

OURAY NATIONAL WILDLIFE REFUGE

Vernal, Utah

ANNUAL NARRATIVE REPORT

Calendar Year 1989

U.S. Department of the Interior

Fish and Wildlife Service

NATIONAL WILDLIFE REFUGE SYSTEM

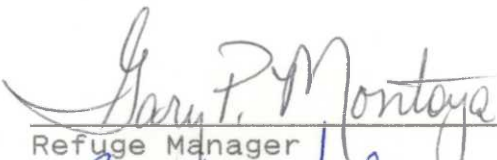
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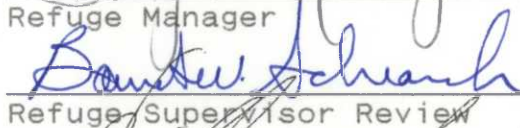
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REVIEW AND APPROVALS


Refuge Manager

3/6/91
Date


Refuge Supervisor Review

3/12/91
Date


Regional Office Approval

3/12/91
Date

INTRODUCTION

Ouray National Wildlife Refuge was approved by the Migratory Bird Conservation Commission on May 25, 1960 to be purchased with Duck Stamp funds. Land acquisition was initiated and the refuge became operational in late 1961.

The refuge is located in northeastern Utah in Uintah County. The refuge is reached by taking U.S. Highway 40 fourteen miles west out of Vernal, then south sixteen miles on State Highway 88.

The refuge contains 11,827 acres and is situated astride the Green River just north of the confluence of the White River from the east and the Duchesne River from the west. The refuge is seven and one-half miles in length and varies in width from two to three and one-half miles. The southern boundary is located in the northern portion of the Uintah and Ouray (Ute) Indian Reservation.

The refuge acreage contains 2,692 acres of leased Tribal lands, 3,111 acres of withdrawn public domain, 1,153 acres of leased State lands, and 4,872 acres of fee purchase lands.

Refuge habitats compose about nineteen square miles of primarily bottomlands and river surface in six bottoms along the shallowly entrenched Green River. Benchlands are held up by upper strata of the Uinta formation, which form rounded and sculptured bluffs bordering the river valley. Pleistocene and earlier terrace gravel cover the benchlands. Bajados and alluvial fans derived from the benches cover the margins of river terraces in the valley bottoms.

The climate of the area is that of a cold desert biome with low precipitation and extremes in temperatures. Average annual precipitation is just under eight inches, mostly received in the spring and fall. Temperature extremes range from 45 degrees F below zero to 104 degrees F above, and an average of 113 frost-free days. Evapo-transpiration is about four feet per year.

Soils in the dry upland benches are fine sand or fine sandy loam intermixed with rough, stony broken ground. The uplands are separated from the bottomlands by broken and stony bluffs of sandstone and shale. The bottomland is fine sand, sandy loam, clay loam, or silty clay. Some of the soils exhibit a fairly high degree of alkalinity, including both calcium and sodium salts.

Vegetation consists of cottonwood, willow and tamarix along the banks of the Green River with an understory of skunkbrush, saltgrass and alkali sacaton. Marshes, both naturally occurring and artificial, support cattail and rush species as emergents. *Alisma*, *Echinodorus*, and *Sagittaria* are representative of shallow ponds. Saltgrass is widespread in saline margins of marshes. Greasewood, seepweed and shadscale grow along the drainages into the drier bajados and fans, where shadscale, sagebrush, spine hop-

sage and horsebrush become co-dominates with Indian ricegrass, galleta and numerous other species. This dryland shrub community is also present on the benchlands.

The bluffs and benchlands of the refuge have had no grazing since 1977 and are representative of the nature of the region prior to disturbance by the white man.

The primary objective of the refuge is to produce waterfowl and act as a feeding and staging area for migratory birds. The refuge was created to offset, in part, losses of waterfowl nesting habitat as a result of construction of the Flaming Gorge Reservoir. Secondary objectives involve maintaining wildlife and habitat diversity for other migratory bird groups and resident wildlife. This is done through the protection and management of river bottom habitat types.

Our habitat objectives are aimed at providing the following: (1) maintaining native communities of upland vegetation in good, vigorous condition to maximize habitat for upland nesting birds, primarily waterfowl; (2) maintain marsh environments in good quality condition for overwater nesters and as brood habitat; and (3) maintain fragile benchland desert habitats in good to excellent condition.

DEDICATION

This narrative is dedicated to former Refuge Manager, Keith S. Hansen who retired on November 3, 1989 with better than 30 years of government service. Six of those years were spent serving the needs of Ouray National Wildlife Refuge and the U.S. Fish and Wildlife Service.

Keith started his career with the U.S. Government during the summer months of 1956-1957. He worked for the U.S. Forest Service at the Cache National Forest. In 1958, he worked as a Biological Aid at Bear River Migratory Bird Refuge. Keith graduated from Utah State Univerisity in June 1959 with a BS in Wildlife Management.

His career as Refuge Manager started at Salt Plains National Wildlife Refuge in Oklahoma, June 1959. Keith progressed through the Refuge Managers series at Hagerman National Wildlife Refuge in Texas, Havasu Lake National Wildlife Refuge in Arizona, Laguna Atascosa National Wildlife Refuge in Texas, Muleshoe National Wildlife Refuge in Texas, Kirwin National Wildlife Refuge in Kansas and finally ended at Ouray National Wildlife Refuge in Utah.

The U.S. Fish and Wildlife Service and particularly those personnel having the pleasure of working with Keith, wish him and Carol the very best in their retirement and thank him for his many years of unselfish service to our nations wildlife resources.



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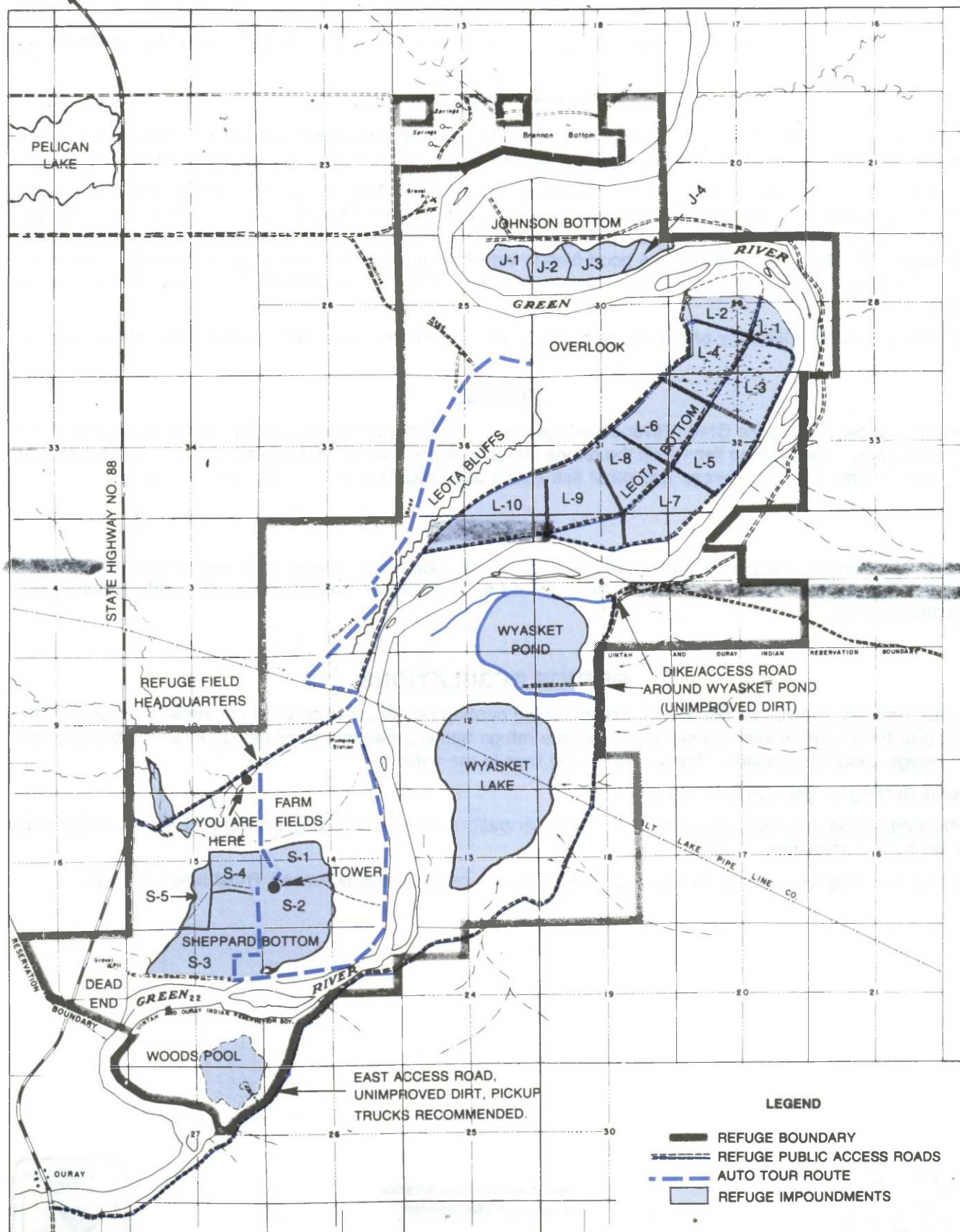
K. FEEDBACK

Nothing to report.

L. INFORMATION PACKET

TO
U.S. HWY. 40

OURAY NATIONAL WILDLIFE REFUGE UINTAH COUNTY, UTAH



LEGEND

- REFUGE BOUNDARY
- REFUGE PUBLIC ACCESS ROADS
- AUTO TOUR ROUTE
- REFUGE IMPOUNDMENTS

SCALE



REFUGE VISITORS

Welcome to Ouray National Wildlife Refuge. This map is provided to help you find your way around the refuge.

WILDLIFE OBSERVATION

All refuge lands are open to public wildlife observation. Vehicles are restricted to designated roads, **no vehicles are allowed off the roads** as this destroys the habitat. Signs will be posted if a particular road is closed.

The main waterfowl migrations occur during the spring period, March–April, and fall period, September–November. Nesting Canada geese hatch out their young in late April, with broods of ducks showing up in late June. Greater sandhill cranes move through this area from mid-March to mid-April. The fall crane migration occurs during September–October. From May on is a good time to view the many kinds of marsh birds, shore birds and song birds. The Lewis woodpecker is a common cavity nester here. Pick up a bird list; see how many different species you can check off.

Feel free to walk out into any of the refuge habitats. Be sure to bring your bug repellent from about May on.

FISHING

Fishing is allowed along the Green River on refuge lands. All State fishing regulations regarding seasons, limits and gear apply. There are no fish within the refuge impoundments, except smaller sized fish which enter through our water supply screens. Herons and other fish eating birds regularly dine on these small fish.

CAMPING

~~Camping~~ picnicking are allowed on refuge lands. Please don't litter, and keep a clean campsite. ~~Open fires~~
~~Smoking~~. Pets should be kept under close control to provide protection to wildlife species.

REFUGE REGULATIONS

No firearms are allowed on the refuge, except during hunting seasons and only then in the appropriate hunting unit. (For further information on hunting, pick up a refuge hunting map and regulations.) Firearms brought onto the refuge should be cased or broken down and kept in the vehicle.

Wood Cutting or gathering is not allowed.

Disturbing, injuring, or removing plants, natural objects and/or artifacts of antiquity is prohibited. These items should be left for the enjoyment of all.

Shining a spotlight or headlights after daylight hours into refuge lands or leased Tribal lands is illegal.



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1989

A. HIGHLIGHTS

The refuge may acquire 782 acres near Myton, Utah. Section C.3.

Proposed pipeline from Pelican Lake. Section D.6.

Refuge Manager, Keith Hansen, retires from the Service. Section E.1.

Incoming Refuge Manager, Gary Montoya arrives on Dec. 3. Section E.1.

Assistant Refuge Manager, Dick Sjostrom, transferred to Bear Lake NWR. Section E.1.

Selenium investigations continue on the refuge. Section D.5.

Sprinkler wheel-line transferred to Lee Metcalf NWR. Section I.4.

B. CLIMATIC CONDITIONS

The following weather information was recorded at the U.S. Weather Bureau station at refuge headquarters for Calendar Year 1989:

	<u>Temperatures (^o F)</u>		<u>Precipitation (inches)</u>	
	<u>Max.</u>	<u>Min.</u>	<u>Rain*</u>	<u>Snow</u>
January	37	-24	0.20	5.0
February	48	-41	0.35	8.0
March	71	1	0.30	1.0
April	88	10	0.08	
May	91	25	0.27	
June	101	39	0.20	
July	107	48	1.06	
August	97	44	1.14	
September	94	32	0.63	
October	85	16	0.53	
November	69	7	0.25	
December	46	- 1	0.00	

Extremes: 107 -41 Totals: 5.01 14.0

Ten Year Precipitation Average: 8.44

*Includes melted snow

The year started out very cold and very dry, going into May with less than an inch of precipitation. Temperatures reached severe lows at the beginning of February with lows on a couple of days down to -41 degrees F. These low temperatures were accompanied with daytime highs of -2 degrees F. However, February ended up with more mild weather towards the end of the month. With April came unusually high temperatures, with highs above 80 degrees F for 12 days out of the month. As summer approached, there had been very little precipitation and vegetation was unusually dry. July had very high temperatures with 15 days of above 100 degrees F., however we did receive a good amount of precipitation that month. As fall approached the weather returned to normal with the rest of the year experiencing near normal temperatures and precipitation, except for December. Snow pack for the year was approximately 60-65% of normal.

