

NARRATIVE REPORT

MODOC NATIONAL WILDLIFE REFUGE

January - April

1962

PERMANENT PERSONNEL

Paul E. Steel . . . . .	Refuge Manager
Andrew C. Andersen (LWOP) . . . . .	Maintenanceman II
Evelyn M. Mino . . . . .	Clerk-Typist

W.A.E. PERSONNEL

Irvin K. Wilson . . . . .	Maintenanceman I
---------------------------	------------------

SF 50-A PERSONNEL

John R. Snider . . . . .	Maintenanceman I
--------------------------	------------------

UNITED STATES DEPARTMENT OF THE INTERIOR  
U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
ALTURAS, CALIFORNIA

# C O N T E N T S

## Page

I.	General	
A.	Weather Conditions. . . . .	1
B.	Habitat Conditions. . . . .	2
1.	Water . . . . .	2
2.	Food and Cover. . . . .	3
II.	Wildlife	
A.	Migratory Birds . . . . .	3
B.	Upland Game Birds . . . . .	4
C.	Big Game Animals. . . . .	4
D.	Fur Animals, Predators, Rodents, and other Mammals. . .	4
E.	Hawks, Eagles, Owls, Crows, Ravens, and Magpies . . .	5
F.	Other Birds . . . . .	5
G.	Fish. . . . .	5
H.	Reptiles. . . . .	5
I.	Disease . . . . .	5
III.	Refuge Development and Maintenance	
A.	Physical Development. . . . .	5
B.	Plantings . . . . .	7
C.	Collections and Receipts. . . . .	8
D.	Control of Vegetation . . . . .	8
E.	Planned Burning . . . . .	8
F.	Fires . . . . .	8
IV.	Resource Management	
A.	Grazing . . . . .	9
B.	Haying. . . . .	9
C.	Fur Harvest . . . . .	9
D.	Timber Removal. . . . .	9
E.	Commercial Fishing. . . . .	9
F.	Other Uses. . . . .	9
V.	Field Investigation or Applied Research	
A.	Progress Report . . . . .	10
B.	. . . . .	
C.	. . . . .	
D.	. . . . .	
E.	. . . . .	
VI.	Public Relations	
A.	Recreational Uses . . . . .	10
B.	Refuge Visitors . . . . .	10
C.	Refuge Participation. . . . .	11
D.	Hunting . . . . .	11
E.	Violations. . . . .	11
VII.	Other Items	
A.	Items of Interest . . . . .	12
B.	Photographs . . . . .	14
C.	Signature . . . . .	

## I GENERAL

A. Weather Conditions

Temperatures during the quarter were about average, with January somewhat colder and April warmer than normal. It was colder and wetter than last year. A cold spell commenced January 14 and lasted until February 6. During this period the Dorris Reservoir acquired about 2½ feet of ice and ice covered the Reservoir much longer this year than normal.

There was an increase over last year in precipitation, but another drought year appears evident. Precipitation during the quarter was up 1.02 inches from last year, but this was still 1.41 less than average. From March 24 to April 27 there was no precipitation. Only a few inches of snow covered food and cover for wildlife from January 12 to the middle of March, except for one good snow storm on March 2 which deposited 8 inches.

The snow pack in the Warner Mountains to the east is far more important to refuge management than the precipitation received directly. Until mid-January there was very little snow pack and the moisture picture was indeed dim. However, the Forest Service reported an average snow pack the first of March and the best since 1958 the last good water year in Modoc County. The April 1 snow surveys again revealed an average pack with more snow at the lower levels than in recent years. After a particularly dry, clear April, however, the final surveys the first of May were alarming. The snow pack was drastically below the 17 year average and below last year which was considered one of the worst water years on record.

The following weather data were recorded at the Alturas Ranger Station of the U. S. Forest Service located near the north boundary of the refuge. This weather station, Index No. 0161, has been in operation since 1917.

1962

<u>Month</u>	<u>Precipitation</u>	<u>Maximum Temp.</u>		<u>Minimum Temp.</u>		<u>Mean Temp.</u>
		<u>Max.</u>	<u>Mean</u>	<u>Min.</u>	<u>Mean</u>	
January	1.12	58	41	-24	7	25
February	1.27	53	44	-4	20	32
March	1.52	68	50	5	23	36
April	<u>.25</u>	82	<u>69</u>	20	<u>29</u>	<u>49</u>
	4.26		51		20	36

Mean

January	1.79	69	40	-32	15	28
February	1.37	75	44	-30	20	32
March	1.40	82	52	-29	25	38
April	<u>1.11</u>	87	<u>62</u>	10	<u>30</u>	<u>46</u>
	5.67		50		22	36

## B. Habitat Conditions

### 1. Water

Water management was the most important refuge function during the quarter. Much time was spent insuring maximum flows from Parker and Pine Creeks into the Dorris Reservoir. All drains into the South Fork were plugged last fall and natural moisture maintained the few water areas on the refuge. Where possible all natural runoff was diverted to the barley fields for winter flooding.

Pine Creek as expected caused little trouble. This creek does not fluctuate much, maintaining a more or less steady relatively low flow. Except for stockwater, all of Pine Creek water was diverted into the Dorris Reservoir until April 6 when the other waterusers commenced irrigating - a reduced flow to the Reservoir was present until April 28. Until February 7, a daily early morning check of the diversion structure was made to break ice. Periodically during the quarter, no stockwater was passed when there was sufficient natural moisture. In summary, a maximum amount of water from Pine Creek was delivered to the Reservoir. The other waterusers were completely satisfied with our management of this creek. A water-master arrived on April 1 to assume the responsibility of managing this creek.

Parker Creek, which provides 60-70% of the water to fill the Reservoir, was a constant problem. This creek fluctuates drastically with each storm or warm day. Daily until February 13 the diversion canal was checked to plug leaks and break up ice jams along a mile section which hangs along a north facing slope. It was decided to take a risk with ice. We had a choice of stopping diversion or fighting ice. Not knowing what to expect in the way of a spring runoff, we decided to put as much water as we could in the Reservoir. The channel was solid with ice, but by daily breaking up ice jams and working several nights when the ice finally broke up no washouts in the dike occurred.

One old leak in the diversion canal required far too many man-hours to plug. Repeatedly, manure was hauled to this leak until it finally held on February 6. This section of this channel must be cleaned out and repaired before next winter.

On March 14 the flow in Parker Creek reached the point where the diversion channel was full to capacity. The nights of the 18th and 19th, surplus water for the first time went over the spillway. Commencing on the 25th surplus water went over the spillway every night. On April 4 a section of the spillway commenced washing away. Despite nightly checks to remove debris, this 12-foot section of the spillway went out completely on the 7th. By the 13th the spillway was repaired to the point where most of the flow was going into the Reservoir again. This repair job, which still permitted too much water to escape, held perfectly. But the main



runoff was over and no more trouble with Parker Creek was experienced.

The Dorris Reservoir was higher this year than last when irrigation commenced by about 15 inches. From the low level last quarter the reservoir raised a total of 147 inches compared to a rise of 138 inches in 1960-61. If the Parker Creek spillway had not washed out we would have filled the Reservoir to capacity without much trouble. As it was, the Reservoir was about 4 feet from being filled to capacity.

Since January of 1961 wooden stakes were used to measure the rise and fall of the Reservoir. These stakes were too frequently disturbed by the public and ice. On January 2, using a level borrowed from the SCS, permanent iron stakes were established at one-foot intervals. These stakes now permit for the first time accurate recording of fluctuations.

## 2. Food and Cover

Except during the period January 12 thru February 3 when it was bitterly cold and snow covered the ground, food was available for waterfowl and a significant number of waterfowl were present. The standing grain in the Tahn Field was essentially consumed by the middle of January.

During February most of the goose use was on the flooded barley fields and adjacent wet meadows. During March and April the meadows were most used. There was a definite preference for the alfalfa fields on adjacent private lands. Refuge meadows where clovers have not been drowned out by over irrigation received more goose use than the meadows supporting strictly a wiregrass-sedge community.

## II WILDLIFE

### A. Migratory Birds

Whistling Swan. Except for a month during January and February when a cold spell sealed all water areas with ice, swans were present all quarter. The migration peaked the end of February. The Dorris Reservoir was the most frequented area - what they found to eat there is unknown. The flooded barley fields were attractive during February. Oddly, no colored swans were observed after sighting a number last fall during the southward movement.

Canada Geese. Common as usual, the most interesting observation was the large number of pairs that never revealed any nesting behavior. The most logical explanation is that they were immature non-breeders. A few later in the season were unsuccessful breeders. Due to snow and cold weather the nesting season

commenced later this year than last. The first brood was observed on April 24. A few nests were located in almost all of the meadows, but the dikes along the South Fork and the Upper Pine Creek Field (11 nests) were again the favored areas. None of the 10 nesting boxes along the north shore of the Dorris Reservoir were used. Considering the level of the reservoir at nest selection time this was expected.

The Cackling goose was as usual the most common migrant. Snow geese use was high according to local ranchers. The White-fronted goose as usual was the least common. All refuge fields were used by grazing geese, but use of the refuge for feeding was lower than in previous years for some reason. The Dorris Reservoir was the chief concentration area for nesting geese. While feeding flocks leaving the reservoir used mostly refuge fields where clovers are still a part of the plant composition, the majority of the flocks visited adjacent private fields particularly alfalfa fields.

<sup>b</sup>  
Dahler duck use was fairly heavy only during February and part of March. Mallards and Pintails were the only abundant migrants. The first ginnamon teal was observed on April 17. As expected the few divers using the refuge concentrated on the Dorris Reservoir with minor use of Teal Pond near headquarters.

The first sandhill crane was observed early in February. During March large flocks were seen over the refuge moving north, but use of the refuge was minor. Coot use was low.

#### B. Upland Game Birds

After a particularly good production year, the valley quail population on the refuge going into the winter was high. Weather conditions caused a high mortality. Only a relatively few quail were present along Pine Creek and around Quarters No. 2 at the end of the quarter. The pheasant population, while still low, survived the winter in good shape. With better cover conditions more pheasants were present at the end of the quarter than last year.

#### C. Big Game Animals

The first mule deer doe to return to the refuge was observed on April 17 along Pine Creek where last year three does raised twin fawns. In March small herds of deer were regularly seen at the Parker Creek and Pine Creek Diversion Structures.

No antelope were seen on the refuge during the quarter. The movement off the Likely Table to summer ranges commenced in March and several bands were seen on the east side of the Dorris Reservoir.

#### D. Fur Animals, Predators, Rodents and Other Mammals

Muskrat, mink and raccoon signs were commonly seen. No

scorpions were observed. Feral cats and dogs were seen regularly on the refuge and control may be necessary if they increase. A porcupine seriously damaging the trees around Quarters No. 2 was killed.

Ground squirrels were abundant and the first one of the season was observed on February 19.

#### E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

During January and February three golden eagles and one bald eagle were regular visitors. The last two months of the quarter, other predaceous birds observed in small number included the red-tailed hawk, marsh hawk, crow, raven and vulture. The resident horned owl and magpie populations were not excessive.

#### F. Other Birds

No unusual observations were made.

#### G. Fish

Fishing was permitted on the refuge commencing January 1 on the Dorris Reservoir and on the Pit River west of County Road 54. Due to ice little fishing pressure was apparent until March. Bullhead fishing was good to excellent during April. Few bass or trout were caught.

#### H. Reptiles

Garter snakes appeared in abundance the middle of April.

#### I. Disease

No losses due to disease were observed. Only one dead crane was observed under a power line.

### III REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

No specific funds were allotted in fiscal year 1962 for construction or rehabilitation.

##### 1. Canals and Water Control Structures

A. Forty-six temporary water control structures were made and put in during the quarter. These structures were necessary to replace deteriorated irrigation structures if we were to effectively irrigate without using tons of horse manure as has been the custom in previous years. Lumber salvaged from old buildings on the refuge was

used to make these structures. Three structures were the double-wall type and the remaining single-wall. Only the key control structures in each meadow were replaced. An operator with a backhoe was hired to put most of these structures in place.

B. Backhoe operator cleaned out a ditch in the Sandy Slough Field and the delivery ditch to House Field No. 2. Most of the irrigation ditches on the refuge need cleaning out, but these two were particularly in need of rehabilitation. Sufficient funds were not available to do more ditch cleaning.

C. The Parker Creek spillway was repaired. A 40-foot light pole was first set in front of the washed out section. Three sections of an old cattleguard made with railroad irons were set against this pole. Pieces of salvaged plywood were then slid down these sections. This arrangement held perfectly. Most of the water was diverted into the Reservoir ditch, but much water of course leaked around the plywood. The channel in front of the diversion structure was cleaned out with a dragline and a dozer. When this structure was plugged with debris, gravel from upstream had deposited in front of it to a depth of about two feet. Debris was a serious problem this year. After three consecutive years of low runoff a lot of debris had accumulated in the mountains.

D. Structure No. 24 was put in. The culverts and risers used were purchased last quarter. A few days after completion, the risers commenced to tilt due to the pressure of water on the flashboards. The pool was again drained, the Dorris Canal plugged to keep out water and the risers reset. Rocks were placed in the bottom of the risers to prevent a recurrence.

## 2. Road Construction and Maintenance

A. Using a borrowed pull type grader, the road into headquarters was graded three times during the quarter.

## 3. Fence Construction and Maintenance

A. Work continued removing the numerous fences around headquarters.

## 4. Sign Construction and Maintenance

A. Public fishing signs were erected around the Dorris Reservoir and the Godfrey area.

## 5. Building Maintenance

A. Quarters No. 1. (1) Kitchen and utility room painted blue. (2) Glass front for fireplace purchased and installed to replace unsafe screen. (3) Front grill installed in fireplace to yield more heat.

(4) Magnetic catches put on all kitchen cabinet doors. (5) A good section of salvaged linoleum was laid in utility room.

B. Quarters No. 2. Unoccupied during the quarter. All utility lines shut off and water system winterized.

C. Office. (1) Magnetic catches put on cabinet doors. (2) Two bulletin boards made and erected - one for the public and one for personnel. (3) Office table was refinished and varnished.

## 6. Miscellaneous

A. Three long-stemmed faucets were installed to water office and Quarters No. 1 lawns. These will replace four outside faucets dug up and removed last fall.

B. Seven dump truck loads of debris were hauled to the city dump from around Quarters No. 2. Still remains many loads of debris.

C. Considerable lumber was salvaged from old buildings to make water control structures.

D. Several of the buildings sold last quarter were removed. Work continued on razing of the buildings still remaining.

## B. Plantings

### 1. Aquatic and Marsh Plants

There were no plantings during the quarter.

### 2. Trees and Shrubs

There were no plantings during the quarter.

### 3. Upland Herbaceous Plants

There were no plantings during the quarter.

### 4. Cultivated Crops

Permittee Brooks nearly finished seeding hammchen barley on the 590 acres of cropland on the refuge - only the Matney Field was still not seeded at the end of the quarter. Dewatering of flooded fields commenced in March. Early in April all water from the Derris Canal and Teal Pond were used to irrigate the high portions of the Matney Field that were not winter flooded. These winter flooded fields will not be irrigated again unless an exceptionally dry spring prevails. The Town Field, which was not

flooded during the winter, will be irrigated after the crop is established.

Fields were disced, harrowed, fertilized and seeded. Statistical information on these operations will be submitted in next quarter's narrative report. Permittee Brooks has done an excellent job of farming again this year. To evaluate management practices he is maintaining a complete record of costs and other figures for each field.

C. Collections and Receipts

1. Seeds or Other Propagules

None.

2. Specimens

None

D. Control of Vegetation

None.

E. Control Burning

None.

F. Fires

The first fires in the history of the Modoc Refuge occurred during the quarter. On March 29 a spark from a pile of debris being burned by refuge personnel set fire to the old shop on the former Sharkey Dorris Ranch. With the aid of three fire suppression agencies (Forest Service, Rural Fire Department and Civil Defense), this fire, which started at the peak of the roof, was extinguished with out damage except for the loss of a few wood shingles. Without a doubt, this old building would have gone up in smoke if control hadn't commenced immediately with wet sacks and buckets of water.

On April 5 a grass fire was started by an employee of Bayley Dorris dragging the Upper Pine Creek Field. He carelessly discarded a cigarette and then spread the fire with his drag. The four acres of dead grass and hay left over from winter feeding that burned was not important. However, a short distance from this fire were 294 tons of stacked hay. Complete control required 9 man-hours due mostly to the numerous cow chips in the area.

IV RESOURCE MANAGEMENT

### A. Grazing

Permittee Bayley Dorris was the only permittee allowed to feed his livestock on the refuge (no winter feeding will be permitted next year). During the quarter he winter fed a total of 4,006 AUMs at \$2.50 per AUM. The revenue received was \$10,015.00. For the 1961 growing season, the summary grazing use was 11,859.3 AUMs with a total revenue of \$23,002.29.

Bayley Dorris when his cattle were removed from the refuge had a herd of 1322 cows, 271 replacement heifers, 134 bulls and 73 horses. Calving commenced in February but he left the refuge with only 392 new calves. Over 60 calves drowned or died from disease on the refuge. Only about 400 of the 930 cows that left the refuge without calves are expected to drop a calf this season. It is difficult to make a profit with only a 60% calf crop.

### B. Haying

As reported in the previous narrative, Bayley Dorris was permitted to feed on the refuge the hay he harvested. He fed a total of 1,072 tons an average of 16 pounds per day. Because he will not be winter feeding on the refuge next winter, he was permitted to purchase the remaining 1,221 tons of hay for \$6.00 a ton - \$7,326.00. In summary for the 1961 growing season, 3,156.75 tons of hay were harvested with a total revenue of \$12,508.50.

