bluebird	o	o	o	
• Mountain Bluebird	c	c	u	

PIPITS-WAXWINGS-SHRIKES

• Water Pipits	r	r	r	
• Cedar Waxwing	o	r	r	o
• Loggerhead Shrike	o	o	u	r

STARLINGS

• European Starling	o	u	o	r
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VIREOS

• Warbling Vireo	r	r	r	
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WOOD WARBLER-WEAVER FINCHES

• Orange-crowned Warbler	r	r	r	
• Yellow Warbler	c	a	c	
• Yellow-rumped Warbler		o	o	
• Common Yellowthroat	o	u	o	
• Chestnut-sided Warbler		x		
• MacGillivray's Warbler		o	u	
• Wilson's Warbler	r	o	r	
• House Sparrow	u	u	u	
• American Redstart		r		
• Northern Waterthrush	r			

MEADOWLARKS-BLACKBIRDS-ORIOLES

• Bobolink		r		
• Western Meadowlark	o	u	o	
• Yellow-headed Blackbird	c	c	u	
• Red-winged Blackbird	c	c	u	
• Brewer's Blackbird	u	c	u	
• Common Grackle	r	u	r	
• Brawn-headed Cowbird	c	c	u	
• Northern Oriole		r		

TANAGERS

• Western Tanager	r	r		
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GROSBEAKS-FINCHES-SPARROWS-BUNTINGS

• Black-headed Grosbeak	r			
• Blue Grosbeak	x	x		
• Evening Grosbeak		o		
• House Finch	o	o	o	
• Rosy Finch	c	o	o	c
• Pine Siskin		o	o	
• Dickcissel	x			
• American Goldfinch	o	u	r	
• Lesser Goldfinch		x		
• Green-tailed Towhee		u		
• Rufous-sided Towhee	r			
• Lark Bunting "Colorado State Bird"	o	o	o	o
• Savannah Sparrow	u	a	u	
• Vesper Sparrow	o	u	o	
• Lark Sparrow		u	u	
• Sage Sparrow	o	o	o	
• Dark-eyed Junco	o	o	o	o
• American Tree Sparrow			u	

	S	S	F	W
— Chipping Sparrow		c	u	
• Brewer's Sparrow		c	c	r
— White-crowned Sparrow	o	u	u	o
— Fox Sparrow	o	u	o	
— Lincoln's Sparrow	o	u	o	
• Song Sparrow		c	c	o
— McCown's Longspur			o	o
— Lapland Longspur			o	o
— Chestnut-collared Longspur		r	o	o
— Snow Bunting			o	o
— Indigo Bunting		x		
— Lazuli Bunting		o		

### MAMMALS

— Masked Shrew ( <i>Sorex cinereus</i> )	u
— Nuttall's Cottontail ( <i>Sylvilagus nuttallii</i> )	u
— White-tailed Jackrabbit ( <i>Lepus townsendii</i> )	a
— Least Chipmunk ( <i>Eutamias minimus</i> )	c
— Yellow-bellied Marmot ( <i>Marmota flaviventris</i> )	u
— Richardson's Ground Squirrel ( <i>Spermophilus richardsonii</i> )	a
— Thirteen-lined Ground Squirrel ( <i>Spermophilus tridecemlineatus</i> )	o
— Golden-mantled Ground Squirrel ( <i>Spermophilus lateralis</i> )	u
— White-tailed Prairie Dog ( <i>Cynomys leucurus</i> )	a
— Beaver ( <i>Castor canadensis</i> )	c
— Deer Mouse ( <i>Peromyscus maniculatus</i> )	a
— House Mouse ( <i>Mus musculus</i> )	c
— Northern Grasshopper Mouse ( <i>Onychomys leucogaster</i> )	c
— Western Jumping Mouse ( <i>Zapus princeps</i> )	c
— Montane Vole ( <i>Microtus montanus</i> )	c
— Muskrat ( <i>Ondatra zibethicus</i> )	c
— Porcupine ( <i>Erethizon dorsatum</i> )	u
— Coyote ( <i>Canis latrans</i> )	c
— Red Fox ( <i>Vulpes vulpes</i> )	o
— Black Bear ( <i>Ursus americanus</i> )	x
— Raccoon ( <i>Procyon lotor</i> )	u
— Ermine ( <i>Mustela erminea</i> )	u
— Long-tailed Weasel ( <i>Mustela frenata</i> )	c
— Mink ( <i>Mustela vison</i> )	u
— Badger ( <i>Taxidea taxus</i> )	c
— Striped Skunk ( <i>Mephitis mephitis</i> )	c
— Bobcat ( <i>Felis rufus</i> )	x
— Rocky Mountain Elk ( <i>Cervus elaphus</i> )	u
— Mule Deer ( <i>Odocoileus hemionus</i> )	c
— White-tailed Deer ( <i>Odocoileus virginianus</i> )	r
— Moose ( <i>Alces alces</i> )	u
— Pronghorn ( <i>Antilocapra americana</i> )	c

### FISH—AMPHIBIANS—REPTILES

— Rainbow Trout ( <i>Salmo gairdneri</i> )	r
— Brown Trout ( <i>Salmo trutta</i> )	c
— Brook Trout ( <i>Salvelinus fontinalis</i> )	r

— Northern Redbelly Dace ( <i>Phoxinus eos</i> )	c
— Fathead Minnow ( <i>Pimephales promelas</i> )	c
— Creek Chub ( <i>Semotilus atromaculatus</i> )	c
— Long-nose Sucker ( <i>Catostomus catostomus</i> )	c
— White Sucker ( <i>Catostomus commersoni</i> )	c
— Johnny Darter ( <i>Etheostoma nigrum</i> )	r
— Barred Tiger Salamander ( <i>Ambystoma tigrinum mavortium</i> )	u
— Western Toad ( <i>Bufo boreas</i> )	u
— Striped Chorus Frog ( <i>Pseudacris nigrata maculata</i> )	u
— Wandering Garter Snake ( <i>Thamnophis elegans vagrans</i> )	r