C. LAND ACQUISITION

1. Fee Title

Realty continues to work toward acquiring the 144 acres of privately owned land in Wyasket Bottom. There are four tracts in two ownerships. Since the refuge cannot fully develop this area, Realty gathered information to approach the Migratory Bird Commission about the acquisition of this property at a higher than market value. This was due to the owners not accepting the Service's appraised market value. Realty will meet with the Migratory Bird Commission in March of 1990.

3. Other

Tribal Land Lease

The leasing of a 344.6 acre tract in lower Wyasket Bottom from the Ute Tribe for inclusion within the refuge was finally approved and accomplished this year. However, the Tribe "lost" the original signed agreement, which means that until it can be located, payment cannot be made on the lease. Realty and refuge personnel have been in contact with the BIA and the Tribe in an effort to locate the agreement, but to no avail.

FmHA Land

The U.S. Fish & Wildlife Service has agreed to accept two tracts of repossessed land from the Farmers Home Administration under the Food Security Act of 1985. One 160 acre tract, the Kurtz property, is located in the northeast quarter of Section 10, Range 20 East, Township 8 South and is bordered on the south and east by the current refuge boundary. However, no official paperwork has been received indicating a transfer of ownership. We are still waiting after two years.

Refuge Manager Hansen and Assistant Refuge Manager Sjostrom toured the Stanley Wheeler property near Jensen in June with personnel from the Farmers Home Administration (FmHA) and the Soil Conservation Service (SCS). The Fish & Wildlife Service has an option for a perpetual easement on 234 acres of some very good migratory bird habitat under the FmHA debt restructuring program. This land would be included under the Conservation Reserve Program (CRP). A management plan was written and submitted to FmHA for visitation report requirements.

Refuge Manager Hansen looked at the Fred Dunham property south of Green River, Utah. He reported that there was some easement potential on this property for riparian habitat, but that his recommendation was to not accept it.

Refuge Manager Hansen, Leon Colburn and Bruce Waddell (ES - Salt Lake City, UT) along with Carol Wiens (USBR) toured the R.W. (Dude) Young property, which is east of Myton, UT. The property consists of 782 acres of farmfields, riparian, wet meadows and shrubland habitat and would include approximately 1 to 1-1/2 miles of the Duchesne River. The land is being looked at for acquisition by the U.S. Bureau of Reclamation, who would then deed it to the U.S. Fish & Wildlife Service as mitigation for the Central Utah Project (CUP). This property is located along the Riverdell Canal, which is part of a project by the USBR to be rehabilitated. Rehabilitation of the canal would be very costly and could provide some mitigation for the CUP project. Recommendations from Refuge and FWE personnel was that the Service should seriously consider accepting the land as mitigation.

Refuge Manager Hansen along with personnel from the Bureau of Land Management (BLM), Fish & Wildlife Enhancement from Salt Lake City, Bureau of Reclamation (USBR) and Utah Department of Wildlife Resources (DWR) took another look at the property in October. Of primary interest was the value of the land for mitigation purposes and who would manage the land. The FWE personnel said they would develop a concept plan so as to be able to run through the Habitat Evaluation Process (HEP).

Refuge Manager Hansen worked with Adam Misztal from the Regional Office for two days in May along the Wasatch Front on Farm Bill matters. Local SCS and ASCS offices were also involved in the tour and there was discussion about wetland preservation and restoration efforts at several locations in that area. Refuge Manager Hansen also met with Harvey Wittmier (RO-Wildlife Biologist) to discuss future plans for the Bear River Migratory Bird Refuge and spent a day looking at the refuge in preparation for Congressman Hansen's and the Lt. Governor's tour in early June.

D. PLANNING

2. Management Plans

Routine yearly planning documents were completed including the more detailed Water Management Plan, Prescribed Burning Plan, Predator Management Plan and Pesticide Proposals as well as the Annual Work Planning Document.

5. Research and Investigation

Selenium Verification Study 65570-89-01

Fish and Wildlife Enhancement personnel from Salt Lake City released 25 pairs of marked, clipped, pen-reared mallards at each of the two Roadside Ponds. This was in connection to the

first year of a two year study to document the potential impacts to migrating birds. Fences were erected around a portion of the Lower Roadside Pond by refuge and FWE personnel in an effort to keep the ducks from leaving the Roadside Pond area. This project was to try and determine the effects of selenium contamination on waterfowl. Things that would be looked at included seasonal changes in selenium accumulation in the body and selenium levels in eggs. Analysis of breast and liver tissue of these birds, upon systematically sampling during the study, showed large increases in the levels of selenium as time progressed. Also as part of this project, coot eggs were radio-telemetered to try and get a handle on nest attendance, in relation to the abandonment of nests. As the equipment was received too late to accomplish much this year, the efforts were directed at evaluating the equipment and attempting to establish procedures to be used next year.



FWE Biologist, Justin Dolling, prepares a mallard hen for her release on the North Roadside Pond.



Pen reared mallards released at their new home on the South Roadside Pond.

Extensive surveys for nesting waterbirds were conducted focusing on locating nests, monitoring the nests through incubation, randomly sampling a subset of the eggs for chemical analysis and direct observation of the egg contents for embryo deformities or viability.

In March, two biologists from the Grand Junction Fish and Wildlife Enhancement office collected blood samples from bald and golden eagles on and near the refuge. They were able to catch 10 golden eagles and only 2 bald eagles. One of the bald eagles escaped before a blood sample could be taken. On the morning of the March 18, they observed 107 eagles on the north end of the refuge, which is very unusual. The next day there were only 35 eagles in the same area.

The U.S. Geological Survey personnel drilled three new shallow wells in March in the Sheppard Bottom area in order to further identify the source of selenium contamination.

Waterfowl Nesting Success 65570-89-02

Nesting surveys were continued this year for both ducks and geese. Goose nest surveys began on April 13 with refuge personnel searching the river islands first. Nine active nests and one inactive nest were found on that day, with clutches ranging from 5-7 eggs. Later in the month, the goose nesting structures were checked for use. Nine out of the 15 structures in Sheppard were used this year. Geese began hatching during the latter part of April, which is actually a little later than usual. Total goose production was approximately 180 birds. Approximately 80% of the nesting structures were used with over 85% success of clutches hatching in the nesting structures and on the river islands.

Duck production was down this year by approximately 35% from last year. It was assumed that the cause of this decline was due to the drought conditions and increased predation. A total of 76 nests were located (32 in Leota, 22 in Sheppard, 20 in Wyasket and 2 in Woods). Results from the nest dragging survey indicate the following:

UNIT	NESTING RESULTS (%)		
	SUCCESSFUL	PREDATED	ABANDONED
Sheppard	26	53	21
Leota	50	16	18
Wyasket/Woods	68	14	18

It was felt by refuge personnel that use of ATV's during the nest dragging surveys caused approximately half of the nest abandonments. Mayfield success was calculated for 75 of the 76 nests this year. Overall success was 33% Mayfield, which was comparable to 35% in 1988. Wyasket/Woods Bottoms had the highest success with 68%, which was probably due to the early trapping success. This was compared to Sheppard Bottom which and the lowest success and more predation on nests. The species breakdown for the 75 nests is as follows:

Gadwall	37	(49.3%)
Cinn Teal	21	(28.0%)
Mallard	10	(13.3%)
Pintail	1	(1.3%)
Redhead	1	(1.3%)
Shoveler	4	(5.3%)
GW Teal	1	(1.3%)

Of the 75 nests found, 67 were used to determine nesting success, since 8 nests were abandoned due to nesting survey activities. Twenty-three nests, or 34 per cent, were destroyed by predators. An attempt was made to determine the predator type, but this was not possible in all cases. A summary is as follows:

1 unknown predator*	1 weasel
9 coyote	5 skunk
1 magpie	4 raccoon
2 bullsnake	

*Probable nest predator was either raccoon or coyote.

DUCK NEST SUCCESS COMPARISONS

<u>YEAR</u>	<u>APPARENT</u>	<u>MAYFIELD</u>	<u>PREDATOR CONTROL</u>
1989	48%	33%	Moderately intense
1988	52%	35%	Moderately intense
1982	36%	19%*	Minimal
1981	26%	9%*	Minimal

* Reduced 17% to approximate Mayfield

E. ADMINISTRATION

1. Personnel

Refuge Manager Trainee Karen Raftery transferred to northern California with the U.S. Forest Service in May. Karen was an excellent employee and an asset to the Service. It's too bad we lose these types of employees.

Assistant Refuge Manager Dick Sjostrom transferred to Bear Lake National Wildlife Refuge in Idaho in September. Dick had been here for about 6 years and did an excellent job.

Refuge Manager Keith Hansen retired in November after having been here for about 6 years. Keith accomplished many good things on the refuge and in the community. He will be missed, and we hope retirement suits him well.

Refuge Manager Gary Montoya came on board in December. He transferred from the Kern National Wildlife Refuge in Delano, California. This is his first Project Leaders position, but he has some good background in wetlands and waterfowl management.



② Refuge Manager, Keith Hansen and ① Refuge Assistant, Vivian Rice-Smuin



② Assistant Manager, Dick Sjostrom, ① Equipment Operator, Gary Mecham and ③ Maintenance Worker, Rex Whitmore

Keith S. Hansen, GS-11, PFT. Refuge Manager
Retired 11/03/89

Gary P. Montoya, GS-11, PFT. Refuge Manager
E.O.D. 12/03/89

Richard R. Sjostrom, GS-9, PFT . . Assistant Refuge Manager
Transferred to Bear Lake NWR, Idaho 9/89

Karen M. Raftery, GS-5, PFT. . . . Refuge Manager (Trainee)
Transferred to U.S. Forest Service 5/89

Vivian B. Rice-Smuin, GS-5, PPT. Refuge Assistant
E.O.D. 8/17/87

Gary M. Mecham, WG-10, PFT . Engineering Equipment Operator
E.O.D. 2/7/82

Rex L. Whitmore, WG-7, PFT Maintenance Worker
E.O.D. 7/8/84



Refuge Manager Trainee, Karen Raftery

5. Funding

	<u>FY1989</u>	<u>FY1988</u>	<u>FY1987</u>	<u>FY1986</u>	<u>FY1985</u>
1260	202,000	202,000	271,000(1	242,600(2	198,000(3
1620					3,000
1994					4,000
8610	6,000	2,925	3,673	6,000	
2821					30,000(4
TOTALS	208,000	204,925	274,673	248,600	235,000

(1 \$105,000 ARMM and \$13,000 Resource Problems

(2 \$94,600 ARMM and \$10,000 Resource Problems

(3 \$32,000 ARMM

(4 Reprogrammed from Bear River Migratory Bird Refuge

6. Safety

Assistant Manager Sjostrom functioned as the Station Safety Chairman. Formal safety meetings were held during the year with films and various safety items being discussed. Tailgate sessions were also held to discuss safety and potential hazards prior to all major refuge operations.

Engineering Equipment Operator, Gary Mecham was on light-duty work status in July after he had wrist surgery on both hands. His hands kept going numb and the surgery was required to get full function back to his hands. This was not due to any injury on the job.

On December 12, Engineering Equipment Operator, Gary Mecham, fell from the grader and injured himself. As he was stepping from the cab to the moldboard to the front rear tire, his foot caught on something and he fell backwards about 3 feet to the ground. As he fell, he attempted to break his fall with his hands and ended up fracturing his right wrist. There was approximately 8 hours of lost time due to the accident, which was a result of about 2 hours on the day of the accident and about 6 hours due to follow-up treatment.

8. Other Items

All work at the Bear River Migratory Bird Refuge during the year had been handled by personnel from the Ouray National Wildlife Refuge until August. This involved attendance at several meetings, monthly wildlife census flights, posting and law enforcement patrols as well as administrative type functions. Many staff-days were spent on activities involving the Bear River Migratory Bird Refuge. Newly selected Refuge Manager, Al Trout reported on-station in August to start rebuilding the refuge.

F. HABITAT MANAGEMENT

1. General

The refuge consists of the following broad types of habitat:

<u>Type</u> <u>Acres</u>	
Shallow Fresh Marsh (cattail/bulrush association)	2,136
River and Streams (Green River, including sandbars)	1,180
Croplands (clover, barley, row crops)	245
Native Grasslands (wheatgrass, Indian ricegrass, saltgrass & alkali sacaton)	1,311
Forest (Cottonwood)	483
Brush (Salt cedar & greasewood mixed with saltgrass & alkali sacaton)	3,173
Desert (Sagebrush, greasewood, rabbitbrush, prickly pear, Indian ricegrass)	3,294
Administrative Site (Residence and shop areas)	<u>5</u>
TOTAL ACRES	11,827

2. Wetlands

This was not expected to be a good moisture year, since the year was starting out with low precipitation amounts. This was expected to be the fourth dry year in a row. Things were not looking good.

Several "channels" were mowed in Sheppard Bottoms unit S-2 cattail stands and around the goose nesting structures. This provided some open water areas for waterfowl in the very dense stands of emergents. Eventually, some of these areas will need to be excavated to a depth whereby enough water can be impounded to drown-out some of the less preferable emergents.

