

SHELDON-HART MOUNTAIN NATIONAL ANTELOPE REFUGES

MODOC NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

1968

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MODOC REFUGE

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I. GENERAL

A. Weather Conditions

The year began with very cold weather during January. The 20° below zero of the month was the coldest recorded in California for that time as well as the lowest refuge temperature.

A balmy February with normal precipitation was followed by drier conditions that extended through October. Though precipitation during that period amounted to 80% of normal it either came in major storms or trifling amounts with warm drying winds often following. January through May snows were quite light and an 85% snowpack accumulated on refuge watersheds.

Substantial storms during November and December brought enough moisture to end the year with a total precipitation only an inch under normal. Year's end was characterized by unseasonable weather, both warm and cold, fully primed soil and an accumulated snowpack a bit over average for the time.

TABLE 1. ANNUAL WEATHER SUMMARY

1968	<u>Precipitation (inches)</u>			<u>Temperature</u>	
	Snowfall	This Month	Normal	Max.	Min.
January	17	1.88	1.79	57	- 20
February	1	1.39	1.37	70	12
March	3	.61	1.40	74	12
April		.07	1.11	82	14
May	2	1.46	1.19	82	18
June		.47	.79	94	31
July		.00	.40	104	36
August		1.97	.23	95	35
September		.00	.42	97	20
October		.69	1.10	82	14
November	8	2.17	1.34	63	4
December	9	.98	1.66	54	- 1
TOTALS	40	11.69	12.80	Extr. 104	- 20

* Based on 33 years of records

B. Habitat Conditions

1. Water. A very warm and early spring quickly melted down the 85% of normal snowpack that had accumulated on refuge watersheds. The heavy, though short-lived, runoff was often fully as much as our control structures and canals diverting water into Dorris Reservoir could handle at times. Although total streamflow was somewhat less than normal, we had enough water to maintain marshes and ponds and irrigate meadows and grainfields. This was made possible by drawing heavily from the water stored earlier in the year at Dorris Reservoir. Following is a narrative summary of the year's water management.

Parker Creek. All of the water diverted by the refuge from this source which totaled 6,600 acre feet was stored in Dorris Reservoir and released from there into the irrigation system for utilization.

Pine Creek. This year the refuge diverted 5,890 acre feet of water from this source for its use. Of this, 3,085 acre feet was diverted into Dorris Reservoir and released from there into the irrigation system for use. The remaining 2,805 acre feet of water went directly into the irrigation system for immediate application.

Stockdill Slough. Water from this source comes from a very small tableland area adjacent to Dorris Reservoir. This water flows directly into the reservoir and totaled 250 acre feet during 1968.

South Fork Pit River. The Sharkey Dam makes it possible for us to utilize a riparian right for 1,267 acre feet of water. This water was used to flood irrigate 500 acres of grain fields and meadows in the southwest corner of the refuge.

Dorris Reservoir. The beginning of the year saw the reservoir about seven feet below spillway with 750 surface acres and 5,890 acre feet of water stored. Heavy inflows early in the year brought in enough water to fill it to full capacity just before outflows began in mid-April. Because of reduced streamflows we were required to draw heavily from the reservoir to satisfy our water needs for the irrigation season. The reservoir dropped to a point 11 feet vertically below spillway with only 570 surface acres and 3,282 acre feet of stored water in early September. When water needs of other users diminished in mid-October, water again began flowing into the reservoir until at year's end it was just where it had been in January.

The following is a tabular recapitulation of the year's water management.

TABLE 2. ANNUAL WATER SUMMARY

Date	DORRIS RESERVOIR Inflows (Acre Ft.)			Outflow	Elevation	Surf/A	Acre/Ft.	DIRECT APPLICATION	
	Parker Creek	Pine Creek	Stockdill Slough					Pine Creek	So. Fork Pit River
JAN.	230	220	0	0	4,392.50	750	5,890	0	0
FEB.	2,200	1,200	150	0	4,396.50	998	9,440	0	0
MAR.	1,420	560	100	0	4,398.50	1,080	11,521	0	0
APR.	600	0	0	1,030	4,399.86	1,115	12,618	300	0
MAY	210	0	0	2,080	4,396.50	998	9,440	560	30
JUNE	220	0	0	1,900	4,394.63	892	7,545	660	0
JULY	0	0	0	860	4,393.13	835	6,682	460	0
AUG.	0	0	0	2,180	4,390.80	648	4,499	310	50
SEPT.	0	0	0	1,220	4,388.50	570	3,282	300	200
OCT.	120	100	0	250	4,388.50	570	3,282	210	730
NOV.	810	410	0	0	4,390.50	648	4,499	0	100
DEC.	790	600	0	0	4,392.50	750	5,890	0	50
TOTALS	6,600	3,090	250	9,520				2,800	1,160

2. Food and Cover. Most water areas produced moderate amounts of the various aquatic food plants found here. Despite Experiencing water level fluctuations of as much as eleven feet, Dorris Reservoir produced a surprising amount of waterfowl food. This consisted mostly of extensive beds of pondweeds (Potamogeton spp.) found in the deeper coves and other parts of the lake beyond the zone of fluctuation.