### -NOTES-

Date \_\_\_\_\_ Total \_\_\_\_\_

Observers \_\_\_\_\_

Weather \_\_\_\_\_ Time \_\_\_\_\_

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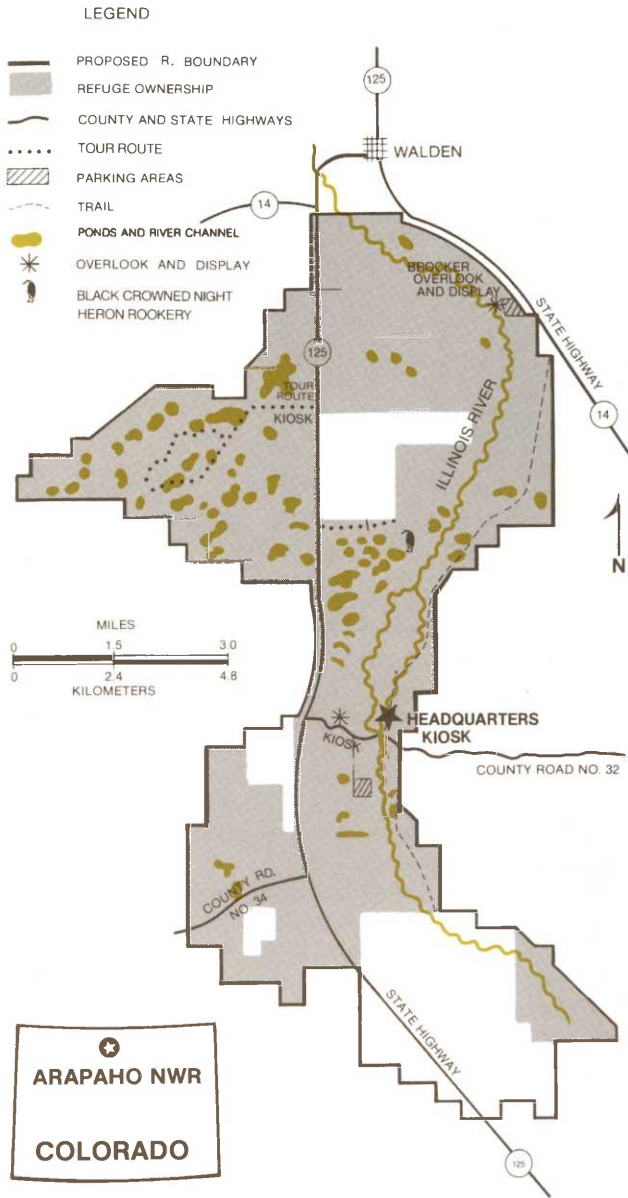
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# ARAPAHO NATIONAL WILDLIFE REFUGE



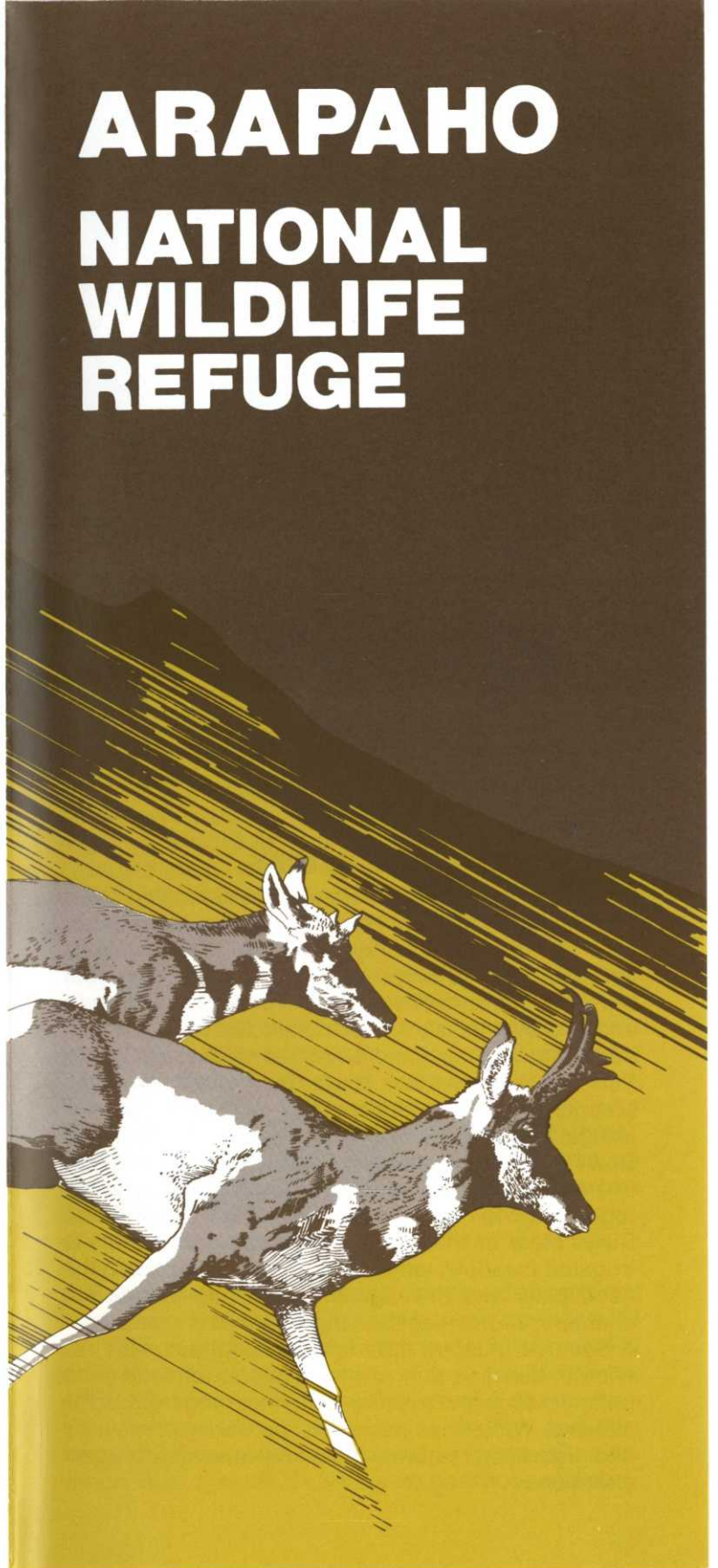
**U.S. FISH AND WILDLIFE SERVICE**  
Department of the Interior