The Green River remained frozen until March 13th. In fact, the ice break-up was relatively fast, which caused an ice jam. The ice jam was a stroke of good luck, since it caused the river level to rise at the gravity inlet to the Sheppard Bottom ponds. We were able to fill the ponds in two days. Woods Bottom also received enough water to get approximately 70% full. Since Leota Bottom's gravity inlet is higher, it did not receive very much water. The Leota pump had to be thawed out before use, which called for running water from the fire pumper into the discharge pipe and mixing in some salt. The 10-lift pumps had to be used for the month of March for the Leota ponds, except for L-10. Water for L-10 was pumped by the use of a "Gator" tractor-powered pump in the southeast corner of the unit and a newly rehabbed drain.

Some work was done in L-10 to try and open up the unit and provide more nesting islands. Twenty-five small islands were pushed up and some small, irregular-shaped areas were excavated. The S-4 unit in the Sheppard Bottom also had some work done in it. Some islands were pushed up in the southwest corner of the unit, by pushing up some of the silt that had come in during the 1983/84 floods. However, the maintenance person doing the work went pretty deep in pushing up the material and may have broken through the clay seal. We won't know until next year. The S-3/S-5 dike in Sheppard was built up, since it had been damaged by the flood and a very limited amount of water could be held in the S-5 unit. In fact, Equipment Operator Mecham was very concerned walking the excavator on to the damaged dike, since there was water in S-5, which caused the dike to be very "spongy". The spoil piles were then dozed down in the winter.



Ice on the Green River after the rapid breakup.



Tractor powered Gator pump, diverting water from the river (top), and the Leota drain (bottom) into the L-10 unit of the Leota Bottom.



By June, it was very obvious the refuge was going to be out of water very soon. The expected river peak never materialized and water had to be pumped for a few days to maintain the units in the Sheppard and Leota Bottoms. Due to Pelican Lake only receiving about a 4 inch increase during the winter, instead of its normal 4 feet, there was essentially no overflow for the North Roadside and South Roadside ponds this year. Low water levels also required more time being spent ensuring that screens and culverts were clean of debris and beaver cuttings. Water levels dropped quickly in July, as water levels in the river dropped below the pump inlets and pumping was stopped. In August, all of the marsh units dried up, except for the borrow areas in the Leota units and the North and South Roadside ponds. In September, the river was at its lowest levels ever that current refuge personnel could remember. A hole was dug with the excavator in the Sheppard S-3 unit to a depth of 8 feet before hitting moist soil.

3. Forests

Refuge "forests" consisted of cottonwood stands along the river. They were in pretty good condition along the river, however some of the ones over 100-yards from the river showed stressing affects and some even died. There was some evidence of regeneration along the river, however, that was few and far between. Also the cottonwood stand to the east of Sheppard S-2, which had been burned in a wildfire in 1988, was not recovering as well as was hoped. There was minimal evidence of regeneration of the cottonwoods and some saltcedar was showing up.

4. Croplands

The refuge force account farming program was carried out under a five year rotation for each field consisting of row crops, spring barley, summer fallow, and sweet clover for a two year period. Because the Pelican Lake low water situation was so critical this year, local farmers were forced to minimize their irrigation needs. Accordingly we cut back our irrigation needs by planting only barley and sweet clover. The corn field scheduled for planting was fallowed and water use was limited to one wheelline. Ouray Refuge has 700 shares of Ouray Park Irrigation Co. water available to it for farming and/or marsh management, but due to the low levels at Pelican Lake some 400 shares of refuge water was sublet to neighbors so they could pump water out of the lake to their adjacent circle pivots. Irrigation of our barley and clover fields continued through the early part of July, then the lake level was too low to provide water to our pipeline. Though the clover was not able to survive and the barley stunted, it still provided waterfowl food during the fall migration.

Approximately 5 acres of field A was planted into Steptoe barley as an extension of field B.

Approximately 25 acres of field B was planted to Steptoe barley this year.

The 23 acre Field E was planted to yellow sweet clover this year.

5. Grasslands

The only true grassland habitat is located on the upland areas and consists primarily of Indian ricegrass, dropseed grasses and sagebrush. Since it was a very dry year, the Indian ricegrass did not do very well. However, the dropseed and alkali sacaton did pretty well. Grazing by pronghorn antelope on the eastside and westside is becoming more common every year. The refuge is still having a problem with trespass grazing by cattle and wildhorses on the eastside of the river.

9. Fire Management

On August 18th, a lightning strike, from a thunderstorm the night before, ignited a cottonwood on the east side of the river on leased tribal ground. The fire spread slowly and was initially monitored by refuge personnel. The next day, the fire had spread significantly and was turned over to BIA fire crews, who quickly brought it under control. About 5-6 acres were consumed in the fire.

A Winter Burn Plan which consisted of three burns in the Sheppard Bottom a total of 175 acres was approved in February, but because of uncooperative weather the burning did not take place. Our Spring Burn Plan was completed and approved in March. The plan included six burns for a total of 343 acres. The burns planned for April were for the purpose of: removing accumulated litter, stimulating native grass and forb regeneration, and to open up salt cedar thickets and emergent vegetation stands along the perimeters of the ponds. We began to carry out the burns on the 17th of April, beginning with the S-3 unit in the Sheppard Bottom. It was intended to burn the south end of the unit, but sudden strong winds arose and carried the fire over into the S-2 unit and over the protective dike toward the river. The wild fire between the river and the dike was contained by dozing a fireline and backfiring off of it. The fire in the S-2 unit was contained where needed by using the tractor pulled pumper trailer. A total of 100 acres were burned in the Sheppard Bottom, approximately half of which were unplanned.

When a second attempt at burning was made on the 19th of the month on the L-5 unit in the Leota Bottom, the same problems were experienced as the fire was carried into the L-3 unit which was also planned to be burned. A total of 125 acres were burned in Leota. Due to problems encountered by these burns the two other burns planned were cancelled.

Burns completed were as follows:

<u>Fire Number and unit</u>	<u>Acres</u>	<u>Main Vegetation Type</u>	<u>Max. Temp</u>	<u>Max. Humidity</u>	<u>Cost/acre</u>
6015-ORWinter Leota L-3,L-5	125	Emergents/ Grasses	40 F	60%	\$1.70
6054-Sheppard S-3, S-2	100	Emergents/ Grasses	80 F	40%	\$6.80

Total acres burned in 1989 : 225

10. Pest Control

Approximately 80 gallons of 2,4-D amine were applied to grasslands in the Leota Bottoms, including units L-3, L-5, L-7 and L-7A. The herbicide was applied at a rate of 1.9 pounds per acre to control giant whitetop (Lepidium latifolium). Approximately 150 acres were sprayed with a ground sprayer. The areas in L-3 and L-5 were first burned and then treated with the herbicide. All of the spraying was done in May.

Approximately 5 gallons of 2,4-D amine were applied to barley in Farmfield B at the rate of .72 pounds per acre, to control Kochia weed and sunflowers. Approximately 26 acres were treated on June 26 and 27, which resulted in an excellent stand of barley with very few weeds.

No Vectobac-AS was sprayed for control of mosquito larvae (Culex spp.), since it was a very dry year and very few mosquitos were present.

Stephen Burningham, State Weed Specialist from the State Department of Agriculture, and George Merkley the Uintah County Weed Supervisor, visited the refuge in April. They were very concerned about the giant whitetop problem the refuge had developed. Manager Hansen took them on a tour of the refuge and tried to explain the problem of treating the whitetop and the restrictions by which we are bound. Mr. Burningham and Mr. Merkley said they would write the Regional Office and see if they couldn't find some support for us.

11. Water Rights

No changes in water rights occurred during the year. The refuge has water rights for 23,452.12 acre feet of water from the Green River under seven water filings. These waters can be co-mingled and diverted anywhere from the north end of the refuge to a point near the south end. Our Section 7 Consultation on endangered Colorado River Fish species would like us to divert no more than 5,000 acre feet. During the year we used 5,036 acre feet of water from the Green River.

The refuge also owns 700 shares of Ouray Park Irrigation Company stock. Each share could deliver a maximum of three acre feet, if it is available in storage at Pelican lake. The delivery system however, is only capable of providing the refuge with around 1-1/4 acre feet per share. Water was available in the ditch from May 1 through July 17. This past year, we used approximately 170 acre feet of water from this source. The refuge's assessment per share this year was only \$3.00, compared to \$8.50 last year.

G. WILDLIFE

2. Endangered and/or Threatened Species

The predominant endangered species that uses the refuge is the bald eagle. This use occurs primarily along the Green River, especially when the river ice begins to break up in late winter. In February the eagles were on the refuge more continuously, and in March their use increased from the normal 8 birds to the spring migration peak of 107 birds on the 17th of the month. This boosted the bald eagle use days to 2,145 for the year.

One Peregrine was noted as spending a week on the refuge on the east side of the river during the month of October.

There were no whooping crane sightings documented on or near the refuge during 1989.

3. Waterfowl

Migration - During the month of January there were only occasional small flocks of geese overhead. As spring neared the waterfowl populations increased and peaked at approximately 12,000 birds during the month of March. They consisted of primarily, green-winged teal which accounted for about 45% of the total, mallards 20%, and pintails 20%. Two weeks later in April, populations had decreased to about half of that, 6225 birds, with approximately the same percentage breakdown as in March. During the summer months waterfowl populations continued to decrease and remained at about 3500 ducks and 200 geese until September when low water levels

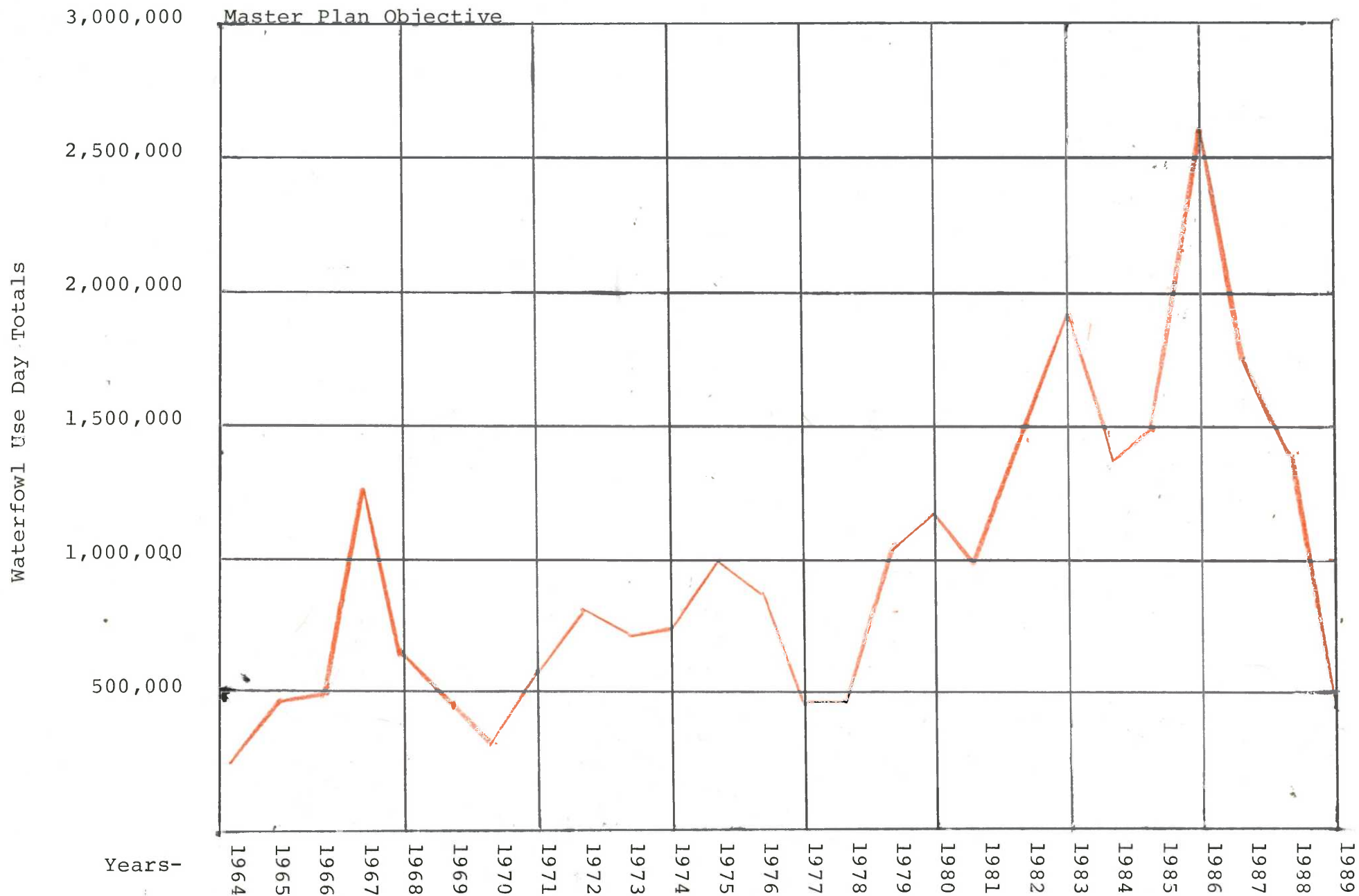
forced the number down to about 100 birds total. Populations picked up in October as about 600 mallards and the Canada goose peak population of 800 birds was using the refuge. By November's end, as the refuge froze up only about 300 geese remained. They remained throughout the rest of the year.

