

REVIEW AND APPROVAL

MODOC NATIONAL WILDLIFE REFUGE
ALTURAS, CALIFORNIA

ANNUAL NARRATIVE REPORT
CALENDAR YEAR 1988

E. Clark Blom 5/3/89
Refuge Manager Date

R. Chitt 5/4/89
Associate Manager Date
CA/NV

R. Chitt 5/4/89
Regional Office Approval Date

INTRODUCTION

The 6,283 acre Modoc National Wildlife Refuge (NWR) is located along the south fork of the Pit River in Modoc County, just south of the town of Alturas in extreme northeast California. The refuge is bordered on the east side by the Warner Mountains. This impressive range rises to an average elevation of 8000 feet, and contains harvestable stands of pine and fir trees. This mountain range is also the principal watershed for the entire valley west of it, including the refuge. The country south, west, and north of the refuge is a variety of rolling hills, canyons, and plateaus with a sagebrush/juniper vegetative community.



Goose Pond with the headquarters and Warner Mountains in the background. MDC 1621, 6/17/85, WRR.

Geographically, the refuge is located on the western edge of the Great Basin Desert, resulting in a rather severe climate. Cold, wet winters (temperatures of -40° F have been recorded) and cool, dry summers are the rule. Drought and flooding conditions are quite common and both have been known to occur during the same year.

The refuge itself consists of irrigated meadows, natural flood plains, marsh communities, and sagebrush/juniper uplands. Soil types are basically heavy clays having a high alkalinity. Black alkali surrounded by salt concentrations are not uncommon on the poorly drained areas of the refuge.

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A. HIGHLIGHTS

- Two and a half years of continued drought have played havoc with the refuge water supply. As a result, Dorris Reservoir was at a critically low level by the end of the summer (Section B).
- Many personnel changes occurred this year. Three new faces were present by the end of the year (Section E-1).
- Modoc NWR's new farm tractor was delivered in time for fall farming! (Section I-4).
- Four of Modoc NWR's staff received Level 4 performance evaluations and subsequent monetary rewards at the end of the fiscal year. (Section J-3).

B. CLIMATIC CONDITIONS

Drought conditions continued to plague the refuge during the course of the year. A second year of below normal snowpack in the Warner Mountains resulted in Dorris Reservoir filling to only 8700 acre feet instead of the normal 11,600 acre feet. This is the second year in a row that Dorris has failed to fill. The drought became severe in late summer and fall with a resulting shortage of water for the refuge ponds and extremely dry farm fields. Fall planting of winter wheat had spotty germination and poor growth through the remainder of the year.

Despite the drought conditions which prevailed through most of the year, a total of 13.75 inches of precipitation was recorded by December 31 (Table 1). This amount is 1.22 inches above the normal amount expected to occur in a 12 month period and is typical of the paradoxical weather conditions which occurs in this area.

The current snow pack in the Warner Mountains is near normal for this time of year. However, the extremely low level of Dorris Reservoir and the uncertainty of spring moisture, lends a gloomy outlook for an improved water year in 1989.

November was the wettest month of 1988 when a total of 3.60 inches of precipitation fell, much of it in the form of snow. July was the only month without any measurable precipitation. The record high for the year occurred on July 31, when a very warm 104° was reached. The century mark was broken six times this summer, a rather unusual occurrence for this area. The record low occurred on December 26, when the thermometer dipped to a chilly -17° F! This cold snap really froze the area up and pushed the last of the lingering waterfowl out of the area.

Dorris Reservoir, the refuge irrigation reservoir, was a low of 2665 acre feet of storage on January 1. The drought conditions and resulting poor snowpack yielded a scanty runoff which put our storage at only 8700 acre feet (75% of normal) by the end of May. Irrigation demands caused a constant drawdown of the reservoir for the remainder of the irrigation season. By the end of September, the reservoir level had dropped to the point where the remains of the old coffer dam were again visible. Water demands continued into November with the reservoir level dropping to a low of 2629 acre feet of storage. However, the precipitation received during November was sufficient to start minimal runoff and by the end of the year, the reservoir had picked up 548 acre feet of water with a resulting 3177 acre feet of storage.

Throughout the course of the year, a total of 6642 acre feet of water was discharged from Dorris Reservoir. This water was used for meadow irrigation, stock water and pond maintenance.

Table 1. Temperature and precipitation during 1988 at Modoc NWR.

Month	TEMPERATURE		PRECIPITATION	
	Maximum (°F)	Minimum (°F)	Total (inches)	Snow depth (inches)
January	51	-12	1.62	11.0
February	68	-5	0.26	0.5
March	72	11	1.18	0.0
April	79	17	2.88	1.0
May	86	19	1.52	0.5
June	98	27	0.64	0.0
July	104	33	0.00	0.0
August	99	36	0.47	0.0
September	100	22	0.70	0.0
October	88	21	0.03	0.0
November	76	6	3.60	7.0
December	60	-17	0.85	10.0
Totals			13.75	30.0

C. LAND ACQUISITION

1. Fee Title

The 20 acre inholding known as the "Race Track" was once again placed in the acquisition pot. This property had been scheduled for acquisition in 1987, but fell through when the owner and the Service could not agree on a price. The owner opted, at that time, to sell to a private party for \$30K more than the Service could offer. However, this deal did not work out and the owner approached us again for new negotiations. This time an agreeable price to both parties (\$45K) was reached. All necessary paperwork was completed and a check was issued. However, someone at the Regional Office level failed to follow through and let the 90 day option expire. In the meantime, the owner found a new buyer who was willing to meet the Service's price and sweetened the pot by an additional \$20K. So, we lose again. It will probably be a long time before another opportunity to acquire this parcel will occur.

D. PLANNING

2. Management Plan

The Law Enforcement Plan, as called for under Part III of the Refuge Management Plan was completed and approved this year. This plan received high praise at the Regional Office level and will subsequently be used as a model for the entire Region! A Cropland Management Plan was also begun in 1988. Hopefully it will be completed this year.

3. Public Participation

Meetings with the newly formed Modoc County Fish, Game and Recreation Commission were held periodically throughout the year. Items discussed included: waterfowl feeding, powerline collision and fishery management. In addition, the manager met with the local sportsmen group to discuss the 1988 waterfowl season and fishery management at Dorris Reservoir. The refuge will continue to meet with these groups in the future to work toward improving warm water fishing at Dorris Reservoir.

4. Compliance with Environmental Mandates

The refuge continued with active participation in the Leaking Underground Storage Tank (LUST) program which began in 1987. During the course of the year, the remaining two underground storage tanks were removed and replaced with a propane system for the shop and office buildings and an above ground oil storage tank for the manager's quarters. Soil samples were taken from the excavations of these last two tanks and submitted for analysis to California Analytical Laboratories in Sacramento, California. Results from the testing came back negative. Now all that remains to finish this project is to transport the remaining removed tanks to an approved scrap metal collection point.

Total cost to the refuge for this project is as follows:

Contract for service island tank removal:	\$ 980.00
New tank and stand purchase:	565.00
Field service trailer purchase:	2630.00
Field service truck, tank and pump purchase:	11789.25
Lab testing fees:	725.00
Force account hours for clean up, excavation and disposal:	800.00

Total cost for LUST program: \$17489.00



New above ground fuel tank at Manager's quarters.
MDC 2252, 01/11/88, ECB.