RF 6-65520-10

May 1992

☆ U.S. GOVERNMENT PRINTING OFFICE: 1992-673-180/60004





*Canada geese, FWS photo.*

### **A PICTURE OF THE VALLEY**

Arapaho National Wildlife Refuge is located in an intermountain glacial basin south of Walden, county seat of Jackson County, Colorado. The basin is approximately 35 miles wide and 45 miles long. It is the northernmost of four such "parks" in Colorado and is known locally as North Park. North Park opens north into Wyoming and is rimmed on the west by the Park Range, on the south by the Rabbit Ears Mountains, on the southeast by the Never-Summer Range, and on the east and northeast by the Medicine Bow Range. Numerous slow, meandering streams are interspersed on the basin floor and eventually come together to form the headwaters of the North Platte River. Most of the flood plain along the streams is irrigated meadow, while the low rises adjacent to the flood plain and the higher rises on the refuge are characterized by sagebrush grasslands.

Summer in North Park is warm but brief, with just enough sun and rain to green the bottomlands and upland slopes and to bring forth fingerling trout in the streams. Winter has nearly always driven less hardy and vigorous creatures, including humans, to lower elevations.



*Beaver, FWS photo.*

### **FOOTPRINTS OF THE PAST**

The Ute Indians referred to North Park as "Cow Lodge" and "Bull Pen." They were the first visitors to the area and remained only during the summer months to hunt bison, abandoning the valley during the long, snowy, and icy winters. Their small numbers and nomadic lifestyle left but a small imprint on the land. One might easily imagine their quiet encampments within the refuge.

The first recorded exploratory footsteps to appear in the valley belonged to Jacques Bijeau in the year 1820. Like many of his French countrymen, Bijeau was lured by the promise of profit in trapping beaver.

In 1844, Lieutenant John F. Fremont traversed the park from Northgate to Willow Creek Pass and recorded the following in his journal:

"The valley narrowed as we ascended and presently divided into a gorge, through which the river passed as through a gate — a beautiful circular valley of 30 miles in diameter, walled in all around with snowy mountains, rich with water and grass, fringed with pine on the mountain sides below the snow, and a paradise to all grazing animals."

Others, like James O. Pinkham, came to exploit mineral wealth. Miners preferred the summer months for their endeavors. The first residents to brave the cold were Jacob Fordyce and his family. They stayed the winter of 1878, 2 years after Colorado became a State and a full 50 years after the first explorers entered the valley.



*Avocet, FWS photo.*

## A HOME FOR WILDLIFE

Arapaho National Wildlife Refuge was established in 1967 to furnish waterfowl with a suitable place to nest and rear their young. To the east in the undulating prairies of the Dakotas and Minnesota, thousands of waterfowl-producing wetlands have been and continue to be destroyed by drainage and filling activities due to farming operations, road construction, and housing developments. Arapaho Refuge was created to offset, in part, losses of nesting habitat in the prairie wetland region of the Midwest.

To assure availability of water in such a dry climate, water is diverted from the Illinois River and directed through a complex system of ditches to irrigate meadows and fill waterfowl brood ponds. Periodic burning, irrigation and various grazing systems are management tools used on the refuge meadows to maintain vegetative vigor for nesting purposes. Manipulation of water levels in the shallow ponds assures adequate aquatic vegetation for food and escape cover. The ponds also produce many insects and other invertebrates (protein) needed by most female waterfowl for successful egg laying. These insects also serve as an essential food item for the growth of ducklings and goslings during the summer months.

The first waterfowl arrive at Arapaho when the ice vanishes in April. The peak migration occurs in late May when 5,000 or more ducks may be present. Canada geese have been reestablished in North Park and begin nesting on the refuge during April. Duck nesting usually starts in early June and peaks in late June. The refuge produces about 9,000 ducklings and 150 to 200 goslings each year. When refuge lands are fully acquired and developed, waterfowl production should increase significantly.



*Blue-winged teal, FWS photo.*

Primary upland nesting species include the mallard, pintail, gadwall, and American wigeon. A number of diving ducks, including the lesser scaup and redhead, nest on the larger ponds and adjacent wet meadows. Most species may be observed during the entire summer season. Fall migration reaches its height in late September or early October when up to 8,000 waterfowl may be on the refuge.

Refuge wetlands also attract numerous marsh, shore, and water birds. Sora and Virginia rails — shy, secretive birds — are numerous but seldom seen. If they are present, Wilson's phalarope, American avocet, willet, sandpipers, yellowlegs, and dowitchers will be easy to observe. Other less common species include great blue heron, black-crowned night heron, American bittern, and eared and pied-billed grebe.

The upland hills harbor sage grouse year around with a winter population of more than 200 birds. Golden eagles, several species of hawks, and an occasional prairie falcon circle the skies above the refuge in search of food. Their prey includes Richardson's ground squirrel, white-tailed prairie dog, and white-tailed jackrabbit.

Badger, muskrat, beaver, coyote, and pronghorn antelope are commonly observed. Now and then one may see a red fox, mink, long-tailed weasel, or porcupine. As many as 400 mule deer have wintered here and up to 200 elk are frequently seen during the winter months. Moose have recently been reintroduced into North Park and may occasionally be observed in the willow thickets along the Illinois River bottoms. There are no poisonous snakes.



*Sage grouse, photo by Harry L. Thompson, Colorado Division of Wildlife.*

## **INVITATION TO THE PUBLIC**

The public is welcome to observe and photograph wildlife. One can sense the vibrance of life here; the faint whirrings of insects, the murmur of moving water, the comings and goings of mammals, and the flights of birds set against the brilliant sky at dawn or dusk.

Aldo Leopold, a thoughtful and sensitive conservationist of a generation ago, suggested an attitude that might help people appreciate more fully the values of our national heritage when he wrote: "When we see land as a community to which we belong, we may begin to use it with love and respect."

