

# C O N T E N T S

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ANNUAL  
NARRATIVE REPORT  
Modoc National Wildlife Refuge  
1966

PERMANENT PERSONNEL

Chester R. Markley	. . . . .	Refuge Manager
Kenneth A. Walch	. . . . .	Ass't Refuge Manager
Harry C. Hoshaw	. . . . .	Mechanic (HD)
Evelyn M. Nino	. . . . .	Clerk-Typist

W. A. E. PERSONNEL

Irvin K. Wilson	. . . . .	Maintenanceman I
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UNITED STATES DEPARTMENT OF THE INTERIOR  
U. S. FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
ALTURAS, CALIFORNIA

## I GENERAL

A. Weather Conditions

In 1966 Modoc Refuge experienced unusual weather. Temperatures reached below freezing every month of the year. The wet cycle prevalent for the past several years ended with a seven month drought which began in April. Snowfall for the year was about average, but below last years 51 inches.

Mild temperatures present in the fall affected the pre-season snowpack in the Warner Mountains, the watershed for Modoc Refuge. Again, snow depth in the Warners was 40 percent below average. Precipitation for the year was 80 percent of the average, 12.79 inches, for Alturas.

The following weather data was recorded at the Forest Service operated weather station located at South Fork Ranger Station, Alturas, California.

	<u>Precipitation</u>			<u>Temperature</u>			
	<u>Normal</u> Average	<u>Total</u> 1966	<u>Snowfall</u>	<u>Average</u> Max. Min.		<u>Extremes</u> Max. Min.	
January	1.79	1.44	14.50	42.3	17.0	55	-5
February	1.37	0.61	9.00	43.8	17.3	55	1
March	1.40	0.57	6.70	60.0	24.0	82	9
April	1.11	0.67	-	69.0	25.0	85	15
May	1.19	0.79	-	79.0	35.0	92	28
June	.79	0.47	-	74.0	40.0	95	25
July	.40	0.63	-	88.0	39.0	104	30
August	.23	0.00	-	90.0	44.0	102	29
September	.42	0.59	-	82.0	36.0	97	28
October	1.10	0.15	-	75.0	25.0	87	12
November	1.34	2.78	3.00	52.5	24.7	81	5
December	1.66	1.48	5.56	44.0	26.0	59	15
TOTALS	12.79	10.18	38.76	90.0	17.0	104	-5

B. Habitat Conditions

## 1. Water

Due to light snow fall in the Warner Mountains, spring runoff through Parker Creek, Pine Creek and Stockdill Slough was significantly reduced. Dorris Reservoir was not filled to capacity (11,100 acre feet) and prior to the irrigation season contained only 7,500 acre feet of water. During 1966, Modoc Refuge received 40 percent less flow from these sources than in previous years. The following indicates years use of refuge waters.

Storage water from Dorris ReservoirAcre Feet Used

Irrigation of 1,854 acres of refuge lands including pastures, hayland and grain fields. This irrigation water also maintained pond levels in the East Unit. Dorris Reservoir at the end of the year contained 1,800 acre feet of water and covered 395 surface acres.

5,796

Water diverted directly from Pine Creek

During the irrigation season, water was diverted from Pine Creek to irrigate 440 acres of meadow in Upper Pine Creek and Mary C. Miller Fields. Some 165 acres of grain in South Swamp and Matney Fields were flooded with return flows from this source.

1,513

South Fork Pit River - riparian right

The Sharkey Bridge-Dam was used to impound water from this source on 499 acres of land. Completion of dikes adjacent to the river facilitated water control in the West Unit, Public Hunting Area.

976

Total Refuge Use - 1966

8,285 A/F

2. Food and Cover

Food and cover conditions varied from fair to good this year at Modoc Refuge. An extended drought reduced growth of meadow grasses and retarded development of barley crops. Barley fields were utilized by ducks, geese, quail and pheasants. Meadows provided green browse for Canada geese and American Widgeon besides cover for deer, fawns and Sandhill Cranes. Excellent cover for upland game birds, deer and nesting waterfowl was found in willows, brush and weed growths along canals and ditches.

All ponds, canals and ditches contained excellent growths of waterfowl aquatic food plants. Dominant species consisted of star duckweed, (Lemna trisulca), duckweed, (Lemna Minor), Sago pondweed, (Potamogeton pectinatus), and arrowhead, (Sagittaria cuneata). Tule growth consisting of common, three-squared bulrush, (Scirpus americanus) and softstem bulrush, (Scirpus validus), has invaded all ponds and irrigation canals. Some removal of thick growth is necessary in irrigation canals in order to facilitate the movement of water. Tule growth in Teal pond should be thinned in 1967 by mechanical means to provide more habitat for waterfowl and shorebirds.

## II WILDLIFE

A. Migratory Birds

Whistling Swan - Modoc Refuge recorded a peak population of 700 swans during the 1966 spring migration in February. This population declined to 47 birds the last week of March. By April 1st all swans migrated out of our area. This migrant population was gratifying in comparison to 1965 spring migration of 55 birds. The fall migration of swans was less spectacular with only 72 birds being recorded during the peak flight in November. One, wounded swan, with a broken right wing was observed on Gull pond in November. This bird was not recovered and evidently was our only casualty for the season.

Trumpeter Swan - Manager Markley reported observing two trumpeters during March. These birds were thought to be from the wide-ranging flock located at Malheur Refuge some 140 miles northeast of Modoc.

Canada Geese - Spring and fall migrations of these birds showed peak populations of 2,000 and 3,200 respectively. Migrants and resident Canadas rested on Dorris Reservoir and fed on refuge grain fields and meadows. Total refuge use by Canada geese has increased each year since establishment with 364,616 use days being recorded in 1964, 474,470 in 1965 and 614,824 in 1966. One reason for this large increase in use days in 1966 was the drought. Most reservoirs, ponds and sloughs in Modoc County dried up prior to the fall migration season. By maintaining water levels in ponds and sloughs yet leaving 1,800 acre feet (395 surface acres) of water in Dorris Reservoir by September the refuge provided much sought after resting areas for migrating waterfowl.

Cackling Geese - The refuge cackler population fluctuated between 200 and 15,750 birds during the spring migration. In past years, spring migrants generally ranged between 5,000 and 6,000 birds. During the fall and early winter months cacklers were observed in numbers ranging from 53 to 7,500. A total of 623,825 use days was recorded for cackling geese in 1966. This compares with 695,915 use days recorded for these birds in 1965.

Snow Geese - Flights of snow geese varied from 50 to 1,400 birds during spring migration and from 6 to 332 birds in the fall. This peak of 1,400 in March remains small in comparison to the peak of 7,500 recorded in March 1964.

White-fronted Geese - The population of spring and fall migrants generally ranges between 50 and 150 birds. This year no spring migrants were observed at or in the vicinity of Modoc Refuge. However, fall migrants reached a population of 148 birds on November 6, which can be considered average. A group of 18 white-fronts was observed at Dorris Reservoir on December 22, a most unusual occurrence for that time of the year.

Ross Geese - One bird was seen with a flight of Cacklers on December 22nd.

Ducks - Total duck use shows an increase over 1964 and 1965. Fall migrants moved into Modoc Refuge gradually and remained longer than usual. The open, mild weather prevalent during October, November and December was conducive to a gradual migration rather than the usual large influx of birds for shorter periods. Consequently, puddle ducks reached a total of 1,413,972 use days compared to 1,199,093 in 1964 and 860,134 in 1965. Mallards continued to dominate spring and fall flights followed by pintails, widgeon, cinnamon teal, green-winged teal and shovelers in numbers. Diving ducks show a small increase from the 40,901 use days of 1965 to 45,353 in 1966. Puddle ducks utilized Teal, Goose, Gull, Flournoy and Horse Ponds, Dorris Reservoir, grain fields and native meadows. Diving ducks, consisting mainly of scaups, goldeneyes and buffleheads, used all ponds, Dorris Reservoir, Pit Slough Marsh and South Fork Pit River.

Coots - During the spring migration, coot numbers varied from 2 to 600. The fall migration revealed a peak population of 850 of these birds in October. Total coot use days amounted to 141,491 in 1966.

Waterfowl Production - During the spring and summer of 1966, waterfowl production surveys were conducted on the four management units of Modoc Refuge. These breeding surveys provide valuable information, necessary to evaluate management operations of each unit. Information pertaining to the results of these surveys is discussed separately below:

Canada Geese - Canada geese began nesting during the last few days of March. The first nest observation occurred on March 29 in the West Management Unit. A direct method was utilized for locating goose nests on the entire refuge, including flowage easement lands at Dorris Reservoir, rather than a sampling method. All observations were made by either jeep, boat, horseback or walking. In 1967 following the completion of the Wildlife Inventory Plan, production figures will be obtained by a more concise, reliable method.