Total waterfowl use days for the year are as follows :

WATERFOWL USE DAYS

	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>
American Coot	109,200	278,175	195,270	331,600
Tundra Swan	28	613	2,303	846
Canada Geese	76,800	156,735	195,470	185,880
Snow Geese		355	200	455
White-fronted Geese		336		
TOTAL GEESE:	<u>76,800</u>	<u>157,426</u>	<u>195,670</u>	<u>186,335</u>
Mallard	110,950	390,982	734,950	762,500
Gadwall	82,850	185,160	231,500	391,040
Pintail	27,300	280,420	143,170	560,430
Green-winged Teal	56,400	145,412	164,030	292,310
Cinnamon/Blue-winged Teal	53,800	94,060	94,550	151,670
American Wigeon	8,050	25,058	39,100	27,260
N. Shoveler	12,400	27,584	49,940	55,200
Wood Duck	420	150	60	
TOTAL DABBLERS:	<u>352,170</u>	<u>1,148,676</u>	<u>1,457,300</u>	<u>2,244,410</u>
Redhead	24,900	74,158	52,788	78,900
Ring-necked Duck	1,950	1,380	2,458	10,125
Canvasback		1,132	665	896
Lesser Scaup	900	1,685	6,715	9,410
Bufflehead	480	1,680	2,330	7,250
Common Goldeneye		920	400	2,205
Ruddy Duck	9,800	17,878	14,390	14,980
Common Merganser		10,130	17,977	44,985
Red-breasted Merganser		305		
Hooded Merganser			62	
TOTAL DIVERS:	<u>38,030</u>	<u>109,268</u>	<u>97,785</u>	<u>168,751</u>
TOTAL DUCKS:	390,200	1,257,944	1,555,085	2,413,161
Total Waterfowl Use Days: (excludes American Coot)	<u>467,028</u>	<u>1,415,983</u>	<u>1,752,858</u>	<u>2,600,342</u>

WATERFOWL USE DAYS, 1964-1989



Overall waterfowl use in 1989 was down 67 percent from 1988. This was primarily due to the extreme dry conditions, which caused lower than normal levels of water in the river. This eliminated the refuge's ability to pump water out, since there was no water at the pump intakes. The refuge ponds were dry in August, which virtually eliminated any habitat for migratory waterbirds.

Production

Ten goose nesting structures, which were built in January, were placed in Leota and Johnson Bottoms marsh units. These kinds of structures have been extensively used in the past and should provide some much needed goose nesting "habitat". In fact, 9 out of 15 nesting structures in Sheppard Bottom were used this year. Goose nest searches on the river islands began in April, with 9 active nests found. The eggs were approximately two weeks old, based upon egg flotation. Approximately 80% of the nesting structures were used this year, with over 85% nesting success occurring on the islands and structures. Geese began hatching during the last part of April, which is a little later than normal. Total goose production was approximately 180 birds.

When the breeding pairs count was done in May, it appeared that the number of pairs were down. This was confirmed when total duck production was calculated and found to be down approximately 46% from 1988 with only 1,116 birds produced. The duck species that produced the highest percentage of birds was the gadwall with 324 birds produced (29%) followed by the redhead with 223 (20%) and the mallard with 190 (19%). There was a 55% apparent nesting success this year versus a 32.7% Mayfield nesting success. Most of the nesting success was in the Wyasket Pond area (79%), followed by Leota Bottom with 59% and Sheppard Bottom with 26%, although most of the nests were found in Leota. The nesting success was due to an intensive effort in the Wyasket Pond area to trap nest predators.

4. Marsh and Water Birds

During the month of March, sandhill cranes were observed regularly flying over the refuge. They also made good use of the farmfields during that period. The great blue herons also returned to the Woods rookery during the month of March, although their nesting along with that of the cormorants was somewhat of a failure this year. This was probably due to the low water levels in the Woods Pond.

Marsh and waterbird numbers were down significantly for the first half of the year as compared to 1988 and prior years. Although as water levels receded to near dry levels during the fall months, marsh and waterbird use was excellent. During the month of August, white pelican use increased to a peak number of 200 birds, while 60 snowy egrets were using the Leota ponds.

MARSH AND WATERBIRD USE-DAYS

<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
92,330	116,075	137,790	149,070	168,722

1989 use days for marsh and waterbirds was down 20% from that of 1988, which was just over a 10.6% average decrease in use days per year since 1983. There has not been an increase in marsh and waterbird use days since 1983, with an average of 15,035 less use-days per year since then.

5. Shorebirds, Gulls, Terns, and Allied Species

Shorebird use peaked during the fall months with receding waters, and was best in the Leota units.

SHOREBIRD USE DAYS

<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
40,220	76,645	88,760	191,070	170,915

Shorebird use-days are down 48% from 1988. This due partly to the water conditions and partly due to incomplete records during the latter part of the year. The incomplete records were due to lack of personnel during that period, although earlier data shows significantly lower numbers, also.

6. Raptors

Several redtailed hawks, rough-legged hawks, and northern harriers remained on the refuge throughout the winter months as did a short-eared owl. Bald and golden eagles began to arrive on the refuge during the month of February, as the river ice began to break-up. Enhancement biologists trapped and took blood from eagles on the refuge during the month of March. Sparrow hawk use on the refuge increased during the fall months. Two golden eagles remained throughout the year.

RAPTOR USE-DAYS

<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
21,655	32,075	39,695	39,210	32,875

Raptor use-days for 1989 was 32% lower than that of 1988.

8. Game Mammals

Mule deer on the refuge and in particular, on the tour route along the cottonwoods near the rivers edge continue to be a highlight for most refuge visitors. Refuge deer numbers are very healthy with the Sheppard Bottom having the largest overall population, numbering over 100 animals during the winter months. This is not unusual since this is a closed unit. As soon as the hunting season opens in the other units on the refuge and areas surrounding the refuge, more of the animals tend to end up in the protected Sheppard Unit.

The average number of bucks per 100 does in 1989 remained the same as in 1988, while the average number of fawns per 100 does increased by 26% as can be seen below.

<u>YEAR</u>	<u>BUCKS/100 DOES</u>	<u>FAWNS/100 DOES</u>
1989	19	111
1988	19	82
1987	32	133
1986	34	70
1985	23	84
1984	25	53

The refuge was once again home to a young bull elk this summer. He had been spotted on occasion near the Leota entrance and his tracks had been found around the farm fields.

10. Other Resident Wildlife

The refuge pheasant population was still on the increase following the devastating 1983-1984 winter, during which their mortality was almost tragic. Pheasant crow count surveys showed a large increase of 54% over the 1988 counts.

15. Animal Control

Upon approval of the newly updated Predator Management Plan, the trapping was initiated in the Sheppard, Wyasket, Woods, and Roadside units. The initial 38 traps were set out and baited with carp and placed in cubby boxes. An average of 49 traps were run throughout the trapping period which ran from

March 31 until May 19. A total of 20 target species were removed along with 4 non-target species. The total number of trap-nights was 2,563 or 128 trap-nights per animal caught. Non-target animals caught included; 1 duck, 1 magpie, 1 porcupine, and 1 turkey vulture.

The breakdown of predator trapping by unit is as follows:

<u>Unit</u>	<u># of traps</u>	<u>Predators Removed</u>
Sheppard	21	5 raccoon, 2 skunk, 1 feral
Leota	13	2 raccoon, 2 skunk cat
Woods	11	1 raccoon, 1 skunk
Wyasket	6	2 raccoon, 4 skunk
	51	10 raccoon, 9 skunk, 1 feral cat

DUCK NEST SUCCESS

<u>Year</u>	<u>Apparent</u>	<u>Mayfield</u>	<u>Predator Control Effort</u>
1989	55%	33%	Moderate
1988	52%	36%	Moderately Intense
1987	36%	19%	Minimal
1986	26%	9%	Minimal

H. PUBLIC USE

1. General

The number of public use visits to the refuge for 1989 was 1,900 visits, which was down 22% from the 2,436 visits of 1988. This was probably due to the lack of fall water on the refuge. Among the visits were approximately 450 Uintah Basin school students and Boy Scouts who recieved tours of the refuge this year, along with various Fish and Wildlife Service personnel and a group of Utah State University students. The first school group that came through on the 22nd of March received an added bonus as biologists who were trapping eagles on that day offered to show them the flightless eagle that they used to lure other eagles to their bait. Assistant Manager Sjostrum also presented a program on the current management practices of the Ouray NWR to a group at a biologists breakfast held in Vernal in February. It was a good presentation and all enjoyed it. Also included in the visits were approximately 88 campers and picnicing people.



Students observe wildlife from the tower in the Sheppard Bottom (above). FWE biologists show students the flightless eagle used to lure other eagles to their trap. (below)



5. Interpretive Tour Route

The refuge auto tour route was installed in 1986 and continues to be a popular attraction to the refuge visitors. It receives about 25 percent of the wildlife observation use, excluding organized guided school tours. Use of the tour route for 1989 was approximately 260 visits for a total of about 320 hours. Vandalism to the 12 mile route during 1989 consisted of the loss of the number 12 interpretive sign on top of the bluff.

8. Hunting

	Hunter Visits				
	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
Deer - Bow	30	60	12	30	32
Deer - Gun	175	110	110	160	196
Pheasant	-	160	100	160	60
<u>Waterfowl</u>	<u>0</u>	<u>95</u>	<u>70</u>	<u>205</u>	<u>25</u>
Total Hunters	205	425	292	555	313

	Activity Hours				
	<u>1989</u>	<u>1988</u>	<u>1987</u>	<u>1986</u>	<u>1985</u>
Deer - Bow	110	150	46	60	124
Deer - Gun	419	220	330	460	608
Pheasant	-	360	300	320	200
<u>Waterfowl</u>	<u>0</u>	<u>285</u>	<u>260</u>	<u>640</u>	<u>50</u>
Total Hours	529	1015	936	1480	982

Despite the fact that no pheasant hunting data was kept during the 1989 season, due to the absence of manager and assistant manager during the season, overall hunter numbers and activity hours were down significantly from 1988 and years past. There was no waterfowl hunting on the refuge because of the lack of water.

During the 1989 Archery Deer season, there was an estimated 110 activity hours spent by hunters looking for the animals, and to our knowledge there were no deer taken. This is the first time in several years that there has been no known deer taken. This was surprising to refuge personnel, as deer were seen regularly in the hunting area.

Of the 419 hours spent by hunters looking for deer during the general rifle season, ten deer were known to have been taken. There was one violation issued during the hunting seasons this year. It was written to a hunter for killing a deer in a closed unit.

9. Fishing

Fishing on the Green River in the refuge, as in past years, was centered around the channel catfish. The number of fisherman in 1989 was down from 1988 by 32 percent, with 130 visits.

Fisherman Visits					Activity Hours				
1989	1988	1987	1986	1985	1989	1988	1987	1986	1985
130	190	210	280	260	350	470	575	688	720

11. Wildlife Observations

Eighty - nine percent of the refuge's visitation deals with observing wildlife in one form or another. Improved roads and early water benefited the visiting public through spring and summer. Lack of water in most units during the fall reduced waterfowl viewing considerably. However, healthy deer and porcupine populations, as well as the good number of raptors that inhabit the refuge during the winter months, attracted many observers to the refuge.

12. Law Enforcement

Many law enforcement hours were expended during the archery and general deer hunts, weekend patrols and spotchecks. Assistant Manager Sjostrum also participated in the arrests of persons on March 6th involved in the southern Colorado/northern New Mexico poaching ring. On the refuge there were only two violation notices served during the year. One was to a person who killed a deer on the closed portion of the refuge on the next to the last day of the season. The other was to a person that was caught killing coots on the North Roadside Pond, which is also in a closed unit.

Two thefts occurred on the refuge during the year. One occurred at the refuge headquarters in April, apparently while the crew was out fighting fire in the Sheppard Bottom. The stolen items valued at \$240.00 included a micro-cassette recorder and a stopwatch. The other theft occurred in May on the east side of the river when one of the new cattleguards that was installed last fall, was lifted and hauled away. The value of the cattleguard was \$1,350.00. Both incidents were reported to FWS Special Agents and to the local Sheriffs department. No suspects were caught nor had any of the items been returned at year's end.

I. EQUIPMENT AND FACILITIES

2. Rehabilitation

A section of road along the Sheppard outer dike was moved away from the rivers edge. Approxitimately 2,000 cu. yards of clay was hauled to complete this project. The section was smoothed, borrow areas reworked, and reflectors was placed on the outer edge.

The end of the buried irrigation pipeline from Pelican Lake was dug up to convert a 3-inch end valve to an 8-inch valve, and to install a breather at the site. Once this was done, concrete surge blocks were poured around the elbows and valves of the pipe to prevent separation when in use. This allows us to take maximum inflows from our Pelican Lake allotment directly into the Sheppard inlet canal, which feeds the ponds in the Sheppard Bottom.

A new cattleguard was hauled over to the eastside of the river in July to replace the one that had been stolen earlier in the year. There was some juggling of cattleguards between old and new roads, to make sure the major roads got a cattleguard.