Please observe the following regulations:

1. No overnight camping.
2. Firearms are strictly prohibited except during appropriate hunting seasons.
3. Pets must be leashed except retrievers used for hunting purposes during appropriate hunting seasons.
4. Trash must be taken home or deposited in proper receptacles.
5. Vehicle access is permitted on all existing roads and trails unless posted as "CLOSED."
6. Parking is permitted in designated parking areas and off to the side of existing roads and trails. Please do not park in a manner restricting the access of other visitors. Use designated parking areas when appropriate.

You are invited to take the self-guided 6-mile wildlife auto tour route and learn about the refuge, its wildlife, and wildlife habitat. The route is marked and begins approximately 3 miles south of Walden, on the west side of State Highway 125. After taking the tour, you may want to visit the Illinois River overlook and interpretive display. Return to Highway 125, turn right, and go 4 miles south, turn east (left) on the gravel road by the refuge entrance sign. The overlook is at the top of the first hill.

Public fishing is permitted on the Illinois River except in those areas posted as "CLOSED." Fishing is challenging because of dense willow growth along the river banks. These willows are essential to the fish, keeping water temperatures low. Expect to catch mostly brown trout with an occasional rainbow or brook trout. IMPORTANT: The refuge is closed to fishing from June 1 through July 31 each year to minimize disturbance to nesting waterfowl.

Portions of the refuge are open to public hunting of some game species during appropriate State seasons. Consult the refuge manager for more information concerning seasons and regulations.

Motels, grocery stores, service stations, and camping facilities are located in and near Walden. Facilities are also available on nearby U.S. Forest Service, Colorado State Forest, and Colorado Division of Wildlife lands.

Mailing address: Refuge Manager, Arapaho National Wildlife Refuge, Box 457, Walden, CO 80480, Telephone: 303-723-8202.

**ARAPAHO**



**NATIONAL  
WILDLIFE  
REFUGE**

**SELF-GUIDED  
AUTO TOUR**

**W**elcome to Arapaho National Wildlife Refuge. You are invited to take the self-guided 6-mile wildlife tour route and learn about the refuge, its wildlife and wildlife habitat. If you drive carefully, you may see pronghorns, prairie dogs, ducks, geese, herons, sage grouse and other wildlife. Watch for signs along the shoulder of the road. The numbered signs along the route are keyed to the following numbered paragraphs. Please do not disturb the wildlife. Those who follow you want to see wildlife too. PLEASE DO NOT LITTER!!

Arapaho National Wildlife Refuge is located in an intermountain glacial basin in Jackson County, Colorado. Forming the headwaters of the North Platte River, the basin opens north into Wyoming and is rimmed on the west by the Park Range, on the south by the Rabbit Ears Mountains and on the east by the Medicine Bow Range. The floor of the basin is known locally as North Park and is interspersed by many slow meandering streams that come together in the north central part of the basin to form the North Platte River. Main tributary rivers are the Michigan, Illinois, Canadian and Grizzly.

The refuge is situated at an elevation of 8,200 feet immediately south of Walden, Colorado. The Illinois River traverses from south to north through the eastern half of the refuge and provides the water needed to irrigate refuge meadows and maintain waterfowl brood ponds. The higher rises on the refuge are characterized by dry grassland, sagebrush and greasewood.



### SAGEBRUSH FLATS

These sagebrush flats and knolls do not appear to offer much for wildlife but actually they are very valuable. Sagebrush is essential to sage grouse, the largest American grouse, which prefers sagebrush for nesting purposes. Pronghorn antelope feed year around on sage brush and other plants. With the coming of winter, 50 to 100 elk descend from the surrounding mountains and winter on these flats and knolls. On other parts of the refuge, mule deer also utilize sage brush and other forbs as their main winter food.



### WATER IMPOUNDMENTS

Refuge managers have created many types of water impoundments like this one for waterfowl and other water birds. Small, shallow ponds are the first to warm up in the spring thereby producing many insects and other invertebrates (protein) needed by most female waterfowl for successful egg laying. During the summer months, insects and other invertebrates serve as an essential food item for growing ducklings and goslings.



### WATERFOWL PRODUCTION

Waterfowl are usually visible from here except when the lake is frozen. Arapahoe Refuge produces an average of over 9,000 ducklings every year and hosts up to 8,000 waterfowl during the peak of the fall migration. Waterfowl production is the primary objective of Arapahoe Refuge. When fully acquired and properly managed, the refuge anticipates a yearly production of approximately 11,000 to 12,000 ducks. Mallard, gadwall and American wigeon are the most common species.



### HABITAT MANAGEMENT

A series of small ditches are used to irrigate these grassy meadows. Although ducks will nest in sagebrush and greasewood, they prefer the tall, dense grasses in the irrigated meadows. Grazing and prescribed burning are management tools which are utilized in various degrees on the refuge to maintain vigorous stands of grasses and other desirable habitat for wildlife.



### SUCCESSFUL NESTING

Canada geese also nest on Arapaho. Over-the-water nesting platforms and large hay bales, together with nesting islands constructed of dirt and rock are safe from raccoons, skunks and most other predators which have an appetite for eggs. The refuge produces from 300-400 goslings each year and with increased development and management, production is expected to reach 500 birds.



## WILLOW WOODS

The willows across the water to your right once contained a rookery or communal nesting area of black-crowned night herons. Over the years, the willows have died due to permanent water levels in the pond. Decline of the willows has forced the birds to move elsewhere. Remnants of old nests are still visible.

A new rookery has been established at Smith Pond on the east side of the refuge. Black-crowned night herons feed on small fish, amphibians, reptiles and insects. If you are interested in observing the new rookery, please contact the refuge office for additional information.



## PRAIRIE DOG TOWN

This area was disturbed by the burrowing of white-tailed prairie dogs. White-tails live in much smaller towns than their black-tailed cousins which are slightly larger and are found at lower elevations. Prairie dogs get their name from their barking in steady yap-yap-yaps at some real or imaginary enemy. The 4 to 8 young per female are born in May but usually do not appear out of the burrow until mid to early June. Prairie dogs hibernate, usually coming out as soon as the snow melts in the spring. In North Park, prairie dog towns are also inhabited by Richardson ground squirrels. They look much alike but the ground squirrels are about half as large.