Location of nests, number of eggs per nest, density of nests in each specific area as well as cover was recorded in the survey. For various reasons, egg counts per nest were not obtained from each nesting site. For these locations, five eggs per nest was determined as being average. Nests, which had been destroyed by predators, were included in the count, but were differentiated from in the final probable production figures by being excluded.

Approximately 33 percent of the nests were located on hay, soil or muskrat mounds in marsh and pond areas. This indicated an excellent response to habitat development efforts in the construction of artificial mounds.

Twenty-five percent of the total nests were found along the north to northeast shore and on islands at Dorris Reservoir. The remaining nests were distributed throughout sagebrush ridges near water, along dikes, in fields with small pockets of emergents, and adjacent to the South Fork of the Pit River. The following chart is a comparison between number of actual goose nests located in each management unit for the years 1965-1966.

UNIT	TOTAL NO. OF NESTS - 1965	TOTAL NO. OF NESTS - 1966
Godfrey Tract	3	3
West Side	32	34
East Side	23	52
Dorris Reservoir	15	26
<b>TOTALS</b>	<b>73</b>	<b>115</b>

Direct observations rather than sampling methods were also used as a criteria for the annual goose brood survey. The largest concentrations of Canada geese occurred in the areas of the South Fork of the Pit River, Goose Pond and Teal Pond.

Only 44 young goslings were counted at Dorris Reservoir. A recheck of nesting sites at Dorris Reservoir revealed destruction of approximately 70 percent of the nests. A pertinent problem exists concerning the breeding populations of Canadas at Dorris Reservoir. Since the reservoir is open to fishing during the breeding season, and fisherman have easy access to nesting areas by car or boat, human interference with nesting is certainly something to consider. In analysing the problem, refuge personnel feel there might be a combination of human destruction and animal depredation at Dorris Reservoir. Definite plans have been formulated to conduct a study of the area prior, during, and following the nesting season in 1967. We will then be in a better position to appraise conditions at Dorris.

The following chart indicates that Canada goose production for 1966 was 30 percent higher than in the previous peak year of 1964.

UNIT	NO. OF BREEDING ADULTS			NO. OF JUVENILES		
	1964	1965	1966	1964	1965	1966
Godfrey Tract	8	*	9	24	15	18
West Side	80	*	103	240	128	246
East Side	12	*	76	33	116	253
Dorris Reservoir	26	*	18	29	61	44
TOTALS	126	*	206	<del>391</del> 391	320	561
* UNKNOWN						

Ducks - Nesting, as usual, occurred over a considerable period of time, from the middle of April to the end of July. Production figures were obtained by making brood counts near the end of June and during July. Transects were walked and driven along all canals, ditches and ponds. Dorris Reservoir was surveyed by boat and by walking the shore. Since there is little emergent vegetation at Dorris, it is felt the brood count on this unit was complete.

#### SUMMARY OF DUCK BROODS BY MANAGEMENT UNITS

Godfrey Tract	16
West Side	70
East Side	110
Dorris Reservoir	34
TOTAL BROODS	230

Broods were found to have a weighed or mean average of 6.2 young per brood which gives a total production figure of 1,426. The percentage of brood composition by species consisted of: 50% cinnamon teal, 26% mallard, 17% pintail, and 5% gadwall. Green-winged teal, ruddy ducks and shovelers comprised the remaining 2%.

#### B. Upland Game Birds

Both California quail and ring-necked pheasants continue to respond to habitat improvements on upland range areas. Habitat for these birds includes 600 acres of barley fields and willow bottoms along Pine Creek, cover crops adjacent to roads, ditches

canals and trails plus 1,370 acres of upland range. The reseeded of upland range to intermediate wheatgrass and yellow blossom sweet clover has provided additional food and cover for quail and pheasants. The population of pheasants ranges from 50 to 70 birds. Quail have increased from 150 during last winter to 250 at the close of the year. The California Department of Fish and Game opens quail and pheasant hunting seasons in the fall in Modoc County which includes areas adjacent to the refuge.

### C. Big Game Animals

Pronghorn antelope continue to range throughout sagebrush-plateaus near Dorris Reservoir and on sagebrush flats along the South Fork of the Pit River. The Dorris Reservoir herd consists of 70 animals and the Pit River herd, 42. Hunting of pronghorns on areas surrounding the refuge has been allowed on a special permit drawing. This has not affected the composition of the herd greatly, and the population remains essentially static.

Mule deer move on and off the refuge throughout the year and reached a peak of 35 animals in June. This year 12 fawns were produced along Pine Creek, Upper Pine Creek field, Front field and South Pine Creek field. Deer habitat consists of brush and willow bottoms along Pine Creek and tall, native meadow grasses of fields north and south of Pine Creek.

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

Fur Animals - Muskrats are the most numerous fur bearers on the refuge. Their mounds located in Teal, Gull, Goose and Flournoy ponds are readily utilized by nesting Canada geese. Besides the benefits derived from muskrat mounds, they cause considerable damage to irrigation facilities. In order to keep the populations in control, a professional trapper removed 713 of these animals in 1966.

Skunks are removed to reduce waterfowl nest depredation. In addition mink, raccoons and badgers occur in moderate numbers throughout the area.

Predators - Coyotes frequented areas near Teal, Goose and Gull ponds. One pair of coyotes was often seen along dikes which encircled Matney field. According to Mr. Killingbeck, Wildlife Services trapper, two dens of pups were located near the South Fork of the Pit River. Our small population of coyotes does not presently constitute a threat to Canada geese and ducks. Consequently, no control measures have been taken to curb the slowly expanding population.

Stray dogs from Alturas and surrounding ranches continue to chase deer and harass goslings and ducklings. These animals are

not destroyed due to local public relation conditions.

Rodents - No control measures were taken to reduce the numbers of Belding ground squirrels this year. The population of ground squirrels has been reduced significantly in previous years through annual poison programs. No burrowing damage occurred along Dorris Canal or Dorris Reservoir earth dam this year, and we do not anticipate having to instigate further control measures until 1968.

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

Red-tailed hawks, marsh hawks, sparrow hawks, magpies, crows, short-eared owls, and great-horned owls are common refuge residents. Golden and bald eagles occurred in lesser numbers, but were seen periodically. Two ravens were observed for the first time near refuge headquarters in December 1966. This was an addition to our bird list.

F. Other Birds

A tentative bird list containing 187 species as observed by various individuals since establishment of the refuge in 1959 was submitted to the Regional Office for approval in October.

G. Fish

Fishing continued to increase in popularity at Dorris Reservoir, which is located four miles east of Alturas. The California Department of Fish and Game planted 4,000 eight inch rainbow trout in Dorris Reservoir last spring. In addition to rainbow trout, bluegill, crappie, black bass, catfish and bullheads composed the majority of the species landed.

H. Reptiles

Several types of small non-poisonous snakes were seen and one rattler was killed by our irrigator near the Parker Creek diversion.

I. Disease

No wildlife losses due to disease were observed.

### III REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

##### 1. Roads and Trails

The east-west road extending from U. S. 395 along Pine Creek to the east boundary of the refuge was improved to secondary road status following application of dirt fill and gravel. Two miles of secondary road development on top of flood control dikes were completed in the West Unit Public Hunting Area.

Approximately .5 miles of jeep trails were relocated following the completion of .5 miles of division fence between Teal and Foxtail fields. An additional 2.5 miles of existing jeep trails were graded to provide access to irrigation control structures in the West and East Units.

##### 2. Dikes, Canals and Ditches

In the spring and early summer,  $3\frac{1}{2}$  miles of flood control dikes were constructed under contract connecting flood control dikes erected in 1965 along the South Fork of the Pit River. With the completion of flood control dikes and irrigation control structures in the West Unit, grain fields were adequately impounded for waterfowl use, and a new 50 acre Pit Slough Marsh was established adjacent to South Swamp grain field.

Refuge personnel working on operations and maintenance cleaned approximately one mile of minor field ditches and constructed .25 miles of new field ditches for dispersal of irrigation waters on meadow lands. Twelve metal culverts and irrigation gates were installed to replace inoperable wood control structures in the irrigation system.

##### 3. Impoundments

No additional ponds were created in 1966, but plans have been formulated for construction of small pothole impoundments for the Bailey, Upper Pine and South Pine Creek fields next year.