E. ADMINISTRATION1. Personnel

6 2 4 1 7
MDC-2375, 1/18/89 KV

1. E. Clark Bloom - Refuge Manager GS-11 PFT EOD: 02/74
2. David A. Hardt - Assistant Refuge Manager GS-09 PFT EOD: 12/88
(Transferred from Kern NWR, CA)
3. Thomas J. Melanson - Assistant Refuge Manager GS-09
(Transferred to Grays Lake NWR, ID 09/88)
4. Sharon L. Storm - Refuge Assistant GS-05 PFT EOD: 06/88
(Transferred from Ruby Lake NWR, NV)
5. Marcia I. Cornwell - Clerk Typist GS-04 Resigned: 05/88
6. Bradley M. Storm - Maintenance Worker WG-08 PFT EOD: 09/88
(Transferred from Ruby Lake NWR, NV)
7. Lyle L. Burgoyne - Maintenance Worker WG-06 CS EOD: 06/76
8. Darryl G. Wilkins - Maintenance Worker WG-08 PFT Resigned: 12/88
9. Steven Mitchell - Equipment Operator WG-08 TFT Terminated 8/88
10. H. Blair French - Biological Technician GS-05 TFT Terminated 10/88

Several personnel changes occurred on the refuge during 1988. In May, Clerk-Typist Marcia Cornwell resigned her position so she could return to her home near Orleans, California.

Sharon Storm filled the vacancy as the Refuge Assistant in June when she transferred from Ruby Lake NWR, Nevada. There was a smooth transition of duties as the assistant manager was glad to give up being the acting refuge assistant. Bradley Storm, Maintenance Mechanic, also transferred from Ruby Lake in September. Having a third maintenance worker on board gave a needed boost to get some long neglected duties completed.

Assistant Manager Tom Melanson transferred to Grays Lake NWR, Idaho in September. This position was filled by David Hardt from Kern NWR, California in December. David was a welcome sight, especially since the refuge manager had handled all the law enforcement duties for the entire duck season.

In December, after 15 years of Federal service, Maintenance Worker Darryl Wilkins submitted his resignation. Darryl had returned to Kentucky in September for his third R & R for the year. After running out of leave and being AWOL for eight weeks, Darryl finally decided that his resignation would be in both his and the Service's best interest. We hope that Darryl is able to work his problems out in the near future.

Two temporary positions were filled this year. The biological technician position was filled by Blair French in April. Blair's duties included monitoring sandhill crane and Canada goose nest success, rocket netting and banding sandhill cranes, duck banding and pesticide application for hemlock control. The temporary equipment operator position was filled by Steven Mitchell in May. Steve spent most of his appointment hauling and spreading gravel on refuge roads. Steve's appointment was cut short when he contracted a severe case of chicken pox in August and was unable to return to work.

The following table depicts a five year comparison of on-board strength for Modoc NWR.

Table 2. Staffing levels at Modoc NWR for the past five years.

Year	Permanent		Temporary
	Full Time	Part Time	
1988	5	1	2
1987	4	1	1
1986	5	1	1
1985	5	1	1
1984	5	2	1

4. Volunteer Programs

Lois N. Bloom donated 20 hours of her time handling information requests and preparing interpretive material for the refuge which is used during outdoor classroom programs. She also accompanied the refuge manager on two breeding bird surveys.

Clint McCarthy, wildlife biologist for the Supervisor's office of Modoc National Forest, Alturas, California volunteered a total of 44 hours assisting with mist net procedures during the fall.

5. Funding

Modoc NWR's funding, excluding moving costs, was sufficient to operate the refuge in an efficient, productive manner throughout the course of the year. In addition, large ARMM dollars were made available to take care of our remaining farm equipment needs.

The following table depicts Modoc's funding levels for the past five years.

Table 3. Funding levels at Modoc NWR for the past five years.

Year	1270 (ADC)	1240 (Fire)	1260	1520 (YCC)	8610	Large ARMM*	6860	Total
1988	n/a	500	225,900	n/a	4,700	55,000	5,000	291,100
1987	n/a	500	309,400	n/a	2,200	50,000	7,000	368,600
1986	500	500	198,700	n/a	1,800	158,500	7,000	366,500
1985	500	500	169,400	10,680	1,800	110,100	7,000	299,480
1984	500	500	194,800	9,000	4,000	20,000	7,000	235,300

*This column denotes other than normal funds or "earmarked" funds such as the 55K in 1988 to buy a new farm tractor.

6. Safety

Safety meetings were held every month in an effort to increase safety awareness among staff members, thereby decreasing accidents on the refuge. Although staff attitudes were generally safety conscious, four accidents did occur during the year. These accidents and their corrective actions are summarized as follows:

On 04/01, Maintenance Worker Darryl Wilkins damaged a Service-owned vehicle while backing out of a parking space with a piece of equipment. Mr. Wilkins was advised to be more cautious when driving in close quarters.

On 05/04, Equipment Operator Steven Mitchell backed a dump truck loaded with gravel onto a fresh fill of dirt over a culvert. The bed was raised to dump the load and as he started to pull forward, the right side of the new fill gave way. The raised bed and weight of the load aided in tipping the truck on its side (see page 38 for picture). Mr. Mitchell was instructed to be more aware of working conditions and possible hazards.

On 07/01, Biological Technician Blair French damaged a Service-owned vehicle and trailer. While backing up the trailer, he jackknifed and the hitch hit against the bumper, bending the hitch and denting the bumper. Proper backing procedures were discussed with Blair.

On 12/02, Maintenance Worker Bradley Storm cut the back of his right hand while unloading buckets from the back of a pickup. The hand was cut while turning the bucket to get access to the handle. The cut was made by another bucket lip that was stacked next to the one being turned. Mr. Storm was reminded to be alert and the suggestion was made to wear gloves during such operations, possibly minimizing the injury. Medical attention was required, but no lost days occurred.

7. Technical Assistance

The refuge manager assisted personnel from the California Department of Fish and Game in management planning on their recently acquired Ash Creek Wildlife Management Area. This area had been considered for acquisition by the Service in the late 1970's, at which time the refuge manager had been involved in developing a potential management plan for the area. He supplied the state with maps and potential management schemes for the area.

Refuge Manager Clark Bloom and Assistant Manager Tom Melanson advised a local rancher on habitat management that will be beneficial for both waterfowl maintenance and cattle grazing. As a result of this session, a formerly barren 300 acre pasture was converted to an improved pasture with several small ponds.

F. HABITAT MANAGEMENT

1. General

Modoc NWR is geographically located on the western edge of the Great Basin Desert. Habitat consists of typical stand of sagebrush and juniper trees on the drier sites. Rabbitbrush, greasewood, and saltgrass associations are typically located on the poorer drained, more alkaline areas, while reed canary grass intermixed with sedges and juncus are common around the marsh units and on the wet meadows. These basic habitat types are considered to be climax communities and as such are very stable unless disturbed by a modifying factor, such as fire or very heavy grazing.

Significant habitat modifications this year involved two prescribed fires (Section F-9), creation of a new marsh area (Section F-2) and enhancement of riparian areas through a tree planting project (Section F-6).

2. Wetlands

Refuge wetlands exist within, and are derived from, a very complex irrigation system. The entire area is managed through the use of a water conveyance system which includes an 11,600 acre foot storage reservoir, 20 miles of major canals, 50 miles of minor ditches, a river, a creek, and several pond and marsh units. Water control structures within the system range in size from eight inch pipes to 60 inch corrugated metal pipes with attached risers to multiple-bay concrete dams.

This system provides water for the entire wetland area and is managed to produce the maximum of benefits with a minimum of labor. Planned annual operations included maintaining non-fluctuating water levels throughout the marsh/pond system while supplying a continuous flow of fresh water. Meeting these two objectives has helped to keep diseases such as botulism from becoming a problem and at the same time provides tremendous amounts of aquatic plants for utilization as a food source by waterfowl.

When Railroad Pond was drained during the summer, over 30 nesting islands were constructed utilizing the refuge's TD-18A dozer and cable operated eight cubic yard earth mover. Additionally, several channels were constructed around portions of higher ground in the northwest section of this pond to protect nesting birds on these sites from mammalian predators.

A new three acre marsh, complete with two islands, was excavated out of the eastern portion of the Heifer Field, converting this primarily upland area into suitable habitat for waterfowl, marsh and shorebirds.

4. Croplands

Modoc NWR's farming program is conducted entirely by force account and is aimed at providing cereal grain for migrant waterfowl during the fall. During 1988, a total of 146 acres was planted with winter wheat at a seeding rate of 104 pounds per acre. The largest of the three plantings, the South Grain Field, comprised 120 acres followed by the N. Ebby Field at 23 acres and a small three acre planting in the headquarters unit. Another 200 acres were planted to barley in the spring, including 80 acres in the North Grain Field and 120 acres in the Matney Field.