In the past it has been the practice to partially drain some of the small ponds and marshes to accommodate haying operations. This practice was reversed this year and the small ponds and marshes were expanded by installing a few new structures and utilizing a number already in place. These newly flooded areas were much utilized by waterfowl feeding on a heavy crop of star and common duckweed (Lemna trisulca and L. minor) and the tender regrowth tips of the solid stands of juncus previously grazed down to water level by cattle. Muskrats made spectacular use of the newly ponded juncus stands of the Duck Pond and built 53 houses as compared to nine last year.

Refuge meadows were the preferred browsing areas for honkers wherever the grass was tender. These meadows were also extensively utilized by mallards and widgeon.

Of the 530 acres of Hamnchen barley planted by permittees this year, 300 acres were harvested by them and the remaining 230 acres were left standing. The extra 60 acres left standing beyond a strict 2/3 and 1/3 share came about when one permittee decided not to harvest his share of the 90 acre Town Field because it had become too weedy.

Waterfowl, especially mallards and pintail made heavy use of the 360 acres (120 acres left standing) of flooded grain fields located in the hunting area. When hunting began, they shifted to the unflooded 170 acres (110 acres left standing) of fields in the closed area. When the lesser Canada and cackling geese arrived in late October, they virtually "camped" on the closed area grain fields and as many as 24,000 cacklers could be counted here.

Cover conditions for nesting waterfowl ranged from practically non-existent in some of the early grazed units (May 1) to good in the later grazed units (June 1) and excellent in the haying units.

Upland game bird habitat, principally along Pine Creek and fallowed agricultural lands, had excellent food and cover throughout the year. The South Grainfield dikes, completed in 1967 and sub-

sequently seeded to intermediate wheat grass and yellow blossom sweet clover, now provide a dense cover that is well used by all wildlife. Deer especially use this area for fawning.

A heavy stand of about eight acres of emergents composed of softstem bulrush (Scirpus validus) and cattail (Typha latifolia) located in the Teal Pond was extensively used as molting cover by mallards and other ducks. A nesting colony of yellow-headed and Brewer's blackbirds also used this area.

II. WILDLIFE

A. Migratory Birds

Whistling Swan. A few whistlers were with us at the beginning of the year. These birds were using open water areas of several ponds including the Warm Springs Pond of the headquarters area. More birds moved in during early February and the spring peak of 625 was reached by month's end. The last whistlers of the spring period were seen in mid-April.

The first whistlers of the fall period were noted in mid-September when a group of 75 was observed on Dorris Reservoir. Most of this early-arriving flock left two days later and only five remained. Numbers began substantially increasing in early November until a peak of 1500 was reached late that month. About 125 swans remained at the close of the year.

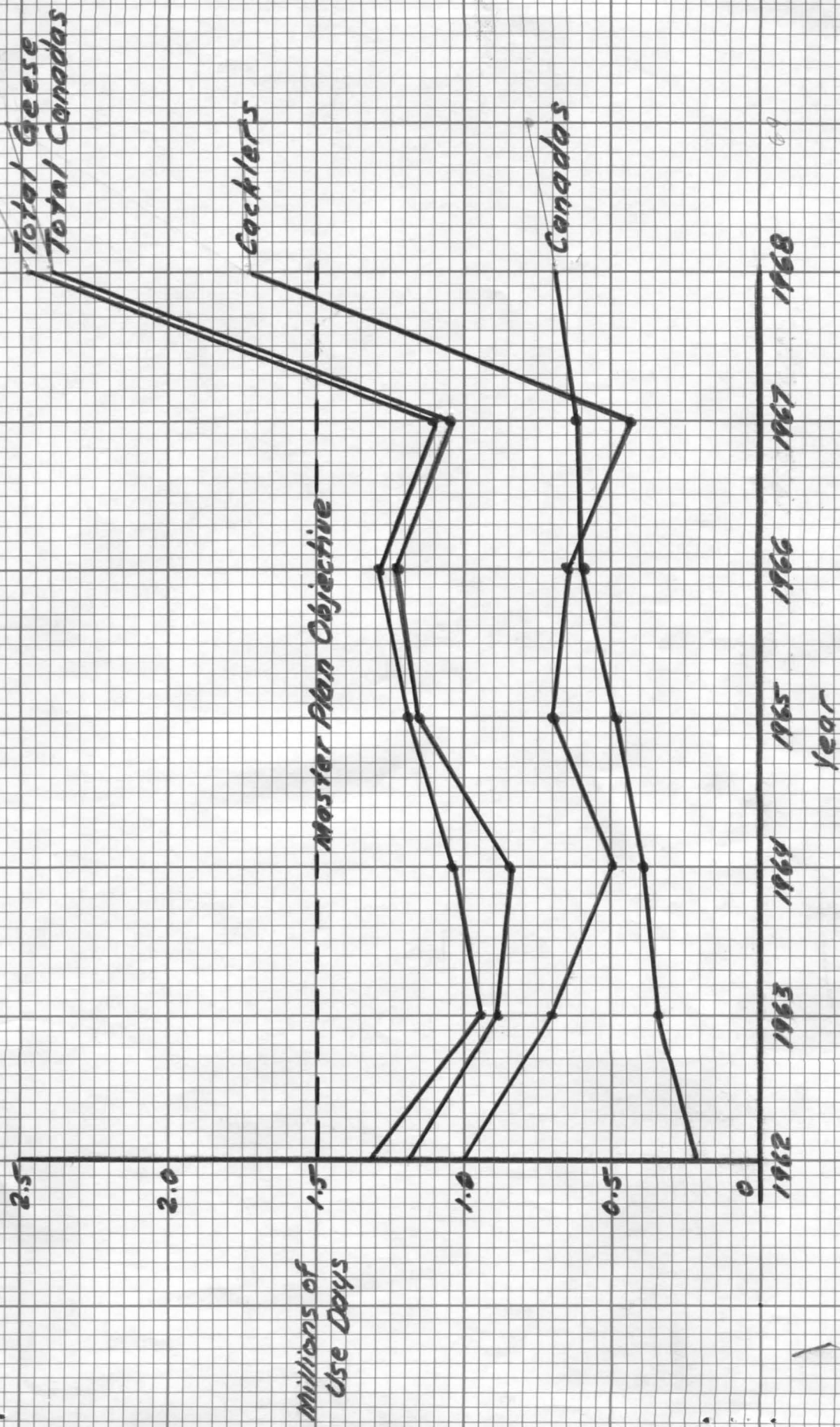
Geese, General. Annually increasing use of the refuge by geese since management began in 1962 continued this year. The master plan objectives of 1,500,000 use days and a production of 750 Canadas was met for the first time when goose use reached 2,453,605 days and 768 Canadas reached flight stage.