A new cattleguard being placed in the Wyasket Bottom after the original was stolen.

The D-7 was used to doze down spoil piles on the S-3/S-5 dike. The material was excavated onto the dike last fall. Eng. Equip. Oper. Mecham completed raising the dike and continued on to do the same to the S-3/S-4 dike where work was about half done at years end.

4. EQUIPMENT UTILIZATION AND REPLACEMENT

Major repairs to the refuges equipment for 1989 were as follows:

The Hien Werner excavator had another expensive year and continues to be an expensive piece of equipment. Total cost of repairs on the excavator for 1989 was \$8,430.00. Repairs included: remounting and securing of the hydra-swivel, removed track retaining caps and put new bolts; rebuilt the engine in March; replaced the left-hand propel control cable in April; in November the dipper stick cylinder was removed and reconditioned which required a re-tube job; and it also received new rap shrouds.

The Caterpillar D-7 was down a couple of times during the year with oil leaks. However, the only major repair that it saw during the year was in November when the transmission pump pressure line was replaced. All the engine oils were drained and the filters were changed. The total cost for this was \$745.00

The John Deere 670A motor grader had repairs done to the injector pump, flasher assembly, right-hand signal light, battery ground cables, exhaust rain flap, and lock cylinder on the right-hand engine access door replaced. There was also repairs done to the fuel pump. Total cost of the repairs was \$740.00.

The John Deere 2640 tractor had the water pump rebuilt in June at a cost of \$150.00

The 1977 Ford ten-wheeled dump truck had the extreme rear right-hand axel leak repaired. Inner and outer seals and the outer bearing nut were replaced during the month of March at a total cost of \$150.00

The 1977 Cheverolet 3/4 ton 4x4 pick-up had rear view mirrors installed in January. It received a new battery, new brakes all around, and a new tube seal on the left-hand front axel, and the rear drums were turned in October. In November rear pinion oil seals were installed and all belts were replaced, along with having the front drive shaft resplined, and the U-joints replaced. The cost of this work was \$746.00.

The 1980 Chevrolet Luv pick-up had a new clutch (disc pressure plate and throw-out bearing) installed in October at a cost of \$454.00 .

The 1985 Dodge Caravan had the windshield replaced and the brakes repaired, along with a new battery and a tune-up during the month of February. Another windshield was put in, and four new Goodyear Vector tires were bought for it in June. In September, the battery that was bought in February had to be replaced. It was replaced by the manufacturer at no cost to us. Total repair costs to the van were \$935.00

The 1985 Chevrolet 1/2-ton 4x4 had the battery replaced in January. In February, the number 6 rod bearing was rotated and new oversize main and rod bearings were installed, along with a new oil pump oil cooler line, new 12-inch clutch, and a resurfaced flywheel which were also installed. Also a leak in the transfer case and steering gear were repaired and new rear-view mirrors were installed. There was a new fuel gauge put in during the month of March and five new tires installed in August. All at a total cost of \$1,773.00 .

J. OTHER ITEMS

1. Cooperative Programs

A U.S. Weather Service recording station next to the shop, was used jointly to collect weather data for the refuge and the weather service.

4. Credits

Manager Montoya, and Assistant Manager Garcia - All sections including picture selection and titles, graphs and editing.

Refuge Assistant Rice-Smuin - Report word processing, maps, graphs, Table of Contents, Information Packet, picture placement, final report organization and editing.

BIRDS OF THE



OURAY

NATIONAL WILDLIFE REFUGE

INFORMATION

LOONS – GREBES – PELICANS – CORMORANTS –
HERONS AND BITTERNS – SWANS, GEESE, AND
DUCKS

VULTURES – EAGLES AND HAWKS – OSPREYS –
FALCONS – GROUSE – CRANES – RAILS AND COOTS –
PLOVERS, SNIPES AND SANDPIPERS – AVOCETS –
PHALAROPES – GULLS AND TERNS – DOVES –
CUCKOOS

OWLS – GOATSUCKERS – SWIFTS –
HUMMINGBIRDS – KINGFISHERS – WOODPECKERS –
FLYCATCHERS – LARKS – SWALLOWS – JAYS AND
CROWS – CHICKADEES, BUSHTITS AND TITMICE –
NUTHATCHES – CREEPERS – DIPPERS – WRENS

MOCKINGBIRDS AND THRASHERS – THRUSHES –
KINGLETS – PIPITS – WAXWINGS – SHRIKES –
STARLINGS – VIREOS – WARBLERS – WEAVER
FINCHES – BLACKBIRDS – TANAGERS –
GROSBEAKS, FINCHES, SPARROWS, AND
BUNTINGS

Welcome to Ouray National Wildlife Refuge. The refuge is located along the Green River in northeastern Utah, about 30 miles southwest of Vernal. Established in 1961, it is 11,483 acres in size. Ouray provides habitat for a large nesting population of ducks and geese. The refuge also provides resting and feeding areas for birds in migration.

Ouray Refuge is an oasis in the desert. Marshes on the refuge are either flooded by the Green River or are pumped full of water in the spring as a management practice. Tall cottonwoods trees and dense brush line the river bottoms created by the Green, Duchesne and White Rivers as they flow through the area. The life-giving waters of these streams create large patches of green vegetation that contrasts strongly with the surrounding dry uplands.

A zone of greasewood brush surrounds the marshes at a slightly higher elevation. The salt grass and alkali sacaton grass give way to curly-grass (*Galleta*) on the alluvial fans, where white-tailed prairie dogs and burrowing owls live. Next come the steep, eroding clay bluffs. On top of the bluffs are green needle grass, Indian ricegrass, cactus and desert shrubs. Bird life is most abundant in the flood plain.

The spring migration of waterfowl begins in early March and peaks in April. Sandhill cranes and whooping cranes also arrive at the refuge during this time. Over 2,000 pairs of breeding ducks remain to nest, along with golden eagles and many species of waterbirds. The fall migration begins in August and peaks in October. Some Canada geese and mallards overwinter along the Green River. Raptors also winter in the area, including both bald and golden eagles.

The desert vegetation is beautiful in a wet spring. May and June are the best months to see these desert flowers, which add a special flavor to a visitor's experience. They alone are worth a trip.

Visitors may also see mule deer, porcupines, jackrabbits and coyotes. Lewis' woodpeckers can usually be found in the cottonwood groves. White-faced ibis nest in the marshes.

To reach the refuge, turn off U.S. 40 about 15 miles west of Vernal and travel south on Highway 88 about 13 miles. This blacktop road passes Pelican Lake, which is a good waterbird viewing area.

Roads are open throughout the refuge for visitor travel.

INFORMATION

LOONS - GREBES - PELICANS - CORMORANTS -
HERONS AND BITTERNS - SWANS, GEESE, AND
DUCKS

VULTURES - EAGLES AND HAWKS - OSPREYS -
FALCONS - GROUSE - CRANES - RAILS AND COOTS
- PLOVERS, SNIPES AND SANDPIPERS - AVOCETS -
PHALAROPES - GULLS AND TERNS - DOVES -
CUCKOOS

OWLS - GOATSUCKERS - SWIFTS -
HUMMINGBIRDS - KINGFISHERS - WOODPECKERS
- FLYCATCHERS - LARKS - SWALLOWS - JAYS AND
CROWS - CHICKADEES, BUSHTITS AND TITMICE -
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MOCKINGBIRDS AND THRASHERS - THRUSHES -
KINGLETS - PIPITS - WAXWINGS - SHRIKES -
STARLINGS - VIREOS - WARBLERS - WEAVER
FINCHES - BLACKBIRDS - TANAGERS -
GROSBEAKS, FINCHES, SPARROWS, AND
BUNTINGS

This list contains 209 species. Those marked with a (*) have been known to nest on the refuge. Seasonal abundance is coded as follows:

S—March-May
 S—June-August

F—September-November
 W—December-February

a—abundant
 c—common
 u—uncommon
 o—occasional
 r—rare

common species, very numerous
 certain to be seen in suitable habitat
 present, but not certain to be seen
 seen only a few times during a season
 seen at intervals of 2 to 5 years

	S	S	F	W
Common Loon	r		r	r
• Pied-billed Grebe	c	c	c	
• Horned Grebe	u		u	
• Eared Grebe	c	c	c	
• Western Grebe	u	c	u	
American White Pelican	o	o	o	
• Double-crested Cormorant	c	c	c	
• American Bittern	c	c	u	
Least Bittern	r			
• Great Blue Heron	c	c	c	u

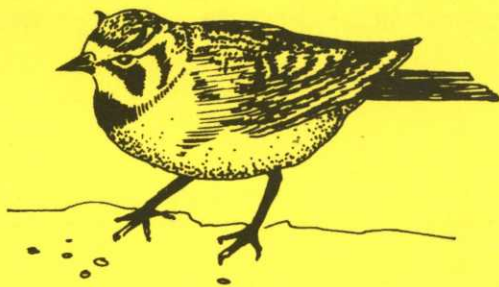
Great Egret	r	r		
• Snowy Egret	u	c	c	
Green-backed Heron	r	r	r	
• Black-crowned Night Heron	c	c	o	
• White-faced Ibis	c	c	o	
Tundra Swan			u	
Greater White-fronted Goose	r	r		
Snow Goose	r	r		
• Canada Goose	c	c	c	c
Wood Duck	r	r		
• Green-winged Teal	c	c	c	
• Mallard	c	c	c	c
• Northern Pintail	c	c	c	u
• Blue-winged Teal	u	c	c	
• Cinnamon Teal	u	c	c	
• Northern Shoveler	c	c	c	
• Gadwall	c	c	c	
• American Wigeon	c	c	c	
• Canvasback	o	r	u	
• Redhead	c	c	c	
Ring-necked Duck	u	r	c	
Greater Scaup	o		o	
Lesser Scaup	o		c	
Common Goldeneye	u		u	
Barrow's Goldeneye	r		r	
Bufflehead	u		u	
Hooded Merganser	r		r	
• Common Merganser	u	u	u	

LOONS — GREBES — PELICANS — CORMORANTS —
 HERONS AND BITTERNS — SWANS, GEESE, AND
 DUCKS

VULTURES — EAGLES AND HAWKS — OSPREYS —
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 STARLINGS — VIREOS — WARBLERS — WEAVER
 FINCHES — BLACKBIRDS — TANAGERS —
 GROSBEAKS, FINCHES, SPARROWS, AND
 BUNTINGS



Horned Lark.

	S	S	F	W
Red-breasted Merganser	r	r	r	
Ruddy Duck	c	c	c	
Turkey Vulture	c	c	c	
Osprey	r	r	r	
Bald Eagle	r		o	c
Northern Harrier	c	c	c	c
Sharp-shinned Hawk	r		r	
Cooper's Hawk	u	u	u	
Northern Goshawk				r
Swainson's Hawk	u	u	u	
Red-tailed Hawk	c	c	c	c
Ferruginous Hawk		o		
Rough-legged Hawk	u		u	c
Golden Eagle	c	c	c	c
American Kestrel	c	c	c	r
Merlin	r			
Peregrine Falcon	r		r	
Prairie Falcon	u	u	u	u
Ring-necked Pheasant	c	c	c	c
Sage Grouse	r	r	r	r
Virginia Rail	u	c	u	
Sora	u	c	u	
Common Moorhen	r			
American Coot	c	c	a	o
Whooping Crane	r		r	
Sandhill Crane	c		c	
Lesser Golden Plover	r		r	
Snowy Plover	r		r	
Semipalmated Plover	o			
Killdeer	c	c	c	
Black-necked Stilt	c	c	c	
American Avocet	c	c	c	
Greater Yellowlegs	u	u		
Lesser Yellowlegs	c	c	u	
Solitary Sandpiper		r		
Willet	c	c	u	
Spotted Sandpiper	u	c	u	
Long-billed Curlew	r	r	r	
Marbled Godwit	u	u	u	
Western Sandpiper	o		o	
Least Sandpiper	o		o	
Baird's Sandpiper	r		r	
Dunlin	r		r	
Short-billed Dowitcher	r			
Long-billed Dowitcher	u	u	u	
Common Snipe	u	u	o	
Wilson's Phalarope	c	c	o	
Red-necked Phalarope	r		r	
Franklin's Gull	u	u	u	
Bonaparte's Gull	r		o	
Ring-billed Gull	c	u	c	
California Gull	c	c	c	
Herring Gull	r		r	
Caspian Tern	r		r	
Common Tern	r		r	

VULTURES - EAGLES AND HAWKS - OSPREYS -
FALCONS - GROUSE - CRANES - RAILS AND COOTS
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BUNTINGS



Great Horned Owl.