5. Grasslands

Modoc NWR has 3000 acres of grasslands; 1000 acres are of the "bunch grass" type intermixed with sweet clover and cheatgrass which can be found on the better drained areas of the refuge. This community type is managed solely for waterfowl production, and is kept in an undisturbed state with no haying or grazing practices permitted.

The remaining 2,000 acres are maintained as irrigated meadows in order to provide succulent green browse for Canada geese. In addition, these wet meadows provide excellent nesting habitat for sandhill cranes, rails, snipe, and phalaropes. Cinnamon teal also utilize these meadows to a lesser extent for nesting purposes.

Approximately 22 acres in the Foxtail Field were planted with perennial rye at a rate of 100 pounds per acre. The perennial rye plots planted in 1987 provided good goose browse during this first season but failed to support any other significant waterfowl use.

6. Other Habitats

A sagebrush/greasewood plant community is present around Dorris Reservoir, along the Pit River, and adjacent to the low, poorly drained, alkaline areas on the refuge. These areas are also in a non-use status by livestock and provide some fair to good cover for quail, pheasants, and numerous species of passerines.

The riparian habitat associated with Pine Creek, which passes through the refuge for three miles has been in non-use status since 1983. Since the elimination of cattle grazing, the understory of willows and multiflora rose has improved significantly. An established overstory is present only along a 1/4 mile section of the creek and an understory is present intermittently along the entire three miles. Over the past five years the refuge has attempted to improve the riparian habitat associated with the creek by planting various species of trees and shrubs with varying degrees of success. This year, 200 trees were planted on the refuge including: 100 golden willow, and ten each of amuir maple, buffaloberry, chokecherry, cotoneaster, black locust, crabapple, Italian hybrid poplar, Jeffrey pine, ponderosa pine and five each; sand cherry and sumac.

The willow and a majority of the buffaloberry, chokecherry, black locust, crabapple, sand cherry, sumac and poplar were planted along Pine Creek while the maple, cotoneaster and both pine species were planted around Subheadquarters. A display plot representing several of these species was planted adjacent to the visitor kiosk at the refuge headquarters.

All seedlings were purchased from the Central Modoc Resource Conservation District for \$1.00 each.

7. Grazing

The main objective of the grazing program has been to encourage growth of succulent green browse for migrating Canada geese during the fall and spring. This practice also provides loafing and feeding areas for the resident flock of honkers, keeping them off neighboring ranches as much as possible.

Grazing permits were issued to four permittees in 1988. John Younger was issued a permit for summer and fall grazing; Warren Weber and Bob Schluter receiving permits for fall grazing only. Rates for these three permits were based on a rate survey conducted in 1987 that established the fair market value for summer grazing at \$9.50/AUM and the fall grazing (October-November) rate at \$7.50/AUM. These rates were unchanged from those of 1987.

Sean Curtis was issued a permit for fall grazing of the Bayley Field on the basis of being high bidder with a bid of \$10.05/AUM. This is the second grazing permit to be awarded on the bid system. This system was chosen to reduce complaints by permittees that refuge rates are too high, and to better reflect the real "market value" of the commodity. Long term permittees who were granted "grandfather" permits when the refuge was established will continue to have their permit rates based on rate surveys.

A total of 1345.42 AUM's valued at \$10,803.58 were removed. Due to personnel transfers, a grazing rate survey was not conducted this fall, consequently there will be no change in the rates for 1988.

8. Haying

Approximately 2000 acres of irrigated meadows exist on the refuge, of which roughly 1600 acres are hayed annually. Haying is an effective and economical management tool used to provide short green browse for Canada geese. The resulting short vegetation the following spring also allows the water in the meadows to warm sooner, thereby providing an abundant food source of invertebrates which are so important to nesting sandhill cranes.

In 1985, we began delaying haying dates from July 15 to August 1 on selected units. These delays, which were identified in the Sandhill Crane Management Plan, were implemented in an attempt to increase sandhill crane production. When meadows are dried for haying a large part of the invertebrate food source of cranes is lost. In addition, escape cover is lost when haying is completed, leaving young colts more vulnerable to predation.

Seven hay permits were issued this year, two of which were grandfather permits and five were awarded to high bidders. Grandfather permits were set at \$12.00/ton based on a rate survey, while high bids were \$5.00, \$13.00, \$13.65, \$15.05 and \$17.26/ton. A total of 2,374. tons was harvested for a total revenue to the government of \$29,190.47.

9. Fire Management

Seven prescribed burns were proposed for 1988, however, due to drought conditions and the associated fire danger only three were conducted. The Pit River Flood Plain burn has been rescheduled for 1989.

West Pit - This burn involved approximately 80 acres of reed canary grass, juncus and western wheat grass located between Hwy 395 and the Pit River. The area is not hayed and had not been grazed for four years resulting in dense vegetation stands that provided only marginal foraging habitat for geese and cranes. The burn was conducted on February 22 with very acceptable results except for low areas in the center of the unit which failed to burn.

Goose Pond - This 90 acre burn in fuels consisting of cattail, reed canary grass, juncus, rabbit's foot grass and western wheat grass was conducted on February 24. Utilizing both head and backing fires, the burn was quite successful in opening the area for improved crane brood habitat and Canada Goose nesting and foraging habitat.

Headquarters Unit - Approximately 10 acres located southeast of the refuge headquarters was burned on August 24 to remove vegetation residue in preparation for planting the unit with winter wheat.

Three wildfires occurred on the refuge this year. The first, a 17 acre lightning caused fire, occurred on August 12 in the east Fournoy Unit. Control was achieved in approximately 1.5 hours utilizing the refuge pumper assisted by the Alturas Rural Fire Department.

The second occurred on August 19 in the Sharkey Field when .1 acre of pasture was burned in a fire caused by the exhaust from a permittee tractor being operated in the field. This fire was controlled utilizing the refuge pumper and hand tools.

The last fire of the year occurred on September 8 in the Matney Field and was ignited by firing of a rocket net in dry vegetation. One acre was consumed before control was achieved using the refuge pumper.

10. Pest Control

The refuge again assisted Modoc County in an effort to control scotch thistle. This is a cooperative program in which the refuge pays for one-third of the cost of chemicals, use of equipment and county employee labor. In 1988 the refuge paid \$173.42. In the past, the chemical of choice by the county was "Tordon". However, due to restrictions on its use on refuges it was replaced this year with the chemical "Banvel". The refuge has participated in this control program since 1974.

Poison hemlock has become a serious pest plant at Modoc NWR over the past 10 years. Each year the plant infests new areas on the refuge, often to

the total exclusion of any other vegetation. Levees, ditch banks, and road shoulders are the primary locations of establishment. Pond margins and wet meadows/upland interfaces have also become infested although to a lesser degree. The quality and quantity of waterfowl nesting habitat has been substantially reduced in areas where hemlock has become established. In an attempt to control this noxious weed, a spraying program was initiated in 1983 utilizing the herbicide Rodeo. This program was continued in 1988 under the direction of Assistant Manager Tom Melanson who possessed a Certified Applicators License. Utilizing the 100 gallon slip-on spray unit and backpack sprayer, approximately 1620 gallons of one percent diluted spray was applied to selected portions of the Flournoy, Town, Subheadquarters, Duck Pond, Pine Creek and Goose Pond units.

Additionally, Dupont Hyvar X-L was used along the entrance road shoulders, around the visitor kiosk and in parking and storage areas to control the growth of weeds and grasses.

11. Water Rights

Modoc NWR is fortunate to have secure water rights on two creeks which drain portions of the Warner Mountain watershed lying east of the refuge. The refuge retains 52 percent of the total water rights within the Pine Creek irrigation district, the major water source for the refuge. A significant water right is also possessed on Parker Creek. Winter-time diversions from both these creeks are used to fill Dorris Reservoir. These stored waters are utilized during spring and summer to irrigate refuge hay meadows and maintain ponds and marshes at stable levels.