This is the last stop on the wildlife tour. You may want to visit the Illinois River overlook. Return to Highway 125 and go 4 miles south (to the right). Then turn east (left) on the gravel road by the large refuge entrance sign. The overlook is at the top of the first hill.

Arapaho National Wildlife Refuge was established in 1967 to furnish waterfowl with a suitable place to nest and rear their young. To the east in the undulating prairies of the Dakotas and Minnesota, thousands of waterfowl-producing wetlands have been destroyed by drainage as a result of farming operations, road construction and housing developments. Arapaho Refuge was created to offset, in part, losses of nesting habitats in the prairie wetland region of the Midwest. Most of the land was purchased with money derived from the sale of Duck Stamps to hunters.

Arapaho National Wildlife Refuge is one of more than 440 wildlife refuges managed by the U.S. Fish and Wildlife Service.



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



RF 6-65520-10



Reprinted May 1992

## VIEWING TIPS

Many of the viewing sites in this brochure do not have any signs to interpret what you may see. We expect more complete signing as the watchable wildlife program develops in the next two years. Most wildlife is active in early morning or evening hours. Be prepared to view with quality binoculars or a telephoto camera. Review bird or mammal field guides ahead of time so you can quickly recognize wildlife and understand more about their behavior. Observe animals from a distance, and respect others who may visit the area after you. Also, be sure to get agency maps of the areas you plan to visit since they contain key landmarks, location of private property, and agency regulations. If by chance you don't see the wildlife you were counting on, take time to appreciate the snowcapped mountains, brilliant wildflowers, golden aspen, peaceful sunsets, or breathtaking clear night skies. Remember, *"What a fool sees as common, a wise man learns to appreciate!"*

## SERVICES

Walden is a small but full service community with motels, restaurants, grocery stores, and gas stations. Sporting good or hardware stores may have some of the camping or viewing equipment you forgot to bring. The Walden Chamber of Commerce is located on Main Street and is open 7 days a week during the summer. Additional brochures about North Park may be acquired there.

## REGULATIONS

Each of the viewing areas is on different public lands which have specific regulations regarding fees, camping, and travel. In general, keep vehicles on established roads and camp in designated areas. If unfamiliar with regulations of the various agencies, contact the references listed.

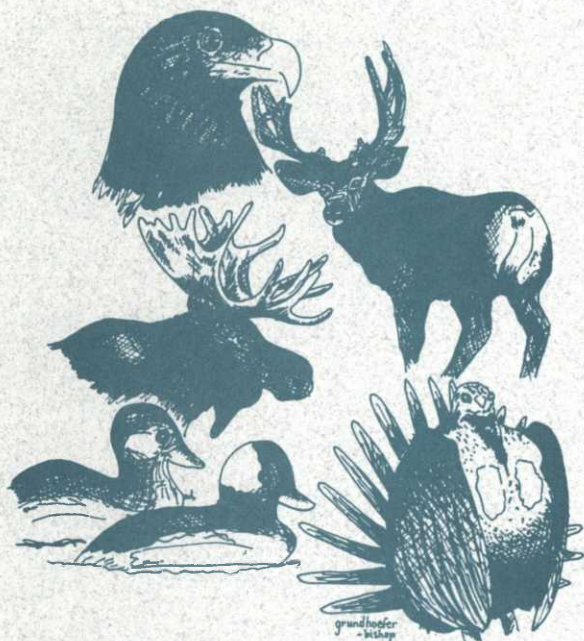
## REFERENCES

U.S. FOREST SERVICE - (303) 723-8204  
COLORADO DIVISION OF WILDLIFE - (303) 484-2836  
BUREAU OF LAND MANAGEMENT - (303) 724-3437  
PARKS AND OUTDOOR REC. (303) 723-8366  
ARAPAHO WILDLIFE REFUGE - (303) 723-8202  
CHAMBER OF COMMERCE - (303) 723-4600

Please direct any specific comments regarding the wildlife viewing sites to the agencies listed above so we can continue to provide a quality experience.

\* A special thanks to Robert Waxman's - *"Where your memories come first...to make them last."*

# NORTH PARK WATCHABLE WILDLIFE



**LEAVE THE CROWDS BEHIND!** Watchable wildlife abound in the pristine mountains, forests, lakes and streams of the area known as North Park. Over half of North Park, Jackson County, is national and state forests, parks, and wildlife refuges. We welcome you to explore the most unique and plentiful wildlife in Colorado. Conveniences such as motels, gasoline, groceries, and sporting goods can be found in the rustic community of Walden. Come and explore North Park's Watchable Wildlife!

## SITE DIRECTIONS (from Walden, CO)

**1. BIG CREEK LAKE OSPREY AND NATURE TRAIL** - Take HWY 125 North to Cowdrey for 9 miles. Head west on County Road 6 to Pearl for 19 miles. Turn southwest on Forest Road 600 to Big Creek Lakes Campground, 6 miles.

**2. NORTHGATE CANYON NATURE TRAIL** - Take HWY 125 North for 17 miles to National Forest Access (Forest Road 896). Head east on FDR 896 for .5 mile to the river access parking area.

**3. SENTINEL MOUNTAIN WINTERING ELK** - Take HWY 125 North for 12 miles. Sentinel Mountain can be viewed from the highway. For additional viewing go east on HWY 127 for one mile.

**4. SHEEP MOUNTAIN RAPTORS** - Take County Road 12 west for 12 miles to sheep mountain.

**5. WALDEN RESERVOIR SHOREBIRDS** - Take County Road 12 west for .5 mile. Head north on County Road 15 which goes part way around the reservoir.

**6. ARAPAHO WILDLIFE REFUGE AUTO TOUR** - Take HWY 125 south for 4 miles. Tour is on the west side of highway.

**7. BEAVER OVERLOOK** - Take HWY 14 southeast 20 miles to County Road 41 near KOA campground. Head north .75 miles to the parking area.

**8. STATE PARK MOOSE VIEWING** - Take HWY 14 southeast 20 miles to County Road 41 near KOA campground. Head north for 7 miles to viewing area.

**9. STATE PARK BIGHORN SHEEP VIEWING** - Take HWY 14 southeast 28 miles to the American Lakes/Crags entrance. Follow the park road signs to the American Lakes Trailhead. A park pass is required.