	S	S	F	W
• Forster's Tern	u	c	u	
• Black Tern	u	c	u	
• Rock Dove	r	r	r	r
• Band-tailed Pigeon	r	r	r	
• Mourning Dove	c	c	a	r
• Yellow-billed Cuckoo	u			
• Western Screech-Owl	r	r	r	r
• Great Horned Owl	c	c	c	c
• Burrowing Owl	u	u	u	
• Long-eared Owl	o	o	o	o
• Short-eared Owl	u	u	u	u
• Northern Saw-whet Owl				r
• Common Nighthawk	u	c	u	

• Common Poorwill	r	r	r	
• White-throated Swift	u	c	u	
• Black-chinned Hummingbird	u	c	u	
• Broad-tailed Hummingbird	u	c	u	
• Rufous Hummingbird	o			
• Belted Kingfisher	u	u	u	
• Lewis Woodpecker	c	c	u	
• Red-headed Woodpecker	r	r	r	
• Yellow-bellied Sapsucker	u	u	u	
• Downy Woodpecker	u	u	u	
• Hairy Woodpecker	u	u	u	
• Northern Flicker	c	c	c	c
• Western Wood-Pewee	u	u	u	
• Empidonax Sp.	u	c	u	
• Say's Phoebe	c	c	c	
• Ash-throated Flycatcher	r	r	r	
• Western Kingbird	u	c	u	
• Eastern Kingbird	u	c	u	
• Horned Lark	c	c	c	o
• Purple Martin	r	r	r	
• Tree Swallow	c	c	u	
• Violet-green Swallow	c	c	u	
• Northern Rough-winged Swallow	c	c	u	
• Bank Swallow	u	u	u	
• Cliff Swallow	c	c	u	
• Barn Swallow	c	c	u	
• Pinyon Jay	r	r	r	r
• Black-billed Magpie	c	c	c	c
• American Crow				o
• Common Raven	u	u	u	u
• Black-capped Chickadee	c	c	c	c
• Mountain Chickadee	r	r	r	
• White-breasted Nuthatch				r
• Brown Creeper	r	r	r	
• Rock Wren	c	c	c	
• Bewick's Wren				u
• House Wren	c	c	c	r
• Marsh Wren	c	c	c	r
• Ruby-crowned Kinglet	u	u	u	
• Blue-gray Gnatcatcher	o	o	o	
• Western Bluebird	r	r	r	
• Mountain Bluebird	u	u	u	
• Townsend's Solitaire	r	r	r	
• Swainson's Thrush	o	o	o	

OWLS - GOATSUCKERS - SWIFTS -
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BUNTINGS



Golden Eagle.

	S	S	F	W
• American Robin	c	c	c	r
— Gray Catbird	o	o	o	
• Northern Mockingbird	r	r	r	
— Sage Thrasher	u	u	u	
— Water Pipit	u		u	
— Bohemian Waxwing			o	o
— Cedar Waxwing	o		o	o
— Northern Shrike				u
• Loggerhead Shrike	o	u	o	
• European Starling	c	c	c	c
• Warbling Vireo	u	u	u	
— Orange-crowned warbler	c	c	u	
— Virginia's Warbler	c	c	u	

	S	S	F	W
• Yellow Warbler	c	c	u	
— Yellow-rumped Warbler	c		u	
— Black-throated Gray Warbler	u		u	
— Townsend's Warbler	u		u	
— American Redstart	r	r	r	
— MacGillivray's Warbler	u		u	
— Common Yellowthroat	u	u	u	
— Wilson's Warbler	r		r	
• Yellow-breasted Chat	u	u	u	
— Western Tanager	r		r	
— Black-headed Grosbeak	u	u	u	
— Blue Grosbeak	u	u	u	
— Lazuli Bunting	u	u	u	
— Green-tailed Towhee	u	u	u	
• Rufous-sided Towhee	u	u	u	r
— American Tree Sparrow				o
— Brewer's Sparrow	o	o	o	
— Vesper Sparrow	c	c	c	
— Sage Sparrow	o	o	o	
— Lark Sparrow		u		
— Lark Bunting	r			
— Savannah Sparrow	u	u	u	
— Fox Sparrow			r	
— Song Sparrow	c	c	c	u
— White-tailed Sparrow			r	r
— White-crowned Sparrow	u	o	u	
— Harris' Sparrow				r
— Dark-eyed Junco	c		c	c
— Snow Bunting				o
• Red-winged Blackbird	c	c	c	u
• Western Meadowlark	c	c	c	u
• Yellowheaded Blackbird	c	c	c	
• Brewers' Blackbird	c	c	c	o
— Common Grackle	r	r	r	
• Brown-headed Cowbird	u	c	c	
• Northern Oriole	u	u	u	
— Rosy Finch				u
— House Finch	u	u	u	
— Pine Siskin	u	u	u	r
— Lesser Goldfinch	r		r	
• American Goldfinch	c	c	c	u
— Evening Grosbeak	r		r	
• House Sparrow	u	u	u	u

Accidentals seen at Ouray NWR

Little Blue Heron

Vermilion Flycatcher

Golden-crowned Kinglet

MOCKINGBIRDS AND THRASHERS - THRUSHES -
KINGLETS - PIPITS - WAXWINGS - SHRIKES -
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BUNTINGS

Oquirrh National Wildlife Refuge is one of a system of refuges administered by the U.S. Fish and Wildlife Service and dedicated to the preservation of wildlife. The financial base for this system was firmly established in 1934 through the passage of the Migratory Bird Hunting Stamp Act. This Act requires waterfowl hunters to purchase annually a migratory bird or "duck stamp." Funds collected from duck stamp sales have been used to purchase numerous refuges that provide habitats necessary to sustain a variety of wildlife for both hunters and nonhunters to enjoy.

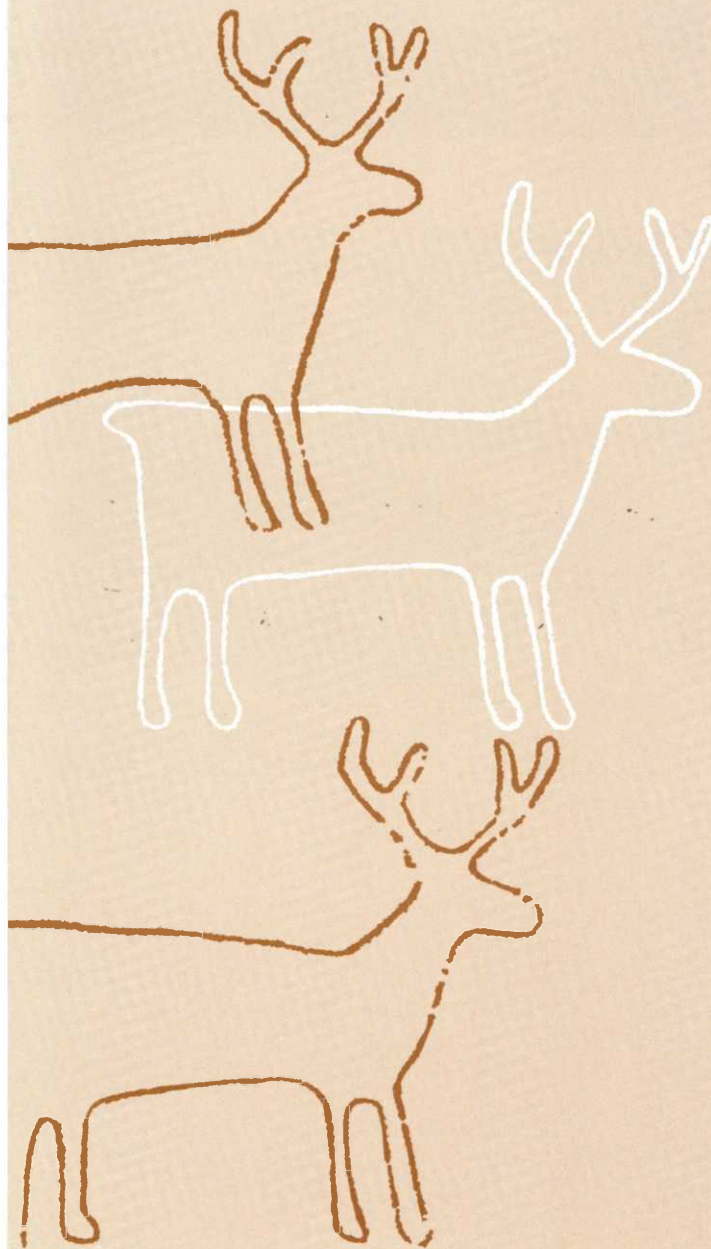
NOTES



May 1987

OURAY

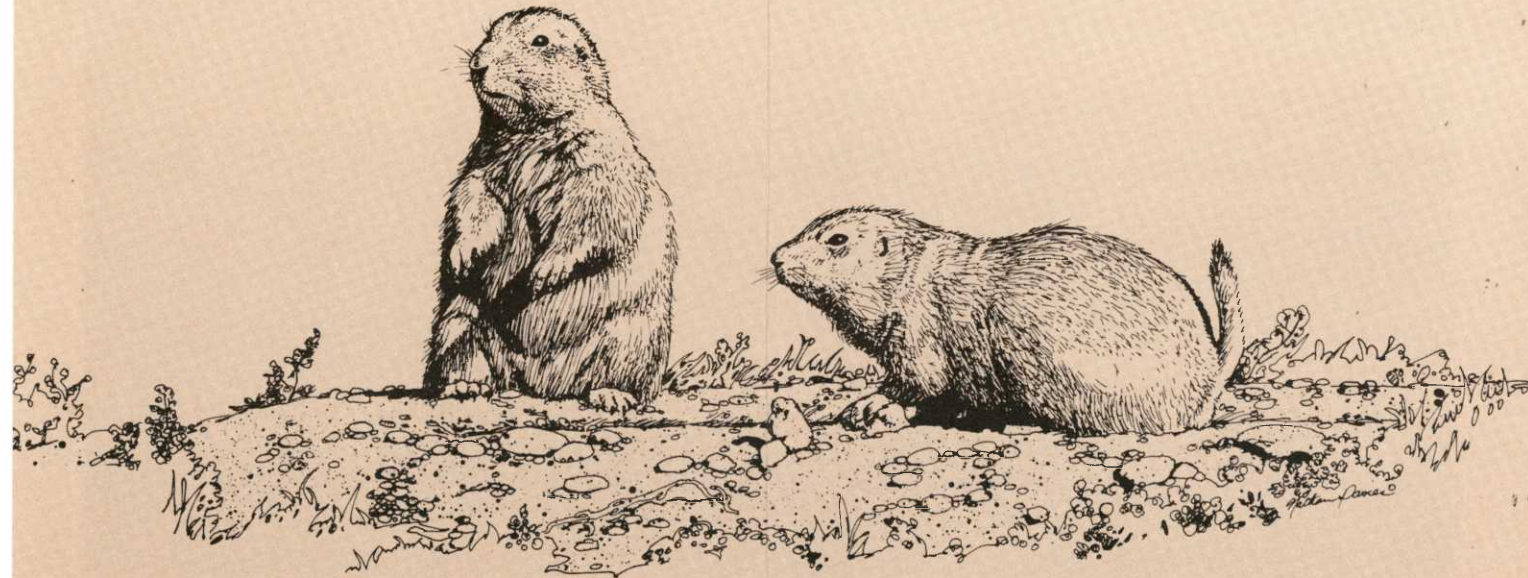
National Wildlife
Refuge



Habitat For All

Ouray Refuge offers food and shelter for a variety of wild birds and animals. The river is used by catfish, suckers, beaver, muskrats, and waterfowl. Adjacent stands of cottonwoods, willows, squawbrush and salt cedars provide cover for cottontails, raccoons, mule deer, bobcats, and porcupines. Raptors, including bald and golden eagles, great-horned owls and several species of hawks also use this habitat.

Greasewood, rabbitbrush, and cacti compete for the limited water of the higher, drier sites. Prairie dogs, jackrabbits and coyotes are typical upland residents. In May and June, the desert is sprinkled with colors from an astonishing variety of wildflowers.



Prairie dogs.

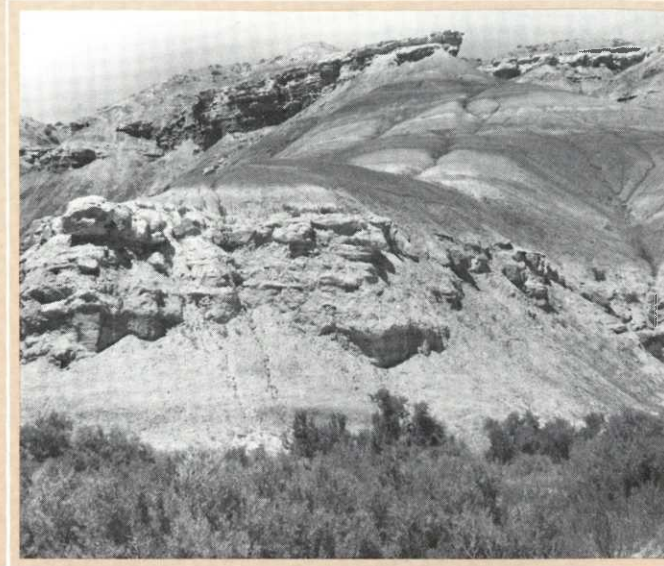
A secondary objective is to provide food for migrating waterfowl, sandhill cranes, and other birds, including the whooping crane. Marshes help meet both objectives and

Managing A Scarce Resource

Water is a scarce resource in the desert and refuge managers tend it carefully. The five large floodplains on Ouray Refuge may flood naturally in late May. This creates a pond and spurs the growth of semi-aquatic plants which provide food and cover for waterfowl. Dikes and canals distribute natural flooding and create marshes. Gravity flows are used when possible, but some pumping is required.

The primary objective of the refuge is to provide food and cover for 14 species of nesting ducks including mallards, pintails, and teal, as well as Canada geese.

agricultural crops are planted to provide additional food. Nearly 200 species of birds use Ouray Refuge and nearly half are associated with water.