##### 4. Fencing

A major fencing project commenced on contract in May with the removal of approximately 6.5 miles of delapidated fence and construction of 10.7 miles of new interior and boundary fence. This project included the construction of a 5-strand cattle fence on the east boundary of the refuge parallel to U. S. 395. The Godfrey Tract southwest of Alturas was completely fenced for the first time since establishment of the refuge. This unit will be surveyed and developed for waterfowl and upland game.

UNITED STATES GOVERNMENT

# Memorandum



J K  
R - MODOC  
Narr.

TO : Refuge Manager, Modoc Refuge  
Alturas, California

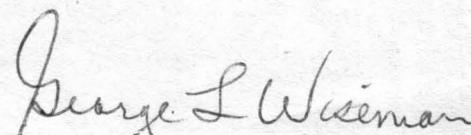
FROM : Acting Regional Supervisor, Division  
of Wildlife Refuges, Portland, Oregon

SUBJECT: 1966 Narrative Report

DATE: March 10, 1967

Your 1966 Narrative Report has been reviewed in this office and found to be factual, concise, and well prepared. Mr. Walch has done an excellent job in writing and compiling data for this report.

Under Section VI C, Refuge Participation, we note that few public contacts have been documented in your report. Perhaps more public relations work was accomplished than that indicated; if not, we would certainly urge the Modoc staff to get out and "beat the bushes" in order to promote our program at Alturas.

  
George L. Wiseman



In addition to contract fencing, 2½ miles of inadequate fences were replaced under force account between Foxtail field, House field and private lands. These fences are important in retaining cattle within separate grazing units.

#### 5. Quarters Improvements

The exterior of residence Number Two located at subhead-quarters was scraped, sanded and painted white. The interior of the screened porch was also refinished and painted.

#### 6. Recreational Development

Public use continues to increase at Dorris Reservoir, partially due to the close proximity of this body of water to Alturas, California. In order to provide for the needs of the visiting public, a cement block chemical toilet building was constructed at the north parking lot at the reservoir. Ten picnic tables were purchased locally and placed at scenic locations near the dam. Fishermen, swimmers and boating enthusiasts readily utilized the new facilities.

#### 7. Soil and Moisture Conservation

As in 1965, the primary objective in our Soil and Moisture Program was the conversion of low use upland brush lands to productive livestock and wildlife units. A range drill was used to seed intermediate wheatgrass and yellow blossom sweet clover on two hundred and thirty-two acres of upland range. In addition a roto beater was used on thirty-five acres of upland in the Godfrey Tract in preparation for seeding with intermediate wheatgrass and yellow blossom sweet clover next year. Rehabilitation of upland range increases economic use of lands, provides soil stabilization, and attracts deer, quail, doves and pheasants to increased available habitat.

Water control and manipulation was facilitated with the replacement of 16 water control structures, which are important in the development and management of meadows, grain crops. These structures aid in maintaining water levels of impoundments and influence run off during crucial floods.

#### B. Plantings

##### 1. Aquatic and Marsh Plants

None

##### 2. Trees and Shrubs

None

### 3. Upland Herbaceous Plants

As discussed under Soil and Moisture conservation, 232 acres of upland consisting of sagebrush, wild rye and weeds such as Russian thistle and pepper grass were roto beat and then planted to a mixture of grasses and legumes. Due to the unusually dry spring and summer, survival was estimated to be approximately 10 percent. Some germination of this planting may occur in the spring of 1967. However, bare areas will undoubtedly require reseeding with one of the wheatgrasses recommended by the local SCS representative.

### 4. Cultivated Crops

In 1966 the refuge continued to manage grain crops under the share-crop system. Mr. Robert Schluter planted 525 acres to Hannchen barley in the Grandmother, Matney, S. Swamp and N. Swamp fields, and Mr. Oran Fitch seeded Compana barley in the 120 acre Town field. Under the sharecrop system, these permittees harvested two thirds of the grain and left one third for use by waterfowl. Grain production was reduced by 50 percent due to the reduction of irrigation water during the prolonged drought.

Waterfowl utilized flooded grain fields in early fall before freezing weather arrived. Canada geese and Cackling geese made excellent use of the Town grain field which is located immediately next to the city of Alturas. This afforded local people the opportunity to photograph and observe geese practically within their own "backyards".

## C. Collections and Receipts

### 1. Seed or Other Propagules

None

### 2. Specimens

On January 1, 1966, the refuge received a dead Bald eagle from California State Wardens, William Auman and Delmor Baxter. The violation occurred near Bieber, California, the violator was successfully prosecuted in state court. Permission was granted to have the immature eagle mounted. It is now the focus of our office decor.

## D. Control of Vegetation

Chemical - Refuge share cropping permittee Robert Schluter contracted to have his 21 1/2 acre Hannchen Barley planting aerial sprayed with 1/2 lb AE/A 2,4,D Amine to control mustard and thistles. A 75 percent control was effected.

Mechanical - All refuge roadsides and trails were mowed to control rank growth.

#### E. Planned Burning

##### 1. General

A  $\frac{1}{2}$  mile of irrigation ditch paralleling Pine Creek Road was the only area receiving a burn treatment.

This was carried out to remove dense growths of grasses and bulrush which periodically interfered with transfer of irrigation water to South Pine and Bayley fields.

##### 2. Post-burning

The fire was confined to the intended area and rank plant accumulation was removed by the operation. Irrigation ditch cleaning is generally accomplished with the refuge dragline or gradall. However, in some cases we have found burning to provide a faster and more economical means of removing thick growth from small irrigation ditches.

#### F. Fires

Although conditions were extremely dry during late spring, summer and early fall, no fires occurred on the area in 1966.

### IV RESOURCE MANAGEMENT

#### A. Grazing

Grazing operations were conducted as in previous years on 3,205 acres by the issuance of Special Use Permits to nine local ranchers. The general grazing season extended from May 1 to November 30, with the exception of hayed fields. These fields were grazed in October and November to reduce aftermath growth to succulent, tender grasses for goose browse. Some 2,896 cattle grazed on the refuge and accounted for 6,215.3 AUM's, an increase of 1,600 AUM's over 1965.

Changes in grazing permits will occur in 1967 following the retirement of Mr. Bayley Dorris, a former refuge land owner, from the cattle business. Mr. Dorris has had grazing and haying privileges on the entire East Unit since establishment of the refuge.

#### B. Haying

Special Use Permits were issued to four ranchers who harvested a total of 2,817 tons of hay on 2,100 acres of irrigated

meadows and improved pastures. This production was about one third of the usual crop taken in years of good weather and plentiful water. Most waterfowl nesting was completed by the time haying began on July 5 and very few active nests were encountered. Irrigation commences immediately following haying and the resultant new growth is much utilized by geese, widgeon and other waterfowl.

### C. Fur Harvest

Mr. Frank Terry of Half Moon Bay, California trapped on the refuge during November and December. Weather conditions were excellent during the trapping season with very little freezing to interfere with Mr. Terry's work. Muskrats cause considerable damage to our irrigation system, and we feel Mr. Terry's trapping efforts were successful in reducing this damage.

Removals consisted of:

Muskrats	713
Mink	11
Raccoon	3
Skunk	5
Feral Cats	7

### D. Timber Removal

None

### E. Commercial Fishing

None

## V FIELD INVESTIGATIONS OR APPLIED RESEARCH

### A. Progress Report

#### 1. Waterfowl Banding

In June of 1966 a cooperative goose banding effort was conducted on the West Unit with the aid of Tulelake Refuge and California Fish & Game personnel participating. An unprecedented number of 294 Canada geese was banded, sex was determined on one-third of the birds.

Preseason duck banding was carried out during September. Owing to an abundance of grain on and in the vicinity of the area, trapping success was low. The preseason banding efforts resulted in the following waterfowl being banded.

<u>SPECIES</u>	<u>NUMBER</u>
Mallard	60
Pintail	25
Green-winged teal	13
Cinnamon teal	10
American widgeon	1

## VI PUBLIC RELATIONS

### A. Recreational Uses

Recreational activities, such as fishing, picnicking, boating and water skiing are available at Dorris Reservoir, a body of water comprising 1,200 surface acres. The Bureau controls 50 percent of this area. Public use of this popular area extended from March 1st to October 1st. In addition the Alturas Chamber of Commerce sponsored a water ski and boat show at the reservoir over the Fourth of July.

One chemical toilet, ten picnic tables and six trash containers were placed at Dorris last spring. Public reaction has been favorable towards the recent and proposed development projects scheduled for Dorris Reservoir.