Refuge water rights are enforced through a state watermaster service which cost \$4,680.00 this year. In 1986 the state watermaster suggested that we apply for a change in "purpose of use" on our water right decree for Pine Creek since the original purpose of use was for "Agriculture". It was suggested that we request that "wildlife and recreation" be added to our purpose of use. We complied and submitted an application in 1987. Upon receiving notification of our application virtually every water user on Pine Creek filed a protest. Hydrologist Richard Johnson in the Regional Office Division of Engineering responded to these protests and a hearing was originally scheduled for January 1989. However, this hearing was postponed to a yet unknown future date.

G. WILDLIFE

1. Wildlife Diversity

The wide range of habitat types present on the refuge supports a corresponding amount of wildlife diversity. At least 238 species of birds alone have been observed on the refuge, and at least 76 species nest on Modoc NWR. The greatest diversity of wildlife occurs along the Pine Creek riparian corridor. The importance of this habitat is recognized and has been protected through fencing, enhanced through plantings, and monitored for species trends.

2. Endangered and/or Threatened Species

Bald eagles and peregrine falcons are the only two federally listed species in this category which occur on the refuge. After peaking in January with three individuals, use of the refuge by eagles declined through March and were absent through the summer until the first fall migrant was observed on November 14. Bald eagles utilized the refuge for a total of 210 use days, with the majority of this use occurring during January and February. Fall eagle use peaked in December when two individuals were present on the refuge.

Although peregrine falcon sightings on the refuge are quite rare, normally occurring once every few years, a sighting on November 1 by Lois Bloom near the entrance road hills area, was the second consecutive sighting in as many years.

3. Waterfowl

a. Ducks

Duck use on the refuge increased for the third consecutive year with 1,555,275 use days being accumulated. Possibly contributing to this 25 percent increase over 1987 were the mild fall weather conditions that persisted through November which permitted large numbers of birds to remain in the area. Due in part to this increase in late fall use, total use days lagged only three percent below the refuge ten year average of 1,604,638 use days.

The following table depicts estimated duck production on Modoc NWR for the past five years.

Table 4. Estimated duck production on Modoc NWR 1984-1988.

Species	Objective	1988	1987	1986	1985	1984
Mallard	2000	1825	940	1513	1748	874
Gadwall	1800	860	351	1710	1556	813
Northern Pintail	500	150	55	157	172	165
Cinnamon Teal	2500	605	775	1511	2054	659
American Wigeon	200	95	61	255	92	134
Northern Shoveler	200	440	199	522	175	88
Redhead	600	510	360	921	562	202
Ruddy Duck	300	445	125	225	107	222
TOTALS	8100	4930	2866	6814	6466	3157

b. Geese

Goose use recorded this year declined 15 percent from 1987 levels, with the greatest difference occurring during the fourth quarter when use days fell 34 percent below average for that time of year. Of the 672,530 total use days recorded, Great Basin Canada geese accounted for 90 percent, followed by cackling Canada geese at 6.6 percent, white-fronted geese at 2.9 percent and snow geese at .5 percent.

The Great Basin Canada goose population reached its peak of 4000 individuals in October, with cacklers and white-fronted geese both reaching peak populations in April of 1000 and 270 respectively.

Recorded use by cackling Canada geese increased by 60 percent over 1987 levels, the first noted increase by this species in many years.

Estimated Canada Goose production totaled 1039 young, an 18 percent decline from 1987 levels. Nest survey results indicated an 82 percent success rate, substantially higher than the 10 year average but somewhat below the 1987 level of 88 percent.

c. Swans

Swan use varies widely from year to year and is heavily influenced by the timing and duration of freeze-up of refuge ponds. During 1988 Swans accumulated 14,245 use days, with a peak population of 500 present during October. No collared swans were observed this year.

4. Marsh and Water Birds

Throughout the year, 17 species of marsh and water birds utilized the refuge for an approximate total of 56,000 use days. Habitat conditions present and resulting use by this group of birds were quite similar to 1987 with the exception being that production by black-crowned night-herons was not documented this past year (Table 5).

Table 5. Marsh and water bird production on Modoc NWR 1984-1988.

Species	1988	1987	1986	1985	1984
Western Grebe	25	5	8	30	25
Eared Grebe	40	15	110	80	90
Pied-billed Grebe	70	25	90	40	100
American Bittern	*	*	*	*	15
Black-crowned Night-heron	*	91	27	*	15
Greater Sandhill Crane		14	20	11	15
Virginia Rail	20	*	*	*	60
Sora	90	*	*	*	60
Great Egret	*	2	*	*	*

* No documented production.

Due to the high priority level that sandhill crane production holds on the list of approved refuge objectives, a considerable amount of time and effort was expended on crane management and data collection.

Breeding pair counts conducted in April indicated a total of 30 pairs utilizing the refuge. Twenty-two nests were located and monitored through the spring with 14 being located in wet meadows and eight near pond margins. All nests contained at least one egg with the average clutch size being 1.95 eggs, resulting in a total of 43 eggs being produced.

Eleven (50%) of the nests successfully hatched 21 eggs. Of the 22 remaining eggs which were unsuccessful, three were infertile, 16 were destroyed by predators, two were abandoned, and one appeared to have been destroyed by the parents. Egg lengths ranged from 8.25 cm to 10.64 cm and averaged 9.58 cm. Egg diameters ranged from 5.72 cm to 6.75 cm and averaged 6.25 cm.

Production was determined by observing fledged colts during September. Observations of color banded colts, unbanded colts with color banded adults and unbanded colts with unbanded adults allowed for a fairly accurate production estimate. Counts revealed a minimum of eight colts being fledged on the refuge (Table 6). This yields a recruitment rate of 13 percent, the second lowest known rate for the refuge. A proposed study to evaluate the mortality factors effecting crane colts is proposed for 1989 and 1990.

Table 6. Sandhill crane production at Modoc NWR for the past ten years.

Year	Nesting Pairs	Nests Located	Successful Nests		Colts Fledged	Percent Recruitment
			Number	Percent		
1988	30	22	11	50	8	13
1987	28	15	15	100	14	25
1986	32	21	14	66	20	31
1985	30	25	19	76	11	18
1984	27	14	8	57	5	9
1983	26	29	13	45	11	21
1982*	22	19	14	73	12	27
1981	23	18	10	55	8	17
1980*	22	22	8	40	13	29
1979*	16	16	11	69	11	34

*Data is probably an overestimate of actual production.

Banding efforts continued in 1988 with only limited success on pre-fledgling colts. Due in part to poor production, only two colts were banded, both of which were captured on privately owned lands adjacent to the refuge's north boundary. Additionally, 20 adult cranes were captured between April 29 and June 20, and fitted with bands and unique color markers.

Completing a project that was initiated in 1986, Pacific Power and Light Company installed 30 orange power line markers on the lines which pass through the refuge along County Road 115. This project was identified in the Sandhill Crane Management Plan to reduce crane/powerline collisions. This was the last section of power line passing through the refuge that required this modification.

5. Shorebirds, Gulls, Terns and Allied Species

Throughout the year, 24 species representing this group were observed utilizing the refuge for a total of 134,200 use days. As water levels were reduced during the spring and summer, extensive use of the exposed mud flats occurred with population peaks occurring in late June and July.

Table 7. Production by shorebirds, gulls, terns and allied species on Modoc NWR 1984-1988.

Species	1988	1987	1986	1985	1984
Wilson's Phalarope	10	120	150	150	200
American Avocet	30	15	12	20	15
Black-necked Stilt	8	9	15	10	*
Common Snipe	150	140	130	150	180
Willet	10	15	15	20	15
Spotted Sandpiper	*	*	*	10	*
Long-billed Curlew	10	9	12	10	25
Killdeer	25	200	200	200	200
Forster's Tern	*	8	10	*	*
Black Tern	*	*	2	*	*

* No documented production.