Large Canada Geese. Spring and fall peaks were 2,200 and 4,200 respectively and total use days for the year came to 681,800 (see graph 1). Honkers made use of browse wherever it was to be found on refuge meadows, pastures and croplands. Heavy use was also made of aquatic vegetation when it was available. The extensive pondweed (Potamogeton spp) beds at Dorris Reservoir were especially favored feeding areas.

The wintering population of 600 utilized the Warm Springs Pond near headquarters during the severest part of the winter when all other water areas were solidly frozen.

Large Canada Goose Production. Despite unusually persistent ice, territories were well established by late February. Soon afterwards, the beginnings of several nests were noted in the Goose Pond and single

Graph 1. Annual Canada Goose Use



eggs were found in three nests there on March 17. The first brood consisting of three goslings was seen on the Teal Pond April 15. This year, 768 goslings were raised to flight stage. This met the master plan objective of 750 for the first time. Extensive habitat development begun three years ago as well as more attention to habitat management holds promise of yet greater production.

Table #3 presents production data for the past several years. A report on Canada goose use of natural and artificial nest sites can be found in the section on Field Investigations.

TABLE 3. CANADA GOOSE PRODUCTION 1/

UNIT	GODFREY			WEST			EAST			DORRIS			TOTAL			
Year	2/	N	B	G	N	B	G	N	B	G	N	B	G	N	B	G
1964	1		4	24	7	40	240	14	6	33	7	13	29	29	63	326
1965	3		-	15	32	-	128	23	-	116	15	-	61	73	64	320
1966	3		5	18	34	51	246	52	38	253	26	9	44	115	103	561
1967	3		2	11	9	61	348	28	31	201	11	26	124	51	120	684
1968	5		6	32	19	69	378	71	43	246	24	21	112	119	139	768

1/ Master Plan objective is 750.

2/ N = Nests located; B = Broods observed; G = Goslings reaching flight stage.

Small Canada Geese. Use by cacklers and lessers totaled 1,712,200 days - four times last year's use and nearly twice that of the previous high which occurred in 1962 (see graph 1). The peak of 32,000 birds during early November exceeded the previous record peak of 28,000 in mid-December of 1965. Spring birds browsed the entire refuge while fall birds completely utilized the refuge grain fields. The greatest numbers however were to be found on Dorris Reservoir.

Snow Geese. The first snow geese were seen when 350 made an abrupt appearance in mid-January. These spring migrants peaked at 500 in March and the last snows were seen in late May.