### B. Refuge Visitors

The following is a list of official visitors to the refuge compiled from the visitors register:

January	4 - 5	Richard Lavender, Wildlife Biologist, Corps of Engineers, Sacramento, Calif. N. Fork Pit River, Flood Control.
	7	Harold T. "Biz" Johnson, Congressman, Washington, D.C. Courtesy call.
	21	John D. Wendler, U.S.G.M.A., Lakeview, Oregon. Violation reports.
February	2	John D. Wendler, U.S.G.M.A., Lakeview, Oregon. Violation reports.
	18	Messrs. Richard D. Munding, Donald R. Kistner, Realty Officers, R.O. Quarters discussion.
	23	Charles E. Rouse, Wildlife Management Biologist, R.O. Haying and Grazing Appraisal.

March	2	John D. Wendler, U.S.G.M.A., Lakeview, Oregon. Violation reports.
	9	John Wendler, U.S.G.M.A., Lakeview, Oregon. Disposition of Golden Eagle.
	14	Harold Hardesty, R. O. Transport, Tulelake, Cal. Delivery of flat bed stake truck.
April	23	Harold Corbin, Engineer, R.O.
	8	Survey, staking - Contract fencing & dikes.
	27	Palmer Sekorra, Asst. Manager, Tulelake NWR. Courtesy call.
	27	Ray Glahn, Pilot-Biologist, R.O. Aerial Census, Photos.
May	19	Delmar Davis, Engineer, R.O. Fencing Contract.
	23	Messrs. Robert Abney, Biologist, Henry Christiansen, Foreman, Tulelake, NWR. Pick up Stationwagon left by Delmar Davis.
	25 - 26	Robert Russell, Asst. Regional Supervisor, R.O. Inspection.
	26	Don Smithpeter, Engineer, R.O. Fencing Contract.
June	9	Edward O'Neill, Biologist, John Annear, Asst.Mgr., Tulelake, NWR. Courtesy call.
	19	Messrs. John J. Jones, SAFETY Officer, Washington, D.C. Frank Jacox, Refuge Mgt. Asst. R.O. Inspection.
	23	Messrs. Edward O'Neill, John Annear, Palmer Sekorra, Gaylord Inman and Bruce Darsel, Tulelake, NWR. Banding Canada geese.
July	6	Messrs. Harold Fine, Riley Harvey, Jr. Auditors, Washington, D.C. Land appraisals, Modoc Refuge.
	12	Messrs. William Lindsey, Realty Officer, and Thorvald Risdal, Engineer, R.O. Courtesy call.
August	19	Messrs. Benjamin Schaefer, Realty Appraiser, Washington, D.C. Richard R. Mundinger, Realty, R.O. Inspection.

August	22	Messrs. Carl Overmier, County Health Inspector, William Noel, City Engineer, Joe Appechea, City Councilman, Harry Pinneo, City Councilman, Alturas, Calif. Land exchange, dump ground area.
September	7	Morris LeFever, Refuge Manager, Sheldon NWR. Repair of Sheldon Pickup.
	12	Messrs. F.V. Olson, R. O. Engineer, Albuquerque, N.M. John V. Mack, Engineer, R.O. Inspection
	13 - 14	Robert H. Shields, Asst. Regional Supervisor, R.O. Inspection.
	13	Harold Hardesty, R.O. Transport. Tulelake, Cal. Deliver TD-9. Pickup TD-4.
	14	Don Smithpeter, Engineer, R.O. Inspection - fencing contract.
	19	John D. Wendler, U.S.M.A., Lakeview, Oregon. Duck banding traps.
	20	John D. Wendler, U.S.G.M.A., Lakeview, Oregon. Inspect duck banding traps.
October	19	Messrs. Leland Porter, Roger Collis, Alturas Volunteer Fire Dept., Fire Agreement.
	20	Don Smithpeter, Engineer. R.O. Inspect Contract fencing.
November	9	Messrs. Mervin A. Cross, Realty, Jon Smith, Realty, R.O. Courtesy call.
	9	John D. Wendler, U.S.G.M.A., Lakeview, Oregon. Enforcement.
	17	Messrs. Harold Hanson, Biologist, Ill. Natural History Survey, Urbana, Illinois. Edward O'Neill, Biologist, Tulelake, NWR. Survey of Giant Canadian geese.
	29	Harold Hardesty, R.O. Transport, Tulelake, NWR. Pick up barbed wire for McNary Refuge.
	30	William D. Carter, Refuge Mgr. Sheldon-Hart Mt. NWR. Courtesy call.

- December
- 20 William D. Carter, Refuge Mgr. Sheldon-Hart Mt. NWR. Orientation Modoc Refuge.
  - 21 Morris LeFever, Asst. Mgr. Sheldon Refuge. Courtesy call.
  - 29 Richard A. Wonagott, Supervisor, Wildlife Services, Susanville, Calif. Courtesy call.

### C. Refuge Participation

During the past year, Refuge Manager C. R. Markley was an active member of the Alturas Rotary Club and the Alturas Episcopal Church. Mr. Markley also participated in hearings on public ownership of lands conducted by the Modoc National Resources Council.

Assistant Manager Walch was an active member of the Alturas Kiwanis Club and served on the board of directors for that organization. Mr. Walch guided an elementary class from Davis Creek and a biology class from Modoc Union High School on a tour of the refuge and oriented them in wildlife management objectives.

### D. Hunting

The 1966 waterfowl hunting season extended from October 8, 1966 through January 5, 1967. The refuge's 1,440 acre public hunting area was open to the public without charge. A total of 2,292 hunters bagged 2,551 birds during the season. Hunter use of the area is similar to last year when 2,271 hunters were checked.

In general, hunting pressure remained light after opening week. Weather remained mild through much of the season. Most hunters interviewed were pleased with food, water and cover conditions in the Public Hunting Area. Ninety percent of the hunters checked resided in Modoc County and the remaining ten percent were as far away as Los Angeles, San Francisco and San Diego areas.

Hunting on private lands adjoining Dorris Reservoir conflicted considerably with the use of the reservoir as a waterfowl loafing area. Most of this hunting was accomplished from blinds located on the East side of the reservoir.

### E. Violations

The five violators apprehended on the refuge this year are summarized below.

1. Mr. O'Neil, an American Indian from Alturas, was found shooting ducks in the closed portion of the refuge. He was found guilty and prosecuted in State Court by California Fish & Game Warden, H. Carling. The defendant was fined \$25.00 which the court suspended.

2. Mr. Ronald Shamburg of Redding, California was cited for shooting 16 minutes late. He was prosecuted in State Court and paid a fine of \$25.00.

3. Mr. Steven Peden of Redding was cited by Assistant Manager Walch and State Warden Carling for illegal possession of a protected bird, an eared grebe. Mr. Peden was fined \$25.00 of which \$10.00 was suspended.

4. Mr. Bud Foshee, Sacramento, California was apprehended on opening day by Warden Carling for illegal possession of a protected bird, an eared grebe. Judge Styles of the State Court found the defendant guilty and levied a fine of \$25.00.

5. Mr. Louis Bonomini of Eureka, California was cited by the assistant manager for shooting 45 minutes late. The case was submitted to Mr. Carling and State Court found Mr. Bonomini guilty and fined him \$25.00.

The California Fish and Game personnel helped patrol the refuge and prosecuted several cases. John Wendler, U. S. Game Agent from Lakeview, Oregon, came down several times and assisted refuge personnel with law enforcement operations.

#### F. SAFETY

Twelve personnel and SAFETY meetings were held during the year. All SAFETY literature was retained throughout the year for review and discussion during regularly scheduled monthly meetings. Unsafe conditions were corrected when noticed by employees and all personnel are quite SAFETY conscious. No lost time accidents have occurred at the refuge and present SAFETY records indicate 2,249 accident free days.

### VII OTHER ITEMS

#### A. Items of Interest

Two personnel changes took place at the refuge in 1966. On March 7th Assistant Refuge Manager Kenneth Walch, Merced Refuge, transferred to the same position at Modoc Refuge. Mr. Chester R. Markley, Refuge Manager, retired on December 30 following 38 years of service in both our bureau and the National Park Service. A retirement dinner for Mr. & Mrs. Markley was held in December with all personnel present.

C. Photographs

The photographs marked M were taken by the refuge manager, and those marked with a G by Ray Glahn, Pilot-biologist, Portland, Oregon.

D. Narrative Report Preparation

Assistant Manager Walch authored the entire report. Messrs. Hoshaw and Wilson provided information for several sections, while Mrs. Nino typed the entire report and prepared several sections.