6. Raptors

Seventeen species of raptors utilized the refuge during various periods throughout 1988 for an approximate total of 14,500 use days. The most common species included red-tailed hawks, northern harriers and great horned owls. Peak numbers of raptors use the refuge during the winter months while feeding on rodents and crippled waterfowl.

In addition to the peregrine falcon observation mentioned previously, another unusual sighting of a red shouldered hawk at Subheadquarters occurred on February 9.

Table 8. Raptor Production on Modoc NWR 1984 - 1988.

Species	1988	1987	1986	1985	1984
Northern Harrier	13	26	10	2	4
Red-tailed Hawk	4	4	5	6	2
American Kestrel	3	3	*	5	3
Great-horned Owl	6	3	1	3	4
Short-eared Owl	*	25	15	3	3
Common Barn Owl	10	7	*	3	3

* No documented production.

7. Other Migratory Birds

Three new species of birds were observed on the refuge during the year, bringing the total number of bird species on the refuge to 238. The three new species included a flock of Franklin's gulls in May, a black and white warbler in July and August, and a magnolia warbler in October. The two warblers were obvious vagrants that strayed a bit during migration. However, the Franklin's gulls are normally found within a few hundred miles of Modoc NWR and may be expanding their range. All three species were reported to American Birds for documentation of vagrant movements.

Mourning dove use on the refuge was 5000 use days, down somewhat from last year's high of 9000 use days. Limited nesting occurred on the refuge this year; an estimated 25 birds were produced. Peak use occurred in August, two weeks before the opening of dove season. As usual, the majority of the doves had departed the area by September 1.

Common raven and black-billed magpie use of the refuge remained basically unchanged from previous years. Raven use occurred sporadically and caused no known problems with nesting waterfowl and cranes. Although black-billed magpies use remained fairly high during the course of the year, it also was not known to cause any predation problems with nesting waterfowl.

This year marked the seventh year in a row that a mist netting project in riparian habitat was conducted on the refuge (Table 9). During the course of this year, 43 days of effort were put into the project as compared to last year's 33 days. As in previous years, well over one half of the effort was conducted on a volunteer basis by the manager on weekends or by a qualified volunteer as his time permitted.

Table 9. Riparian habitat mist netting project in 1988.

Total Days of Operation	43
Total Net Hours	1160
Birds per 100 net Hours	90
Total Birds Captured	1043
Total Number of Species	60
Largest Daily Catch (10/2/88)	74

Table 10. Top ten species captured in mist netting operations in 1988.

<u>Species</u>	<u>Total Captured</u>
Yellow-rumped warbler	151
White-crowned sparrow	94
Wilson's warbler	75
Yellow warbler	73
Common yellow throat	67
Song sparrow	60
House finch	45
Tree swallow	40
Lincoln's sparrow	36
Orange-crowned warbler	33

One of the principal reasons for conducting the mist netting project is to continue to monitor the population trend of willow flycatchers on the refuge. This sensitive species utilizes riparian habitat on the refuge during migration and has been known to nest here in the past. It is hoped that the riparian habitat improvements being conducted by the refuge will in turn offer increased habitat and use by willow flycatchers. This increase should show up in current and future mist netting projects. Figure 1, graphically depicts these trends along with brown-headed cowbirds which are known to have a detrimental effect upon small passerines such as warblers and flycatchers.

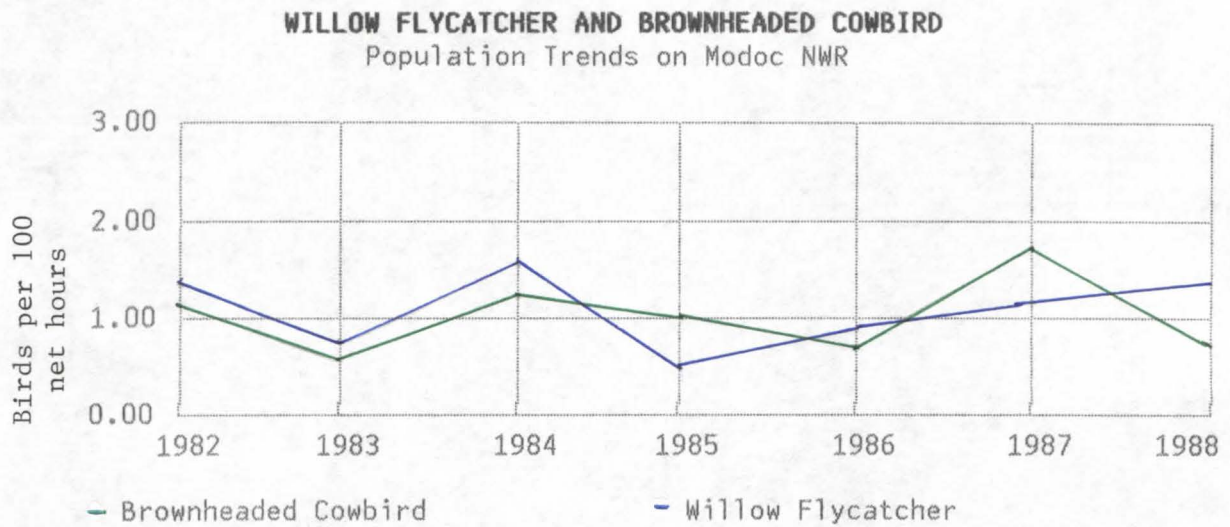


Figure 1. Willow Flycatcher and Brownheaded Cowbird Population Trends On Modoc NWR.

The mist netting activities over the past six years have also been very valuable in documenting use by other small passerines such as the black and white warbler and magnolia warbler captured this year that otherwise would probably have gone unnoticed.



Adult male black and white warbler in pre-basic molt taken in a mist net. MDC 2340, 7/15/88 ECB.

The mist netting operation will be continued during 1989 as time permits. The amount of time spent on the project will be increased this year, especially during the spring and fall migrations. This increased activity, which will be provided by volunteers will give us more quantitative data. It is hoped to continue this operation through 1992 to have a total of 10 years' data to work with.

8. Game Mammals

a. Mule Deer

The mule deer population on the refuge has stabilized at approximately 80-100 animals. This large number of animals continues to hamper our efforts to establish shelter belts and rehabilitate riparian habitat. Their browsing on these plants has been particularly severe during periods of prolonged snow cover and extremely low temperatures.

b) Pronghorn Antelope

Several pronghorn antelope were observed using the Pine Creek Field this year. Upwards of ten antelope could be seen browsing in this field up to haying time. As usual, a few antelope strayed onto the east side of Dorris Reservoir during their annual migration from winter grounds to summer grounds and back again.

c) Cottontail Rabbit

Cottontail numbers appear to be fairly stable at this time. However, no actual counts are made and actual numbers are unknown. Until the refuge institutes an inventory procedures for game animal, population levels will continue to be estimated.

10. Other Resident Wildlife

California quail and ring-necked pheasants continue to maintain their populations on the refuge. Both species have responded well to habitat improvement, especially in the riparian corridor that bisects the refuge. It is not uncommon to see upwards to 30 pheasants when working near Pine Creek, Subheadquarters or farming units.

Commonly observed mammals include mink, Belding's ground squirrel, striped skunk and black-tailed jackrabbit. Muskrat numbers have declined somewhat from the previous high numbers that were common in the past three years.

Resident reptiles documented on the refuge include the western fence lizard, sagebrush lizard, side-blotched lizard, rubber boa, racer, gopher snake and western terrestrial garter snake. The western pond turtle has been introduced into the area and has been observed on the refuge since at least 1982. Amphibians documented on the refuge include the western toad, Pacific tree frog and bull frog.

11. Fishery Resources

In 1986, 5000 catchable size rainbow trout were planted in Dorris Reservoir, of which one percent were equipped with reward tags. Since that time, there have been very few, if any tags turned in. This poor return prompted the California Department of Fish and Game to cancel all plans for a put and take trout fishery at Dorris Reservoir.