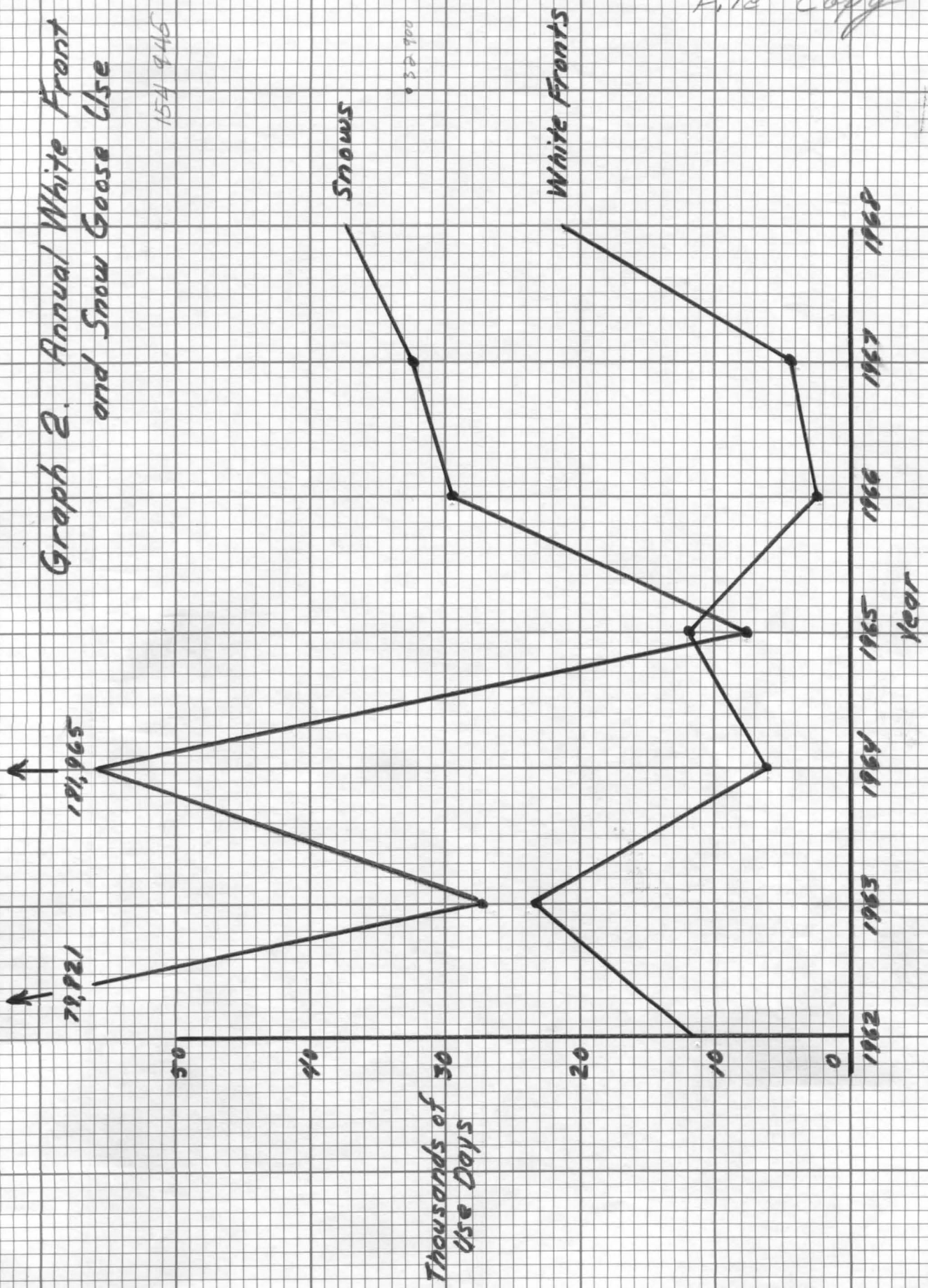
Early October saw the first few snows of the fall. The peak of 400 was noted in mid-November and approximate peak numbers of the past four years but falling short of the 1964 record of 7,500. The 37,380 use days are on a par with the past three years use but far below the 181,965 days recorded in 1964 (see graph 2).

Graph 2. Annual White Front
and Snow Goose Use

154 845

0 32 900

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White-fronted Geese. This year's 21,245 use days is the highest ever recorded (see graph #2). Though neither spring nor fall numbers were very great, being only 350 and 400 respectively, the birds came earlier and stayed later. Spring migrants fed extensively on the refuge's several crested wheat areas while fall birds seemed to divide their feeding between meadow and aquatic areas.

Ross Geese. Seven groups of Ross geese totaling 25 in number were noted in mid-January. These birds were usually associated with cacklers and by the time they left in April, the last time they were seen for the year, they had accrued 980 use days.

Ducks. Duck use came to almost $3\frac{1}{2}$ million days. This continued a 40% yearly increase which began in 1965 (see graph #3) and nearly achieved the master plan objective of $3\frac{1}{2}$ million use days.

Production by all species totaled 2,554 ducks raised to flight stage. The production objective is 3,000.

The spring influx began in earnest during late February. The peak of 14,875 for this period occurred in late March.

The most numerous dabblers were pintail (4,000), mallard (2,750) and gadwall (1,500) while divers were redhead (900), lesser scaup and ruddies (750).

Dabblers accounted for 91% of total duck use with mallards accruing 40%, pintail 24%, widgeon 11%, gadwall 9%, cinnamon teal 5% and other dabblers 2%.

Diver use was 9% of total duck use and the percent of use by species was much the same as last year. This year ruddies used 4% of the total duck days, redheads 2%, bufflehead 1%, canvasback 1% and other divers 1%.

Duck Production. Breeding pair counts during mid-April recorded 327 pairs. These were composed of 48% cinnamon teal, 28% mallard, 12% pintail, 9% gadwall and 1% each for shovelers, redheads and ruddies.