SIGNATURE PAGE

Submitted by:

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

Kenneth A. Walch

\_\_\_\_\_  
Assistant Refuge Manager

(Title)

Date: February 10, 1967

Approved, Regional Office:

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

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

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



Headquarters Area: two equipment shops; new office building equipped with 4 separate offices, basement, 3 vehicle stalls; and refuge manager's quarters. C - April



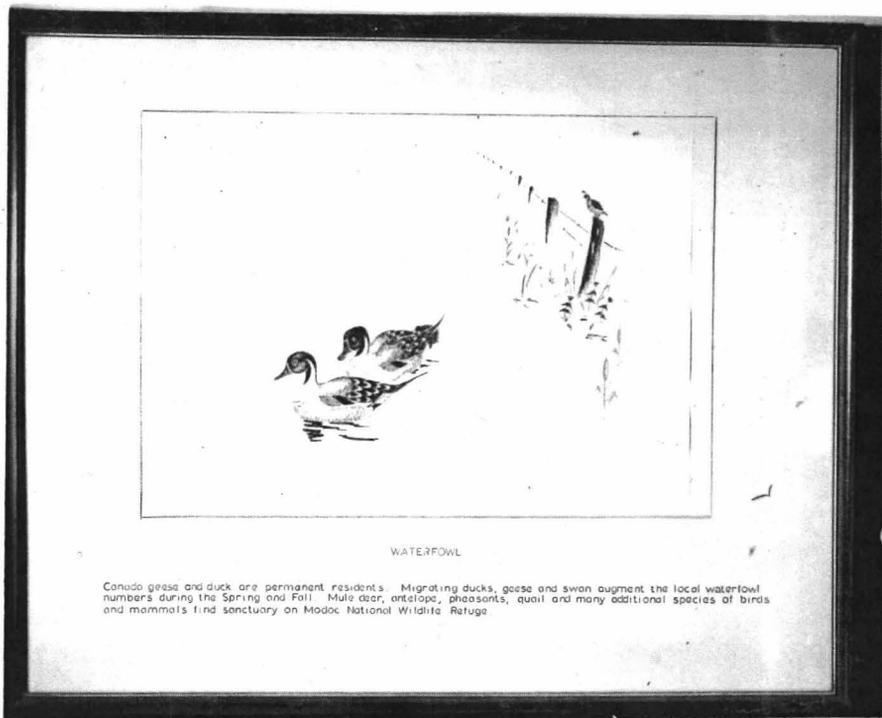
Goose pond located near highway U.S. 395. Note artificial goose mounds constructed of hay and soil located in the center. C - April



Public Hunting Area viewed from the northwest. Features include the S. Fork of the Pit River and Sharkey Bridge; Sharkey field with pothole type drainages; and barley fields. G - April



This warm springs pond located near refuge office remains open year around and provides waterfowl with a resting area when other ponds freeze. M - February



WATERFOWL

Canada geese and duck are permanent residents. Migrating ducks, geese and swan augment the local waterfowl numbers during the Spring and Fall. Mule deer, antelope, pheasants, quail and many additional species of birds and mammals find sanctuary on Modoc National Wildlife Refuge.

Charcoal sketches, such as these pintails, were drawn by David Brown a former assistant manager at Modoc. These framed sketches add much to office decor. M - August



Development of recreational facilities commenced this year with the construction of a chemical toilet on the north shore of Horris Reservoir. M - June



Bill Russell, seasonal employee, stares down past a catch of 312 Canada geese. M - June



The Forest Service range drill was used to seed yellow blossom sweet clover and intermediate wheatgrasses to effect renovation of upland range on 232 acres. M - May



Tule Lake Refuge and California Fish and Game personnel assisted refuge staff in banding operations. 11 - June



The crew banded 294 geese in a smooth 1 1/2 hour operation. 11 - June

W A T E R F O W L

REFUGE Modoc

MONTHS OF January 2, TO March 12, 1966

(1) Species	(2) Weeks of reporting period									
	1/2-8	1/9-15	1/16-22	1/23-29	1/30-2/5	2/6-12	2/13-19	2/20-26	2/27-3/5	3/6-12
Swans:						9	19	100	700	268
Whistling										
Trumpeter										
Geese:										
Canada	662	600	800	1000	1750	2000	2000	2000	2000	1670
Cackling		1200	200	200			12000	800	400	6457
Brant										
White-fronted										
Snow							50		1200	1400
Blue										
Other Total Geese	662	1800	1000	1200	1750	2000	14050	2800	3600	9527
Ducks:										
Mallard	1500	2700	1500	800	400	600	600	500	400	1060
Black										
Gadwall									50	45
Baldpate	8	20	40	40	20	20	20	200	200	475
Pintail	14	200	100	40			2000	1800	1400	1950
Green-winged teal		30			50	50	50	50	50	65
Blue-winged teal	8									
Cinnamon teal										120
Shoveler		20								80
Wood										
Redhead										8
Ring-necked							400	100	40	25
Canvasback										128
Scaup										
Goldeneye		10					400	200	100	10
Bufflehead										20
Ruddy	3	10	10	10	10	20	20	20	30	50
Other Common Merganser										2
TOTAL DUCKS	1533	2990	1650	890	480	690	3490	2870	2270	4036
Coot:	3	4	2	2	0	0	20	40	40	55

WATERFOWL  
 (Continuation Sheet)

REFUGE Modoc

MONTHS OF March 13 TO April 30, 1966

(1) Species	(2) Weeks of reporting period							TOTALS	(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	3/13-19	3/20-26	3/27-4/2	4/3-9	4/10-16	4/17-23	4/24-30				
<b>Swans:</b>											
Whistling	127	47					1570	12,250			
Trumpeter	2						2	14			
<b>Geese:</b>											
Canada	1800	1800	1800	640	640	640	640	22442	157,094		
Cackling	660	650	3250	15750	6000	3000	3000	53567	374,969		
Brant											
White-fronted											
Snow			2					2652	18,564		
Blue											
Other TOTAL GEESE	2460	2450	5052	16390	6640	3640	3640	78661	550,627		
<b>Ducks:</b>											
Mallard	762	750	975	980	900	900	900	16227	113,589		
Black											
Gadwall	8	45	120	125	100	100	100	693	4,851		
Baldpate	448	450	280	215	200	200	200	3036	21,252		
Pintail	1425	1575	1025	725	700	700	700	11,354	100,478		
Green-winged teal	72	125	70	75	20	20	20	747	5,229		
Blue-winged teal								8	56		
Cinnamon teal	230	200	235	200	400	450	450	2285	15,995		
Shoveler	50	125	210	175	100	100	100	960	6,720		
Wood				2				2	14		
Redhead	6	6	6	6	10	10	10	62	434		
Ring-necked	8	20	16	10	20	20	10	669	4,683		
Canvasback	38	35	15	8		10		234	1,638		
Scaup	30	50	45	40	50	50	40	305	2,135		
Goldeneye	8	5						733	5,131		
Bufflehead	16	26	18	12	20	20	20	152	1,064		
Ruddy Common	60	60	50	35	40	40	40	508	3,556		
Other Merganser		2	4	4	10	10	20	52	364		
<b>TOTAL DUCKS</b>	<b>3161</b>	<b>3474</b>	<b>3069</b>	<b>2612</b>	<b>2570</b>	<b>2620</b>	<b>2610</b>	<b>41,027</b>	<b>287,189</b>		
<b>Coot:</b>	<b>515</b>	<b>650</b>	<b>600</b>	<b>550</b>	<b>600</b>	<b>600</b>	<b>600</b>	<b>4,281</b>	<b>29,967</b>		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	12,264	700	
Geese	550,627	16,390	
Ducks	287,189	4,038	
Coots	29,967	650	

SUMMARY

Principal feeding areas headpws. South Fork Pit River,  
and Dorris Reservoir.

Principal nesting areas Artificial nesting mounds, and  
all river, creek and field dikes.

Reported by Chester R. Markley

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).