Haying and grazing revenues for the 1961 growing season totaled \$35,510.79. The return to Modoc County will be over \$8,000 which is more than that part of the property tax attributable to the land and fixed improvements.

In February a haying and grazing rate survey was taken. The prevailing comparable private rates were \$3.00 per AUM and \$7.00 per ton of hay. These rates were recommended and approved by the Regional Director for the 1962 season.

### C. Fur Harvest

No fur harvest program was approved.

### D. Timber Removal

Not applicable to this refuge.

### E. Commercial Fishing

None.

### F. Other Uses

None

## V FIELD INVESTIGATIONS OR APPLIED RESEARCH

None.

## VI PUBLIC RELATIONS

A. Recreation Use

The waterfowl hunting season ended January 7. Public fishing was permitted on the Dorris Reservoir and the Godfrey Tract commencing January 1. During January and February only 3 fishermen were observed due to ice conditions. In March about 45 fishermen were present and about 140 in April. During the period numerous telephone calls requesting fishing information were answered.

B. Refuge Visitors

There were 213 visitors to the office during the quarter - an average of 1.9 visits per day. Besides the 20 official visits reported below the other 193 visits were as follows:

Recreation Information	- 4
Business Agents	- 22
Economic Use	- 74
Federal, State & County Personnel	- 26
Job Applicants	- 10
Social Visits	- 57

January	30	Ben Hazeltine, Refuge Manager, Sheldon-Hart Mt. Refuges. Social Visit
	31	Neil Bassett, BLM, Susanville. Refuge acreage information.
February	3	Mr. & Mrs. Gene Branson, Asst. Refuge Manager, Tule Lake Refuge. Social Visit.
thru March	13	Messrs. Seibert E. Hottenstein, and Miles Moore, Construction Superintendents., R. O. Refuge surveys.
	2	
	13 - 14	Messrs. Harry Goodwin, Chief Department Technical Services, RO, David B. Marshall, Biologist. RO, and Raymond M. Glahn, Pilot-Biologist. Aerial Census.
	27	Harold Hardesty, RO Transport, Tulalake Refuge. Delivery of arch welder.
March	14	Tony Erskine, Canadian Wildlife Biologist, Sackville, New Brunswick. Bufflehead study.
	14	John Reginato, Shasta-Cascade Wonderland Assn. Social Visit.



- March 22 Larry Warden, Refuge Manager, Sheldon Refuge. Pick up stolen sign found on Modoc Refuge.
- April 9 Raymond Glahn, Pilot-Biologist, RO. Aerial inspection.
- 9 - 10 Messrs. Winston F. Banks, Section of Wildlife Management, Washington, D. C. and John B. Van den Akker, Assistant Regional Supervisor, RO. Inspection.
- 17 Mr. & Mrs. Paul T. Quick, Regional Director, RO. Social Visit.
- 18 Ray Glahn, Pilot-Biologist, RO. Aerial census.
- 23 - 24 A. Vernon Ekedahl, Asst. Regional Supervisor, RO. Inspection.

#### C. Refuge Participation

Manager as a member attended appropriate functions of the Federated Community Church, Alturas Rotary Club, Alturas Rural Fire Department, Modoc County Natural Resources Council and Square Dance Club.

Manager attended meeting of California Section of the Wildlife Society in San Jose on February 8-9.

Manager addressed the Alturas Rotary Club on the Progress of the refuge April 3. A Bureau film was shown this same club on January 9.

#### D. Hunting

The waterfowl hunting season ended January 7. These data were summarized in the previous narrative report.

#### E. Violations

None apprehended.

#### F. SAFETY

There were no lost time accidents during the quarter, nor were there any reportable personal injuries or property damage accidents. At the end of the quarter our SAFETY record sign revealed 365 lost-time accident free days and a previous record of 0 days.

The manager attended a five-day SAFETY Course in Spokane during January. This course was sponsored by the Labor Department and was designed to stress the importance of the Supervisor in a SAFETY Program.

## VII. OTHER ITEMS

### A. Items of Interest

Personnel. Maintenance man Andy Andersen was on LWOP the whole quarter. His illness will not permit full time employment for an indefinite period.

Pine Creek Reservoir. Modoc County had troubles with this reservoir - the perimeter dike developed a number of serious leaks necessitating dropping the spillway about a foot, the inflow channel proved inadequate spreading water over large areas, and the inflow pipe leaked so badly a welder had to be hired for two days to make repairs. This water area, which was habilitated by the County last fall using money provided by the Wildlife Conservation Board, is not a natural reservoir site. The maintenance cost will be excessive. The fishing value does not justify the cost to perpetuate.

When it became apparent that this diversion from Pine Creek would seriously influence the available water for irrigation this summer, the Pine Creek Waterusers became concerned. Three meetings were held. The first, at headquarters, was attended by five waterusers, Supervisor Christensen and the watermaster. On April 17, the same people plus District Attorney Paul Baker met at the reservoir site. It was decided then to eventually abandon the project if possible. At a special meeting of the Board of Supervisors on April 24 Ray Nesbit, Coordinator for the Wildlife Conservation Board, emphasized the right of the State to divert up to 25 C.F.S. which is all of Pine Creek during most of the year. The Supervisors, who have been unanimously skeptical of this project since its conception, agreed to operate the reservoir for one year to determine its influence on the availability of irrigation water.

The rehabilitation of this reservoir for a fishery was originally suggested by the Alturas Rotary Club in 1960. Assemblywoman Pauline Davis got through the State Legislature a special fund of \$5,000 to do the work. The County was "hired" to do the actual work. From the first, the Board of Supervisors, the County Engineer and the waterusers have been apposed to the project because it was definitely not economically feasible. However, \$5,000 of State money has been spent on the project and it will be operated for at least one year.

City Dump. The present city dump is a burn type operation. It is unsightly, a health hazard and about one-third of the dump is on the refuge. With authorization from the Regional Office negotiations commenced to abolish this site and start a sanitary-fill operation on the refuge at a site of little value to wildlife. Working with the City Engineer and the County Sanitation Officer a proposal complete with maps was drafted.

This plan was approved by the Board of Supervisors on March 5 when the Refuge Manager and the City Council presented the proposal. At a City Council meeting March 16 this proposed plan, which involved an exchange of land use, was approved and submitted to the Regional Office. Negotiations continued at the end of the quarter with, however, an exchange of land instead of use the central feature.

Budget Session. The manager and clerk attended a meeting at the Tule Lake Refuge where Messrs. Skedahl and Jacox reviewed the new program procedures.

Master Plan. A complete Master Plan for the Modoc Refuge was submitted in January. For two weeks the Manager was in the Regional Office reviewing this plan and correlating the development section prepared by the Branch of Engineering.

Retirement Party. On March 16 the Manager and his wife attended a retirement party for Mr. Jean Bransen at the Tule - lake Fair Grounds.

Watermasters. Both the North Fork and South Fork watermasters were new this year. George Winn and Kurt France. Close working relations were established with both. We are particularly pleased with Mr. France who has insisted that all of the Pine Creek waterusers install operable delivery structures and weirs. We spent a number of man-hours in the field helping Mr. France become acquainted with his duties and to be sure that he understood clearly our rights. Before the end of April we registered two complaints and in both cases he warned the offender.



Water Control. One of three temporary double-walled structures built and placed. To effectively irrigate meadows, many structures had to be replaced this year - in previous years the former owners used tons of horse manure to render deteriorated structures operable. With no money for permanent risers or even for the purchase of lumber, nothing but salvaged lumber was used. More of these double-walled structures would have been built if sufficient salvaged lumber had been available.



Water Control. One of 43 temporary single-walled structures made from salvaged lumber. The structure removed at this site was typical of all structures replaced - a jumble of logs and boards "operated" by shoveling in or pitching out horse manure. Thanks primarily to these new structures, three refuge employees have been able to do a good job of irrigating where previously up to nine men have been needed.





Water Control. Although most of the irrigation structures are wood, there are a few metal culverts. A piece of metal or a board is used to regulate the flow - inefficient, but 1000% better than horse manure.



Irrigation Canal. Important delivery canal choked with bur-weed. Many of the irrigation canals are choked with emergent vegetation and/or badly silted in. During the summer months after full vegetative growth it is difficult to pass water thru these canals.



Parker Creek Spillway. Top: Lower side of spillway showing break at downstream end. Washed out down to hardpan. This structure has been in sad shape for many years. Bottom: Patch job - 40 foot light pole, three sections of an old cattleguard and sheets of salvaged plywood in front. This repair job allowed most of the flow to go into the diversion canal. When picture taken all water going to other waterusers and none into the Dorris Reservoir. Money has been programmed to rebuild this spillway in F. Y. 1963.





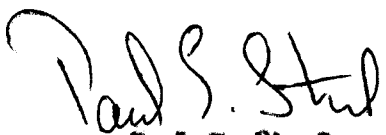
Goose Nesting Platforms. One of ten built and erected by boy scouts last fall on north side of Dorris Reservoir. Lumber was salvaged from old buildings on refuge. Juniper posts and stencil kit donated by U. S. Forest Service. None of these platforms were used by geese this spring.



Bridge. This bridge was well built 23 years ago. Safe now for light vehicles only. Because this bridge must be used to haul hay off of three meadows a culvert was purchased to be installed next quarter.

SIGNATURE PAGE

Submitted by:

  
Paul E. Steel  
(Signature)

Refuge Manager

(Title)

Date: May 20, 1962

Approved, Regional Office:

Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature)\_\_\_\_\_  
(Title)



WATERFOWL

REFUGE

11/5/62

MONTHS OF

January TO April, 1962

(1) Species	(2) Weeks of reporting period									
	12/31-1/6	1/7-13	1/14-20	1/21-27	1/28-2/3	2/4-10	2/11-17	2/18-24	2/25-3/3	3/4-10
	1	2	3	4	5	6	7	8	9	10
<u>Swans:</u>										
Whistling	15	15				3	60	180	230	190
Trumpeter										
<u>Geese:</u>										
Canada	200	270	40	25	15	90	650	450	800	600
Cackling	1,300	1,600				150	350	150	500	350
Brant										
White-fronted										50
Snow	180	280	110			160	100	170	650	1,200
Blue										
Other TOTAL GEESE	1,680	2,150	150	25	15	400	1,100	770	1,950	2,200
<u>Ducks:</u>										
Mallard	150	110	30	10	10	40	30	260	900	800
Black										
Gadwall	5								20	30
Baldpate	40	15						40	190	160
Pintail	130	40	10			30	80	600	1,300	1,100
Green-winged teal	20							50	200	350
Blue-winged teal										
Cinnamon teal										
Shoveler									20	
Wood										
Redhead										10
Ring-necked										
Canvasback								5		20
Scaup										
Goldeneye									20	120
Bufflehead							15	35	90	70
Ruddy								5		
Other Am. MERGANSER						5	10	60	45	60
TOTAL DUCKS	345	165	40	10	10	75	135	1,055	2,925	2,800
<u>Coot:</u>										

3-1750A

Cont. -1

(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)

REFUGE

Modoc

MONTHS OF

January

TO

April

1962

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimate seen : total
	3/11-17 11	3/18-24 12	3/25-31 13	4/1-7 14	4/8-14 15	4/15-21 16	4/22-28 17	18		
Swans:										
Whistling	130	70	60	40	35	12			7,280	
Trumpeter										
Geese:										
Canada	850	900	750	220	260	140	120		44,660	
Cackling	600	800	4,000	13,000	24,000	17,000	12,000		530,600	
Brant										
White-fronted	100	150	200	200	350	130	70		8,750	
Snow	900	750	400	600	450	250	150		44,450	
Blue										
Other TOTAL GEESE	2,450	2,600	5,350	14,020	25,060	17,520	12,340		628,460	
Ducks:										
Mallard	400	250	300	250	200	200	200		28,980	
Black										
Gadwall	20	20	30	30	40	60	50		2,135	
Baldpate	150	60	10						4,655	
Pintail	700	350	150	60	20	10	10		32,130	
Green-winged teal	450	200	350	130	60				12,670	
Blue-winged teal							20		140	
Cinnamon teal						40	250		2,030	
Shoveler	70	200	150	50	50	30	20		4,130	
Wood										
Redhead	20	15	25	30	10	20	15		1,085	
Ring-necked										
Canvasback	15	20	10						490	
Scaup	35	5	15	10					1,435	
Goldeneye	65	50	10						3,345	
Bufflehead	10	5							140	
Ruddy	30	40	35	30	15				1,785	
Other A.M. Merganser	40	35	20	10					2,800	
TOTAL DUCKS	2,015	1,250	1,105	600	395	360	565		96,950	
Coot:			40	90	30	35	20		1,505	

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	7,280	230	
Geese	628,460	25,060	
Ducks	96,950	2,925	
Coots	1,505	90	
	734,195		

SUMMARY

Principal feeding areas alfalfa fields adjacent to the refuge

Principal nesting areas \_\_\_\_\_

Reported by Paul S. Stiel - Refuge Manager

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751

Form NR-1A

(Nov. 1945)

## MIGRATORY BIRDS

(other than waterfowl)

Refuge

*Modoc*

Months of

*January*

to

*April*19*62*

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
GREAT BLUE HERON	1	4/3	4	4/26						5
Sandhill Crane	3	2/7	38	3/18						80
II. <u>Shorebirds, Gulls and Terns:</u>										
KILLDEER	RESIDENT									60
COMMON SNIPES	RESIDENT									140
LONG-BILLED CURLEW				April						10
WILLET				"						30
GREATER YELLOWLEGS				MARCH						25
AMERICAN AVOCET				April						10
WILSON'S PHALAROPE				"						30
CALIFORNIA GULL										20
RING-BILLED GULL	Constant Visitor									300
BLACK TERN				MARCH						80

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons</u> : Mourning dove White-winged dove					
IV. <u>Predaceous Birds</u> : Golden eagle Duck hawk Horned owl Magpie Raven Crow					
Reported by.....					

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
 II. Shorebirds, Gulls and Terns (Charadriiformes)  
 III. Doves and Pigeons (Columbiformes)  
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-17

Form NR-2

(April 1946)

## UPLAND GAME BIRDS

Refuge

Months of

to

April, 19 62

[illegible]

## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

\* Only columns applicable to the period covered should be used.

3-1754  
Form NR-4  
(June 1945)

SMALL MAMMALS

Refuge

*Modoc*

Year ending April 30, *1962*

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Popula- tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
								Permit Number	Trappers Share	Refuge share				
Raccoon														70
Short-tailed Weasel														Common
Mink														25
Striped Skunk														10
Badger														10
Coyote														5
Yellow-bellied Marmot														20
Belding Ground Squirrel														Abundant
Pocket Gopher														Uncommon
Pocket Mouse														Common
Grasshopper Mouse														Common
Harvest Mouse														Common
Deer Mouse														Abundant
Desert Woodrat														Uncommon
Bushy-tailed Woodrat														Common
Vole														Abundant
Muskrat														Common
House Mouse														Common
Porcupine					1									Common
Black-tailed Jack Rabbit														0
														Uncommon

\* List removals by Predator Animal Hunter

\* List removals by Predator Animal Hunter

REMARKS:

Reported by *Paul S. Sted - Refuge Manager*



## INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

- (1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)
- (2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.
- (4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.
- (5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.
- REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

NARRATIVE REPORT

MODOC NATIONAL WILDLIFE REFUGE

May - August

1962

PERMANENT PERSONNEL

Paul E. Steal . . . . .	Refuge Manager
Melvin T. Nail . . . . .	Asst. Refuge Manager
Harry C. Hoshaw . . . . .	Operator General (HD)
Evelyn M. Nino . . . . .	Clerk-Typist

W.A.E. PERSONNEL

Irvin K. Wilson . . . . .	Maintenanceman I
---------------------------	------------------

SF 50-A PERSONNEL

John R. Snider . . . . .	Maintenanceman I
--------------------------	------------------

UNITED STATES DEPARTMENT OF THE INTERIOR  
U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
ALTURAS, CALIFORNIA

# C O N T E N T S

	<u>Page</u>
I. General	1
A. Weather Conditions. . . . .	1
B. Habitat Conditions. . . . .	2
1. Water . . . . .	2
2. Food and Cover. . . . .	3
II. Wildlife	4
A. Migratory Birds . . . . .	4
B. Upland Game Birds . . . . .	5
C. Big Game Animals. . . . .	5
D. Fur Animals, Predators, Rodents, and other Mammals. . .	6
E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies . . . .	6
F. Other Birds . . . . .	7
G. Fish. . . . .	7
H. Reptiles. . . . .	7
I. Disease . . . . .	7
III. Refuge Development and Maintenance	8
A. Physical Development. . . . .	8
B. Plantings . . . . .	12
C. Collections and Receipts. . . . .	13
D. Control of Vegetation . . . . .	13
E. Planned Burning . . . . .	14
F. Fires . . . . .	14
IV. Resource Management	14
A. Grazing . . . . .	14
B. Haying. . . . .	14
C. Fur Harvest . . . . .	15
D. Timber Removal. . . . .	15
E. Commercial Fishing. . . . .	15
F. Other Uses. . . . .	15
V. Field Investigation or Applied Research	16
A. Progress Report . . . . .	
B. . . . .	
C. . . . .	
D. . . . .	
E. . . . .	
VI. Public Relations	16
A. Recreational Uses . . . . .	16
B. Refuge Visitors . . . . .	17
C. Refuge Participation. . . . .	18
D. Hunting . . . . .	18
E. Violations. . . . .	
VII. Other Items	18
A. Items of Interest . . . . .	18
B. Photographs . . . . .	
C. Signature . . . . .	19

## I GENERAL

### A. Weather Conditions

On the whole weather conditions during the quarter were about normal. There were few extremes in any factor. Compared to last year it was a moderate summer. Quite enjoyable.