Bluffs of the Leota Hill.



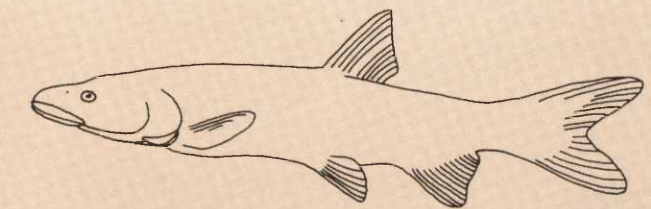
Brooding Night Hawk.

Photos by Herb Troester. U.S.F.W.S.
Front cover Petroglyph - style deer

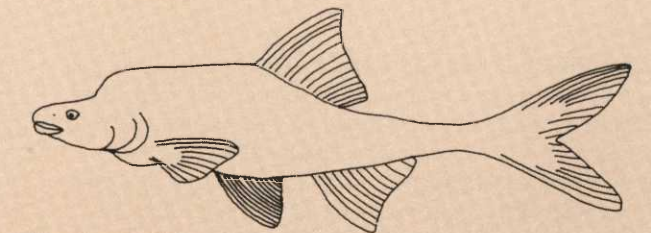
Species in Peril

The threat of extinction looms over hundreds of plants and animals. At least eight imperiled animals find refuge on Ouray — whooping cranes, peregrine falcons, ospreys, bald eagles, Colorado squawfish, humpback chubs, bonytail chubs, and razorback suckers. Five threatened or endangered plants occur on the refuge.

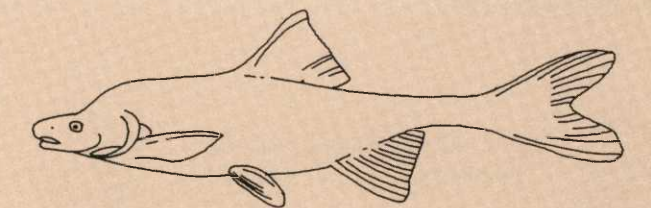
The Colorado squawfish, humpback chub, and bonytail chub have become endangered because of changes to their habitat. What was once a natural, free flowing stream has been heavily impacted by man. The river has been reduced in flow by various withdrawals and damming. The dams have reduced floods but produce higher, clearer, and colder summer flows. Such changes impact the native fish populations, but the endangered fishes still occur in preferred habitat in the Green River and are occasionally caught by fishermen. Endangered fish are protected by Federal law and must be carefully returned unharmed into the river. Below are drawings of the three endangered fish to help you recognize them.



Colorado Squawfish



Humpback Chub



Bonytail Chub

Water Birds in the Desert

The desert of northeastern Utah is a harsh place for ducks, geese, and other water birds. Less than 7 inches of precipitation fall per year, hardly enough to maintain marshes, lakes, and streams. But the Green River brings water down from the mountains of Wyoming and thousands of waterfowl flock to the Green River.

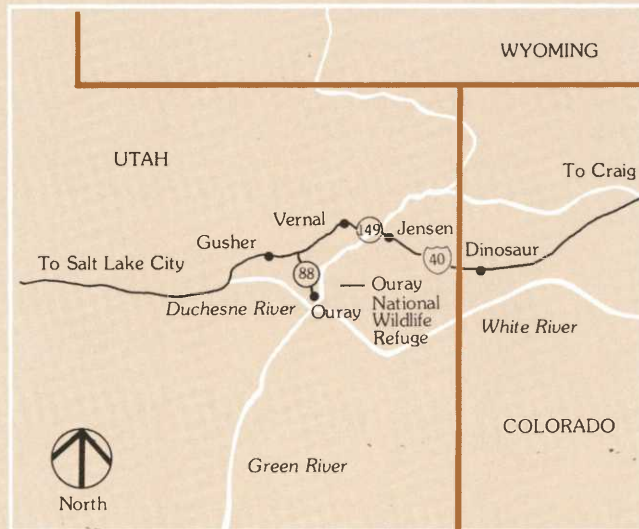
In 1960, the U.S. Fish and Wildlife Service began purchasing land for Ouray National Wildlife Refuge, using funds derived from the sale of Duck Stamps to hunters. The refuge includes 12-miles of the Green River and encompasses 11,482.71 acres of land, of which 3,500 acres is leased, mostly from the Uintah and Ouray Indian River Reservation which adjoins the refuge on the south.



Scenic view of Ouray Refuge. U.S.F.W.S. Photo.

A Refuge For People

Visitors are welcome to enjoy the wildlife and scenic beauty of Ouray. Refuge roads are open to the public except for limited closures during the hunting season. Hunters should consult the refuge manager for current regulations. Utah regulations apply to all anglers and hunters. For further information, write: Refuge Manager, Ouray National Wildlife Refuge, 447 East Main Street, Suite 4, Vernal, Utah, 84078. Tel. 801-789-0351.



Ouray National Wildlife Refuge is one of a system of over 400 refuges administered by the U.S. Fish and Wildlife Service and dedicated to the preservation and conservation of wildlife. The financial base for this system was established in 1934 through the passage of the Migratory Bird Hunting Stamp Act. Funds collected from "Duck Stamp" sales have been used to purchase refuge lands that provide habitats necessary to sustain a variety of wildlife for both hunters and nonhunters to enjoy.



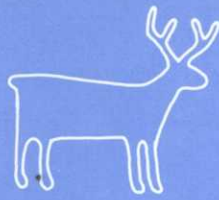
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U.S. Fish & Wildlife Service
Department of the Interior



June 1981

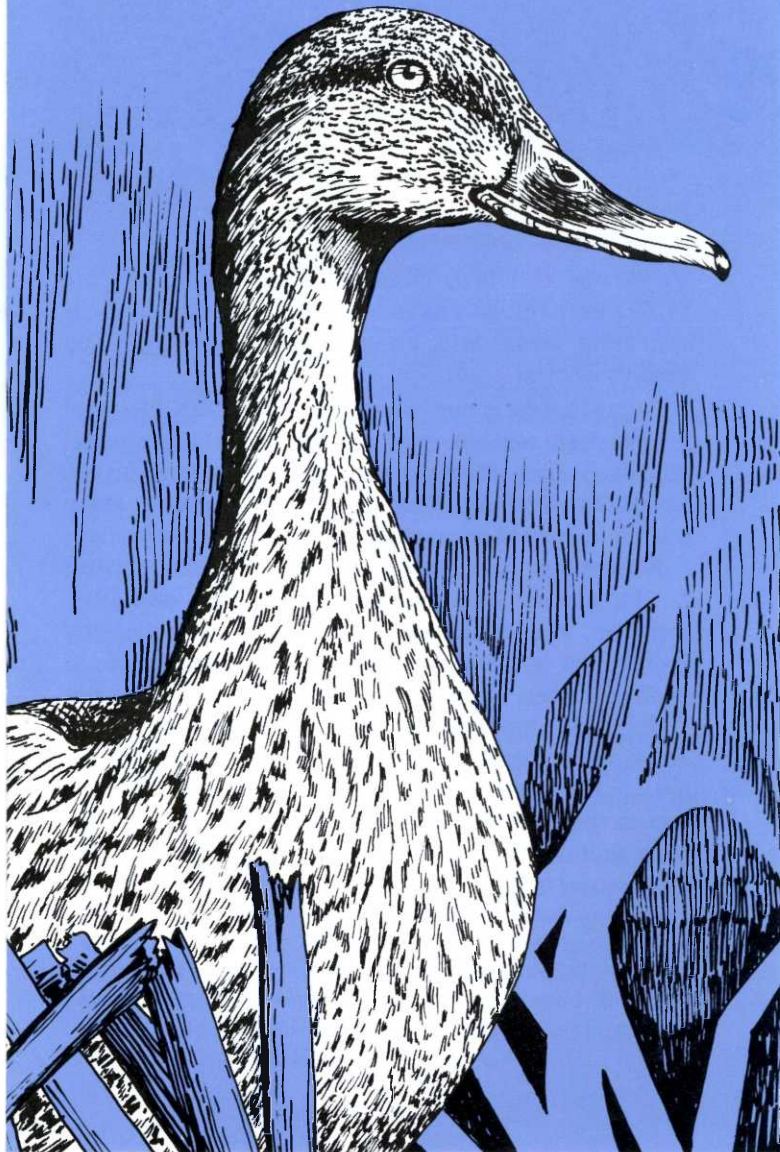
☆ GPO: 1981-780-787



OURAY

NATIONAL WILDLIFE REFUGE

**AUTO
TOUR
GUIDE**





Welcome to Ouray National Wildlife Refuge. This 11,827 acre refuge was established in 1960 to furnish migrating birds with choice nesting, resting, and feeding habitat.

Ouray Refuge is one of a system of over 400 National Wildlife Refuges administered by the U.S. Fish and Wildlife Service. Management at Ouray is intended to benefit wildlife and provide people with a place to enjoy wildlife in natural surroundings.

Remember, your chances of seeing wildlife depend on the season, weather, time of day, wind, and other variables. Wildlife are most often seen during the early morning or late afternoon hours. You are welcome to explore places of interest on foot, but please do not drive off the graveled roads. There are 12 numbered stops along the nine mile route, which takes about one hour to complete. The first stop is 0.3 of a mile ahead and to the right of the information station. Check the map in this leaflet for the location of the first and subsequent stops.



FARMING FOR WILDLIFE

To your left lies 200 acres of fertile bottomlands cleared for farming purposes. Approximately 100 acres of milo, barley, winter wheat, and sweet clover are grown in a rotation system designed to minimize the use of pesticides and fertilizers. In the fall, strips are mowed into the crops to make the foods more accessible to ducks and geese. Waterfowl require high energy foods such as these for their migration flights. Deer, raccoon, and ring-necked pheasant also benefit from the food and cover provided by the crops. Refuge crops are irrigated via a system of wheelline sprinklers fed by an underground pipeline from Pelican Lake. The next stop is 0.7 of a mile.



MARSHLANDS, THE HEART OF OURAY REFUGE

The Sheppard Bottom pond area is one of five bottomland marsh complexes on the refuge. All units are diked for water control and use pipe inlet structures to distribute water from unit to unit. As Green River flows increase during the spring, water is directed into the ponds through gravity flow inlet structures and by pumps. By this process, water can be put into the ponds at the optimum time for breeding waterfowl. Ideally, the filling of the ponds should occur in early February, before waterfowl and waterbirds begin their Spring migration and start nesting.



WATERFOWL SUPERMARKET

Marshlands such as these yield abundant food, water, and shelter for migrating waterfowl. For those ducks that stay to nest, beds of aquatic plants provide nourishment. Their offspring—ducklings—prefer more concentrated, nutritious food. Minute animals, called invertebrates, fulfill this need and marsh waters often teem with these small food parcels. Scan the marsh carefully and you may see ducklings scurrying about in search of invertebrates. Observe the growths of cattail and bulrush—good escape cover for a harried gosling. Frequently, these plants also provide over-water nesting places for redhead and ruddy ducks. Marshlands are actively managed by manipulating water levels to create good growing conditions for aquatic foods and cover. Bottom feeding fish, like carp, are controlled to prevent disturbance and subsequent muddying of pond waters. This helps maintain cleaner waters enabling good growths of aquatic plants and invertebrates to occur. The next stop is 0.6 of a mile.



SALT CEDAR—A BRUSH INVADER

The tall, slender, clumps of brush to your left are called saltcedar. This troublesome plant was brought into the United States about 100 years ago from the Mediterranean region. Below the 5,000 foot level saltcedar flourished and has invaded most of the drainages in the southwest, displacing natural willow. Saltcedar, or tamarisk, has slender foliage with small scale-like leaves and pink flower clusters. The name saltcedar refers to the tolerance of this plant to alkali type soil. This shrub does provide some cover and food for wildlife, but its usefulness is diminished by its tendency to take over an area. Control of saltcedar is done by mowing, prescribed burns with a follow-up spraying and/or flooding. It is a tough plant to control, once it moves into an area. The next stop is 0.9 of a mile.



COTTONWOODS

Cottonwoods grow in very thick stands along the Green River. Although of marginal value to waterfowl, cottonwoods provide cover, food and nesting sites for a wide variety of animals. Mule deer, raccoons, porcupines, Lewis woodpeckers, red-tailed hawks, great horned owls, yellow-rumped warblers, and other wildlife frequent the cottonwood groves. Great blue herons and double-crested cormorants nest in rookeries high up in cottonwoods on the refuge in Woods and Johnson Bottoms. Cottonwoods give the refuge a lot of its wildlife diversity and are a welcome feature providing shade to wildlife and visitor alike. The next stop is 0.5 of a mile.



THE GREEN RIVER—LIFEBLOOD OF OURAY REFUGE

The Green River meanders for some 12 miles through the refuge and is its primary source of water. River waters are directed to the ponds via canals cut through the river banks and by pumping. Flooding by the Green has caused damage to refuge dikes and control structures. This bulkhead is a reminder of what the river can do and depicts the problems faced in managing an area next to and dependent upon the mighty Green. The primary game fish of the Green is the channel catfish, although a sprinkling of other game fish are present. Endangered fishes also inhabit the Green, such as the Colorado squawfish and the humpbacked chub. The next stop is 0.3 of a mile.