W A T E R F O W L

REFUGE Modoc

MONTHS OF May 1 TO July 9, 1966

(1) Species	(2) Weeks of reporting period									
	5/01-07 1	5/08-14 2	5/15-21 3	5/22-28 4	5/29-6/4 5	6/05-11 6	6/12-18 7	6/19-25 8	6/26-7/2 9	7/03-09 10
<b>Swans:</b>										
Whistling Trumpeter										
<b>Geese:</b>										
Canada	850	550	550	550	550	510	620	1,175	1,275	1,300
Cackling Brant										
White-fronted Snow										
Blue <del>Other</del> <b>TOTAL GEESE</b>	850	550	550	550	550	510	620	1,175	1,275	1,300
<b>Ducks:</b>										
Mallard	700	600	600	625	600	600	600	600	600	650
Black										
Gadwall	100	50	50	50	50	70	65	60	60	60
Baldpate	20	20	20	40	40	60	70	60	60	45
Pintail	400	400	400	375	400	400	425	430	430	410
Green-winged teal										
Blue-winged teal										
Cinnamon teal	300	300	300	350	350	325	385	450	450	475
Shoveler	20	20	20	25	25	20	20	20	20	20
Wood										
Redhead	10	10	10	15	20	22	20	14	14	10
Ring-necked	10	10								
Canvasback										
Scaup	20	20								
Goldeneye										
Bufflehead										
Ruddy	40	40	40	40	40	40	35	30	30	30
<del>Other</del> <b>Common Mergan.</b>	20	20	20	15	15	15	15	16	16	12
<b>TOTAL DUCKS</b>	1,640	1,490	1,460	1,535	1,540	1,552	1,635	1,680	1,680	1,712
<b>Coot:</b>	600	600	600	500	500	440	475	450	450	400

WATERFOWL  
 (Continuation Sheet)

REFUGE Modoc

MONTHS OF July 10 TO September 3, 1966

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	7/10-16	7/17-23	7/24-30	7/31-8/6	8/07-13	8/14-20	8/21-27	8/28-9/3	waterfowl days use	Broods: seen	Estimated total
<b>Swans:</b>											
Whistling											
Trumpeter											
<b>Geese:</b>											
Canada	1,300	1,300	1,300	1,300	1,375	1,375	1,600	1,600	133,560	107	561
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other TOTAL GEESE	1,300	1,300	1,300	1,300	1,375	1,375	1,600	1,600	133,560	107	561
<b>Ducks:</b>											
Mallard	650	745	745	745	900	900	1,725	1,725	100,170	43	366
Black											
Gadwall	60	130	130	130	150	150	72	72	10,563	9	76
Baldpate	15	30	30	30	30	30	15	15	4,620		
Pintail	410	410	410	410	800	800	1,430	1,430	71,190	31	228
Green-winged teal											
Blue-winged teal											
Cinnamon teal	475	950	950	950	950	950	1,500	1,500	83,370	94	746
Shoveler	20	25	25	25	25	25	20	20	2,765		
Wood											
Redhead	10	15	15	15	10	10	10	10	1,680		
Ring-necked									140		
Canvasback							2	2	28		
Scaup									280		
Goldeneye											
Bufflehead											
Ruddy	30	30	30	30	30	30	297	297	7,973		
Other- Common Merg.	12	5	5	5	5	5			1,337		
TOTAL DUCKS	1,712	2,340	2,340	2,340	2,895	2,895	5,071	5,071	284,116	177	1,416
<b>Coot:</b>	400	400	400	400	400	400	500	500	58,905	17	142

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans			
Geese	133,560	1,600	561
Ducks	284,116	5,071	1,416
Coots	58,905	600	142

### SUMMARY

Principal feeding areas East and West Units - irrigated

meadows and aquatics in canals and ponds.

Principal nesting areas S. Fork Pit River, Teal, Goose,

Flournoy and Gull Ponds; Dorris Reservoir

Reported by Kenneth A. Walch, Ass't 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).

W A T E R F O W L

REFUGE Modoc

MONTHS OF September 4 TO November 12, 1966

(1) Species	(2) Weeks of reporting period									
	9/4-10 1	9/11-17 2	9/18-24 3	9/25-10/1 4	10/2-8 5	10/9-15 6	10/16-22 7	10/23-29 8	10/30-11/5 9	11/6-12 10
<b>Swans:</b>							5		28	68
Whistling Trumpeter										
<b>Geese:</b>										
Canada	2,110	2,250	2,800	3,200	2,800	2,450	2,500	2,850	3,000	3,200
Cackling								53	600	6,750
Brant										
White-fronted			2			20	28	28	40	118
Snow						15		6	129	235
Blue										
<b>Other TOTAL GEESE</b>	<b>2,110</b>	<b>2,250</b>	<b>2,802</b>	<b>3,200</b>	<b>2,800</b>	<b>2,485</b>	<b>2,528</b>	<b>2,937</b>	<b>3,769</b>	<b>10,333</b>
<b>Ducks:</b>										
Mallard	1,725	2,870	3,200	4,155	5,700	3,200	2,100	2,800	3,850	4,050
Black										2
Gadwall		208	290	385	400	330	300	350	600	600
Baldpate	42	180	225	318	300	800	680	800	3,160	3,218
Pintail	3,430	3,500	3,280	3,650	3,725	1,900	1,650	2,210	4,500	5,300
Green-winged teal			210	520	510	600	600	600	530	200
Blue-winged teal									68	70
Cinnamon teal	2,629	2,635	2,050	780	700	185	175	125	100	110
Shoveler	24	30	30	140	165	140	125	265	400	500
Wood								3	10	16
Redhead	10	10	18	20	20	40	40	86	200	200
Ring-necked						20	20	45	50	70
Canvasback	12	25	40	8	12	15	12	75	60	60
Scaup					40	40	30	28	40	100
Goldeneye										75
Bufflehead								14	32	40
Ruddy	297	300	300	325	400	300	210	200	375	325
<b>Other Common Merg.</b>						8	6	4	8	8
<b>TOTAL DUCKS</b>	<b>8,169</b>	<b>9,758</b>	<b>9,673</b>	<b>10,301</b>	<b>11,972</b>	<b>7,583</b>	<b>5,948</b>	<b>7,635</b>	<b>13,983</b>	<b>15,644</b>
<b>Coot:</b>	<b>585</b>	<b>575</b>	<b>600</b>	<b>700</b>	<b>850</b>	<b>400</b>	<b>400</b>	<b>550</b>	<b>500</b>	<b>800</b>

WATERFOWL  
 (Continuation Sheet)

REFUGE Modoc

MONTHS OF November 13 TO December 31, 1966

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total								
	11/13-19	11/20-26	11/27-12/3	12/4-10	12/11-17	12/18-24	12/25-31	11		12	13	14	15	16	17	18		
<b>Swans:</b>																		
Whistling	72	28	14	17	19	13	2		1,862									
Trumpeter																		
<b>Geese:</b>																		
Canada	3,100	3,000	2,400	3,000	2,800	2,750	2,100		324,170									
Cackling	7,500	6,200	3,770	2,120	1,765	3,900	2,750		247,856									
Brant																		
White-fronted	56		9		24				2,485									
Snow	280	255	260	48	332	18			11,046									
Blue Ross						1	1		14									
Other																		
<b>TOTAL GEESE</b>	<b>10,936</b>	<b>9,455</b>	<b>6,439</b>	<b>5,168</b>	<b>4,921</b>	<b>6,662</b>	<b>4,851</b>		<b>585,571</b>									
<b>Ducks:</b>																		
Mallard	4,000	2,200	750	940	1,340	460	510		306,950									
Black Hooded Merg.	10								84									
Gadwall	520	65	35	35	35				29,071									
Baldpate	3,800	780	215	67	345	135	80		110,915									
Pintail	5,200	1,250	580	230	275	88	65		286,041									
Green-winged teal	150	50	23						28,161									
Blue-winged teal	35								1,211									
Cinnamon teal	50		8						66,829									
Shoveler	600	114	30	18	20	20	5		18,382									
Wood	10								308									
Redhead	160	20							5,768									
Ring-necked	75	12							2,044									
Canvasback	45					2	8		2,618									
Scaup	90	20	10			64	10		3,304									
Goldeneye	50	40		8	10				1,295									
Bufflehead	48	40	28	5	8	7	4		1,582									
Ruddy	300	84	40	20	70	35	13		25,158									
Other	16	6							392									
<b>TOTAL DUCKS</b>	<b>15,159</b>	<b>4,681</b>	<b>1,719</b>	<b>1,323</b>	<b>2,169</b>	<b>763</b>	<b>679</b>		<b>890,113</b>									
<b>Coot:</b>	<b>750</b>	<b>400</b>	<b>230</b>	<b>110</b>	<b>37</b>	<b>15</b>	<b>15</b>		<b>52,619</b>									

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	1,862	72	--
Geese	585,571	10,936	--
Ducks	890,113	15,644	--
Coots	52,619	800	--

SUMMARY
Principal feeding areas <u>Meadows and management</u>
<u>Units II and III and Ponds listed below.</u>
Principal nesting areas <u>Dorris Reservoir, South Fork Pit</u>
<u>River, Gull, Teal, Goose and Flournoy Ponds.</u>
Reported by <u>Kenneth A. Walch</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).