**10. STATE PARK ELK VIEWING** - Take HWY 14 southeast 20 miles to County Road 41 near KOA campground. Head north 4.25 miles to the viewing area.

**11. STATE PARK MOOSE VIEWING (HWY 14)** - Take HWY 14 southeast for 24 miles to mile marker 58. There is a large pull-off and parking area. From the parking area hike southeast through the trees, for roughly 300 feet, to the edge of a large meadow.

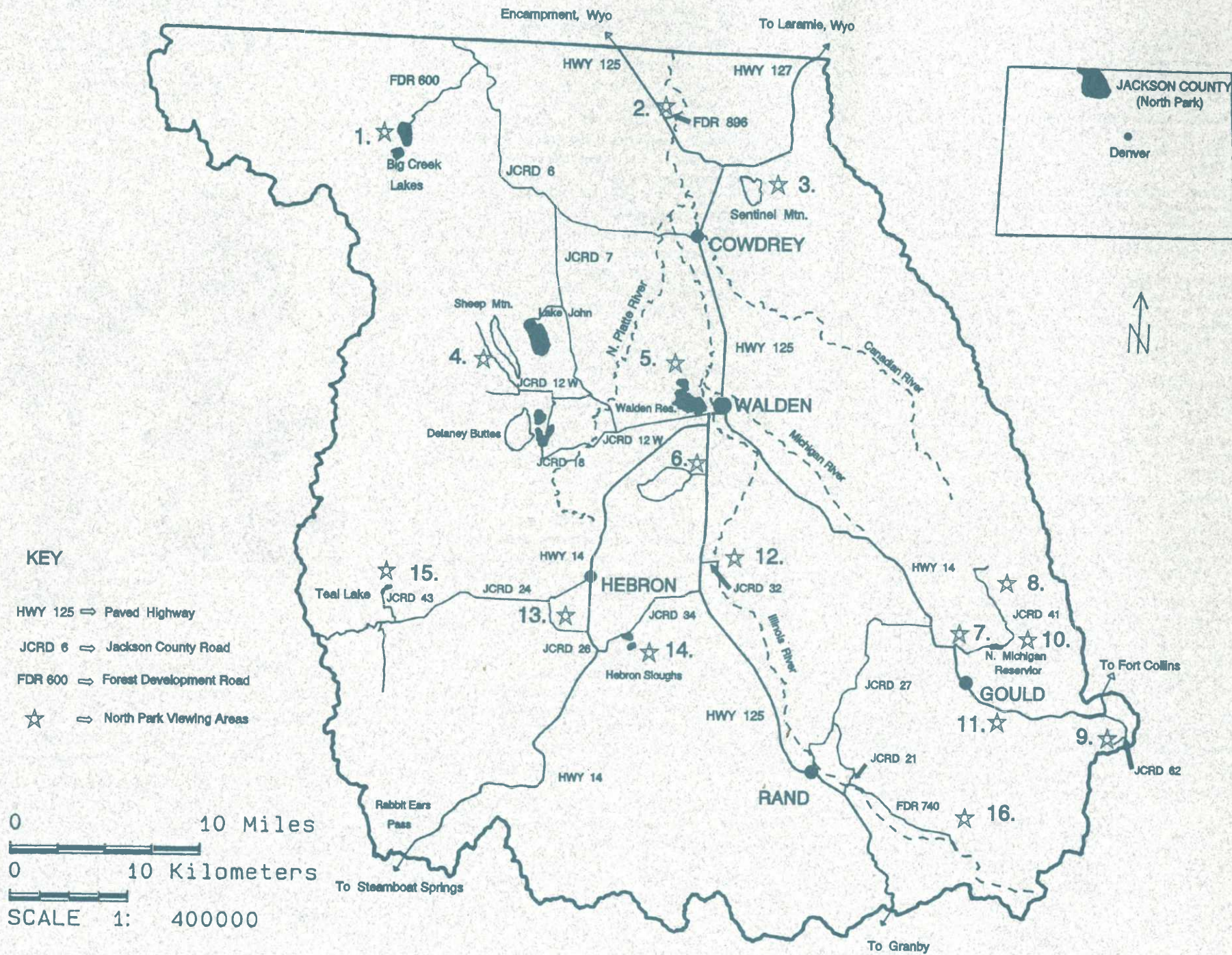
**12. ARAPAHO WILDLIFE REFUGE NATURE TRAIL** - Take HWY 125 south for 8 miles. Turn east on County Road 32 and travel approximately .5 mile. Turn south to trailhead parking area.

**13. COALMONT SAGE GROUSE VIEWING** - Take HWY 14 southwest for 15 miles. Turn west on County Road 26 for 1.6 miles. Turn north on the two track road for 0.3 mile to the parking area.

**14. HEBRON WATERFOWL AREA** - Take HWY 14 southwest for 16 miles. Turn east on County Road 34 for 2 miles to waterfowl area.

**15. TEAL LAKE BUFFLEHEAD DUCK AND BIG GAME** - Take HWY 14 Southwest for 12 miles to Hebron. Turn west on County Road 24 to National Forest Boundary (11 miles). Campgrounds are available at Teal Lake (3 miles North) or Hidden Lake, (4 miles South). Wildlife viewing in all areas of Forest. Routt National Forest Map is recommended.

**16. ILLINOIS RIVER MOOSE VIEWING** - Take HWY 125 South for 24 miles to County Road 21 (2 miles south of Rand). Turn northeast on County Road 21 for 0.5 mile. Turn east on Forest Road 740 (toward Gould) for 4 miles. Turn southeast on Forest Road 750 toward Illinois River for 2 miles.



## SITE DESCRIPTIONS

**1. BIG CREEK LAKE OSPREY AND NATURE TRAIL** - This area is unique for Colorado. Osprey can be observed hovering over the water and plunging in feet-first for fish, on either of the two lakes. Nesting begins in May and young are flying by August. An interpretive nature trail is maintained along Forest Trail 1125 on the west side of the large lake.

**2. NORTHGATE CANYON NATURE TRAIL** - This 1 mile trail on National Forest is excellent for short family hikes. The area is dry, scenic, and has interesting wildlife including badgers, eagles, beaver, kestrels, and magpies. The interpretive trail educates the user about a wide variety of natural resources and is open May through October. In addition, the North Plate River has excellent trout fishing for experienced anglers and guided white water raft trips in spring.