The first duck nest, a mallard with 7 eggs, was found April 23 near the duck hospital. Duck Pond was again the site of the year's first brood observation when a mallard with 11 young was seen there on May 16 - fully a month earlier than last year.

Brood surveys set this year's production of flight age birds at 2,554. Tables #4 and #5 summarize duck production data for the past several years.

Graph 3. Annual Duck Use

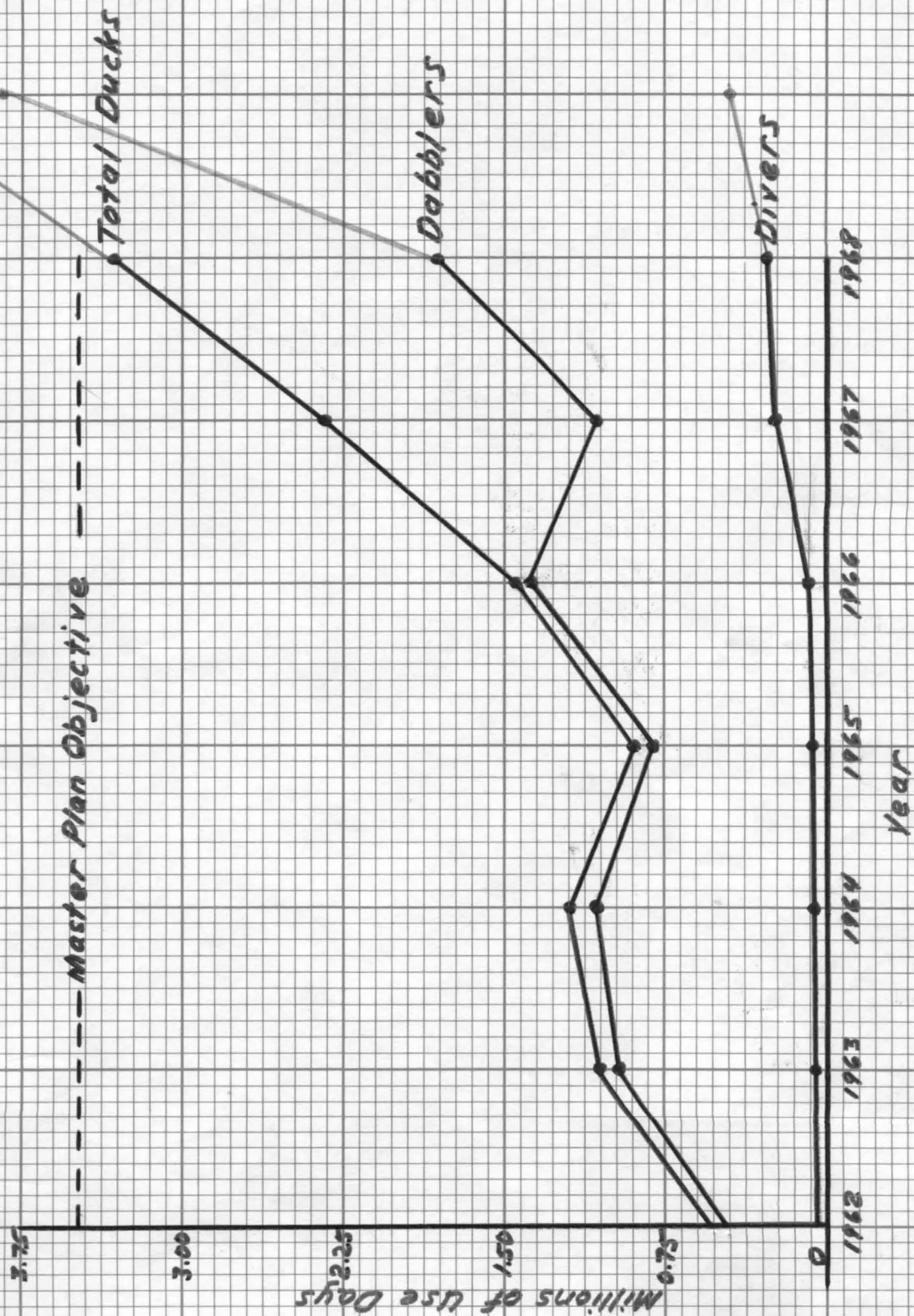


TABLE 4. DUCK BROODS OBSERVED

UNIT	1964	1965	1966	1967	1968
Godfrey	34	12	16	23	17
West	122	39	70	91	93
East	166	42	110	106	113
Dorris	88	59	34	62	67
TOTALS	410	152	230	282	290

TABLE 5. DUCKS PRODUCED TO FLIGHT AGE 1/

	1962	1963	1964	1965	1966	1967	1968
Mallard	300	700	760	-	366	706	726
Gadwall	50	100	310	-	76	195	232
Pintail	50	250	530	-	228	302	286
Green-wing	-	-	10	-	-	-	4
Cinnamon	790	800	1,148	-	746	1,172	1,264
Shoveler	20	50	20	-	-	-	14
Redhead	10	30	-	-	-	10	12
Ruddy	10	20	18	-	-	21	16
TOTALS	1,230	1,950	2,796	942	1,416	2,406	2,554
Coot	125	150	175	-	142	162	585

1/ Master Plan objective is 3,000

B. Upland Game Birds

The two upland game birds, ring-necked pheasant and California valley quail, began the year numbering 100 and 200 respectively. Production however was very poor for both species. Only 4 pheasant and six quail broods were seen, compared to eight and ten last year. As a result of the poor production, the year ended with about the same number of birds as it began. The poor production may have been the result of heavy predation (see Section II d); this was a good production year weather-wise.