MIGRATORY BIRDS  
(other than waterfowl)

Refuge.....Modoc..... Months of January 1 to April 30 19566

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
<u>I. Water and Marsh Birds:</u>										
Eared Grebe	20	4/10	28	4/28	Still Present					
Western Grebe	9	4/10	16	4/21	Still Present					
White Pelican	1	4/10	22	4/28	Still Present					
Great Blue Heron	Present all Quarter		20	4/30	Still Present					
Sandhill Crane	12	2/28	47	4/30	Still Present					
<u>II. Shorebirds, Gulls and Terns:</u>										
Killdeer	P. Resident		300	4/30	Still Present					
Common Snipe	P. Resident		200	4/30	Still Present					
Long-billed Curlew	14	4/10	50	4/30	Still Present					
Willet	40	4/21	100	4/30	Still Present					
Calif. Gull	125	3/5	300	4/30	Still Present					
American Avocet	8	4/10	30	4/30	Still Present					

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	15	3/18	110	4/30	Still Present
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle	1	3/14	2	4/09	2
Duck hawk					
Horned owl	Resident		2		
Magpie	Resident		25		
Raven					
Crow					
Red-tailed hawk	Resident		15		
Marsh hawk	Resident		18		
Sparrow hawk	Resident		25		
Bald Eagle	Resident		4	4/18	
Short-eared owl	Resident		12		
					Reported by <u>Chester R. Markley</u>

#### 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.

MIGRATORY BIRDS  
(other than waterfowl)

Refuge.....Modoc.....

Months of May 1 to August 31 1966

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
<b>I. Water and Marsh Birds:</b>										
Eared Grebe	15	*	20	5/12	15	Still present				
Western Grebe	8	*	8	5/12	2	Still Present				
White Pelican	12	*	60	5/27	10	Still Present				
Great Blue Heron	5	*	24	6/24	24	Still Present				
Sandhill Crane	10	*	14	6/24	12	Still Present		5	8	
* Present from last quarter										
<b>II. Shorebirds, Gulls and Terns:</b>										
Killdeer	Resident		300	5/27		Still Present				
Common Snipe	Resident		200	5/27		Still Present				
Longbilled Curlew	24	*	36	5/12	16	5/18				
Willet	80	*	100	6/17		Still Present				
California Gull	250	*	500	6/24		Still Present				
American Avocet	30	*	32	6/17		Still Present				
* Present from last quarter										

(over)

(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u>						
Mourning dove	100	*	200	8/18	Still Present	No records
White-winged dove						
IV. <u>Predaceous Birds:</u>						
Golden eagle	2	*	2	4/09	1	6/24
Duck hawk						
Horned owl	Resident		8	8/18	Still Present	
Magpie	Resident		30	7/20	Still Present	
Raven						
Crow	3	8/24	7	8/26	7	8/26
Red-tailed hawk	Resident		12	5/27	Still Present	
Marsh Hawk	Resident		10	8/26	Still Present	
Sparrow Hawk	Resident		20	8/18	Still Present	
Bald eagle	Resident	"No observation during the period"				
Short-eared owl	Resident		18	7/20		
*Present from last quarter						

Reported by Kennth A. Walch

#### 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.

MIGRATORY BIRDS  
(other than waterfowl)Refuge ModocMonths of September 1 to December 31 1966

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
<b>I. Water and Marsh Birds:</b>										
Eared Grebe	15	*	84	10/12	17	11/09				100
Western Grebe	2	*	11	10/12	1	11/09				20
White Pelican	55	*	55	9/23	8	10/26				65
Great Blue Heron	24	*	38	9/14	Still Present					45
Sandhill Crane	12	*	72	9/14	2	11/22				80
*Present from last Quarter										
<b>II. Shorebirds, Gulls and Terns:</b>										
Killdeer	Resident	*	120	9/14	Still Present					250
Common Snipe	Resident	*	310	9/14	Still Present					350
Long-billed Curlew	3	*	9	9/06	9	9/06				25
Willet	38	*	6	9/14	6	9/14				60
California Gull	210	*	300	9/23	Still Present					350
American Avocet	16	*	80	9/23	2	11/09				100
* Present from last quarter										

(over)

(1)	(2)	(3)	(4)	(5)	(6)	
III. <u>Doves and Pigeons:</u>						
Mourning dove	48	*	60	9/06	Still Present	250
White-winged dove						
IV. <u>Predaceous Birds:</u>						
Golden eagle	Resident		2	10/20	Still Present	5
Duck hawk						
Horned owl	Resident		6	9/23	Still Present	10
Magpie	Resident		16	9/06	Still Present	35
Raven	2	12/14	2	12/14	2	2
Crow	Resident		6	9/23	Still Present	15
Red-tailed Hawk	Resident		5	10/10	Still Present	15
Bald Eagle	Resident		3	12/19	Still Present	3
Marsh Hawk	Resident		11	10/10	Still Present	30
Sparrow Hawk	Resident		16	9/23	Still Present	40
Short-eared owl	Resident		15	9/23	Still Present	20
* Present from last quarter						

Reported by Kenneth A. Walch

#### 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.

3-1750b  
Form NR-1B  
(Rev. Nov. 1957)

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, 1966

Reported by Kenneth A. Walsh Title Ass't Refuge Manager

(1) Area or Unit Designation	(2) Habitat		(3) Use-days	(4) Breeding Population	(5) Production
	Type	Acreage			
GODFREY UNIT I	Crops	0	Ducks	49,854	99
	Upland	825	Geese	35,700	18
	Marsh	0	Swans	189	0
	Water	5	Coots	4,998	0
	Total	830	Total	90,741	117
WEST UNIT II	Crops	540	Ducks	327,348	125
	Upland	1580	Geese	621,530	246
	Marsh	20	Swans	3,115	0
	Water	20	Coots	27,307	18
	Total	2160	Total	979,300	689
EAST UNIT III	Crops	60	Ducks	296,548	680
	Upland	2155	Geese	403,988	253
	Marsh	50	Swans	3,514	0
	Water	125	Coots	29,316	44
	Total	2390	Total	733,366	977
DORRIS RES. UNIT IV	Crops	0	Ducks	466,907	212
	Upland	190	Geese	356,387	44
	Marsh	0	Swans	6,307	0
	Water	430	Coots	84,959	80
	Total	620	Total	914,560	336
TOTAL V	Crops	600	Ducks	1,140,657	1,416
	Upland	4750	Geese	1,417,605	561
	Marsh	70	Swans	13,125	0
	Water	580	Coots	146,580	142
	Total	6000	Total	2,717,967	2,119
	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.

WATERFOWL HUNTER KILL SUR

Refuge Modoc National Wildlife Refuge

Year 1966

(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. Total Kill
Oct. 8- Oct. 14	618	2,163	Mallard - 440; Pintail - 312; Green-winged teal - 151; American Widgeon ; 96; Ruddy duck - 49; Gadwall - 46; Canada Goose - 30; Coot - 20; Shoveler - 13; Lesser Scaup 2.	1,159	232	1,391	700	1,500
Oct. 15- Oct. 21	162	615	Mallard - 68; Pintail - 20; Gadwall - 11; Shoveler - 11; Canada Goose - 11; American Widgeon - 10; Green-winged teal - 6; Ruddy duck - 1.	138	28	166	180	175
Oct. 22- Oct. 28	275	1,031	Mallard - 84; Pintail - 76; American Widgeon - 38; Shoveler - 14; Canada Goose - 13; Gadwall - 12; Green-winged teal - 9; Ruddy duck - 6; Snow Geese - 1.	253	51	304	300	340
Oct. 29 - Nov. 4	240	840	Mallard - 63; Pintail - 57; American Widgeon - 36; Canada Goose - 16; Gadwall - 15; Green-winged teal - 12; Ruddy duck - 11; Shoveler - 10; Cinnamon teal - 3; Cackling Goose - 3; White-fronted Goose-1.	227	45	272	280	300
Nov. 5 - Nov. 11	307	1,166	Mallard - 78; Pintail - 45; American Widgeon - 37; Canada Goose - 10; Gadwall - 9; Shoveler - 3; Bufflehead - 3; Green-winged teal - 2; Cackling Goose - 2; Snow Goose - 2.	191	38	229	350	260

(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.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$ .