**3. SENTINEL MOUNTAIN WINTERING ELK** - Sentinel Mountain provides high quality winter habitat for Rocky Mountain elk. Some 300 elk use Sentinel during winters with average snowfall. On the south and west facing slopes, grasses are available for forage. When snow depths are extreme in other areas of the mountain, prevailing winds and solar radiation reduce snow depth here. Elk can best be seen on Sentinel Mountain December through March.

**4. SHEEP MOUNTAIN RAPTORS** - Sheep Mountain is a series of steep, precipitous cliff and upland habitats about 4 miles long, east of the road. Some of the cliffs are 200 feet high and offer excellent nesting habitat for golden eagles, prairie falcons, and red-tailed hawks. Nest sites for these species exist along most of the mountain. Upland, riparian, and hay meadow habitats at the foot of Sheep Mountain provide prey in close proximity to the raptor nest sites. Cliff swallows, ravens, and crows can also be seen.

**5. WALDEN RESERVOIR SHOREBIRDS** - Walden Reservoir is a large man-made wetland inhabited by a wide variety of waterfowl and shorebirds. It is important nesting and brood rearing habitat for Canada Geese as well as dabbling and diving ducks. Avocets (a crow sized shorebird with needle like bill curved upward) can commonly be seen feeding in shallow water. Other wildlife including pronghorn, jack rabbits, cormorants, and prairie falcons can often be observed.

**6. WILDLIFE REFUGE AUTO TOUR** - This six mile self-guided wildlife auto tour loop offers opportunities to view waterfowl, shorebirds, sage grouse, raptors, prairie dogs and pronghorn antelope. The tour travels through various habitats including meadow, sagebrush-grassland upland, and wetlands. Numbered signs along the shoulder of the road are keyed to a pamphlet explaining the refuge, its wildlife and wildlife habitat. Weather permitting, the tour loop is open from late March to mid October.

**7. BEAVER OVERLOOK FROM NATURE TRAIL** - From the parking area you can see the North Fork of the Michigan River. The river curves and bends through the willows and evidence of past and present beaver activity is readily visible. A short hike around the nature trail provides different views of the river and the beavers' impact upon the riparian area.

**8. STATE PARK MOOSE VIEWING** - This newly built observation deck was funded by a donation from the Fort Collins Moose Lodge. The deck overlooks prime moose habitat and moose are regularly seen in the creek bottom below. Moose are the largest member of the deer family and may reach sizes up to 7 feet tall and weigh 1,400 pounds.

## SITE DESCRIPTIONS (CONT.)

**9. STATE PARK BIGHORN SHEEP** - A 5 mile hike uphill from the trailhead takes you through dense forest to the alpine basin near timberline. From the basin use binoculars to scan the surrounding mountains. The sheep are frequently visible on the mountain sides and can also be seen by looking from Thunder Pass South into Rocky Mountain National Park.

**10. STATE PARK ELK VIEWING** - To the northeast from the road is a large meadow. Elk will frequent the edges of the meadow early in the morning and late in the evening. They feed in the meadow and seek shelter in the surrounding forest.

**11. STATE PARK MOOSE VIEW (HWY 14)** - This meadow offers incredible views of varying habitats including riparian, sub-alpine and the distant alpine. Moose, elk, deer, coyotes and a variety of small game and birds are frequently seen here. Additionally, the Nokhu Crag sharp rock outcrop offer a spectacular back drop for pictures.

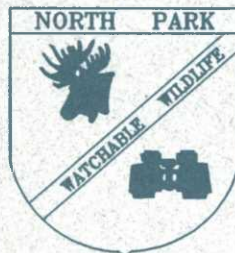
**12. WILDLIFE REFUGE NATURE TRAIL** - This .5 mile foot trail has interpretive stations and loops through a variety of wildlife habitats. Opportunity to view moose, deer, beaver, porcupines, songbirds, waterfowl, and native flora are excellent. The trail is accessible for the physically challenged with parking and restroom facilities available. Weather permitting, the trail is open from early April to late October.

**13. COALMONT SAGE GROUSE VIEWING AREA** - This communal display ground is one of the many "leks" in North Park where sage grouse gather annually to breed. Dominant males establish territories near the center of the lek and display by fanning tail feathers, inflating their yellow/green throat air sacs, and strut while producing a resonant "poik-poik" sound. Displaying occurs early mornings in late March through early May. Specific information can be obtained at the Walden Chamber of Commerce.

**14. HEBRON WATERFOWL AREA** - This area is composed of about 2500 acres of public land administered by the Bureau of Land Management. It provides important habitat for a variety of wildlife including waterfowl, shorebirds, songbirds, birds of prey, small mammals, and several species of large mammals. Eighteen Islands Reservoir was recently constructed to enhance wetland habitat in the Hebron Waterfowl Area.

**15. TEAL LAKE BUFFLEHEAD DUCK AND BIG GAME** - This area on National Forest has one of the few breeding populations of bufflehead duck in Colorado. Look for the ducks in larger lakes with minimal human disturbance. The male is black and white with a large bonnetlike white patch on a puffy head. Interestingly, they nest in old woodpecker holes or nest boxes. Keep an eye open for moose, deer, or elk almost anywhere. Pika, a mammal normally found above timber line can be observed in large wood piles near Colorado Creek.

**16. ILLINOIS RIVER MOOSE VIEWING** - A visit to this area boasts good odds on seeing moose May through October. After July, you may see bull moose with large antlers. Willow bottoms of the Illinois River are bordered by a 50 foot high land formation (terrace) which provides an excellent view into prime moose habitat. Walk along the terrace and scout the many ponds which moose frequent. An observation tower is proposed for construction in future years.





**HISTORY** At one time, before the white settlers discovered the picturesque highlands, North Park was inhabited by the Crow, Sioux, Cheyenne, Arapaho and Ute Indians. North Park was often called "Bull Pen" by them as it was a natural grazing area for vast herds of buffalo and was surrounded by a circle of mountain ranges. The Ute tribes used it for harboring stolen horses, bringing them through what is now known as Ute Pass. Arapaho Pass, in the southwest, was described as one of the most beautiful ever seen by Lt. John C. Fremont and Kit Carson. Beaver were found in more numbers than they had ever anticipated, giving credit to the bountiful wildlife still inhabiting the area.