Temperatures were about average. Daytime temperatures averaged warmer and nighttime temperatures cooler. The month of May was cold and wet. After record high temperatures in June last year, this year this month was as usual moderate. July and August were both cooler than last year on the average, but both were warmer than the mean. During the summer there were only 4 days when the high temperature was 100 degrees or more - last year there were 11 days.

Relatively heavy rains in May were responsible for an above average precipitation record for the period - up about one inch over last year. These May rains produced good dryland grain alfalfa and grass crops. Of more importance to the refuge were the heavier rains and snows in the Warner Mountains. From May 30 to August 10 there was no beneficial precipitation.

Only minor snow flurries occurred May 19 and 20. Last year several inches of snow fell on May 11.

The last killing frost in the spring occurred June 4 a few days later than last year but still much earlier than the average date of June 18. This was the only sub-freezing date in June. There were six nights below freezing during May. There were no killing frosts during July and August. The average date of the first killing frost in the fall is August 27. Refuge barley was not seriously affected by temperature this year for a change.

As usual scattered hail occurred in August. No damage claims were reported except on the refuge where it was estimated there was a loss of about 500 pounds per acre. There was no hail damage last year on the refuge. Widespread destructive hail storms are unusual.

As usual wind was an important factor during May. However, essentially no soil erosion was apparent on the refuge due to irrigation methods. Last year soil loss was appreciable on the barley fields. Gusty afternoon winds from the southwest prevailed most every day of the quarter.

The following weather data were recorded at the Alturas Ranger Station of the U. S. Forest Service located near the north boundary of the Modoc Refuge. This weather station, Index No. 0161, has been in operation since 1917.

## 1962

Month	Precipitation	Maximum Temp.		Minimum Temp.		Mean Temp.
		Max.	Mean	Min.	Mean	
May	2.51	78	65	29	35	50
June	7	91	80	26	39	60
July	.03	101	90	34	41	66
August	<u>.34</u>	<u>100</u>	<u>88</u>	31	<u>39</u>	<u>64</u>
	2.88		81		38	60

## Mean

May	1.19	98	69	15	35	52
June	.79	99	77	25	41	59
July	.40	107	88	29	45	67
August	<u>.22</u>	105	<u>87</u>	24	<u>42</u>	<u>64</u>
	2.60		80		41	61

B. Habitat Conditions1. Water

Water conditions on the refuge depend almost entirely on the status of the Dorris Reservoir. Without this supply of water the refuge could not be operated successfully either as a waterfowl habitat or as a cattle ranch. With a lot of hard work last winter and heavy rains in May, the water supply this year is better than any year since 1958.

When irrigation water was first released the Dorris Reservoir was only 15 inches higher than in 1961 when irrigation commenced. The water picture was not bright. Irrigation water had to be released earlier - on April 12 compared to April 26 in 1961. With the Parker Creek Structure washed out, little water could be expected from this source. Close rationing of water again another year was the prospect.

Then the May rains and snows came. The Warner Mountains were repeatedly covered with wet snows that quickly melted. Even though seriously impaired, the patch job on the Parker Creek Structure permitted a good supply of water to be delivered into the reservoir. Pine Creek delivered a peak of 92 second-foot into the reservoir. All water users ceased irrigating for about two weeks - the Dorris Reservoir gate was closed from May 18 to 31.

The Dorris Reservoir reached its highest level on June 1, a full 27 inches higher than when irrigation commenced and 42 inches higher than the maximum level in 1961. By the last week of June, when the gate on the reservoir was shut down to permit haying operations, the reservoir was still 5 inches higher than when irrigation commenced in April.

At the end of the quarter, a good supply of water remained in the reservoir to (1) maintain water areas during the fall migration months, (2) continue irrigation of meadows sufficiently for a good regrowth of grasses and legumes, (3) provide water to flood standing barley and barley stubble and yet retain a high enough level in the reservoir to attract nesting waterfowl. The reservoir was a whopping 70 inches higher this year at the end of the quarter than last year. This year the reservoir dropped 72 inches from the peak level and last year it dropped 100 inches.

We attempted to (1) maintain scattered water areas and water in the main canals for waterfowl broods, (2) dewater each field separately to produce the best quality hay, (3) commence irrigating again immediately after the haying operation was completed, (4) keep meadows not being hayed irrigated.

Problems with too much water resulted. Some fields we were unable to dewater when they should have been. Portions of other fields were too wet for haying. Water flooded cut hay and in one case baled hay. These problems could have been avoided by completely drying up the refuge during haying as has been practiced in the past. Adequate structures and canals are needed, but better planning next year will also help in avoiding these problems.

On May 11 a meeting was held at headquarters with the watermaster and Pine Creek waterusers Quinn, McDowall and Ebbe. This meeting was requested to protect refuge water rights. The system of water delivery to these three users is so complicated it is easy for them to steal water. Agreement was reached, in accordance with the Pine Creek Agreement, but the watermaster had to be notified several times during the summer of illegal acts. The solution to this particular problem is clear but will require construction of adequate facilities.

Trouble was again experienced this year with Pine Creek waterusers above the refuge. After the new watermaster let it be known he would tolerate no illegal acts, little trouble was experienced except with one wateruser. Dr. Swanson was contacted and warned on nine occasions to stop stealing water. The Department of Water Resources in Sacramento advised us that they could take this case to court, but suggested that adequate diversion structures would be a better solution. This problem will be taken care of next quarter.

## 2. Food and Cover

Food conditions were more favorable than last year. Refuge barley fields produced higher yields. Most of the irrigated meadows yielded better feed for grazing geese. This was a good legume year. Meadows which last year supported few clover plants were heavy with either alsike or native clover. Better water management was partly responsible. For a few weeks after hay

meadows were again irrigated geese used these fields. However, after some regrowth goose use ceased. Why?

Aquatic food production was as usual excellent in the irrigation systems where fluctuating water levels stimulate growth. On the only "duck pond" on the refuge, Teal Pond near headquarters, there appeared to be more aquatic growth this year. To promote aquatics in this pond it was drained last winter after the hunting season.

Cover conditions improved. Nesting cover on the west side where no winter grazing was permitted was particularly good. Cover on the dikes and high knolls around the barley fields where no grazing has been allowed was not too rank. Nesting cover on the east side for early nesting ducks was not good. Winter feeding here completely removed all vegetation. No winter feeding will be permitted here next winter.

## II WILDLIFE

### A. Migratory Birds

Whistling Swan. One crippled swan was present all quarter on the South Fork of the Pit River due west of Quarters No. 2. On one occasion this swan was urged to fly but did not.

Canada Goose. Goose production was up slightly - about 30 goslings. Production on the Dorris Reservoir was up nearly as high as the last good year in 1956. There was also a big increase in production on the east side around headquarters. On the west side, the best natural nesting area, there was a marked decrease.

Small flocks of non-breeders were present until June when they departed for the flightless period. Brooding geese concentrated as usual on the Dorris Reservoir, Teal Pond and on the South Fork. After haying when irrigation commenced again meadows were used extensively by geese. However, after several weeks this use ceased. During August heavy use was made of the 35 acres of dryland barley on the west side. At the end of the period most of the geese were feeding off the refuge on dryland oat fields and upland crested wheatgrass fields.

Cackling Geese. The last spring migrant did not leave until the third week of May.

Dabbling Ducks. Production was up for all species. The mallard and cinnamon teal were as usual the only common nesters. There was no significant change in the production of areas on the refuge. In August dabblers as usual commenced concentrating on the South Fork adjacent to the barley fields. This flock showed

an increase in mallards and a decrease in pintail use. Most of the mallards may be locals but the pintails are migrants.

Diver Ducks. On Teal Pond there were two diver broods - redhead and ruddy. Except for a few sculp on the Dorris Reservoir, this was the only diver use on the refuge during the quarter.

Water and Marsh Birds. Pelican use was continuous during the quarter. These population figures are reported on NR-1. No colored pelicans were observed. Coot production on Teal Pond and a few other small areas was up. As usual a few Great blue herons were seen all quarter. There were only two known sandhill crane nests this year, both on the east side. Three young reached flight stage. There were three pairs of cranes on the west side that showed nesting behavior but no successful nests were apparent. There was one brood of Pied-billed grebe on the Teal Pond.

Shorebirds, Gulls and Terns. There were no unusual observations. Killdeer, common snipe and Wilson's phalarope were very common nesters. A few avocets and willetts nested.

#### B. Upland Game Birds

California Quail brood production was low this quarter with three coveys being seen. One covey was often seen in the South Pine Creek Field bordering Pine Creek, and another covey was occasionally seen and frequently heard in the trees surrounding Quarters No. 2. The third covey was seen once in the willows bordering the Pit River on the Godfrey Tract.

Some pheasants were seen on the refuge, but numbers are low. Pheasant broods were seen in the South Pine Creek Field, Grandmother Field and the Foxtail Field. The brood using the Foxtail Field suffered high mortality on highway 395. The brood was seen several times on the highway shoulder, and three dead pheasants were found on the highway.

#### C. Big Game Animals

A good population of mule deer was on the refuge with 14 deer being seen regularly. The largest group, consisting of 2 bucks, 2 does and 3 fawns, was seen along Pine Creek.

A spike and a doe with twin fawns frequented the House Field and were seen several times around the yard at Quarters No. 2. A small forked-horn buck was seen in the Grandmother Field, and a single doe was seen at headquarters. A doe in poor condition was observed in the Town Field.



Antelope were occasionally seen throughout the summer in the West Pit Field, but it was not until mid-July that any were seen on the east side of the river. During July a large herd (1 buck, 6 does and 6 kids) was seen feeding in the Matney Field. A single doe with twin fawns was seen in the West Pit Field.

#### D. Fur Animals, Predators, Rodents and Other Mammals

Although no raccoon were seen their tracks are present wherever water is found. Several badgers were seen during the quarter, and judging from their dens many more are present. The badger, a beautiful and interesting animal, is now a welcome member of our mammal population, but at some time in the future some control may become necessary around dams and dikes.

Skunks seem to be too numerous, and may be approaching a density which will make itself felt on waterfowl nesting success. During and after haying many skunks were seen including a skunk with five kittens.

The coyote wandering around in his never-ending search for food was a welcome sight, and it is hoped this animal will become slightly more abundant. Three coyotes were seen during the quarter. One was seen on the east side of Dorris Reservoir and one each in the Matney and Grandmother Fields.

Two dogs were killed out of a pack running cattle on the west side. Two cows were badly wounded.

Redding ground squirrel populations were excessive at the beginning of the quarter, but they were well into hibernation by the end of the quarter and were seldom seen.

Some ground squirrel control was done in June when refuge personnel assisted a PRC agent in distributing 50 lbs. of barley treated with 1080 poison. Poison grain was put out along the dam at Dorris Reservoir, on the sagebrush knolls along the entrance road to headquarters, between the corrals and house at subheadquarters and along the dirt dikes in the Matney Field. Although many dead squirrels were observed, there was no noticeable drop in squirrel numbers.

#### E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Both red-tail and Swainson's hawks were abundant during most of the quarter, but by the end of the quarter the population of Swainson's hawks had dropped due to their fall migration south.

One golden eagle was frequently seen, and it continued to use the dirt knoll near the Quill Field for a perching site. This eagle made periodic trips away from the refuge during the summer, but it usually returned in less than a week. This eagle was present on the refuge at the end of the quarter.

A pair of great-horned owls continued to use the grove of trees at subheadquarters and great-horned owls were seen several times in the large willow tree near the barn at headquarters. Short-eared owls were seen in greater numbers during the quarter than they had previously been seen. The short-eared owl is almost certain to nest on the refuge, but no nests have been found.

Few gulls frequented the refuge except for a flock of about 100 which were regularly seen on the north side of Dorris Reservoir. Magic numbers are not excessive.

#### F. Other Birds

On June 9 while moving the dump truck at subheadquarters a tree swallow was noticed flying along and landing on the truck. By watching the bird it was found to have a nest containing 5 eggs in a small, round hole used for hooking the tail gate dump chains. On June 21 all the eggs hatched, and on July 12 five healthy tree swallows left the nest. This truck, full of debris, was not dumped until the young left the nest.

#### G. Fish

Fishing success in the Dorris Reservoir and the Godfrey Tract was only fair. Catfish fishing as usual accounted for most of the fishing pressure. Bass fishing was again this year poor. A number of large trout were caught at the outlet of the reservoir.

#### H. Reptiles

No unusual observations. Carter snakes were as usual very common on all parts of the refuge.

#### I. Disease

No losses due to disease were observed.

### III REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

For fiscal year 1963, \$85,000 was allotted for the replacement of the Parker Creek Diversion Structure, development of the Town Meadow irrigation system and other construction projects. In addition, \$5000 was allotted for S & M projects.

##### 1. Canals and Water Control Structures

a. Eleven temporary water control structures were made using salvaged lumber and installed during the quarter. Also four Wesco metal control structures were purchased and installed. These structures were necessary to replace deteriorated irrigation structures previously kept functional by using horse manure.

b. During the May flood, more work was required on the temporary repairs to the Parker Creek Diversion Structure which washed out last quarter. Without these repairs water rights down stream could not have been satisfied this summer.

c. In May when the Pine Creek Diversion Canal was delivering up to 92 C.F.S. to the reservoir this canal was inspected. Several low spots on the low side were patched with a shovel.

d. In August several days were spent with a dozer on the Pine Creek Diversion Canal. Sections were straightened and deepened, a few willow clumps were removed, gravel bars were removed and several low sections of the embankment on the low side were raised.

e. Four old earthen dams in the West Field were repaired with a dozer. These dams had washed out many years ago. These dams replaced wooden structures, efficiently redistributed irrigation water, provided small ponds for waterfowl, and facilitated hay removal by enhancing truck travel.

f. A culvert in Pine Creek near Quarters No. 2 was taken out, a mass of willow roots inside removed and the culvert replaced. This structure, which restricted the flow, seriously hampered irrigation and dewatering operations.

##### 2. Road Construction and Maintenance

a. Once during the quarter the entrance road into headquarters was improved with a dozer.

b. Prior to haying, the trail from subheadquarters to the Sandy Slough Field was improved with a dozer. A motor patrol is urgently needed.

### 3. Fence Construction and Maintenance

a. A fence around headquarters was erected to keep cattle off of the lawns. Railroad ties were set 8-feet apart. Four 2x6 boards high. A power company pole hole digger was hired to make the post holes. This fence was partially painted white during the quarter.

b. A new wire fence around Quarters No. 2 using salvaged material was erected.

c. During May a 4-man crew from the U. S. Forest Service erected about 180 rods of new fence and repaired another 330 rods at subheadquarters. This crew also removed a number of truck loads of debris from the area. This work was necessary before this site could be used as a horse pasture.

d. On a number of occasions fences were repaired to keep cattle in or out of the refuge. Due to the sad condition of most of the fences spot repair jobs were too often necessary. The bulls pasturing the Bull Field caused much damage - upon the request of the Highway Patrol these bulls were moved to another field where two fences separated them from U. S. 395.

e. Many rods of excess fencing at headquarters were removed. These wire fence corrals and small pastures were no longer necessary. Several small wire corrals at subheadquarters were also removed.

f. A number of hay corrals in the meadows were removed. This next quarter all of the remaining hay corrals on the refuge will be removed.

### 4. Sign Construction and Maintenance

a. The three large recognition signs were rehabilitated as were 11 smaller signs. A mixture of linseed oil, penta, paraffin and dyes was used. This mixture obtained from the Forest Service and approved by the Regional Office is supposed to protect signs for about four years. Our signs are now ~~readable~~ - dark redwood with yellow lettering.

b. A number of boundary signs damaged by bullets were replaced. This quarter for the first time sign destruction was appreciable.

## 5. Building Maintenance

a. Office. (1) An office lawn was planted in May. A rototiller was hired to prepare a seedbed. (2) Two beds of nasturtiums and zinnias were planted in front. (3) A new meter base was installed for the hot water heater - on a separate meter our electric bill will be much lower. (4) A flagstone walk to the flagpole was laid using stones obtained from Dufurrena on a trip there looking at a surplus horse.

b. Quarters No. 1. (1) A new 280-gallon fuel oil tank was purchased and installed. A borrowed 1200-gallon tank was returned to its owner.

c. Quarters No. 2. (1) The kitchen sink, counter and cupboards were removed and replaced with same salvaged from an excess dwelling at headquarters. (2) All rooms were painted except the bathroom. (3) A salvaged medicine cabinet was installed in the bathroom. (4) The hot water heater was moved from the kitchen into the bathroom and closeted with salvaged material. (5) With salvaged plasterboard one of the two doors into the bathroom was sealed off. (6) The chimney in the kitchen was removed the walls and roof patched. (7) A surplus cooking stove, heating stove and refrigerator were obtained from Tule Lake Refuge. (8) A surplus bathtub from Tule Lake was obtained and installed to replace a legged tub with one leg missing. (9) Plumbing was provided to the porch for a washing machine. (10) Wiring was checked and defective materials removed and replaced with salvaged material. (11) When the septic tank ceased to function the drain line was cleaned with a snake and a ditch dug with the dragline at the end of the drain line. The septic tank itself was in good operating condition not requiring cleaning. (12) A new 280-gallon fuel oil tank was purchased and installed. (13) The old linoleum in the bathroom and kitchen was removed and replaced with vinyl asbestos tile.