C. Big Game Animals

Mule deer frequented all parts of the refuge and some were on the area at all times. Several bands, totaling up to 200 animals, wintered on the sagebrush flats surrounding Dorris Reservoir, the Godfrey Unit and along Pine Creek. Several does raised their fawns in these same areas and of the 25 raised, there was one set of triplets, nine twins and four singles. There were four known road-kills, three does and one fawn along U.S. 395 in the vicinity of subheadquarters.

Pronghorn antelope also winter on the same areas as deer. This is the Likely Tables herd and numbered 572 during early spring. The wintering herd breaks up into summer bands two of which range on the refuge; The Rocky Prairie band numbered 197 before kidding time and ranged the southwest part of the refuge; the Pit River band roamed the northwest part of the refuge and numbered 29 prior to kidding.

Aerial counts by California Fish and Game personnel during late December showed 621 animals, a 9% increase over last year and the highest on record.

D. Fur Animals, Predators, Rodents and other Mammals

Fur Animals. Muskrats are the most numerous furbearers found on the refuge. This year's fall population was estimated at 1,500 animals. In an effort to promote more house building for nesting Canada geese, water levels were more carefully managed. Muskrats responded by building three times more houses this year (115) than last (35). The Duck Pond population made spectacular use of the newly flooded juncus stands. This 54 acre pond had nine houses last year and 53 this year.

Tunnel excavating activities of rats living in the 30 miles of irrigation canals and ditches is quite another matter. The trapping program, directed at alleviating this damage, resulted in 291 rats being removed by one permittee trapper.

Mink though not abundant are occasionally seen along Dorris canal and the Neer Pond. They were estimated to number 50 this fall.

Predators. Raccoon, though seldom seen, are evident by their sign about most of the area. They are most abundant along Pine Creek and the Dorris Canal. Their population evidenced an increase over the 10 animals estimated last year to 25 this year.

Striped skunk sightings (and scentings) became more frequent this year and an increased population over last year was evident. The population estimate on April 30 was 125 as compared to 100 last year (see predator control below).

The badger population numbered 10 through the year and did not change from last year. Their extensive diggings in the Dorris Dam during early winter caused some concern. Steel trapping was initiated to control this dam damage and though none were taken the damage ceased.

Coyotes were commonly seen hunting over the entire refuge, especially during fall, winter and spring. Their mousing antics were a source of enjoyable wildlife observation opportunity for a number of people. Assistant Manager Laroche conducted several boy scout groups on wildlife observation tours with coyote observations the high point. About 25 coyotes were estimated to use the refuge this year. Most coyotes leave the refuge area in early spring. Control measures are sometimes brought to bear at the time waterfowl begin nesting. This year three were removed.

Uncontrolled dogs from Alturas and nearby ranches, sometimes in packs of up to 14, frequented the refuge throughout the year. These dogs harassed waterfowl, cattle and deer and were discouraged at every opportunity.

Feral cats were commonly seen on the main part of the refuge, especially during early spring and summer. These cats were living in haystacks and vacated burrows which they often further dug out to suit themselves.

Special Waterfowl Predator Control. During early June, it became apparent predators were destroying an excessively large number of duck nests. The Division of Wildlife Services was consulted and a reduction program aimed at skunks, raccoons and feral cats was outlined. This consisted of joint operation of 17 live traps beginning in mid-June. The results were unbelievable to all—especially the seasoned Wildlife Services trappers. Several catches of two were made on skunks, raccoon and cats, one triple catch was made on skunks. Catches were mostly disposed of by drowning and maintenanceman Russell became quite proficient in this tender operation—being sprayed only once in some 103 disposals. When the program was terminated in early October the tally was 179 skunks, 76 magpies, 53 feral cats and 16 raccoons.

Refuge rodent control (ground squirrels) has largely been handled by the Modoc County Agricultural Commissioner. An intensive control program in 1965 with follow-up treatment in 1966 and 67 effected a 95% reduction on what had been an extremely dense population. No control was carried out this year because the remaining population was not considered numerous enough to warrant control measures.

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

Golden eagles were common throughout the year with as many as eight being seen on several occasions. Bald eagles were common too but in lesser numbers. They were most numerous during late winter and early spring. The powerline running through Goose Pond is a favorite eagle perch and each year several are electrocuted. This year, two bald, two golden and two redbill were found dead below the line. Being in advanced stages of decomposition, none were salvagable. Negotiations with the power company and affected landowners are underway to remove this line from the Goose Pond and route it east of the refuge.

Again this year, two female peregrine falcons utilized the eaves of the manager's residence for roosting during late fall. Red-tailed, Swainson's, rough-legged, marsh and sparrow hawks were regularly seen at various times.