WATERFOWL HUNTER KILL SUR

Refuge Modoc National Wildlife Refuge

Year 1966

(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. Total Kill
Nov. 12 - Nov. 18	385	1,540	Mallard - 136; Pintail - 110; American Widgeon - 64; Gadwall - 14; Cackling Goose - 11; Green-winged teal - 10; Shoveler - 9; Ruddy Duck - 9; Canada Goose - 8; Bufflehead - 5; American Goldeneye - 2.	378	76	454	430	480
Nov. 19- Nov. 25	143	500	Pintail - 37; American Widgeon - 29; Mallard - 23; Ruddy Duck - 20; Canada Goose - 16; Cackling Goose - 14; Coot - 11; American Goldeneye - 6; Bufflehead - 1; Snow Goose - 1.	158	32	190	170	225
Nov. 26- Dec. 2	32	90	Canada Goose - 7; Cackling Goose - 3; Mallard - 3; Ruddy Duck - 1; American Widgeon - 1	15	2	17	35	18
Dec. 3- Dec. 9	29	81	Canada Goose - 4; Cackling Goose - 2; Mallard - 2.	8	3	11	30	11
Dec. 10- Dec. 16	16	45	Canada Goose - 3; Cackling Goose - 2;	4	0	4	16	4
Dec. 17- Dec. 23	11	31	Canada Goose - 2.	2	0	2	11	2

(over)

Year 1960

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.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}.$

WATERFOWL HUNTER KILL SUR

Refuge Modoc National Wildlife Refuge

Year 1966

INSTRUCTIONS

(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. Total Kill
Dec. 24- Dec. 30	31	87	Canada Goose - 9; Mallard - 2; Cackling Goose - 1; Ruddy Duck - 1.	13	1	14	36	16
Dec. 31- Dec. 30	43	120	Canada Goose - 3; Cackling Goose - 2.	5	0	5	45	5
SEASON'S TOTALS	2,292	8,309	Mallard - 899; Pintail - 657; American Widgeon - 311; Green-winged teal - 190; Canada Goose - 132; Gadwall - 107; Ruddy Duck - 98; Shoveler - 60; Cackling Goose - 39; Coot - 31; Bufflehead - 9; American Goldeneye - 8; Snow Goose - 4; Cinnamon teal - 3; Lesser Scaup - 2; White-fronted Goose - 1.	2,551	508	3,059	2,583	3,336

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.  $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$ .

UPLAND GAME BIRDS

Refuge Modoc

Months of January 1 to April 30, 1966

(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'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Grain Fields 600 Acres Bottom Land Brush & Marsh- 200 Acres	20	Not applicable this Quarter			None			40	
Calif. Valley Quail	Above Habitat Plus 1370 Acres Of Upland Range	14.5	Not Applicable This quarter			None			150	

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.

UPLAND GAME BIRDS

Refuge Modoc Months of May 1 to August 31, 19 66

Form NR-2 - UPLAND GAME BIRDS

(1) Species	(2) Density	(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks	
		Acres per Bird	Number broods obs'vd.		Estimated Total	Hunting	For Re- stocking			For Research
Common Name	Cover types, total acreage of habitat			Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.	
Ring-necked Pheasant	Pine Creek, roadsides, dikes, plus 600 acres of barley fields.	11.5	5	40	-	None	None	None	70	Responding slowly to improved cover and barley plantings.
California Valley Quail	Above habitat with the addition of 1370 acres of upland range.	9.2	11	187	--	None	None	None	250	Responding to brush piles along Pine Creek, which provides cover and nesting sites.

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

UPLAND GAME BIRDS

**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.

UPLAND GAME BIRDS

Refuge Modoc Months of September to December, 19 66

\* Form NR-2 - UPLAND GAME BIRDS \*

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total		Percentage	Hunting	For Re- stocking		
Common Name									Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	Pine Creek, road- sides, dikes, plus 600 acres of barley fields.  Total Acreage: 840	16.8	-	-	-		<u>N O N E</u>		50	Responding slowly to improved cover and barley plantings.
California Valley Quail	Above habitat with the addition of 1370 acres of up- land range.  Total Acreage: 2210	8.9	-	-	-		<u>N O N E</u>		250	Responding to brush piles along Pine Creek, which provides protection and cover.

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

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.

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number		Source	At period of Greatest use	
Common Name	Cover types, total Acreage of Habitat	Number											
Pronghorn Antelope	Sagebrush, upland range adjacent to Dorris Res. and in the West Unit.  Total Acreage: 1370	17	<u>N</u>	<u>O</u>	<u>N</u>	<u>E</u>						112	32
Mule Deer	Brush and willow bottoms along Pine Creek; Wheat field adjacent to Pine Creek.  Total Acreage: 186	12	<u>N</u>	<u>O</u>	<u>N</u>	<u>E</u>	1					35	3

Remarks: Animals move on and off the refuge throughout the year.

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.

3-178  
Form NR-4  
(June 1945)

SMALL MAMMALS

Refuge Modoc

Year ending April 30, 1966

(1) Species  Common Name	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula- tion
	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				
Muskrat	200	.2		659					100%				900
Mink	200	3.3		26					100%				60
Raccoon	200	10		5					100%				20
Striped Skunk	4916	41		1					100%				120
Belding Ground Squirrel	1370	.3			600								4000
Cottontail Rabbit	1370	45.6											30
Black-tailed Jackrabbit	1370	18											75
Meadow Mice	3360	--											Abundant
Badger	1370	137											10
Coyote	4916	613											8

\* List removals by Predator Animal Hunter

REMARKS:

Reported by Chester R. Markley

## 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.

DISEASE

Refuge Modoc National Wildlife Refuge Year 19 66

Botulism NONE

Lead Poisoning or other Disease NONE

Period of outbreak \_\_\_\_\_

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 \_\_\_\_\_

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

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

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

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

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

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

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

Remarks \_\_\_\_\_

## PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge ModocCalendar Year 1966

## 1. Visits

a. Hunting 2,219 b. Fishing 1,111 c. Miscellaneous 1,817 d. TOTAL VISITS 8,207

## 1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	<u>2,219</u>	<u>1,110</u>	<u>Refuge</u>
Upland Game	<u>None</u>		
Big Game	<u>None</u>		
Other	<u>None</u>		

Number of permanent blinds 0Man-days of bow hunting included above 0

Estimated man-days of hunting on lands adjacent to

refuge 485

## 1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	<u>600</u>	
Streams and Shores		

## 1c. Miscellaneous Visits

Recreation 2,748 Official 58Economic Use 1,977 Industrial 64

## 2. Refuge Participation (groups)

TYPE OF ORGANIZATION	ON REFUGE		OFF REFUGE	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs			<u>2</u>	<u>210</u>
Bird and Garden Clubs				
Schools	<u>1</u>	<u>22</u>		
Service Clubs			<u>2</u>	<u>72</u>
Youth Groups				
Professional-Scientific	<u>5</u>	<u>17</u>		
Religious Groups				
State or Federal Govt.	<u>1</u>	<u>3</u>		
Other				

## 3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	<u>7</u>	Radio Presentations	
Newspapers (P.R.'s sent to)	<u>2</u>	Exhibits	
TV Presentations		Est. Exhibit Viewers	

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

Refuge Modoc National Wildlife Refuge Year 19 66

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	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
Mixture of: Int. Wheatgrass, Ladak Alfalfa, Yellow Blossom Sweet Clover							Upland Range in the East and West Units	8 lbs/Ac 2 lbs/Ac 6 lbs/Ac	232 Acres		3/29	10%	See Remarks

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

**Remarks:** Lack of spring rains and prolonged drought during the summer caused poor germination and low survival rate.

Total acreage planted:

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

## REFUGE GRAIN REPORT

Refuge ModocMonths of January through December, 1956

(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
Campana Barley	0	1200 lbs.	1200 lbs.			800 lbs. (used in banding)	800 lbs.	400 lbs.		400 lbs. (future banding)	

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

(9) Grain is stored at Refuge granary, located in the West Unit.

(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.

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Modoc National Wildlife Refuge 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	Acres	Bu./Tons			
* Campana Barley	80	12			40	6	120		
Hannchen Barley	350	150			175	75	525		
* Poor production due to unavailable irrigation water during drought.									
								Fallow Ag. Land	0

No. of Permittees: Agricultural Operations 2 Haying Operations 4 Grazing Operations 9

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	2,896	6,215.30	\$18,645.90	3,205
				2. Other	4	29.70	89.10	25
				1. Total Refuge Acreage Under Cultivation				645
Hay - Wild	2,817.24	1,991	\$19,720.68	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.

## ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

2

Reporting Year

1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
June 15	wild mustard	Matney Field	214	Herbicide 2, 4 - D Amine	107 lbs. of actual acid	.5 lb/acre actual acid	water 5 gallon per acre	Aerial

10. Summary of results (continue on reverse side, if necessary)

1. Spraying of herbicide was performed by the permittee at no expense to the government.
2. Results: 40 percent kill of mustard after 4 days and 75 percent kill in one week from spraying date.  
Aerial spraying of mustard in June before weeds mature has proven to be effective.