In the past year, the refuge became involved in an effort to provide improved warm water fishing opportunities for the public. This project is being conducted cooperatively with the California Department of Fish and Game and the Organized Sportsmen of Modoc County. The project involves placing spawning structures for channel catfish and brush piles for increased fry survival in appropriate areas along the shoreline at Dorris Reservoir. To date, ten spawning structures have been placed in the Dee's Point area. This program will be continued in 1989 as materials to construct additional spawning structures and brush piles are acquired.



California Department of Fish and Game using prima cord to cut concrete pipes for use as spawning structures.
MDC 2367, 11/30/88, BMS

For the second year, the Organized Sportsmen of Modoc County volunteered time and materials to construct an additional 30 bass nesting rings. These "rings" were placed about two feet below maximum pool level. The rings were constructed of rocks and filled with pea gravel. There are now approximately 100 of these rings at Dorris Reservoir which will hopefully be utilized by spawning bass in the upcoming year.

15. Animal Control

The refuge has conducted an active animal control program for the past several years. This program is designed to minimize predation by striped skunk and feral house cats on nesting waterfowl. In order to achieve this goal, control efforts are concentrated during nesting and brood rearing periods. In addition, fur trapping permittees are encouraged to take pest animals during their winter trapping activities. This year's program was considered to be successful. Random checks of duck nests showed a decline in predator destroyed nests.

Studies at Malheur NWR have shown coyotes to be a major predator on sandhill crane eggs and young. In order to keep coyote numbers down, they are also controlled, particularly in the spring and summer. Raccoons are also controlled on an opportune basis to increase sandhill crane nest success. In addition, beaver are occasionally taken when they cause problems with the refuge water delivery system.

During the course of the year, the following animals were taken:

Striped skunk	98
Feral cat	72
Coyote	5
Raccoon	3
Beaver	2

16. Marking and Banding

As required by the Annual Work Plan, Modoc NWR again participated in the pre-season mallard banding program. The program was modified this year to include placing \$100 reward bands on 25 percent of the adult males captured in the operation. In all, the refuge manager and biological technician took turns tending six swim-in traps from mid-August through September. A water shortage kept two traps non-productive for over one half the banding period. Despite these problems over 2400 mallards (23% of the entire quota for Region 1) were banded.

Banding results are summarized as follows:

AHY males	- 1165
AHY females	- 500
HY males	- 357
HY females	- 400

Total mallards 2422

It should be noted that of the 1165 banded AHY males, 931 were control bands and 234 were reward bands. Also note the 2:1 ratio of adults to juveniles. Normally, the ratio is closer to 1:1.

For the fifth consecutive year, an effort was made to capture and color mark known-age sandhill cranes. This year a total of 26 sandhill cranes were captured, color-marked and banded. Of this total, five were locals and the remaining 21 were after hatching year birds.



Assistant Manager Tom Melanson with a color-banded crane colt (P003) in the Hansen Field. MDC 1943, 6/20/86 WWR

17. Disease Prevention and Control

There were no documented disease outbreaks on the refuge this year. The few dead birds that were found were decomposed beyond the point where any type of lab analysis could be conducted.

H. PUBLIC USE

1. General

Public use on the refuge centers around warmwater fishing, wildlife observation and waterfowl hunting. Refuge visits totaled 10,954 up significantly from 8316 last year. Most of this increase can be attributed to the improved fishing success at Dorris Reservoir and subsequent increased number of fishermen.

The refuge contributed 22 new releases to the local newspaper, covering such topics as waterfowl hunting, fur trapping, haying/grazing permits and the Dorris Reservoir Recreation Area. The newspaper owner and editor are very cooperative in helping us get our information out to the public. In addition, the refuge hunting leaflet and bird list were updated this year.

2. Outdoor Classrooms - Students

The refuge continued its outdoor classroom program this year, with two school groups and a total of 120 students participating in the program. Refuge personnel presented each group with an introduction to refuge objectives, wildlife management, and wildlife ecology. The students were then taken on a self guided tour conducted by the teacher. The tree planting program initiated in 1985 by third grade teacher Lois Bloom was continued again this year. This type of hands-on learning and involvement among students was helpful in teaching them outdoor awareness. In turn, the refuge benefited through the planting of assorted trees and shrubs managed to enhance riparian habitat.



Third graders from Alturas Elementary School learning about the refuge. MDC 2338, 5/19/88 ECB

An ornithology class from Lassen College at Susanville, California utilized the refuge extensively this year during the fall semester. Ten students finished the class and in the process learned quite a bit about the mission of the National Wildlife Refuge System as well as the basics of ornithology. The class was taught by Roy Van de Hoek who also worked as a volunteer on the refuge.

5. Interpretive Tour Routes

The two and a quarter mile automobile tour route surrounding Teal Pond is the main route used by refuge visitors for birdwatching, photography and wildlands observation. Approximately one mile of this route was widened and over 800 cubic yards of road base added which greatly increased the quality and safety of the road (Section 1-3). In addition, U.S. Highway 395 and County Road 115 pass through portions of the refuge and are also used extensively as wildlife observation routes.

6. Interpretive Exhibits/Demonstrations

The interpretive kiosk, erected at headquarters in 1986, continues to receive positive public reaction. The seven panel exhibit explains refuge management activities, goals and objectives, with emphasis upon sandhill crane management. During the course of the year, over 1100 visitors utilized the kiosk to one degree or another.

7. Other Interpretive Programs

Refuge Manager Clark Bloom completed his twelfth year as a California Hunter Safety Instructor. Approximately 45 students went through the program, which is mandatory before California residents can receive a hunting license. In addition to teaching safety practices, special emphasis was placed on conservation, hunting ethics, and refuge regulations regarding waterfowl hunting.

8. Hunting

The waterfowl hunting season regulations in California's northeastern zone underwent some radical changes this year. Duck season was reduced from 79 days to 59 days (October 8 - December 12). Goose season remained unchanged from last year's 93 day season (October 8 - January 8). In a continuing effort to reduce harvests of mallards and pintails, the daily limits were further reduced from last year's total of five. This year, the daily limit was set at four ducks of which no more than three could be mallards and no more than two could be redheads and no more than one could be pintails. In addition, no more than one hen mallard could be in the mallard portion of the limit. Canvasbacks were closed completely. As could be guessed, this caused some law enforcement problems (See H-17).

This was Modoc NWR's third year under the new steel shot regulations. Although a few hunters continue to complain and cheat on occasion, compliance continues to improve. The majority of the hunters contacted not only have accepted steel shot, but now prefer it over lead.

The five year long decline in hunter use ended this year with an increase in hunters of 12 percent over last year. A total of 1547 hunters utilized Modoc NWR's public hunting area during the course of the season. Excellent food supplies and fair waterfowl numbers resulted in fair to good duck hunting success during the first 45 days of the season. Subsequent freeze up and departure of ducks kept duck hunting success rather poor for the remainder of the season.

The total number of ducks taken was 1637, very close to last year's harvest of 1672 (Table 11). As usual, mallards were the number one bird in the bag with green-winged teal and gadwall rounding out the top three species taken.

Goose hunting, although somewhat slow, was much better than last year's dismal season. During the course of the season, a total of 509 geese were taken, all but four were Canada geese. The four exceptions consisted of two white-fronted geese and two snow geese. This year's goose take is very close to the established five year average of 520 geese. The goose population on the refuge and surrounding private land averaged 2500 -3500 birds during October and November, which normal for that time of year. Several snow storms and very cold temperatures beginning around November 24, and continuing through the close of the season forced many geese to seek warmer areas to the south. At the close of the season the goose population was down to about 500 birds.

Table 11. Hunting statistics on Modoc NWR for the past five years.

	1988	1987	1986	1985	1984	5 year average
Total Hunters	1547	1379	1702	1800	1801	1646
Total Ducks Taken	1637	1672	1409	1325	1724	1553
Total Geese Taken	509	337	440	796	524	522
Total Snipe Taken*	4	1	3	102	84	39
Total Birds Taken	2150	2009	1852	2223	2332	2113
Average Bird/Hunter	1.39	1.45	1.08	1.23	1.29	1.28

* The number of snipe taken has been severely reduced since 1985 because the refuge has been unable to conduct any fall burning to create feeding areas for snipe. This trend will probably continue as long as we are under burning restrictions during the early fall.