## 6. Miscellaneous

a. By the end of the quarter all of the buildings and structures that were sold were removed except for the large dwelling on the west side. This building was moved out close to U. S. 395 in July and since has not been moved. The moving contractor is at fault. The purchaser is getting ulcers. Also, two buyers have not cleaned up debris around their buildings and thus have not completed their contract.

b. On June 26 four buildings at headquarters were burned in conjunction with a fire school sponsored by the California Department of Education. A total of 32 firemen with

4 fire trucks were present. A moderate wind was prevailing directly towards headquarters, but a fireman on the roof kept it wet and extinguished the numerous hot ashes. Prior to burning, all usable materials - windows, doors, bathroom and kitchen fixtures, lighting fixtures, wood and etc. - were salvaged.

c. Usable lumber was salvaged from the stone house at subheadquarters to make temporary water control structures. This is the last source of salvaged lumber. To date no new lumber has been purchased to make the 60 odd structures made.

d. A Government telephone was installed in Quarters No.2.

e. A scale plan of a corral was prepared and approved by the permittee. This corral will be erected on the site of the old barn at subheadquarters.

f. An arc welder from the Columbia Refuge was received via Tule Lake Refuge.

g. During haying several truck loads of debris were picked up from the Sharkey Field. This field is apparently a natural collection area for debris during periodic floods.

h. With a dozer the site of the old barn was leveled for a corral. Several truck loads of debris were removed prior to leveling.

i. During haying numerous truck loads of dirt were hauled to the Sharkey Field to fill ditches so hay trucks could drive to all of the lands. Attempting to keep some water areas for waterfowl broods this field did not dewater as quickly as expected.

j. Via Tule Lake Refuge a field service trailer was received from the Columbia Refuge.

k. A large dump site at subheadquarters was cleaned up. A trench was dozed out and the debris buried.

l. To permit safe access of hay trucks on the east side, two old bridges were beefed up with 3x12" timbers. In previous years when hay was not removed from the fields, these bridges were used only by light farm equipment. These bridges should be replaced with culverts.

m. Before haying an old bridge north of subheadquarters was removed and burned. A culvert was purchased and put in to permit safe passage for hay hauling trucks.

n. Six tons of broken bales were picked up. This hay was stored in the barn at headquarters to feed the horse this winter.

o. A horse and saddle were purchased in May. Lucky Boy, a 13-year old gelding, proved to be an excellent irrigating horse.

## B. Plantings.

### 1. Aquatic and Marsh Plants

There were no plantings during the quarter.

### 2. Trees and Shrubs

There were no plantings during the quarter.

### 3. Upland Herbaceous Plants

There were no plantings during the quarter.

### 4. Cultivated Crops

The barley crop on the refuge was the best ever according to all sources. The weather was cooperative, no discernable frost damage and moderate temperatures, but much of the credit must be given the permittee, Mr. Robert Brooks, who did a good job of management. A number of factors contributed to this good crop, but two factors are primarily responsible for this high yield - deep subsoiling and pre-irrigation.

Last fall the fields that were harvested were chiseled down to a depth of about 16 inches. Previously none of the fields had even been plowed since the time they were taken out of grass in about 1953 - only shallow discing was done to prepare a seed bed. The Town Field and another 80 acres of unharvested grain were plowed this spring.

Immediately after chiseling last fall the fields were flooded. Dikes were erected by the permittee to insure flooding of all portions of each field. Dewatering commenced in March. Seedbed preparation included discing and harrowing. All of the 600 acres of barley were fertilized with 35 pounds of available nitrogen. Aqua ammonia was applied with a 16-foot spring-tooth liquid applicator.

The Town Field was seeded to Campana barley on April 5. This field was not pre-irrigated. In fact, at no time was water put on this field. When the time came to irrigate in May sufficient natural moisture precluded the necessity of irrigating.

The Pit Slough Field was also seeded to Campana at the same rate 100 pounds per acre. The other fields were

seeded to Hannchen barley at the rate of 105 pounds per acre May 3 - 8. When the strong May winds came sufficient moisture was available to preclude soil loss. This late seeding date also materially reduced the amount of wild oats. Only in the Town Field was this weed a serious problem. This field will be pre-irrigated this winter and seeded later next year to lick this weed there also.

On June 10, when the barley was about 8 inches high, all 600 acres were aerially sprayed with 2-4-D ester at a rate of 1 pt. per acre. This treatment produced generally good results, but isolated patches of poverty weed (*Iva axillaris*) may indicate that the method of application did not produce uniform coverage.

In July two gallons of lady bugs were released in the barley fields to combat an infestation of aphids.

The total amount of grain harvested off 400 acres (2/3 of the crop) was 337 tons. Last year only 230 tons were harvested. There was no significant difference in the yield between fields. While the harvested yield indicates less than a ton per acre average yields, actually more than a ton per acre was produced. A hail storm on August 9 knocked off an estimated 110 tons of mature grain. On one 80-acre area in the South Swamp Field the loss was 36%. This crop actually came close to the average yields in the Tule Lake Basin where climatic conditions are somewhat less adverse. All harvested barley made brewing specifications.

The unharvested 200 acres included (1) all of the Town Field except 15 tons harvested for seed next year, (2) all of the Pit Slough Field, (3) areas at the south end of both the South Swamp and Matney Field, and (4) a 35-acre dryland area at the South end of the Matney Field in Campana that yielded well thanks to the May rains.

#### C. Collections and Receipts

##### 1. Seeds or Other Propagules

None.

##### 2. Specimens

None.

#### D. Control of Vegetation

None.



### E. Control Burning

None.

### F. Fires

None.

## IV RESOURCE MANAGEMENT

### A. Grazing

Grazing permits were issued to six permittees. These permits provided for a maximum use of 7,721 AUMs. The grazing rate allowed ranged from 3 AUMs per acre for fields not hayed to 1 AUM per acre for the poorer fields that were hayed. Permittees were required to assist in maintenance of fences. This year refuge personnel assumed full responsibility for irrigation, maintenance of water control structures and dragging meadows after the grazing period. A new fee of \$3.00 per AUM was approved. The permit issued to the U. S. Forest Service to graze a few head of horses called for no charge.

Only two irrigated fields were grazed with no haying. The other fields will be aftermath grazing. Grazing commenced on June 3. November 30 will be the last day of the grazing season for all permittees. Last year Bayley Dorris was permitted to winter feed on the refuge. Not until the first of October will any number of cattle be on the refuge. All of the permittees utilize Forest Service range until about that time.

### B. Haying

Four haying permits were again issued. Haying operations commenced on July 5 and by August 12 all hay was off the refuge except for a late maturing crop of oats hay in the Grandmother Field.

Due to a cool spring, hay yields in the community were somewhat less than last year. However, many ranchers reported a better quality hay - more legumes and a larger percent of the better quality grasses. Some of the better grasses matured late this year. For example, on July 1 the timothy stands on the refuge were less than 6 inches high - by the middle of July they were knee high and still growing.

Considering that this was the first year refuge personnel irrigated the meadows, the yields on the refuge were more than satisfactory. In total, about 205 tons less hay was

harvested this year than last. However, on most of the meadow acreage yields were up. The differences in yields was primarily a function of water management. On 6 fields a larger hay crop was harvested - on these fields a good job of irrigation was done.

Of the 8 fields with reduced yields, 3 were plainly not "properly" irrigated. But only one of these 3 fields was unintentionally not properly irrigated. The South Pine Creek and Bayley Fields, leveled and seeded to reed canarygrass and alsike clover, were deliberately not overwatered as was customary in the past. The result was about as expected - a bumper crop of alsike clover and a 100% reduction in the yield - 435 tons in 1961 compared to only 225 tons this year. The other 5 fields yielded less this year - from 1 to 23 tons. The reason for lower yields in these fields is not apparent. It is believed just as good or better job of irrigation was accomplished.

On the whole the quality of the hay was much better than last year. Legumes and quality grasses were a significant part of the composition in fields of low quality last year. This increase in quality was partly due to water management. The Front Field particularly was a joy - this field last year was essentially a solid stand of wiregrass (*Juncus balticus*). A record of irrigation, plant composition, and haying operations was kept on each field to help point the way toward better management.

2,974

The total production on the refuge was 2,974 tons. At \$7.00 a ton the revenue from hay was \$20,818. Refuge personnel sampled bales in each field to determine the average weight. The bale count from each field was taken from the counters on balers and from hay haulers.

#### C. Fur Harvest

None.

#### D. Timber Removal

Not applicable to this refuge.

#### E. Commercial Fishing

None.

#### F. Other Uses

Two permits were issued to keep bee hives on the refuge. Each apiary included 30 hives. At \$.10 a hive the fee was \$3.00 per permit.

A permit was issued to the Modoc County Road Department to remove approximately 10,000 cubic yards of gravel from the pit at the southwest corner of the Dorris Reservoir. No gravel was removed during the quarter.

## V FIELD INVESTIGATIONS OR APPLIED RESEARCH

On July 16 fertilizer test strips were made by the Farm Advisor on the Bayley Field to (1) determine the response of aftermath growth to fertilizer and (2) determine the influence of fertilizer on alsike clover.

This field was selected for this test because it had been leveled and border checked with positive control over the distribution of water. This field had been originally seeded to reed canarygrass and alsike clover. Last year a good crop of canarygrass and spike rush (*Eleocharis*) was produced but few clover plants were observed. This year, by applying just enough water to keep the soil damp an excellent crop of clover came up, but canarygrass apparently didn't receive sufficient water. The hay crop off this field was 100% less.

Other fertilizer tests in the community have abundantly demonstrated the economic value of fertilizer on grass - higher yields, higher protein content. However, most of these tests plots are now devoid of legumes. For goose food, the refuge should encourage legumes even at the expense of higher hay yields.

Two types of fertilizer were applied - ammonium sulfate and 16-20. Each fertilizer was applied at three different rates - ammonium sulfate at 100, 200, and 300 pounds per acre and 16-20 at 125, 250 and 375 pounds per acre. Each plot is about 25 feet wide and a half mile long with a control check between each plot. These plots were put in across the lands. The amount of water passing down each land varies, but in one land each fertilizer application received about the same amount of water.

The results of this experiment will be discussed in next quarter's narrative report.

## VI PUBLIC RELATIONS

### A. Recreational Uses

There was an increase in boating on the Derris Reservoir. The Fourth of July was the peak use day when at one time almost 100 cars, 17 boats pulling water skiers and 3 sailboats were observed. Fishing on the Reservoir and on the Godfrey Tract was not particularly good this year. As a result there was a drop in the pressure.

### B. Refuge Visitors

There were 222 visitors to the office during the quarter - an average of 1.8 visits per day. Besides the 5 official visits reported on the following page the other 217 visits were as follows:

Recreation Information	- 8
Business Agents	- 23
Economic Use	- 48
Federal, State & County Personnel	- 54
Job Applicants	- 3
Social Visits	- 81

- May 19 Joe Mazzone, Asst. Refuge Mgr., Malheur Refuge.  
Social visit and check grain bins.
- June 7 H. Alan Foster, Mammal Control Supervisor, Redding, Calif.  
Social Visit.
- 16 - 21 David Brown, Branch of Rodent Control, Sacramento, Calif.  
Ground squirrel control.
- July 2 Edward O'Neil, Biologist, Tule Lake Refuge.  
Biological Information.
- August 28 James R. Norris, USGMA, Chico, Calif.  
Enforcement training for Assistant Refuge Manager  
Malvin Nail.

### C. Refuge Participation

Manager as a member attended appropriate functions of the Federated Community Church, Alturas Rotary Club, Alturas Rural Fire Department and the Modoc County Natural Resources Council.

- May 21 Manager attended annual Cattlemen's Association meeting at Likely.
- 23 Manager attended meeting of Modoc County Natural Resources Council in Adin.
- 26 - 27 Manager with Messrs. John Van den Akker and Ray Erickson inspected Monte Vista Refuge in Colorado.
- June 28 Manager and Assistant completed 15-hour course in Fire Fighting sponsored by the California Department of Education.
- 29 Manager attended meeting of Modoc County Natural Resources Council in Likely.
- 30 Manager with fellow Rotarians supervised fish derby for kids at Pine Creek Reservoir.
- July 27 Manager as assistant chairman of Keep California Green in Modoc County accompanied Chairman Marval Eastin, PP&L Manager, to Cedarville and Likely to promote program.

D. Hunting

None

E. Violations

None apprehended. Investigated reports that ring-billed gulls were being shot at the city dump. This problem was checked several nights but no hunters were observed. Local enforcement personnel are aware of this problem but have not caught any violators.

F. SAFETY

There were no lost time accidents during the quarter. Nor were there any reportable personal injuries or property damage accidents. At the end of the quarter our SAFETY record sign revealed 488 lost-time accident free days and a previous record of 0 days.

## VII OTHER ITEMS

A. Items of Interest

Personnel. Maintenanceman Andy Andersen remained on LWOP due to illness the whole quarter. The possibility of his eventual return to the Modoc Refuge is remote.

On May 14 Harry Hoshaw reported for duty as Equipment Operator (HD). This position had been vacant since the departure of Mr. Andersen on January 2.

On May 17 temporary maintenanceman John Snider resigned to manage a cattle ranch near Hornbrook, California.

Assistant Manager Malvin Nail reported for duty June 5 a few days after graduating from Oregon State College. As a Student Trainee he worked last summer on the Malheur Refuge.

Pine Creek Reservoir. This reservoir for the first time since 1957 was kept full during the quarter. To accomplish this, most of the Pine Creek flow was diverted into this water. The outlet returns this water back to Pine Creek. The "only" water loss was evaporation and percolation. As a result the flow at Diversion No. 1 was less this year than last during August despite much better moisture conditions last winter.

No breaks in the dikes forming this reservoir occurred as half expected. However, in August the pipe line near the diversion point broke completely apart leaving a two-foot gap. This break was repaired by Modoc County Road Department.

Puncture Vine. In the spring the State Department of Agriculture released several hundred puncture vine beetles near Likely to control this serious weed. This release was one of the first in the country. This weed is presently not a serious weed on the refuge but if this plant is successful this beetle will probably control this weed in all areas of the Pit River Valley.

SIGNATURE PAGE

Submitted by:

(Signature) Paul E. SteelRefuge Manager(Title)Date: September 20, 1962

Approved, Regional Office:

Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature)\_\_\_\_\_  
(Title)

W A T E R F O W L

REFUGE Modoc

MONTHS OF May TO August, 1962

(1) Species	(2) Weeks of reporting period									
	4/30-5/6 1	5/7-13 2	5/14-20 3	5/21-27 4	5/28-6/3 5	6/4-10 6	6/11-17 7	6/18-24 8	6/25-7/1 9	7/2-8 10
Swans:										
Whistling	1	1	1	1	1	1	1	1	1	1
Trumpeter										
Geese:										
Canada	150	180	160	220	200	250	270	300	350	365
Cackling	8,000	2,500	600							
Brant										
White-fronted										
Snow										
Blue										
Other Total Geese	8,150	2,680	760	220	200	250	270	300	350	365
Ducks:										
Mallard	200	250	300	275	250	300	275	250	250	125
Black										
Gadwall	30	30	30	30	30	30	30	30	30	30
Baldpate						10	10	3	5	
Pintail	20	20	15	15	15	15	20	20	15	20
Green-winged teal						10	5	10		
Blue-winged teal	40	30	50	40	60	40	30	40	40	50
Cinnamon teal	100	150	200	300	400	450	500	650	725	700
Shoveler	20	20	20	20	20	20	20	20	20	20
Wood										
Redhead	10	10	10	10	10	10	10	10	10	10
Ring-necked										
Canvasback										
Scaup							8	4		
Goldeneye										
Bufflehead										
Ruddy	10	10	10	10	10	10	10	10	14	10
Other Total Ducks	430	520	635	700	795	895	918	1,047	1,109	965
White Pelican	15	20	20	10	20	20	16	30	50	35
Coot:	75	85	80	90	80	85	95	125	100	125

(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)

REFUGE      Modoc

MONTHS OF May TO August, 19 62

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	7/9-15 11	7/16-22 12	7/23-29 13	7/30-8/5 14	8/6-12 15	8/13-19 16	8/20-26 17	8/27-9/2 18	waterfowl days use	Broods: seen	Estimated total
<b>Swans:</b>									126		
Whistling	1	1	1	1	1	1	1	1			
Trumpeter											
<b>Geese:</b>											
Canada	400	440	535	560	600	675	750	800	50,435	40	275
Cackling									77,700		
Brant											
White-fronted											
Snow											
Blue											
<b>Other Total Geese</b>	400	440	535	560	600	675	750	800	128,135	40	275
<b>Ducks:</b>											
Mallard	150	200	350	400	400	600	700	750	42,175	42	300
Black											
Gadwall	30	30	30	35	30	40	40	50	4,095	6	50
Baldpate									196		
Pintail	20	30	65	200	400	550	600	600	18,480	5	50
Green-winged teal									175		
Blue-winged teal	40	50	55	50	40	40	30	20	5,215		40
Cinnamon teal	650	650	500	325	300	310	300	200	51,870	43	750
Shoveler	20	20	20	20	20	20	20	25	2,555	2	20
Wood											
Redhead	10	10	10	10	10	10	10	10	1,260	1	10
Ring-necked											
Canvasback											
Scaup									84		
Goldeneye											
Bufflehead											
Ruddy	10	10	10	10	10	10	10	10	1,288	1	10
<b>Other Total Ducks</b>	930	1,000	1,040	1,050	1,210	1,580	1,710	1,665	127,393	102	1,230
White Pelican	23	20	18	30	7	10	10	7	2,527		
<b>Coot:</b>	175	175	200	200	225	250	275	275	19,005	25	125

(over)



	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	126	1	0
Geese	128,135	8,150	275
Ducks	127,393	1,710	1,230
Coots	19,005	275	125

#### SUMMARY

Principal feeding areas Geese - Flooded meadows, barley stubble and created wheatgrass seedings.  
Ducks - Ponds, canals and flooded meadows.