A few ravens were seen throughout the year and one pair raised a brood of three young along Pine Creek. Crows, though not numerous, were seen at all seasons of the year. None were known to nest.

Magpies were quite common throughout the year, about 150 of them foraged on the refuge before controls began with the destruction of nests in April. Seventy-six were taken in live traps set out for waterfowl nest predators.

F. Rare and Endangered Birds. Five birds found on the refuge are included in this category. These are noted as follows:

1. Ferruginous Hawk (Buteo regalis) status undetermined. Six late *undetermined* fall sightings of single birds.
2. Prairie Falcon (Falco mexicanus) status undetermined. Three *rare* birds used the refuge during the early part of the year, five during mid-year and seven at the end of the year.
3. American Peregrine Falcon (Falco Peregrinus anatum) status *undetermined* **rare**. Numerous sightings of one and two birds throughout the year.
4. Greater Sandhill Crane (Grus canadensis tabida) status *rare* **rare**. The first sandhills, a group of six, were seen on February 13.

Nine nests were located and 11 young are known to have been raised. The summer peak of 80 occurred on August 16. Early October saw many birds moving about in apparent migrational staging. On the seventh of the month a staging formation began in mid-morning with 30 birds and built up to 245 by mid-afternoon when the entire flock was seen to move out of the valley and over the mountains to the southwest. The last cranes were seen on November 4—the same date as last year.

5. Western Burrowing Owl (Speotyto cunicularia hykugaea) status rare. Eleven sightings of single birds and one of three birds during the year. Ten birds are thought to use the area.

G. Fish

Fish management has largely been undertaken by the California Department of Fish and Game. This year they planted 6,000 subcatchable Shasta strain rainbow trout in Dorris Reservoir during late May. In early June, 145 adipose-clipped Shasta strain rainbows and 195 right ventral-clipped Hot Creek strain rainbows of catchable size were also planted in Dorris. The latter plant was intended to provide information on the size of the entire trout population as well as survival and return to the creel of each strain. No results have been reported. The state department obtained 130 young large-mouth bass and 87 bluegill from refuge waters for transplanting to other waters. The bluegill were used by a local 4-H club for a farm pond fish management program.

H. Reptiles

Several species of nonpoisonous snakes were seen. Though poisonous snakes, namely rattlers, were reported from nearby, none was seen on the refuge.

I. Disease

None noted this year.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Recreation. The Dorris Reservoir Recreation Area received extensive recreational development. The $1\frac{1}{2}$ mile North Shore Drive was partially relocated, entirely rebuilt and resurfaced. A 90 car parking lot and boat launching area was developed at the west terminus of this road. About 220 yards of stream gravel, resulting

from cleaning the Parker Creek Diversion was added to the surface.

In conjunction with this new road and parking lot, the old North Entrance located on a dangerous curve was fenced shut and an East Entrance was opened in a safer place. Metal gates installed at both of these entrances, greatly facilitated closing the area to public use during the waterfowl hunting season.

A 1,200 foot floating log boom was constructed at the Dorris Reservoir swimming area to exclude boats.

Contract drillers brought in a good well to supply water to the Dorris Reservoir Visitor Contact Facility planned for construction in 1969. A contract to provide electricity to this site was also awarded.

The North Public Hunting Area parking lot was expanded to accommodate 120 cars. This was accomplished by leveling a small knoll and applying 370 yards of gravel.

All recreational facilities were given regular service including cleaning of toilets, trash hauling and litter cleanup throughout the year.

2. Irrigation System. About 2,600 feet of small spreader ditches and drains were constructed in various units. Three miles of canals and ditches were burned to remove rank vegetation impeding the delivery of water. A dragline was used to clean about 1,400 feet of canal. To facilitate water management for irrigation and habitat management, four flashboard control structures, three culverts with Swanson gates, one 100' dam and four wooden control structures were installed at various places.

3. Habitat.

- a. Wheat Field. Two small impoundments totaling $\frac{1}{2}$ acre were created by building small dams incorporating culverts with Swanson Gates. Three nesting islands were pushed up for nesting and all were used by both geese and ducks.
- b. Sloss Pond. A 36"x36" stoplog riser was installed on the 36" outlet culvert. This allowed water levels to be maintained in the 13 acre pond rather than being drawn down each year at haying time.
- c. Pit Marsh. A 24"x36" stoplog riser was installed on the upstream side of the 24" outlet culvert and a 24" screwgate on the downstream side of the same culvert. The stoplog riser allowed water levels to be managed on this important 50 acre nesting development, the screwgate prevented water

from backing up into the marsh during periods when the Pit River was high.

- d. South Dam. Minimum and temporary work was done on the abandoned dam in order to raise the Pit River about 14" during the low water period. This was enough to supply water to maintain the Pit Marsh and also irrigate and flood the South Grain fields.
- e. Front Field. Six large nesting islands about 30 feet in diameter were constructed. Three were made by bulldozing out a moat around the sites of old haystack corrals and pushing the spoil up to form the island (see photo). Three others were made by using a dragline to enlarge springs in the meadow, forming the spoil from the spring into a nesting mound and level-ditching around the mound to form an island.
- f. Horse Pasture. A 30"x30" stoplog riser was installed on the roadway culvert in this unit. This allowed water to be maintained in a 3/4 mile long, 30' wide canal that previously served as a drain. This is now a favored cinnamon teal nesting area.