9. Fishing

Good catches of largemouth bass and brown bullheads were taken from Dorris Reservoir in the spring. In addition, channel catfish has come into its own. Hardly a week went by during the spring and early summer without photos of smiling fishermen holding 8 - 15 pound channel cats appearing in the newspaper. This type of success spurred an increased interest in fishing and fishing visits increased from 1987's 4370 to 5460 this year. The continuing drought again dropped the reservoir level to record lows by mid-summer and fishing pressure dropped significantly.

Opening and closing of the area as well as all custodial maintenance is accomplished by contract. Refuge staff handled contract administration again this year. Earl Young, a local resident, was again the low bidder for the six month job with a bid of \$2190.

10. Trapping

The trapping program is conducted to reduce damage to roads and dikes by muskrat and beaver. Other furbearing species such as raccoon, mink and coyote are also permitted to be taken. Trapping permits on the refuge have been issued by bid system since 1985. The refuge is divided into two units and prospective trappers were allowed to bid on one or both units. The high bidder(s) are required to submit a 10 percent down payment prior to beginning trapping.

David Jordan and his brother, Mike, were the high bidders for both units with a combined bid of \$620. As usual, active trapping was delayed because of frozen ponds. However, after ponds began to thaw out, trapping began in earnest and a record number of muskrats were taken. The following table depicts the number of furbearers removed from the refuge for the past five years.

Table 12. Trapping data from the past five seasons on Modoc NWR.

Species	1988/87	1987/86	1986/85	1985/84	1984/83
Muskrat	1795	1692	1004	837	906
Mink	8	10	18	11	15
Raccoon	1	0	1	1	0
Skunk	0	21	8	3	5
Coyote	0	0	0	1	0
Beaver	0	1	2	0	12
Weasel	0	1	0	0	0
Non-target species*	0	0	2	0	12
Total Income:	\$6220	\$6174	\$3800	\$1721	\$3650

*Non-target species consist of waterfowl & marsh birds.

11. Wildlife Observation

Wildlife observation centers around waterfowl observed from the Teal Pond tour route. However, interest in raptors and passerine species has grown noticeably over the past few years. Mule deer are also a popular attraction, particularly with local residents during the fall. Wildlife observation increased for the third year in a row. The following table illustrates wildlife observation visits for the past seven years.

Table 13. Wildlife observation visits on Modoc NWR 1982-1988.

Year	Number of Visits
1988	2540
1987	2395
1986	2155
1985	2900
1984	2640
1983	1350
1982	1330

12. Other Wildlife Oriented Recreation

Photographic opportunities are plentiful on the refuge, however demand is rather low. Less than 100 photographic visits occurred this year. Visits to the refuge were primarily focused on photographic opportunities of waterfowl, mule deer, sandhill cranes, and raptors. Because of sandhill crane sensitivity to disturbance during nesting, much of the refuge is closed to public entry. As a result, most of the photography oriented visits occurred around the tour route at Teal Pond.

16. Other Non-Wildlife Oriented Recreation

Waterskiing at Dorris Reservoir continued to attract a few individuals to the refuge during summer months. In the past, regular weekend law enforcement patrols were scheduled to control associated littering, consumption of alcohol by minors and reckless driving. However, due to low water levels and resulting reduced use, these problems were virtually non-existent after mid-summer.

17. Law Enforcement

The law enforcement program at Modoc NWR is focused upon the public waterfowl hunting program with emphasis upon game law enforcement. During the remainder of the year, other problems such as littering, vandalism, trespass and associated problems are dealt with in a spontaneous manner.

The recent increase in fishing use at Dorris Reservoir has caused an increase in vandalism and violations of refuge regulations. This, in turn, has required increased presence by refuge officers. Unfortunately, time and money constraints kept enforcement activities at Dorris Reservoir lower than it should have been.



Sign vandalism at Dorris Reservoir. MDC 2320
4/22/88 ECB.



Illegal campfire at Dorris Outlet. MDC 2323, 4/22/88 ECB.

During the hunting season, enforcement activities are conducted under an established routine with at least one refuge officer on duty during most of the scheduled 42 shoot days. Besides enforcing the law in both overt and covert fashions, refuge officers conducted limited bag checks and answered hunter's questions. Twelve game law related violations were filed this year, down four from the previous year (Table 15). In addition, the manager assisted Special Agents Joseph Sandburg and Kenner Harrington on a baiting violation that occurred adjacent to the refuge.

Table 15. Law enforcement violations on Modoc NWR in 1988.

Migratory Bird Treaty Act 16 USC 703:

50CFR20.21(j)	Possessing shotshells loaded with shot other than steel	6
50CFR20.24	Exceed daily bag limit	6
Total		12

I. EQUIPMENT AND FACILITIES

1. New Construction

New construction was limited to two projects this year, both of which were completed by force account. The first project was a three acre pond which was built on the east end of the Heifer Field. This pond was constructed to provide additional brood water for ducks and to provide feeding/loafing areas for waterfowl, shorebirds and marsh birds. Actual construction was accomplished in the late summer after the area had dried sufficiently to permit utilization of the cat and can.

The second project was completed as part of the handicapped access program (Section 504). The project consisted of pouring a concrete ramp and parking area to provide wheelchair access into the office. In addition, the concrete parking area was poured at the kiosk in order that wheelchair-bound visitors may have access to all the display panels at the kiosk.



Cat and can being utilized in new pond construction.
MDC 2353 8/23/88 TJM.

2. Rehabilitation

All rehabilitation projects were accomplished by force account this year. One of the completed projects included resetting one of the major water control structures which drain water from the north end of the refuge into the Pit River. The structure consisted of a 40 foot long, 48 inch diameter pipe with attached riser that had been washed out by muskrat activity. In order to get this job accomplished, we had to borrow a dragline operator from Klamath Basin NWR. We were fortunate enough to get operator Larry Bigoni for one week. During that time period, not only did Bigoni get the

drain pipe reset, he also cleaned and widened a channel across the west side of the Railroad Pond and built several small islands around the perimeter of the pond.



Refuge Manager Clark Bloom and Dragline Operator Larry Bigoni discussing channel development. MDC 2351, 7/13/88 TJM.

Another major rehabilitation project included applying approximately four miles of pit run gravel on secondary roads and trails. This project will help the refuge staff get around in the area during periods of inclement weather. In addition, these roadways provide access to haying/grazing areas that previously been inaccessible except at haying time. One mishap did occur when the truck driver got a loaded truck too close to the edge of a canal crossing. The result was an overturned truck and loss of eight yards of gravel. Fortunately, the driver was not injured and the truck received only minor damage.



Incorrect way to dump gravel. MDC 2327, 5/14/88 ECB.



Same driver, same truck...Experience helps! MDC 2346, 6/24/88 TJM.

3. Major Maintenance

Several major maintenance projects were accomplished this year. The refuge tour route received approximately 300 yards of three-quarter inch minus base. This job was completed by Leonard Fitch Gravel Company with end of the year money. In addition to receiving additional base gravel, the tour route was bladed along with the entrance road periodically through the year. The road grader was also used to spread pit run gravel that had been hauled to various roads/trails within the refuge.

The refuge fleet of vehicles and equipment received major maintenance as required. The TD-9 crawler tractor received a major tune up and had the track adjustment/spring assembly replaced on one side and had the ROPS supporting plates, which were cracked, replaced with new ones. The TD-18A received a major tune up and had the radiator rebuilt. The Huber road grader, the John Deere 750, 2440 and 210C received tuneups and were serviced as required. The old tilt bed trailer had all cracked and broken planking replaced with new alder beams.

The refuge buildings and structures also received considerable maintenance, the office interior was completely repainted on the inside and the rain gutters were repaired and reset to the proper pitch. The comfort stations at Dorris Reservoir along with the raptor holding pens were repainted and linseed oil was applied to the shake shingles.