Principal nesting areas Irrigation canal banks.

Reported by Melvin T. Nail  
Assistant Manager

#### INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751  
Form NR-1A  
(Nov. 1945)

MIGRATORY BIRDS  
(other than waterfowl)

Refuge Modoc Months of May to August 1962

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Pied-billed Grebe			20	6-7				1	4	30
White Pelican			50	6-29						75
Great Blue Heron			12	9-12						20
Black-crown Night Heron			10	7-26						15
American Bittern			3	7-16						5
Sandhill Crane			20	8-31				2	3	30
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	Resident								125	200
Common Snipe	Resident								80	120
Long-billed Curlew			3	5-15						10
Willet			400	5-20					110	600
Greater Yellowlegs			4	8-30						15
American Avocet			35	7-31					20	50
Black-necked Stilt			5	8-30						5
Wilson's Phalarope									400	600
California Gull			50	8-30						50
Ring-billed Gull			300	8-30						400
Forster's Tern			6	6-10						10
Black Tern			20	7-10						30

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove		100	8-30	25	200
White-winged dove				50	
IV. <u>Predaceous Birds:</u>					
Golden eagle		1			1
Duck hawk					
Horned owl		6	7-15	1	8
Magpie		50	7-15	5	75
Raven					
Crow		100	8-10		
Red-Tailed Hawk	Resident	50	8-30		75
Swainson's Hawk	4-30	50	6-15	5	75
			8-30		

Reported by Malvin T. Nail

**Assistant Refuge Manager**

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
 II. Shorebirds, Gulls and Terns (Charadriiformes)  
 III. Doves and Pigeons (Columbiformes)  
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Modoc

For 12-month period ending August 31, 19 62

Reported by Malvin T. Nail

Title Assistant Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production	
	Type	Acreage				
<b>I</b> <i>Hayden</i>	Crops	0	Ducks	13,968	12	37
	Upland	825	Geese	17,816	8	14
	Marsh	0	Swans	130	0	0
	Water	5	Coots	1,670	8	8
	Total	830	Total	33,584	28	59
	-----					
<b>II</b> <i>West</i>	Crops	600	Ducks	302,498	200	615
	Upland	1,580	Geese	560,339	54	110
	Marsh	20	Swans	7,672	0	0
	Water	20	Coots	7,557	36	37
	Total	2,220	Total	878,066	290	762
	-----					
<b>III</b> <i>East</i>	Crops	0	Ducks	127,029	164	492
	Upland	2,235	Geese	132,271	20	41
	Marsh	50	Swans	4,420	0	0
	Water	45	Coots	13,908	60	60
	Total	2,330	Total	277,628	244	593
	-----					
<b>IV</b> <i>North</i>	Crops	0	Ducks	136,658	30	86
	Upland	190	Geese	761,254	54	110
	Marsh	0	Swans	7,630	0	0
	Water	430	Coots	10,010	20	20
	Total	620	Total	915,552	104	216
	-----					
<b>TOTAL</b>	Crops	600	Ducks	580,153	406	1,230
	Upland	4,830	Geese	1,471,680	136	275
	Marsh	70	Swans	19,852	0	0
	Water	500	Coots	33,145	130	125
	Total	6,000	Total	2,104,830	672	1,630
	-----					
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
-----						
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

## INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.
- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.
- (5) **Production:** Estimated total number of young raised to flight age.

3-175  
Form NR-2  
(April 1946)

# UPLAND GAME BIRDS

Refuge Modoc Months of May to August, 19 62

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Valley Quail	Crops 600 acres	67	3	60					80	
Pheasant	Upland 4,850 acres	90	3	50					60	
Sage Hen		543	0	0					10	

## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

\* Only columns applicable to the period covered should be used.

NARRATIVE REPORT

MODOC NATIONAL WILDLIFE REFUGE

September - December

1962

PERMANENT PERSONNEL

Paul F. Steel . . . . .	Refuge Manager
Melvin T. Nail . . . . .	Asst. Refuge Manager
Harry C. Hoshaw . . . . .	Operator General (ND)
Evelyn M. Nino . . . . .	Clerk-Typist

W.A.E. PERSONNEL

Irvin K. Wilson . . . . .	Maintenanceman I
---------------------------	------------------

SF 50-A PERSONNEL

William T. Smith . . . . .	Laborer
----------------------------	---------

UNITED STATES DEPARTMENT OF THE INTERIOR  
U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
ALTURAS, CALIFORNIA



# C O N T E N T S

## Page

I.	General	
A.	Weather Conditions. . . . .	1
B.	Habitat Conditions. . . . .	2
1.	Water . . . . .	2
2.	Food and Cover. . . . .	4
II.	Wildlife	
A.	Migratory Birds . . . . .	4
B.	Upland Game Birds . . . . .	5
C.	Big Game Animals. . . . .	6
D.	Fur Animals, Predators, Rodents, and other Mammals. . .	6
E.	Hawks, Eagles, Owls, Crows, Ravens, and Magpies . . .	6
F.	Other Birds . . . . .	7
G.	Fish. . . . .	7
H.	Reptiles. . . . .	7
I.	Disease . . . . .	7
III.	Refuge Development and Maintenance	
A.	Physical Development. . . . .	7
B.	Plantings . . . . .	11
C.	Collections and Receipts. . . . .	11
D.	Control of Vegetation . . . . .	11
E.	Planned Burning . . . . .	12
F.	Fires . . . . .	12
IV.	Resource Management	
A.	Grazing . . . . .	12
B.	Haying. . . . .	13
C.	Fur Harvest . . . . .	13
D.	Timber Removal. . . . .	13
E.	Commercial Fishing. . . . .	13
F.	Other Uses. . . . .	13
V.	Field Investigation or Applied Research	
A.	Progress Report . . . . .	13
B.	. . . . .	
C.	. . . . .	
D.	. . . . .	
E.	. . . . .	
VI.	Public Relations	
A.	Recreational Uses . . . . .	14
B.	Refuge Visitors . . . . .	14
C.	Refuge Participation. . . . .	14
D.	Hunting . . . . .	16
E.	Violations. . . . .	17
VII.	Other Items	
A.	Items of Interest . . . . .	18
B.	Photographs . . . . .	
C.	Signature . . . . .	

## I GENERAL

### A. Weather Conditions

This period will long be remembered as the year of the October flood and the exceptional bluebird weather that prevailed most of the quarter. Favorable weather factors significantly influenced waterfowl utilization and hunter success on the public hunting area.

Temperatures all four months were warmer than last year when they very closely approximated the established averages. The mean, mean maximum and mean minimum temperatures were respectively 4, 5 and 5 degrees warmer. Particularly significant were the clear, warm days during December with the mean maximum a whopping 11 degrees warmer.

Continuing the trend in recent years, the first killing frost occurred about two weeks later than normal on September 9. There were very few windy days during the quarter. The lack of wind during the hunting season was especially noteworthy.

Precipitation during the quarter was about 5 inches greater than last year and about 4 inches more than normal. However, precipitation was less than the average every month but October. A record of 6.17 inches of moisture was recorded in October -- the previous high for this month was 2.17 inches. Most of this moisture, 5.77 inches, was received during a rainy five day period October 10 - 14.

The prolonged drought which started in 1959, when an all time low of only 7.27 inches of precipitation was received, was at least temporarily broken with 15.51 inches recorded in calendar year 1962. The average precipitation is 12.53 inches. The highest recorded was in 1952 with 20.80 inches. Other records in recent years: 1957 - 17.03 inches, 1958 - 14.38 inches, 1960 - 11.67 inches, 1961 - 8.07 inches.

Ice was not a serious factor until mid-December. Finally on the night of December 23 the larger ponds completely closed over precluding further waterfowl use. The same night the Dorris Reservoir was covered with ice except for a large bay in the middle. Swans maintained a small open area on the reservoir the remainder of the quarter.

Snow at no time was a limiting factor to waterfowl utilization. The only snow during the quarter occurred in November when on three occasions the ground was lightly covered for a few days. The snow pack in the Warner Mountains, which had an excellent start in October, was actually diminished by December rains.

The following weather data were recorded at the Alturas Ranger Station of the U. S. Forest Service located near the north boundary of the refuge. This weather station, Index No. 0161, has been in operation since 1917.

1962

Month	Precipitation	<u>Maximum Temp.</u>		<u>Minimum Temp.</u>		Mean Temp.
		Max.	Mean	Min.	Mean	
September	.11	95	86	24	34	60
October	6.17	87	68	20	30	51
November	1.21	82	57	0	26	41
December	<u>.88</u>	65	<u>52</u>	8	<u>23</u>	<u>37</u>
	8.37		66		28	47

Mean

September	0.42	100	79	15	35	57
October	1.10	93	67	7	29	48
November	1.34	79	53	-6	23	38
December	<u>1.66</u>	71	<u>44</u>	<u>-25</u>	<u>19</u>	<u>32</u>
	4.52		61		26	44

**B. Habitat Conditions**

**1. Water**

Irrigation of meadows ceased the end of September. At this time all ponds, canals and sloughs were full of water. To maintain these water areas for waterfowl and cattle the gate at the Dorris Reservoir was left open a few inches. However, with sufficient natural moisture this gate was shut on October 10 and remained completely closed the rest of the quarter. Last year this gate was not completely closed until December 15.

An excellent supply of water remained in the Dorris Reservoir at the start of the quarter - 72 inches higher than last year. During September the reservoir dropped 30 inches when water was still being used for irrigation. Parker and Pine Creeks were diverted into the reservoir on October 8. Normally, the supply of storage water is inconsequential until late in the quarter. This year the mid-October deluge materially changed the water picture. After the flood both creeks continued to deliver good flows into the reservoir the rest of the quarter.

The level of the reservoir was 118 inches higher than last year at the end of December and almost exactly at the same level as in April when irrigation commenced. The prospect of filling the

reservoir for the first time since 1958 appeared excellent. This, even though the remains of the Parker Creek Spillway leaks approximately about as much water as is passing into the diversion canal.

**Flood.** Late fall floods have occurred in years past but never before has a major flood hit this area in October. At the peak, the night of October 13, Pine Creek reached a record 600-700 cfs according to the local watermaster. Parker Creek's flow was higher but no estimate was obtained. About two-thirds of the refuge was inundated and the remainder waterlogged. About a third of Alturas was flooded resulting in a damage bill of about \$200,000. U. S. Highway 395 thru the refuge was under and no thru traffic was possible for almost a week.

Except for minor erosion of a few dikes, this flood caused little damage to refuge property. On October 13 and 14 refuge personnel worked removing stop logs, removing debris at various structures and dozing at Diversion No. 1 on Pine Creek to keep water flowing into the reservoir. Actually, little preventative action is possible in time of flood and normally little damage to refuge property is apparent.

In September the Department of Water Resources completed their investigation of the water control structures on Pine Creek. Each wateruser was requested to construct the necessary structures to properly measure and regulate water at each delivery weir. Because of the gross inadequacy of the present structures, watermasters have for years been unable to effectively manage this creek. In short, water stealing has been a common practice. Each of the new structures designed by the Department can be locked if illegal manipulation becomes a problem. The refuge erected all of the structures requested by the Department to set an example. It is hoped the other waterusers will voluntarily build their structures. The Department can, if necessary, force them to do so.

The flood disrupted the pre-irrigation of the barley fields. In mid-September Permittee Brooks had completed erection of temporary dikes to facilitate this operation. The flood completely inundated all of the barley fields except the Town Meadow and the dikes were broken dewatering these fields by the end of the quarter. The Town Meadow dike was not washed out and this field was still flooded at the end of the quarter.

Ice was less a problem this quarter than last year on the diversion structures. With the advent of freezing weather a number of water control structures on the Parker and Pine Creek diversion canals must be checked regularly to preclude ice from interfering with the planned diversion of water. While the bulk

of the water from these creeks flows into the reservoir, stock water for the other waterusers must be released at a number of structures. New stop logs were installed in a number of structures with a slot in the bottom log to pass small flows with the least trouble with ice.

## 2. Food and Cover

Adequate food was available for the waterfowl utilizing the refuge during the quarter. There were 197 acres of unharvested barley - 112 acres in the Town Field and portions of the other four barley fields. There were 394 acres of barley stubble also. Unlike last year, fall rains caused some of the barley to germinate producing an abundance of green vegetation. Most of the irrigated meadows were cropped close enough by cattle to render these areas acceptable to browsing geese.

As last year these barley fields were the preferred feeding areas for both ducks and geese. The Town Meadow was used earlier by waterfowl but at the end of the quarter some grain still remained. On the stubble fields within the public hunting area some grain still remained here also. The harvesting operations left an amazing amount of grain on the ground and hunting activity precluded full utilization.

The October rains and warm weather filled the numerous water areas on the Devil's Garden and elsewhere and green cheat grass provided abundant food. Goose use was particularly high on these areas and refuge utilization was correspondingly that much lower.

## II WILDLIFE

### A. Migratory Birds

Whistling Swan. Swan use for the quarter was down 40% compared to swan use for the same period last year. The first migrants arrived September 28, and 145 swans were still here at the end of the quarter. Swans did not begin showing up in large number until the middle of November, and the peak population of 145 was reached the last week of the quarter. They fed mostly on the Town Field barley, and loafed on the Dorris Reservoir, Teal Pond, Neers Pond and the Highway Slough.

A yellow swan from Malheur was first observed November 19, on Teal Pond. This yellow swan spent most of its time on the Highway Slough adjacent to Highway 395. Many people stopped to observe and photograph this swan and an article concerning it was run in the local paper. This swan was last seen on November 28.

Total goose use on the refuge was down 27%. Use by all geese was down to some extent, but it was most noticeable in the snow goose which was down 74% compared with last year. The cackler was again the most common making up 68% of total goose use. Prior to the opening day of hunting season geese rested on the Dorris Reservoir and made feeding flights to the standing barley and stubble on the public hunting area. After the hunting season opened they shifted their feeding habits and began making morning and evening flights to the Pit River Valley south of the refuge. Midway in the hunting season as the Town Field barley became flooded the birds then shifted to this area for feeding. The Dorris Reservoir was a favored resting spot for geese throughout the season.

The Canada Goose, (including both the Great Basin and Lesser), also favored the Dorris Reservoir for resting; and followed pretty much the same feeding pattern except that they tried to feed more on the PHA. This difference accounts for the fact that the Canada goose made up 56% of the goose kill in spite of the greater numbers of the cacklers.

The snow goose first arrived during the first week of October. They followed the same feeding pattern as the other geese except that they rarely ever frequented the PHA.

Very few white-fronted geese used the refuge, and the peak population was 100 birds. They followed the same use pattern as the other geese.

Dabbler use was up considerably over last year with total duck use being up 17%. The mallard was again the most common with a peak population of 3,300 birds almost twice that of last year. Mallard use was up 67%, but the pintails failed to show up in the large numbers they did last year. Duck populations held up well at the end of the quarter probably due to the beautiful weather. At the end of the quarter last year 620 ducks were present compared with over 5,000 still here at the end of the quarter this year.

Diver use was very low. Dorris Reservoir being the only good diver habitat on the refuge, the diver use is mainly short rest stopover. It is probable that many divers use the reservoir for a day or two then move on, and are not included in the weekly census.

#### B. Upland Game Birds

Valley Quail and pheasants, the only upland game birds found on the refuge, fared well throughout the quarter with no appreciable snow to cover food and no severely cold weather. An attempt is being made at subheadquarters to feed quail this winter in hopes of carrying over a larger breeding stock for next spring.

Pheasants are not numerous anywhere on the refuge, but coveys were seen in the Town Meadow, Grandmother Field and in the South Pine Creek Field. Two pheasant kills were found on U. S. Highway 395.

### C. Big Game Animals

Male Deer were regularly seen on the refuge. A herd of 14 deer stayed in the willows along Pine Creek, and could be seen in the evening feeding in the South Pine Creek and Bayley Field. These deer were easily seen from Pine Creek Boulevard and U. S. Highway 395.

Antelope were seen occasionally on the east and north sides of the Dorris Reservoir. In mid-September three antelope stayed several days in the Matney Field. By the end of the quarter most of the antelope in the area were at their wintering area on the Likely Table.

### D. Fur Animals, Predators, Rodents and Other Mammals

A fur management plan was submitted and approved this quarter, and trapping was started. Muskrat removal was the main goal of the trapping, and removal of some raccoons and skunks should increase nesting success. Five mink were caught by trappers, and four of these were cotton mink and of little value. The muskrat population is not high enough to permit profitable trapping, but high enough to be a nuisance on water control structures. No coyotes were seen during the quarter.

Balding ground squirrels were seen several times during the quarter. One was seen at headquarters October 31, and two were seen on the west side on December 11. These squirrels are true hibernators, and this activity seems unusual.

Dogs roaming the refuge has become far too common. At least ten different dogs were seen running on the refuge during the quarter. One permittee reported dogs were running cattle in the Town Meadow.

### E. Hawks, Eagles, Owls, Crows, Ravens & Magpies

Red-tailed, marsh and sparrow hawks were seen throughout the quarter. A duck hawk was seen during the last week of the period. Great horned owls were seen regularly at headquarters and subheadquarters.

A golden eagle was present all quarter, and was seen periodically at Dorris Reservoir harassing the birds as it flew around. The first hald eagle was seen on December 12, and from

two to three were present the rest of the quarter. One bald eagle was observed feeding on a swan at Dorris Reservoir, but the swan may have been carrion.