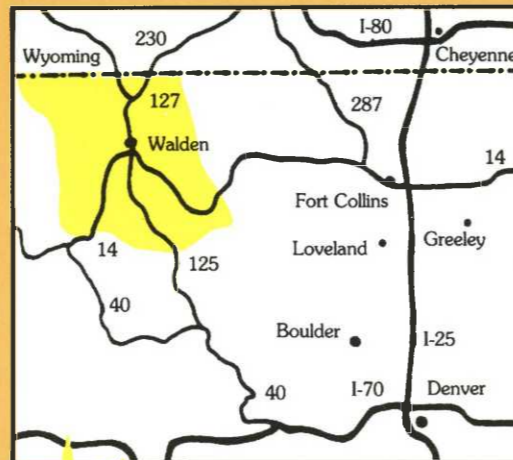
By the early 1870s, miners such as James O. Pinkham began panning for gold. However, silver became the real draw and by 1880 the new town of Teller numbered 2,000. When the shipping of the ore was found to be too expensive, the miners sought land elsewhere in the park, thus contributing to the settlement of the park in general. A similar incident occurred with the copper boom of 1905 in the town of Pearl.

Even the earliest prospectors realized the true potential of North Park lay in the ranching business, for the same reason the buffalo were here in the early days—it has natural pastureland protected on all sides by mountains. After cows were first wintered in 1878, the next year saw the beginning of several permanent ranches. As a result of the hard winter of 1883-84, ranchers began storing native hay for winter use. Ever since the advent of irrigation, hay has become one of North Park's major industries.

The year 1890 saw the founding of Walden due to the need for a centrally located supply source. It eventually became the seat of Jackson County. In 1909, North Park severed its relations with Larimer County and established itself as a separate county. It is believed to have been named after Andrew Jackson.

# ROOM TO ROAM NORTH PARK

*year around recreation!*



*★ Colorado's  
Newest Star*

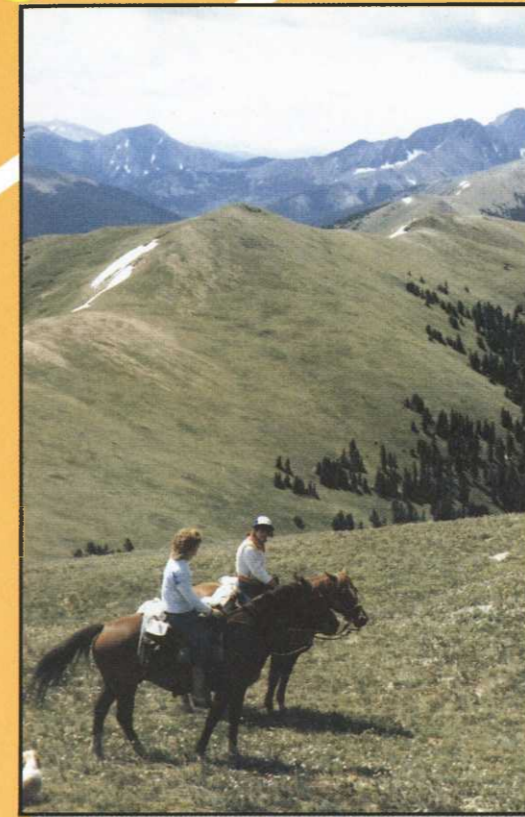
### Mileage to Walden

Albuquerque, New Mexico	611
Colorado Springs, Colorado	244
Dallas, Texas	958
Denver, Colorado	174
El Paso, Texas	866
Flagstaff, Arizona	731
Gallup, New Mexico	646
Grand Junction, Colorado	302
Los Angeles, California	1,088
Phoenix, Arizona	870
Santa Fe, New Mexico	549
Salt Lake City, Utah	398

North Park Chamber of Commerce  
Box 227, Walden, Colorado 80480  
(303) 723-4600

# NORTH PARK

*Colorado*



**ROOM  
TO  
ROAM**



**NORTH PARK** truly is a place with "Room to Roam" and is the northernmost of four such "parks" in Colorado. It opens north into Wyoming and is rimmed on the west by the Park Range and on the east and northeast by Medicine Bow Range. Numerous meandering streams are interspersed on the basin floor and eventually come together to form the headwaters of the North Platte River. Any direction you choose to explore will lead to a remarkable variety of surprises and unbelievable settings.

Routt National Forest and Colorado State Forest possess numerous beautiful high mountain lakes and streams teeming with Brook, Rainbow, Mackinaw, Brown and Native Trout. Both areas provide campgrounds, maintained hiking trails and four-wheel drive roads. In addition, the National Forest contains over 75,000 acres of designated wilderness lands. The Bureau of Land Management owns numerous tracts of land throughout the valley floor, most of which are open to a variety of public uses. One such popular area is the sand dunes located in the northeast section of North Park. Arapaho National Wildlife Refuge offers a self-guided auto tour route that allows you to see nature up close.



The Colorado Division of Wildlife administers several lakes and reservoirs on the valley floor that provide excellent fishing and camping opportunities.



North Park offers some of the best big-game hunting in Colorado. Large mule deer, majestic elk, blue grouse and ptarmigan abound in the surrounding mountains, while pronghorn, upland game birds and waterfowl test the shooter's skill in the valley. North Park also offers Colorado's only moose herd. Popular winter activities include ice fishing, cross-country skiing and snowmobiling.

Other attractions in the park include the North Park Pioneer Museum in Walden, one of the finest museums in Colorado preserving North Park's pioneer treasures of yesteryear in a good, old-fashioned pioneer way, and the Jackson County Courthouse, built in 1913 with native sandstone. Picnic tables and benches surrounded by green grass, trees and flowers make the courthouse an enjoyable resting area for travelers and natives alike. North Park's most popular attraction, however, has always been the open and friendly people who live here. Stay a few days and get acquainted—you'll come back.