Structure maintenance accomplished included treating the wood planking at South Dam with linseed oil. Bulletproof plates were installed in water recorder boxes and walkways with handrails were installed on all water control structures as required for safety. In addition, the old service station island was completely dismantled and removed from the headquarters area.

Miscellaneous maintenance projects included: dike repairs and resetting washed out pipes and risers. Ditch cleaning was conducted where needed. Several wire gates were replaced with tubular steel gates and rotted out fence braces were replaced as needed.

The manager's house was completely repainted on the outside by a private contractor. This project was completed as part of the Maintenance Management System (MMS), total cost was \$550 for labor and \$337 for paint. In addition, the sewer line was replaced when it was discovered that tree roots had caved in the old one. This project was completed by Heard Plumbing to the tune of \$337. Routine furnace repairs and maintenance cost an additional \$210 with an overall expenditure of \$1447 of 8610 money. At the end of the year, there was a carry over of \$4486.17 which should take care of next year's planned interior painting and floor joist repairs.

4. Equipment Utilization and Replacement

In a continuing effort to upgrade our equipment, a new tractor and mower was acquired. The tractor was funded under a large ARMM package which will improve our farming capabilities significantly. Case/International was the low bidder and in August, a brand new Case International 7110 tractor was delivered. In addition, a John Deere sickle bar mower was purchased for our John Deere 2440 tractor to improve our weed control on the refuge.



New Case/International 7110 hooked up to disc. MDC 2354
8/24/88 TJM.

Three new vehicles were also received this year. A new Chevrolet S-10 pickup, a Chevrolet S-10 Blazer and a one ton full-size Chevrolet service truck were all delivered in April. These vehicles had been purchased with both FY-86 and FY-87 funds. Our fleet is now up to modern day standards.



Our new fleet of vehicles. MDC 2381 1/31/89 ECB.

Several old vehicles and equipment were disposed of during the course of the year. The 1982 full size Blazer was sold for \$4900, the old 1971 Dodge pickup went for \$555. The old 1971 Scout was sold for \$369, but later the bidder went into default. This vehicle will go back through the GSA channels for disposal. In addition, the old Case 750 crawler backhoe was excessed to the Wild Horse and Burro organization at Shingletown, CA.

5. Communications Systems

The refuge has continued to have Cascade Telephone Communications, Inc. of Klamath Falls, Oregon handle all our radio maintenance work. This work was done under a blanket purchase arrangement for under \$500.00 per year. Besides installing and repairing radios, they also make one trip per year to Alturas and service our base station. This service was utilized extensively last year as all three new vehicles had radios installed in them.

6. Computer Systems

The refuge is now in its second year of owning and operating a computer. The computer received extensive use for about six months when various problems began showing up. These problems (hard disk lockup) got progressively worse which finally required some major repairs. Careful examination by a qualified repair person revealed that a power surge had damaged some key components inside the computer which cost us \$650 to have repaired. In addition, the refuge put out an additional \$100 to have a surge protector installed for future protection against a similar happening.

7. Energy Conservation

There were no new energy conservation projects accomplished during the year. Routine maintenance was performed on all three heating systems in an effort to keep these systems functioning in an efficient, yet conservative manner.

J. OTHER ITEMS

1. Cooperative Programs

This is the second year that the refuge has been involved in the Farmer's Home Administration (FmHA) Food Security Act of 1985 (also known as the Farm Bill). The refuge has inspected two inventory properties which were subjected to loan foreclosures by FmHA in 1988. One property was recommended for fee title transfer, the other for conservation easement. The first property, which was an actual carryover from 1987, is still pending. The County Board of Supervisors went on record as opposing any fee title transfer and it now appears that the best the Service will get out of it will be a conservation easement protecting the riparian habitat. The second property was purchased by a private party and removed from FmHA's inventory.



Riparian habitat along Pit River adjacent to the refuge on FmHA property currently being recommended for conservation easement. MDC 2018, 08/14/86, WRR.

Once again, Assistant Manager Melanson carried out the Phenological Monitoring Program which is done in cooperation with the National Weather Service. This program is conducted annually to provide information on blooming dates of honeysuckle at various sites throughout the western United States. The information gathered is used by the National Weather Service to aid in their long range forecasts.

Refuge Manager Bloom and his wife Lois conducted two breeding bird surveys off the refuge, the Likely Route (#151) and the Ingalls Route (#073). These routes are conducted in cooperation with the research center at Patuxent, Maryland.

The refuge staff participated in the North American Nest Record Card Program and in the Colonial Bird Registry, both in cooperation with Cornell University.

Manager Bloom participated in his twelfth year as a hunter safety instructor in cooperation with the California Department of Fish and Game. (Section H-7).

The refuge staff made quarterly reports of noteworthy bird observations to American Birds.

2. Other Economic Uses

Several excess vehicles were sold during the course of the year (Section I-4). In addition, a former commodity (waste oil) used to be sold for upwards of \$1 per gallon. This substance is now classified as a "toxic waste" by the State of California and the Service now has to pay recyclers \$.16 a gallon to have it hauled away!

3. Items of Interest

Training and attendance at key meetings continued as an important part of this stations operation during the course of the year. The manager attended the Law Enforcement 40 hour refresher course held in Sacramento in March. Bloom also attended the annual hunt meeting with the California Department of Fish and Game in April, the Project Leaders meeting at Reno, Nevada in August, a problem personnel management workshop at Medford, Oregon in September and a Farm Bill workshop at Portland, Oregon in November.

Assistant Manager Tom Melanson attended the Law Enforcement 40 hour refresher course held in Sacramento in March and the annual hunt meeting with the California Department of Fish and Game which was also held in Sacramento in April. Tom also attended a 40 hour course on personnel management in San Francisco in April.

Maintenance worker Darryl Wilkins attended the Law Enforcement 40 hour refresher course held in Sacramento in March.

Clerk/Typist Cornwell attended a three-day procurement training session in Portland, Oregon in March.

The entire staff participated in a four hour CPR refresher/certification session in February.

Three Special Achievement Awards were earned at Modoc NWR during 1988. In addition, two more of Modoc NWR's current staff also received Special Achievement Awards making a grand total of five awards. Recipients of these awards included: former Assistant Manager Tom Melanson; current Assistant Manager David Hardt; Refuge Assistant Sharon Storm; Maintenance Worker Bradley Storm and Maintenance Worker Lyle Burgoyne.



Part of the current staff which received Special Achievement Awards. MDC 2378 1/20/89 ECB.

4. Credits

Refuge Manager Clark Bloom wrote sections A, B, C, D, E-5 and 7, G-7 through 17, H, I and J.

Assistant Manager David Hardt wrote sections F, G-1 through 6.

Refuge Assistant Sharon Storm wrote section E.

Photographs were taken by Refuge Manager Clark Bloom, Assistant Manager Tom Melanson, former Refuge Assistant Bill Radke and Maintenance Worker Bradley Storm and are identified by initials.

The report was typed and assembled by Refuge Assistant Sharon Storm.

Editing was conducted by Refuge Manager Clark Bloom, Assistant Manager David Hardt and Refuge Assistant Sharon Storm.

K. FEEDBACK

Funding: This is an old subject that has been discussed many times. However, after watching some recent events on television, I feel I must vent my feelings. As usual, we are receiving budget cuts because of the Administration's attempt to balance the budget. This is to be expected, but it just does not make sense to me when the refuge can not conduct a sandhill crane colt survival study for a paltry \$15K when the White House is planning an inaugural dinner costing a cool \$30 million.

Career Moves: It has become quite obvious to me that pre-selection is a way of life when jobs are filled from the green sheet. I have no real problem with this. In many instances, it is the most logical way to make a selection. However, I do think that if this is the case, it should be advertised as such. It is ridiculous to require numerous candidates to fill out reams of paper addressing ranking factors, previous experience, etc. Perhaps a simple one page form requesting consideration for the advertised job (the way it was done 15-20 years ago) and a subsequent phone interview might make everyone's life a little easier.