#### F. Other Birds

No unusual observations were made.

#### G. Fish

Fishing was allowed on the refuge from the beginning of the quarter until October 20 when the waterfowl season opened. At the opening of hunting season all refuge waters are closed to fishing. A sport fishing plan for the refuge was submitted during the quarter. Fishing pressure was slight during the period, and consisted of a few older men who fished regularly.

#### H. Reptiles

No unusual observations were made.

#### I. Disease

No losses due to disease were observed.

### III REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

##### 1. Canals and Water Control Structures

a. A concrete structure was built to replace Diversion No. 10 and the main stream structure on Pine Creek. Both of these structures were in very poor condition. This structure, designed by the watermaster, was the first step in the program of the Department of Water Resources to obtain effective control over Pine Creek water. Diversion No. 10 has a 5-foot slide gate fabricated by a local blacksmith. There is a two-foot opening to continue passing some water downstream to satisfy other rights. Completed just before the flood, this structure was completely under water for several days. To remove the forms a pump was rented to remove water from the construction site. The structure cured well and only a few spots had to be patched where the flood waters had washed away the green concrete. With the adjacent meadow waterlogged further dressing up of the site was impossible. The TD-18A became hopelessly stuck and the dragline had to be planked out of the area.

b. To obtain accurate measurement of the water passing down the Pine Creek Diversion Canal, both during the storage and irrigation periods, a 4-foot parshall flume was built about 180 feet



below Diversion No. 1. Access to the site was difficult and a rented concrete mixer was used instead of procuring pre-mix. It was a fine structure, but during the flood it was dozed out. The embankment to Diversion No. 1 was inadequate. Even during moderately heavy flows this embankment would have leaked badly and probably washed out. Before another permanent parshall flume is constructed this embankment must be improved.

c. All bids on the construction of the Parker Creek Spillway were refused by the Regional Office. The two lowest bids were identical and due to the heavy rains too much water at the construction site would have been a real problem. These bids will be reissued next quarter scheduling construction to commence about June 15.

d. After the flood the washed out section of the Parker Creek Spillway was repaired with boards and riprap. About half the flow of the creek continued to leak thru this spillway, but the reservoir will probably fill to capacity anyway.

e. The drain along the west side of the Bayley Field was cleaned out with a dragline. It was choked with burweed. The efficient operation of this 2-mile drain is necessary to permit rapid dewatering and to provide for the irrigation of the barley fields on the west side.

f. All of the stop logs at Diversion No. 1 on Pine Creek were replaced. A new catwalk was needed to replace the one washed out by the flood.

g. With the first deep freezing weather all water control structures on Pine Creek were checked. Where needed new stop logs were installed with a slot in the bottom log to minimize the ice problem.

h. Late in December work commenced to reconstruct the numerous earthen dams in the Front Field. Good top soil was hauled from the headquarters area. In recent years these water-spreading devices were annually put in with horse manure. These permanent dams will greatly facilitate irrigation, provide sites for nesting waterfowl and probably interfere in a minor way with haying.

## 2. Road Construction and Maintenance

a. Before leaving the Diversion No. 1 site on Pine Creek after the flood, the trail to the county road was repaired with the deser. Several sections of this trail were washed out. This trail is used regularly by refuge personnel during the winter to check on ice conditions.

b. The entrance road to headquarters from U. S. 395 was improved once during the quarter with the dozer on the TD-18A. A motor patrol is urgently needed for road maintenance and rehabilitation of small irrigation ditches.

### 3. Fence Construction and Maintenance

a. The fence along the west side of the Bayley Field was removed to facilitate cleaning of an adjacent drain. This fence will not be replaced. A parallel fence on the boundary will suffice - only the two ends need be closed in.

b. The fence between the Town Field and Town Meadow was checked and repaired where necessary to prevent cattle from trespassing on barley crop.

c. To stop a minor trespass problem, the fence on the west side of the Hanson Field adjacent to land owned by Paul Baker was repaired.

d. Construction of a new 116' x 108' corral at subheadquarters commenced on the site of the old barn that was previously razed. An REA rig was rented to dig 78 holes - surplus railroad ties were set in these holes forming the outside fences. The remaining 65 holes needed were not dug due to the break down of the REA rig. The plans for this corral were designed by the Farm Advisor. After inspecting several new corrals in the community, a few minor changes were made. For this corral and another one on the east side, over 19,000 board-feet of 2 x 8s were purchased and stored in the barn at headquarters. The lowest of three bids for Douglas fir, # 2 or better, from Eugene, Oregon was \$100 per thousand, which was \$25 less than the usual retail price. This lumber was fresh out of the mill pond so it was necessary to stick each piece to permit proper drying.

e. Removal of the numerous old hay corrals in the meadows commenced. The only one in the Town Field was removed. The only one in the Sandy Slough Field was likewise removed. On the east side where there are 22 hay corrals, the wire was taken off a few before the end of the quarter.

### 4. Sign Construction and Maintenance

a. All boundary signs were checked prior to the opening of hunting. Public hunting signs were erected and the public fishing signs on the Dorris Reservoir and Godfrey Tract were taken down. A number of damaged signs had to be replaced. Bullet scarred signs are too frequently found.

b. Two boxes for hunter report forms were built and erected at the two parking areas on the public hunting area. The information in the two information boards was updated.

## 5. Building Maintenance

a. Office. (1) Flagstone picked up at Dufurrena was laid from the entrance door to the flagpole. (2) The storage room was converted into an office for Assistant Manager Nail - the walls and ceiling cleaned and painted white, the concrete floor painted deck gray. (3) The west and south exterior sides were painted white and the windows on the west side trimmed with green paint. (4) Salvaged rain troughs were installed over two entrances to the office.

b. Quarters No. 1. (1) The old linoleum in the downstairs bathrooms and kitchen was removed and replaced with vinyl asbestos tile. (2) The roof over the wood shed was again patched with asphalt. (3) A small area below the sink in the upstairs bathroom was patched - the concrete floor here was badly cracked.

c. Quarters No. 2. (1) Part of the porch was enclosed with salvaged metal windows to serve as a utility room. During zero weather this room will have to be heated with an electric heater to keep water pipes from freezing.

d. Subheadquarters Pump House. (1) Exterior painted two coats.

e. Headquarters Shop. (1) Two cabinets were built to provide storage for parts and tools.

## 6. Miscellaneous

a. A total of 338 bales of barley straw were picked up from the North Swamp Field and stored in the barn. These bales will be used in January to make goose nesting platforms.

b. All buildings and structures sold were finally removed during the quarter.

c. The area around subheadquarters where buildings and corrals were previously was completely cleaned up ready for grass seeding. This was no small task. Pits were dozed out and old foundations buried. Numerous other pits were dozed out to bury huge piles of wire and junk. Old corrals were dozed into piles and burned. Numerous wire corrals were removed - good wire and posts salvaged and junk burned or hauled away. Numerous truck loads of scattered bits of glass, wire, wood, metal, cans, etc. were hauled away to the city dump.

d. A trailer was built for the arc welder. This unit can now be used for field repairs and with a 110-volt generator it can be used to supply power for electrical tools in the field.

e. A ditcher to clean small irrigation ditches was fabricated using mostly salvaged material.

f. Four trips were made to the San Francisco Bay Area to screen and pick up surplus property. Three trips were made to the Sierra Army Depot, Marlong, California to pick up railroad ties.

## B. Plantings

### 1. Aquatic and Marsh Plants

There were no plantings during the quarter.

### 2. Trees and Shrubs

There were no plantings during the quarter.

### 3. Upland Herbaceous Plants

There were no plantings during the quarter.

### 4. Cultivated Crops

The results from the 600 acres planted to barley were reported in last quarter's narrative report. During September the straw left by the combine was baled and removed. This method of removing excess straw is preferred over burning. Prior to the flood in October about half of the North Swamp Field was deep plowed.

After erecting temporary dikes preirrigation commenced. The flood, however, effectively "irrigated" all of the barley fields except the Town Field. By the end of November all of the south fields were dewatered thru breaks in the dikes. The Town Field dike held and this field was inundated all quarter as planned.

## C. Collections and Receipts

### 1. Seeds or Other Propagules

None.

### 2. Specimens

None.

## D. Control of Vegetation

None.

E.. Planned Burning

None.

F. Fires

None

## IV RESOURCE MANAGEMENT

A. Grazing

Grazing permits were issued to six permittees. One permit issued to the U. S. Forest Service called for no charge to graze no more than five head of horses. During calendar year 1962 the refuge accommodated 7,562 AUMs with a total revenue of \$22,885. Part of this use and revenue was obtained from a winter feeding operation by one of the permittees. Hay was fed and charged at the AUM basis. This operation accounted for 4,006 AUMs and \$10,015 of revenue.

For the 1962 grazing season there were 3,556 AUMs of use with a revenue of \$10,668. In addition, \$2,202 was forfeited by two permittees for non-use of available pasturage - their final bill for grazing was less than the down payment on their permits and the difference was forfeited.

Grazing commenced on June 3 and all cattle were off the refuge by the end of November. Permittees used from 96% to 38% of the maximum allowable AUMs. Only four fields were strictly grazed. Most of the fields were first hayed and the aftermath growth was pastured. Aftermath grazing commenced in mid-August, but the majority of the fields were not used until after the first of October.

This was not a good aftermath growth year. The Farm Advisor estimated yields were down an average of 50% in the community. The rate of utilization was less than 1 AUM per acre on most fields. The rate on one field where grazing commenced in mid-September was 1.9 AUMs per acre. This field at the end of the grazing season actually looked less used than many fields used less than 1 AUM per acre but were grazed later in the season. At least this year it would appear our meadows would have accommodated more AUMs if they had been grazed earlier.

Immediately after grazing refuge personnel commenced dragging meadows to break up and distribute manure. By the end of the quarter the Town, Sandy Slough and Hanson Meadows were done. Normally this operation is not done until the spring, but to preclude interference with nesting as much dragging as possible should

be done in the fall. However, freezing temperatures were a problem. Only afternoon dragging was feasible on most days. About 9 acres per hour was dragged with the equipment used.

#### B. Haying

During calendar year 1962, 4,129 tons of hay were sold off the refuge with a total revenue of \$27,682. These figures include 1,221 tons (\$7,326) of hay harvested in 1961 and sold this spring. After the winter feeding operation this hay remained and it was sold for \$6 a ton. Hay production during the 1962 growing season came to 2,908 tons. At \$7.00 a ton the revenue was \$20,356.

#### C. Fur Harvest

A fur management plan was submitted and approved. Two trappers commenced operating and another one plans to start next quarter. Based on results thus far, relatively few muskrats exist on the refuge. With most of the fur-bearers inhabiting irrigation canals the return to the trappers will be small compared to the effort that will be required.

#### D. Timber Removal

Not applicable to this refuge.

#### E. Commercial Fishing

None.

#### F. Other Uses

The two apiaries established on the refuge last quarter were removed. The total revenue from apiaries was \$6.00.

No gravel was removed this quarter under the permit issued to the Modoc County Road Department.

### V FIELD INVESTIGATIONS OR APPLIED RESEARCH

The Farm Advisor was unable to take clippings of the fertilizer plots in the Bayley Field to accurately determine the yield differences. However, it was apparent that the higher the application of both ammonium sulfate and 16-20 the greater the yield. These plots will be watched closely this spring to see if clover responses are favorable to 16-20. Local experiments with ammonium sulfate have increased grass yields and completely eliminated clover. For goose use we would prefer a high clover count in the plant composition.

## VI PUBLIC RELATIONS

A. Recreational Uses

Public hunting was the only recreation use during the quarter, except for a few fishermen-days early in the quarter.

B. Refuge Visitors

There were 272 visitors to the office during the quarter - an average of 2.2 visits per day. Besides the 24 official visitors reported below the other 248 visits were as follows:

Hunting Information	- 88
Business Agents	- 27
Economic Use	- 55
Federal, State and County Personnel	- 24
Job Application	- 6
Social	- 48

September	17	Paul Art, Dept. of Water Resources, Sacramento, Calif., Water Rights.
	18	H. Alan Foster, PRC, Redding, Calif. Ground squirrel control.
	19	William P. Lindsey, Branch of Realty, RO. Land acquisition.
October	3	Messrs. Tuttle, RO, Douglas, CO, Branch of Fish Hatcheries. Inspection.
	4	Messrs. Garrett, RO, Wendler, Lakeview, Oregon, USGMA. Law enforcement.
	12	John Wendler, Lakeview, Oregon, USGMA. Law Enforcement.
	15 - 16	Howard Spragge, Classification Officer, RO. Classification of employees.
	16	Messrs. R.F. Dittman, Chief, CO, J.B. Van den Akker, Asst. Reg. Ref. Sup., RO, L.R. Jacoby, Engineer, RO. Inspection - planning.
	16	Raymond Glahn, Pilot-Biologist, RO. Aerial inspection.
	29	R.D. Hardesty, RO Transport, Tule Lake Refuge, Tulalake, Calif. Delivery of signs.

- November 6 - 8 Motto Stanley, Branch of Engineering, RO.  
Inspection - Parker Creek Structure.
- 12 David Marshall, Regional Biologist, RO.  
Inspection.
- 13 Joseph Massoné, Asst. Refuge Manager, Malheur  
Refuge, Oregon. Social.
- 15 Raymond Glahn, Pilot-Biologist, RO.  
Aerial census.
- 15 John Wendler, USGMA, Lakeview, Oregon.  
Law enforcement.

- December 13 Messrs. Paul Art, George Ross, Dept. of Water  
Resources, Sacramento, Calif. Water Rights.
- 18 George Wiseman, Master Planner, RO.  
Inspection.
- 18 Benjamin Hazeltine, Superintendent, Sheldon-Hart Mt.  
Refuges, Lakeview, Oregon. Social.
- 19 John Wendler, USGMA, Lakeview, Oregon.  
Law enforcement.

#### C. Refuge Participation

Manager as a member attended appropriate functions of the Federated Community Church, Alturas Rotary Club, Alturas Rural Fire Department and the Modoc County National Resources Council.

- October 4 - 5 Manager as member attended annual California  
Section meeting of American Society of Range  
Management in Alturas. Field tours and banquet.
- 5 Manager, at banquet, addressed annual meeting of  
Northern California Vocational Agriculture  
Teachers on National Refuge System in Alturas.  
Attendance - 65.
- 29 - 30 Manager in Regional Office completing Master Plan  
for Modoc Refuge.
- November 8 - 9 Mrs. Nino participated in Clerk's Workshop in  
Regional Office.



November

- 13 Manager addressed Alturas Kiwanis Club on Refuge operations. Attendance - 18.
- 13 Manager addressed Sierra Army Depot Conservation Club at Herlong, California. Briefly discussed refuge operations and showed waterfowl identification slides. Attendance - 33.

**D. Hunting**

Hunting was allowed on the 1,440 acre public hunting area throughout the waterfowl hunting season. Last year there was a split waterfowl season, but this year a continuous season was held which ran from October 20 through January 2. Attached is a map of the PHA and a handout on hunting information.

Opening day was clear and warm, and at the noon opening it was estimated 90% of the refuge birds were using the PHA. As shooting started the birds immediately left the PHA and headed for the Derris Reservoir. A large portion of the opening days kill was made during the first few minutes of the season, but hunting was fairly good throughout the day. On opening day the 53 hunters checked, of an estimated total of 111 hunters, averaged 1.9 ducks and .7 geese per hunter.

There were an estimated 1,677 hunter-days during the season compared to the 910 of last year. There was an estimated kill of 1,122 birds. The 690 hunters checked bagged an average of .6 birds. Ducks made up 52% of the total kill and geese 48%. The Canada geese, including the Great Basin and the Lesser, made up 56% of the total goose kill. The cackler made up the bulk of the other 44%. One diver, a Goldeneye, was found in the sample. Thirty-seven percent of all the birds killed were mallards. Surprisingly four wood ducks were killed on the PHA. The following table shows the species composition of hunter bag checks:

<u>Species</u>	<u>Number Bagged</u>	<u>Percent of Total Bag</u>
Mallard	151	37%
Canada Goose	109	26%
Cackler	84	20%
Pintail	21	5%
Baldpate	21	5%
G.W.Teal	10	2%
Wood duck	4	1%
Shoveler	4	1%
Snow Goose	3	1%
Ruddy Duck	3	1%
Goldeneye	1	T
Coot	1	T
Total	412	

Two bands were recovered during the hunting season. One band from a white-fronted goose was brought to the refuge by a hunter who had killed the bird several days earlier, and a banded cackler was found in a hunter bag. A report of where these birds were banded has not yet been received.

Hunting in general was poor. The average hunter hunted 2.7 hours and bagged .6 birds. Poor hunting can be attributed to several factors the most important being the "bluebird" weather. Too many hunters for the small area, high shooting and failure of many hunters to hide properly at times contributed to the poor hunting.

Many hunters commented that the ducks must have a copy of the shooting hours table. The daily occurrence was for several thousand ducks to pour into the PMA within 15 minutes after the end of legal shooting hours. Both ducks and geese used the shooting area heavily at night. As previously mentioned, the Town Field barley was used heavily this year, and this held many birds off the PMA.

Some hunters insisted on hunting the railroad tracks adjacent to the Town Field barley and the Town Meadow. This is a legal practice in California and must be tolerated.

A sample of 538 hunters was taken to determine where the hunters were from. The following table gives the results:

Area	Number	% of Total
Modoc County	220	41%
Los Angeles Area	108	20%
Bishop Area	87	16%
San Francisco Area	43	8%
Sacramento Area	29	5%
San Diego Area	19	4%
Susanville Area	17	3%
Redding Area	15	3%
	<u>538</u>	<u>100%</u>

### F. Violations

Three violation cases were taken into local court for presentation.