UPLAND NESTING HABITAT

At stop 3, you observed growths of cattails and bulrush, nesting habitat for redhead and ruddy ducks. Most ducks, however, do not locate nests in such wet places, preferring drier sites. What you see before you is upland nesting habitat for mallard, pintail, gadwall, and cinnamon teal ducks. After selection of the nesting place, a hen lays about six to twelve eggs. Incubation takes 22 to 25 days. Upon hatching, the hen quickly leads the brood to water. In about two months, the fast growing ducklings will be airborne. The next stop is 0.6 of a mile.



ALKALI BRUSHLANDS

Many areas of the refuge have salty or alkali soils. Only vegetation tolerant of saline soils will flourish in these areas. To your left is an alkali area in Sheppard Bottom. Greasewood brush, saltcedar, and saltgrass dominate the plant life. Although not ideal for waterfowl, ducks such as cinnamon teal commonly nest in saltgrass if it is near water. This area, due to its poor nesting cover and considerable distance to water, is of low value to waterfowl, but it is important to mule deer as winter cover. To continue the tour route, turn right on the main road ahead and proceed to the next stop on the Green River overlook road (distance to stop, 1.2 miles). Turning left will take you back to the headquarters area.



PRAIRIE DOG COLONY

White-tailed prairie dogs are common upland residents on the refuge with colonies scattered through the desert in Leota Bottom and on the overlook bench. At this stop, a colony resides on both sides of the road. White-tailed prairie dogs are a high desert and mountain species. They differ from the plain's black-tailed prairie dogs by being smaller, less colonial, and of course, having a white-tipped versus a black-tipped tail. Prairie dogs hibernate from October to March. The young are born in May and number from three to five. Because of the summer heat, prairie dogs go into a pseudo-hibernation or estivation in July. Look carefully, western burrowing owls are often observed standing on prairie dog colonies. They commonly nest in prairie dog burrows. The next stop is 1.3 miles.



DESERT GRASSLANDS

Here, desert grasslands receive only six to seven inches of annual rainfall which disappears quickly in the sandy soils. Deep rooted bunch grasses, such as needle and thread grass and the feathery headed Indian rice grass before you, are the primary grass species. The low shrubs with scale-like leaves are called shadscale and the abundant slender leaved, greener shrubs are rabbitbrush. Prickly-pear cactus abound, and along with other desert wildflowers, are quite beautiful in May and June. This habitat is extremely fragile, and recovers very slowly if damaged. Mule deer frequent this area during winter to eat the tips of shrubs. Other wildlife reside here, such as black and white-tailed jackrabbits, western meadowlark, sage sparrow, and many reptiles, including the short-horned lizard pictured above. These are just a few of the animals that live in desert grasslands. The next stop is 0.8 of a mile.



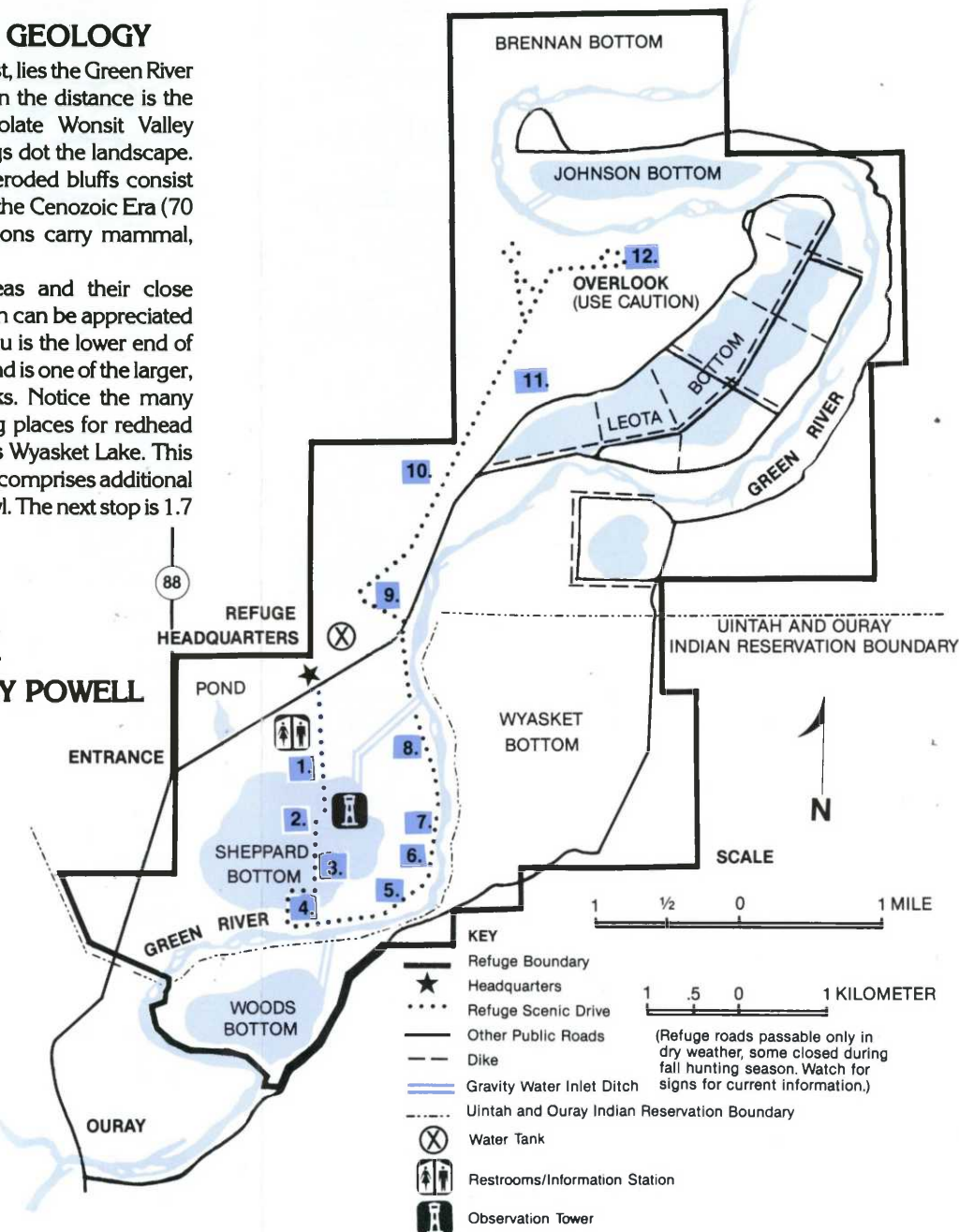
GREEN RIVER GEOLOGY

Before you, to the east, lies the Green River and its flood plain. In the distance is the expansive and desolate Wonsit Valley where oil and gas rigs dot the landscape. Geologically, these eroded bluffs consist of sandstones and shales formed during the Cenozoic Era (70 million years to present). These formations carry mammal, turtle, and fish fossils. The true form of the bottomland areas and their close association and dependence on the Green can be appreciated from this elevated view. Directly below you is the lower end of the Leota Bottom Pond complex. This pond is one of the larger, more productive units for nesting ducks. Notice the many stands of bulrush providing good nesting places for redhead ducks. Across the river and to the right is Wyasket Lake. This whole area is called Wyasket Bottom and comprises additional nesting and migration habitat for waterfowl. The next stop is 1.7 miles.



GREEN RIVER OVERLOOK—JOHN WESLEY POWELL EXPEDITION

You are at the highest point on the refuge, Leota Butte (5,072 feet). This overlook provides an exceptional view of Leota Bottom to the east and Johnson Bottom across the river to the north. The northern boundary of the refuge lies just beyond Johnson Bottom. The display in front of you tells the story of the Powell river expedition of 1869. This is the end of the auto tour route. As you leave the overlook, Pelican Lake will lie directly in front of you (westerly). Taking the right-hand fork of the road will take you back to Highway 88 by Pelican Lake. Please come again.



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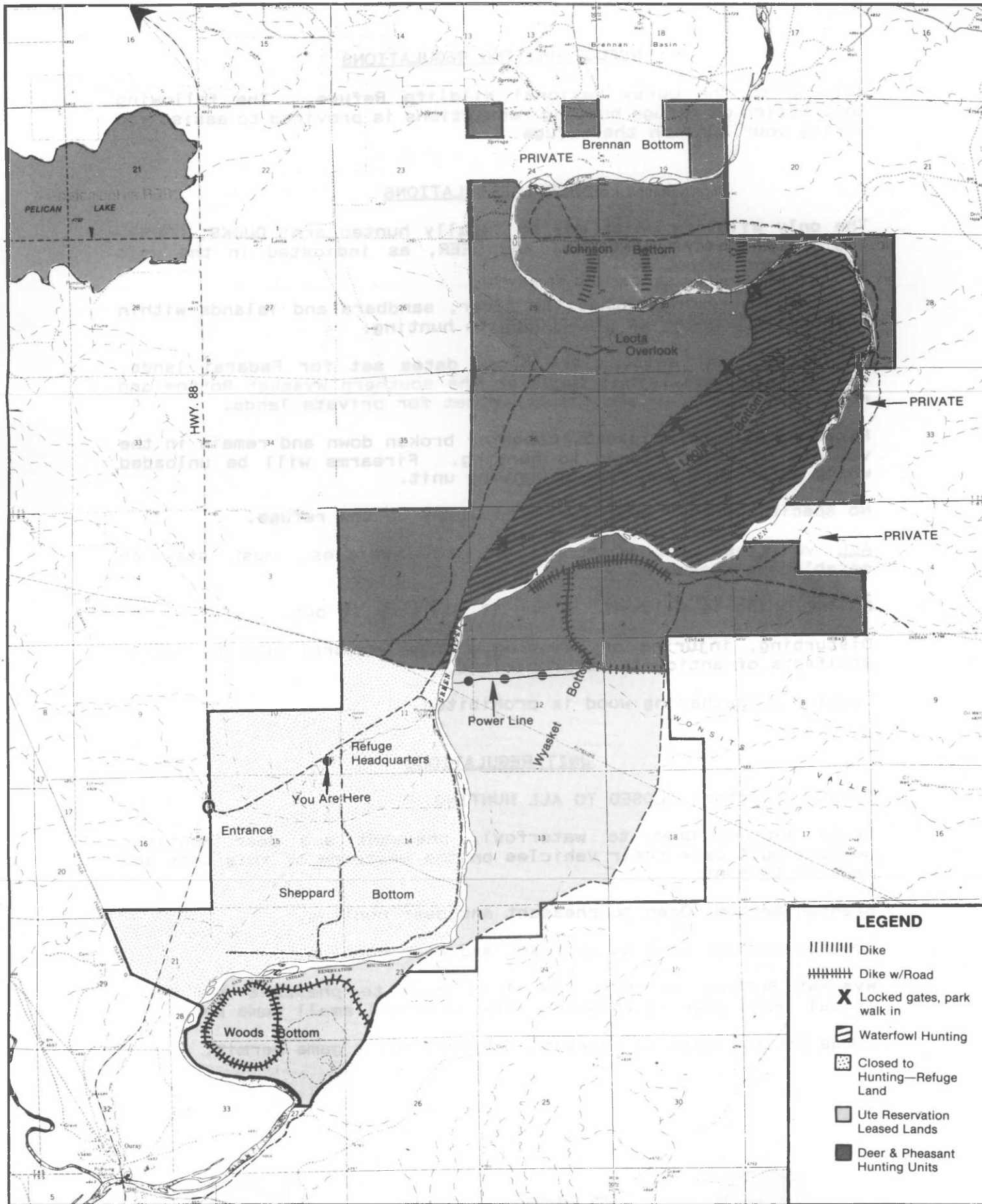
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To Hwy. 40



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



REFUGE HUNTING REGULATIONS

Welcome to the Ouray National Wildlife Refuge. The following information on refuge hunting regulations is provided to assist you during your hunt on the refuge.

GENERAL REGULATIONS

The only wildlife which may be legally hunted are: DUCKS, GEESE, COOTS, MERGANSERS, PHEASANT and DEER, as indicated in the unit regulations below.

Hunters are reminded that the river, sandbars and islands within the refuge boundaries are CLOSED to hunting.

Refuge pheasant seasons are those dates set for Federal lands, except for those Tribal lands in the southern Wyasket Bottom and Woods Bottom, which are the dates set for private lands.

Firearms will be unloaded, cased or broken down and remain in the vehicle in areas closed to hunting. Firearms will be unloaded while walking to and from a hunting unit.

No special permits are required to hunt on the refuge.

ALL vehicles, including all terrain vehicles, must stay on established roadways.

No littering is allowed. Bring it in, pack it out.

Disturbing, injuring or removing plants, natural objects and/or artifacts of antiquity is prohibited.

Cutting or gathering wood is prohibited.

UNIT REGULATIONS

Sheppard Bottom: CLOSED TO ALL HUNTING.

Leota Bottom: Open to waterfowl, pheasant and deer hunting. Hunters must park their vehicles on the westside of this unit and walk in to hunt.

Brennan Bottom: Open to pheasant and deer hunting.

Johnson Bottom: Open to pheasant and deer hunting.

Wyasket Bottom: Northern one-third open to pheasant and deer. Tribal lands open to pheasant only, w/Tribal small game permit.

Woods Bottom: Open to pheasant w/Tribal small game permit.



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