A 16-year old youth from Alturas was apprehended by Assistant Manager Neil shooting up a refuge sign on the Godfrey Tract. This case was held in Juvenile Court. Because the offender had no previous record the juvenile officer put this youth on 6-months probation at the end of which, if his conduct was satisfactory, the offense would be removed from his record.

Assistant Manager Nail apprehended a hunter with one duck over the legal limit. Judge Leo Steil fined the violator \$10.

Manager Steel apprehended an illiterate worker from Alturas hunting on the closed portion of the refuge. The case was tried by Judge Steil the day before Christmas and the \$25 fine was all suspended.

## **P. SAFETY**

There were no lost time accidents during the quarter. Nor were there any reportable personal injuries or property damage accidents. At the end of the quarter our SAFETY record sign revealed 610 lost-time accident free days and a previous record of 0 days.

## **VII OTHER ITEMS**

### **A. Items of Interest**

First Aid. Mrs. Nino, Mary and Malvin Nail successfully completed the STANDARD Red Course First Aid Course in December.

Flood Damages. The City of Alturas received State & Federal funds and commenced the rehabilitation of the dikes along the North Fork of the Pit River. This work, which starts at the confluence with the South Fork, will involve refuge lands at the northwest corner of the Town Field.

Accident. On the night of September 22 a small foreign made sports car went off U. S. 395 about 150 feet north of the refuge entrance road removing 5 rods of fence. It ended up in the Foxtail Field bottom up. Both occupants were badly bruised but not seriously injured. The driver fell asleep. The car was a total wreck.

Pine Creek Reservoir. This reservoir, discussed in this section of previous narrative reports, amazingly was not seriously damaged by the October flood. Pine Creek waterusers were hoping the dikes forming this reservoir would wash out.



1. Fire School. Firemen donning gasmasks and air tanks preparing to extinguish fire in one of 4 excess buildings at headquarters used for instructional purposes during fire school sponsored by the California Department of Education in June. Excellent course given by outstanding instructor.



2. Fire School. Firemen extinguishing one of many individual fires illustrating 11 types of fires. One of four fire trucks on the scene. Manager, member of Rural Department, and Assistant Manager successfully completed this 15-hour course.



3. Fire School. Firemen cooling off fire in one of two residences burned to slow it down. After successfully extinguishing the "control fires" all buildings were burned to the ground. Firemen on area 1830 to 2330 when all hot embers out. Much salvageable material was previously removed from these buildings. Cheap, safe method of getting rid of excess buildings.



4. Fire School. Firemen watching two chicken houses going up in flames. Note flagpole and office in rear. With a stiff breeze blowing directly toward the office two firemen were stationed on the roof with hoses to extinguish numerous hot embers. 32 firemen from the Alturas and Alturas Rural Departments participated and about as many spectators were on hand.

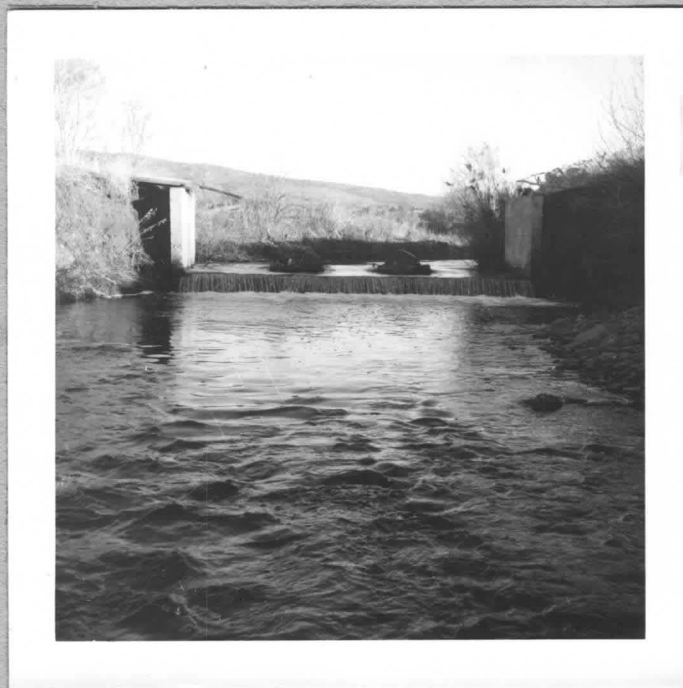




5. New Corral. This new corral at subheadquarters on the site where the huge old barn used to be, will be used by permittees to brand, vaccinate, separate and hold cattle. Four-foot deep holes dug by rented REA power digger - much, much cheaper than doing by hand in this rock, hard soil.



6. New Corral. Setting surplus redwood railroad ties about 5 feet apart, 3 feet in the ground and 5 feet above. Top of ties all at same elevation. Size of corral 116' x 108'. Old corral along U. S. Highway 395 was dozed into piles and burned after salvaging usable material.



7. Structure 261. Looking upstream at the Parker Creek Diversion Structure which is upstream about a  $\frac{1}{4}$  of a mile from the Parker Creek Spillway. During October flood this structure was completely under water - a huge bridge passed over it without doing damage.



8. Structure 261. Looking downstream at the Parker Creek Diversion Structure. Original channel of Parker Creek to the right - this channel presently being used strictly for delivery of irrigation water. Normal stream flow year around is thru this diversion structure. Structure is on Leland Porter's land.





9. Structure 261. Note erosion of bank. Both sides are in need of protection. In picture 2 note wooden protection missing in this picture - it was washed away during October flood. Plan to haul in talus slope riprap material next quarter from source about 2 miles away on Leland Porter land.



10. Opening Day. First day of waterfowl season, October 20, on 1,440-acre public hunting area, 111 hunters attracted. Picture is of south parking area. All season long hunters used this unfenced parking area exclusively - indiscriminate car travel would have hurt hunting success.

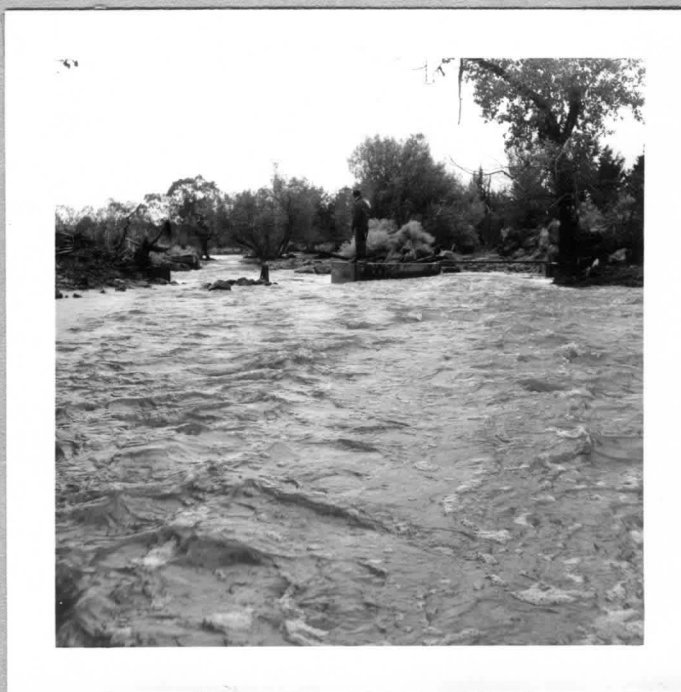




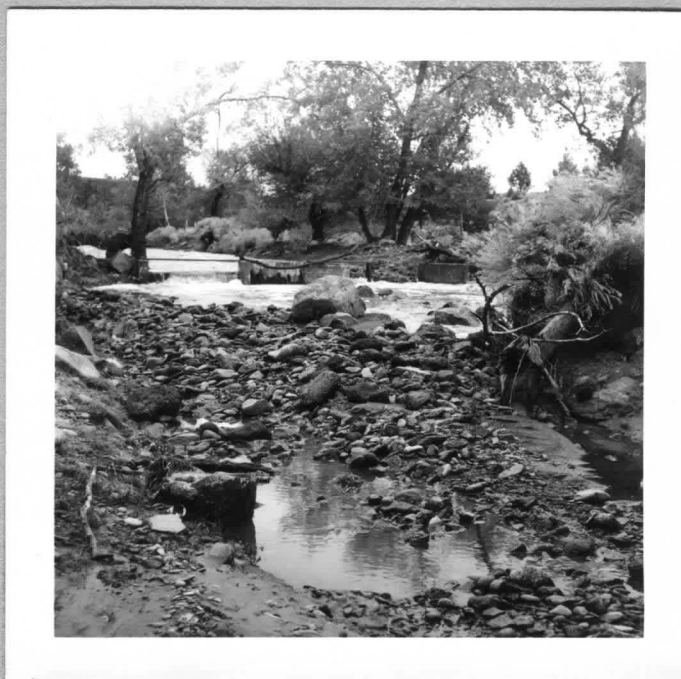
11. Signs. Numerous signs were again used to regulate hunters. Small shelter box is for hunter report forms. Hunters were requested to make out a report form at the end of each hunting day and drop it into slot in box - few hunters did so. Note waterfowl identification leaflet in box.



12. Happy Hunter. More than his share. Hunters opening day averaged 1.9 ducks and .7 of goose per hunter. For the whole season the average bag was only .6 birds. During the season 1,677 hunters killed 1,122 birds - 37% mallards, 26% Canada geese and 20% cacklers.

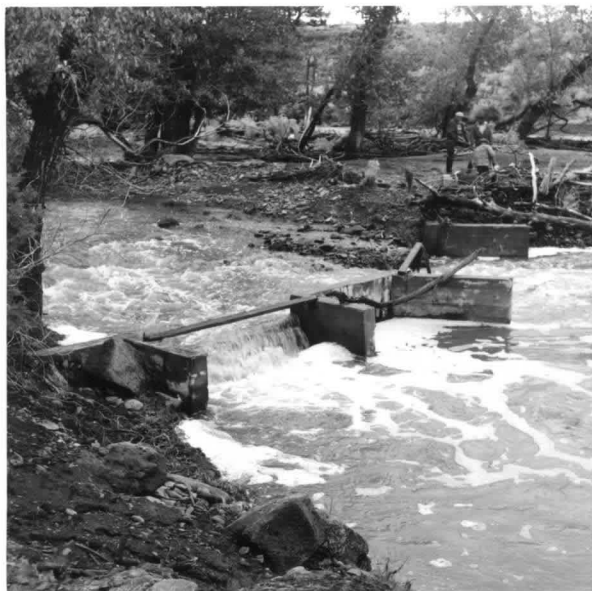


13. Diversion No. 1. This and the next 11 pictures were taken on Sunday October 14 the night after Pine Creek peaked at 600-700 cfs. Looking downstream - diversion canal on right. This structure was almost exactly 2-foot under water at the peak.



14. Diversion No. 1. Looking upstream from diversion canal. Flood washed out embankment from the diversion downstream about 40 feet. This embankment washed out Friday night - high water stymied efforts to doze up this embankment early Saturday morning. It was a hopeless task - the gravel washed away as fast as it was dozed up.





15. Diversion No. 1. Looking upstream from the north side. Note stream of water in background - creek bank broke upstream from structure about  $\frac{1}{4}$  mile and this new channel carried most of the flow from Friday night to Sunday noon when this break upstream was repaired.



16. Diversion No. 1. Looking downstream from south side. Amazingly the embankment on both sides of structure was not badly eroded. Note deposit of gravel in front of structure. Top two boards removed on Saturday morning, but others could not be removed. This structure was the only damaged property on the refuge as a result of the flood.



17. Diversion No. 1. Our TD-18A first dozed out the gravel deposited in front of the structure, then the diversion canal was cleaned and lastly the main stream immediately below the structure was dozed out to form the diversion canal embankment.



18. Diversion No. 1. Job finished and a full head again being delivered to the Dorris Reservoir. Compare with picture 13. The peak flood water - from Friday night to Sunday noon - mostly passed downstream to inundate our neighbors with little passing down the diversion canal to the reservoir.





19. Diversion No. 1. Job finished - at least temporarily. The embankment washed out was repaired with gravel and sand from the stream bed - the next heavy run-off it could easily washout again. A more impervious, erosion-resistant embankment is needed for about 180 feet below the structure.



20. Diversion No. 1. Compare with picture 14. Work commenced at 0730 and finished at 1400. Crew around warming fire eating sandwiches and drinking coffee furnished by Mrs. Rice. Crew consisted of Jack Rice and his two hired hands, Glenn Jobe, John Younger, the watermaster, Assistant Manager Nail and the Refuge Manager.



21. Parshall Flume. Looking downstream at 4-foot concrete flume erected this quarter. Located about 180 feet downstream from Diversion No. 1 on Pine Creek. These pictures of the flume were all taken at the same time as the previous 12 pictures.



22. Parshall Flume. Looking upstream. Flood water did not unduly disturb filled area on left, but about half of the rocks and dirt backfill on the right side was removed.





23. Parshall Flume. Looking upstream from north or high side. Transite pipe with old bucket over the top was for a continuous recorder - a 1" pipe connected the flat front floor of the flume and the transite well.



24. Parshall Flume. Out it comes. It was a good structure, but it was a bottleneck. Designed to pass 68 cfs before going over the top. No harm in water going over the top if the low side embankment would permit. To our regret, even about 50 cfs would have washed out the embankment between this flume and Diversion No. 1. If this embankment had been sound or if it had been possible to quickly repair this embankment this flume would still be functioning today.

SIGNATURE PAGE

Credit for this record of the Modoc National Wildlife Refuge

Malvin T. Nail - Parts II and VI  
Paul E. Steel - Parts I, III, IV, V and VII.

Submitted by:

\_\_\_\_\_  
(Signature) Paul E. Steel

\_\_\_\_\_  
Refuge Manager  
(Title)

Date: January 18, 1962

Approved, Regional Office:

Date: \_\_\_\_\_

\_\_\_\_\_  
(Signature)

\_\_\_\_\_  
(Title)



# MODOC NATIONAL WILDLIFE REFUGE

MODOC COUNTY, CALIFORNIA

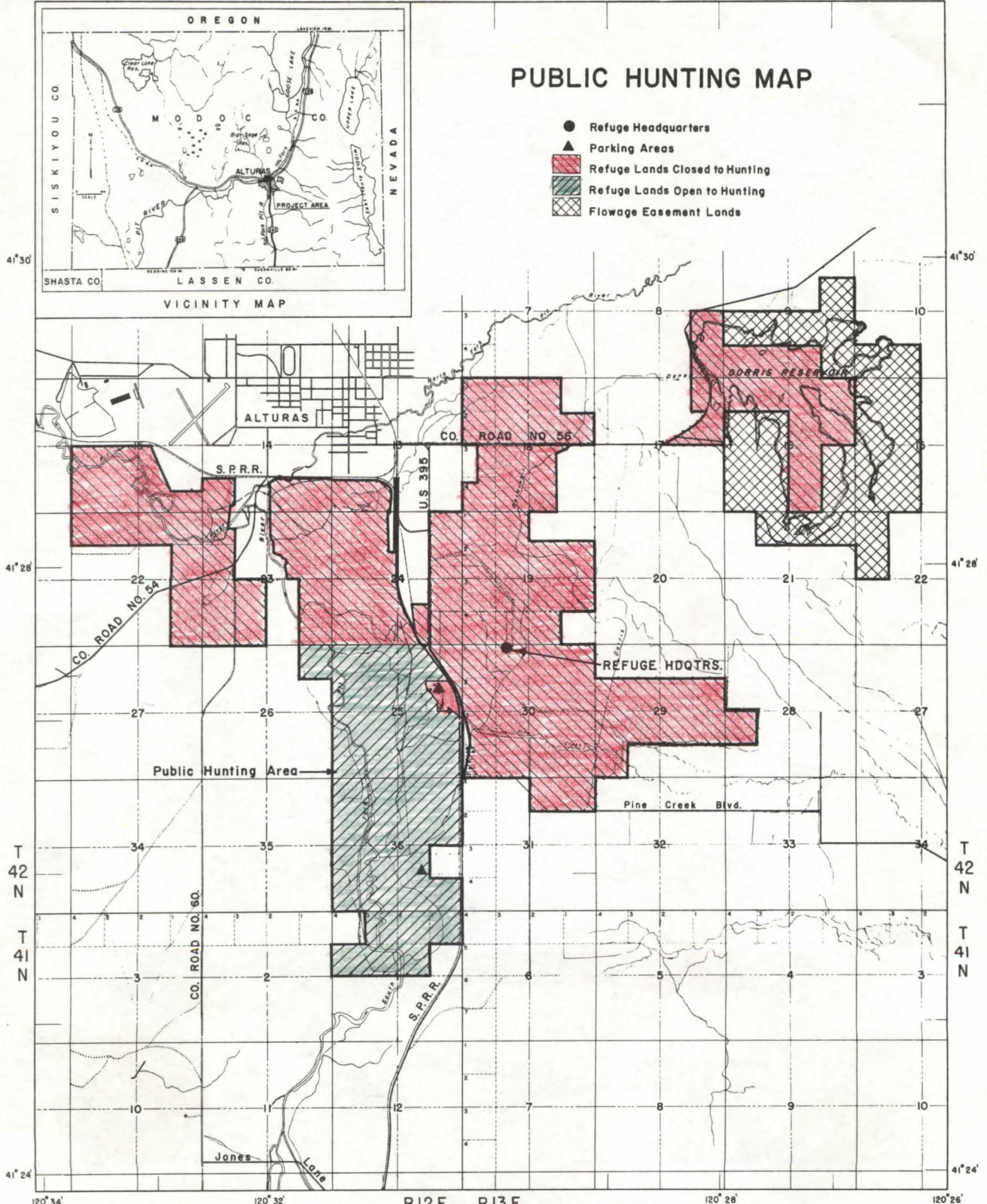
UNITED STATES  
DEPARTMENT OF THE INTERIOR

U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

R12E R13E

## PUBLIC HUNTING MAP

- Refuge Headquarters
- ▲ Parking Areas
- ▨ Refuge Lands Closed to Hunting
- ▧ Refuge Lands Open to Hunting
- ▩ Flowage Easement Lands



COMPILED IN THE BRANCH OF ENGINEERING  
FROM SURVEYS BY AERIAL PHOTOGRAPHY,  
S. L. M. AND F. B. W. S.

PORTLAND, OREGON  
REVISED: 3/61 8/13/62

FEBRUARY, 1959

R12E R13E  
MT. DIABLO MERIDIAN

Scale 0 20 40 60 80 100 120 140 160 CHAINS  
0 1/4 1/2 1 1 1/2 2 MILES

43	43	43	43	43
78	78	78	78	78
113	113	113	113	113
148	148	148	148	148
183	183	183	183	183
218	218	218	218	218
253	253	253	253	253
288	288	288	288	288
323	323	323	323	323
358	358	358	358	358

TOWNSHIP  
DIAGRAM

TRUE NORTH  
MAGNETIC  
DECLINATION

MEAN  
DECLINATION  
1957

IR CALIF 171 T 419

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE

MODOC NATIONAL WILDLIFE REFUGE  
Alturas, California

WATERFOWL HUNTING REGULATIONS - 1962 SEASON

AREA OPEN TO PUBLIC HUNTING of ducks, geese and coots - all other wildlife is protected. This public hunting area, of about 1,440 acres, is clearly defined by red signs.

ACCESS - Car travel is permitted only on roads and areas indicated by posting. Hunters may not enter the public hunting area earlier than 2 hours before the start of shooting time and must be off the area 1 hour after the close of shooting. There are two access roads off U. S. Highway 395.

PERMITS - All hunters must possess a valid California hunting license and all hunters 16 years of age and older must possess a signed 1962 Migratory Bird Hunting Stamp. No other permit is required. All hunters have equal rights on a first-come-first-served basis to hunt in any area within the public hunting area. There is no charge for hunting privileges.

OPEN SEASON - All species October 20, 1962, through January 2, 1963. Shooting hours  $\frac{1}{2}$  hour before sunrise to sunset, EXCEPT from noon to sunset on opening day.

DAILY BAG AND POSSESSION LIMITS

Ducks - 4 per day, 8 in possession. No open season on Canvasbacks and Redheads. The daily bag and possession limit may include 1 wood ducks and 1 hooded merganser. But in addition to the bag limit for other ducks, the daily bag limit may include 5 American and red-breasted mergansers, singly or in the aggregate of both kinds, with 10 in possession.

Geese - 6 per day, 6 in possession, provided: Not more than 3 of the dark species may be included in the daily bag and possession limit. No open season on Ross' Geese.

Coots - 25 per day, 25 in possession.

WEAPONS - Shotguns only (not larger than 10 gauge and incapable of holding more than 3 shells) may be used.

HUNTING BLINDS - Blinds, using only natural vegetation, may be constructed. Construction of a blind does not establish priority to the blind or hunting area. The digging of pits is prohibited.

DOGS - Not to exceed 2 dogs per hunter. Uncontrolled dogs may be impounded.

CAMPING - Permitted at Subheadquarters.

BOATS AND FIRES - Not permitted.

READ AND OBSERVE ALL POSTED SIGNS. THEY ARE FOR YOUR GUIDANCE AND PROTECTION.

Free maps, hunting regulations and refuge information are available at Refuge Headquarters located 2 miles south and 1 mile east of Alturas. Address mail to Refuge Manager, Modoc National Wildlife Refuge, P. O. Box 1439, Alturas, California.

3-1750  
Form NR-1  
(Rev. March 1953)

W A T E R F O W L

REFUGE Modoc

MONTHS OF September TO December, 19 62

(1) Species	(2) Weeks of reporting period									
	9/2-8 1	9/9-15 2	9/16-22 3	9/23-29 4	9/30-10/6 5	10/7-13 6	10/14-20 7	10/21-27 8	10/28-11/3 9	11/4-10 10
<b>Swans:</b>										
Whistling				3	1	1	8	50	65	75
Trumpeter										
<b>Geese:</b>										
Canada	800	800	700	780	1,850	1,800	1,000	1,000	1,300	1,400
Cackling							2,000	1,800	1,900	2,100
Brant										
White-fronted							50	60	50	40
Snow						10	10	100	275	350
Blue										
<b>Other Total Geese</b>	800	800	700	780	1,850	1,810	3,060	2,960	3,525	3,890
<b>Ducks:</b>										
Mallard	700	650	700	1,350	1,500	1,500	1,200	1,000	1,500	1,800
Black										
Gadwall	20	20		25	50	50	25	25	50	50
Baldpate			350	475	300	250	2,000	1,500	1,200	800
Pintail	500	500	520	375	600	200	200	400	600	600
Green-winged teal			50	150			500	800	300	250
Blue-winged teal	40	50	20	175	250	200	100	25		
Cinnamon teal	200	200	120							
Shoveler	30	30	50	75	25	200	150	100	200	300
Wood										
Redhead						25	100	100	20	20
Ring-necked										
Canvasback						10	100	50		
Scaup			30		50	25		25		
Goldeneye										
Bufflehead			10	50	50	25				
Ruddy	10	10		10	10	25	25	20		
<b>Other H. Merganser</b>										5
<b>Am. Merganser</b>						50	50	40	25	20
<b>Total</b>	1,500	1,460	1,850	2,685	2,835	2,560	4,450	4,085	3,895	3,845
<b>Coot:</b>	200	225	200	400	410	400	400	200	100	75
<b>White Pelican</b>	6	6	6	2	0	3	0	0	0	0

3-50a

Cont. NR-1  
(Rev. March 1953)WATERFOWL  
(Continuation Sheet)REFUGE ModocMONTHS OF September TO December, 19 62

(1) Species	(2) Weeks of Reporting 11/11-17 11/18-24 11/25-12/1 12/2-8 12/9-15 12/16-22 12/23-29								(3) Estimated waterfowl days use		(4) Production Broods:Estimate seen: total	
	11	12	13	14	15	16	17	18				
Swans:	132	120	100	95	131	138	145		7,448			
Whistling												
Trumpeter												
Geese:												
Canada	1,200	800	900	1,000	975	600	1,350		127,785			
Cackling	4,500	8,500	8,000	8,000	3,800	4,800	5,200		354,200			
Brant							1		2,457			
White-fronted	100	50										
Snow	850	650	700	750	750	600	8		35,371			
Blue												
Other Total Geese	6,650	10,000	9,600	9,750	5,525	6,000	6,559		519,813			
Ducks:	1,500	1,000	1,500	2,200	2,000	3,100	3,300		185,500			
Mallard												
Black												
Gadwall	25	200	250	300	200	250	60		11,200			
Baldpate	800	400	500	600	300	500	170		71,015			
Pintail	500	1,200	1,400	1,500	1,000	1,000	1,600		88,865			
Green-winged teal	300	200	150	100	50	25	40		20,405			
Blue-winged teal									6,020			
Cinnamon teal									3,640			
Shoveler	200	150	100	75	25	10			12,040			
Wood	1								7			
Redhead									1,855			
Ring-necked												
Canvasback									1,120			
Scaup			10	20					1,120			
Goldeneye	10	40	125	200	150	250	35		5,670			
Bufflehead		30	25	10					1,540			
Ruddy	10	25							1,015			
Other H. Merganser									35			
Am. Merganser	25	40	175	250	75	50	10		5,670			
Total Ducks	3,371	3,305	4,235	5,255	3,800	5,185	5,215		416,717			
Coot:	100	30	20	20	0	0	0		19,460			
White PELICANS	0	0	0	0	0	0	0		161			
Total									963,599			

	(5)	(6)	(7)	SUMMARY
	Total Days Use :	Peak Number :	Total Production :	
Swans	<u>7,448</u>	<u>145</u>		Principal feeding areas <u>Standing barley, barley stubble</u>
Geese	<u>519,813</u>	<u>10,000</u>		<u>and meadows, Town Field Barley and Swamp Field used heavily.</u>
Ducks	<u>416,717</u>	<u>5,255</u>		Principal nesting areas _____
Coots	<u>19,462</u>			
	<u>943,998</u>			
				Reported by <u>Malvin T. Mail</u>
				<u>Assistant Refuge Manager</u>

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
- (2) Weeks of Reporting Period: Estimated average refuge populations.
- (3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.
- (4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.
- (5) Total Days Use: A summary of data recorded under (3).
- (6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.
- (7) Total Production: A summary of data recorded under (4).

3-1751  
Form NR-1A  
(Nov. 1945)

MIGRATORY BIRDS  
(other than waterfowl)

Refuge Modoc Months of September to December 195/ 62

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Eared Grebe			300	10-12	60	12-10				500
Western Grebe			40	10-12	5	11-20				75
Pied-billed Grebe			20	9-14	2	10-15				30
White Pelican			6	9-7	3	10-10				10
Great Blue Heron			30	10-18						75
Sandhill Crane			50	10-18	25	10-30				100
II. <u>Shorebirds, Gulls and</u>										
<u>Terns:</u>										
Killdeer	Resident									50
Common Snipe	Resident									100
Greater Yellow legs			35	10-24	2	11-15				60
Dowitcher			400	10-5	25	12-10				700
American Avocet			50	10-12	10	11-10				75
Ring-billed gull			250	11-15						300

(over)



(1)	(2)		(3)		(4)		(5)			(6)
III. <u>Doves and Pigeons:</u>										
Mourning dove			50	9-5	5	10-10				50
White-winged dove										
IV. <u>Predaceous Birds:</u>										
Golden eagle			2	11-11						3
Duck hawk	1	12-28	1	12-28						2
Horned owl	Resident									6
Magpie	Resident									50
Raven	2	9-17	2	9-17	2	9-17				2
Crow										
Red-tailed Hawk	Resident									30
Bald Eagle	1	12-12	2	12-28						3
Sparrow Hawk			8	11-6						15
Reported by.....										

#### INSTRUCTIONS

- (1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiformes)  
 II. Shorebirds, Gulls and Terns (Charadriiformes)  
 III. Doves and Pigeons (Columbiformes)  
 IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)
- (2) First Seen: The first refuge record for the species for the season concerned.
- (3) Peak Numbers: The greatest number of the species present in a limited interval of time.
- (4) Last Seen: The last refuge record for the species during the season concerned.
- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750  
Form M-1C  
(Sept. 1960)

## WATERFOWL HUNTER KILL SURV

Refuge Modoc Refuge

Year 196 :

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Tot. Kill
10/20-26	210	596	Mallard 95 - Canada Goose 43 - Pintail 15 Cackler 12 - Baldpate 11 - G.W.Teal 8 Wood Duck 4 - Shoveler 3 - Ruddy Duck 3	194	44	238	357	428
10/27-11/2	28	57	Canada Goose 1 - Mallard 1 - Coot 1	3	1	4	63	16
11/3-9	46	94	Mallard 8 - Canada Goose 3 - Cackler 2	13	1	14	120	37
11/10-16	72	168	Cackler 22 - Canada Goose 8 - Mallard 3 Baldpate 1	34	1	35	174	84
11/17-23	81	202	Cackler 18 - Canada Goose 14 Snow Goose 2	34	6	40	180	84
11/24-30	59	131	Mallard 10 - Canada Goose 5 - Cackler 5 Pintail 1 - Baldpate 1	22	2	24	225	91
12/1 -7	62	189	Canada Goose 11 - Cackler 8 - Mallard 6 Baldpate 2 - Snow Goose 1	28	3	31	178	90
12/8-14	43	148	Canada Goose 11 - Cackler 9 - Mallard 1	21	5	26	107	65
12/15-21	42	121	Mallard 8 - Cackler 5 - Canada Goose 3 Pintail 2 - Baldpate 1 - Shoveler 1 Goldeneye - 1	21	7	28	97	65
12/22-28	27	79	Canada Goose 10 - Mallard 8 - Cackler 3 Baldpate 2 - G.W.Teal 2 - Pintail 1	26	2	28	66	68
12/29-1/2	20	69	Mallard 11 - Baldpate 3 - Pintail 2	16	1	17	110	94
TOTALS	690	1,854		412	73	485	1,677	1,122

(over)



### INSTRUCTIONS

- (1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.
- (2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.
- (3) Record the total number of hours the hunters spent hunting on the refuge.
- (4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).
- (5) Record total numbers of waterfowl bagged.
- (6) Record total numbers of waterfowl reported knocked down but not recovered.
- (7) Total of Columns 5 and 6.
- (8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).
- (9) Kill sample projected to 100 percent.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

Refuge Modoc Months of September to December, 19 62

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Valley Quail	Crops 600 acres Upland 4,850 acres	72							75	Observation
Pheasant		136							40	Observation
Sage Hen									0	None seen on Refuge

## INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.\*

- (1) SPECIES: Use correct common name.
- (2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.
- (4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.
- (5) REMOVALS: Indicate total number in each category removed during the report period.
- (6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.
- (7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

\* Only columns applicable to the period covered should be used.

3-1783  
Form NR-3  
(June 1945)

BIG GAME

Refuge Modoc

Calendar Year 1962

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Rati
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
Antelope	Sagebrush-grass (400 acres) Willow stands along Pine Creek (100 acres)	2										13	0	
Mule Deer		6					1	Cause Unknown				20	0	

Remarks:

Reported by Melvin T. Nail - Asst. Refuge Manager

## INSTRUCTIONS

### Form NR-3 - BIG GAME

- (1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.
- (2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.
- (3) YOUNG PRODUCED: Estimated total number of young produced on refuge.
- (4) REMOVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Nodda Year 1962

Botulism

Lead Poisoning or other Disease

Period of outbreak None

Period of heaviest losses \_\_\_\_\_

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) \_\_\_\_\_

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) \_\_\_\_\_

Condition of vegetation and invertebrate life \_\_\_\_\_

Remarks \_\_\_\_\_

Kind of disease None

Species affected \_\_\_\_\_

Number Affected Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered \_\_\_\_\_

Number lost \_\_\_\_\_

Source of infection \_\_\_\_\_

Water conditions \_\_\_\_\_

Food conditions \_\_\_\_\_

Remarks \_\_\_\_\_

PUBLIC USE

Refuge Modoc

Calendar Year 1962

Total Use Visitor-Days	Hunting Use	Fishing Use	Miscellaneous Use
6,125	1,680	875	3,570

Where practical, by means of occasional spot checks, or other methods, show by percent and visitor-days the breakdown of the above figures and other related information:

Hunting (on refuge lands):	Percent	Visitor-Days	Acres	Miscellaneous:	Percent	Visitor-Days
Waterfowl	<u>100</u>	<u>1,680</u>	<u>1,440</u>	Recreation *	<u>45</u>	<u>1,600</u>
Upland Game	<u>      </u>	<u>      </u>	<u>      </u>	Official	<u>1</u>	<u>50</u>
Big Game	<u>      </u>	<u>      </u>	<u>      </u>	Economic Use	<u>39</u>	<u>1,390</u>
Supervised by refuge <u>x</u> by State <u>      </u>		No. of blinds <u>0</u>		Other	<u>15</u>	<u>530</u>

Hunting (off  
refuge lands): Estimated man-days of hunting on lands  
adjacent to the refuge 350 (These figures  
should not be included in hunting-use totals above).

Fishing:

Acres of ponds or lakes 600 and miles of streams  
3 open to fishing.

Comments:

Other includes all office visitors except  
official visitors: business agents, job  
applicants, state-county personnel, and  
social visitors.

\*(including picnicking, swimming, boating,  
camping, viewing wildlife, and photographing)

3-1757  
Form NR-7  
(Rev. June 1960)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge Modoc Year 19 62

Collections and Receipts (Seeds, rootstocks, trees, shrubs)							Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
None							None						

- (1) Report agronomic farm crops on Form NR-8
- (2) C = Collections and R = Receipts
- (3) Use "S" to denote surplus

Total acreage planted:

Marsh and aquatic \_\_\_\_\_  
Hedgerows, cover patches \_\_\_\_\_  
Food strips, food patches \_\_\_\_\_  
Forest plantings \_\_\_\_\_

Remarks: \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_



3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Modoc

County Modoc

State California

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
			Acres	Bu./Tons	Acres	Bu./Tons			
Hammchen Barley	400	16,176			88	4,224	488		488
Campons Barley					112	5,376	112		112
					200	9,600	600		600
								Fallow Ag. Land	0

No. of Permittees: Agricultural Operations 1 Haying Operations 4 Grazing Operations 5

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	3,743	7,562	22,885.00	3,603
				2. Other				
				1. Total Refuge Acreage Under Cultivation				4,020
Hay - Wild	4,129	2,588	27,682.00	2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

3-1570  
NR-88  
(4/54)

# REFUGE GRAIN REPORT

Refuge       none      

Months of January through December, 19562

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
<b>NONE</b>			<b>NONE</b>					<b>NONE</b>			

(8) Indicate shipping or collection points \_\_\_\_\_

(9) Grain is stored at \_\_\_\_\_

(10) Remarks \_\_\_\_\_

\*See instructions on back.

## REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

**Report all grain in bushels.** For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.