4. Physical Plant.

- a. Office. Acoustic ceiling tile was installed in all rooms.
- b. Residence #14. The kitchen was painted and floor tiling installed in two bedrooms.
- c. Heating systems. All heating systems were regularly maintained as necessary by a local service.
- d. Storage Yard. A 145 foot long, seven foot high redwood stained "Beautification Screen" was erected on the north and south sides of the equipment storage yard. The yard was also surfaced with 226 yards of screened volcanic cinders hauled in for \$1.60/yd. This made for a neater appearance and the cinder surfacing, being cover-free, was not used by mice who would later nest in the vehicles.

- 5. Soil and Moisture Conservation. Much of the S&M effort was concerned with water conservation and management. This included diversion, storage, utilization and measurement as well as a small amount of maintenance work on some control structures.

About 3/4 mile of dike was planted to yellow blossom sweet clover at #3/acre.

A short, temporary fence was erected to exclude cattle from a range renovation project completed in 1965 and in need of protection.

B. Plantings

1. Aquatic. In cooperation with the County Farm Advisor, experimental plantings of alkali bulrush and wildrice were conducted. Farm Advisor Savage had secured 20 pounds of Alkali bulrush seed from a commercial source and he and Assistant Manager Laroche harvested seven pounds of wildrice seed from private property neighboring the refuge. Neither was successful, improper seed storage and handling are suspected.

Since wildrice thrives in several stands established by a refuge neighbor on a nearby pond, we decided to try again. About 35 pounds of seed were obtained from Rice Lake NWR. This seed was stored in burlap sacks placed in a perforated steel drum and submerged in a canal of running water. It will be planted when the ice goes out in the spring of 1969

2. Trees and Shrubs. A zabeli honeysuckle, furnished by the U.S. Department of Commerce, was planted on the office lawn. The morphological phenology of this plant is noted and reported as a part of the Western States Phenological Survey coordinated by Montana State University for the Department of Commerce. All observation stations were furnished with genetically similar stock to be used for future observations.
3. Cultivated Crops. The refuge farming program was managed through two cooperative farming agreements.

Permittees planted 530 acres of Hannchen barley this year and harvested 300 acres of a crop averaging 21 bushels per acre. The extra 60 acres left standing beyond a strict 1/3 refuge and 2/3 permittee sharing came about when one permittee decided not to harvest his share of the 90 acre Town Grain Field because it had become too weedy. Waterfowl made full use of this crop (see Food and Cover).

C. Collections and Receipts

1. Seed or other Propagules. See NR-7 and section III b. preceding.

2. Specimens.

None.

D. Control of Vegetation

1. The headquarters roadside totaling three acres was sprayed with a low-volatile 2,4-D ester at a rate of 2 pounds AE/acre (see NR-12) to control weedy growth.

2. Spot treatment totaling 27 acres was conducted on areas heavily infested with mustards and thistles. A low volatile 2,4-D ester was used at a rate of 2 pounds AE/acre.
3. About 1 3/4 acres of mustard and morning glory in the Grandma Grain field was treated with a low volatile 2,4-D ester.
4. Three small stands of Scotch thistle and two of Mediterranean vetch were controlled by grubbing.

E. Planned Burning

The bottoms of about three miles of canals and ditches were burned to remove rank vegetation impeding water deliveries.

F. Fires

None

IV. RESOURCE MANAGEMENT

A. Grazing

Refuge grazing units are primarily of the wet meadow type. Grazing is used as a tool in controlling vegetation density and distribution in such a manner to create what we hope is a good waterfowl production area.

The minimum degree of grazing use is difficult to achieve on good forage years because permittees have plenty of feed at home. In order to insure the minimum use we require for waterfowl habitat, this year we required a down payment in accordance with what we estimated the minimum grazing requirements would be. There was an understanding there would be no refunds.

In order to make some intelligent estimates of what minimum and maximum use should be, Assistant Manager Larochelle researched the history of use of each unit. The guidelines in the Master Plan and S.C.S. Conservation Plan were consulted. A "use chart" for each unit was developed. This chart has become a handy reference which shows the past history of maximum and minimum use as well as time of use.

This year, twelve permittees utilized 6,528 AUM's at \$3.00/AUM during the grazing season that extended from May 1 through November 29. There were 2,097 acres grazed as summer pasture from May 1 through November 29 and 1,778 acres of hay meadows were grazed following haying in July until November 29.

The 6,528 AUM's is the greatest use yet recorded and is partially the result of experimentally grazing Teal and Foxtail hay fields.

This experimental grazing showed there may be some instances when grazing is more detrimental to nesting than haying. Ducks seem reluctant to nest on our wet meadows unless they can find a dry prominence. These dry spots are usually irrigation canal banks or rough spots where we prohibit mowing. When these units are grazed cattle congregate on the dry spots and soon beat out nesting cover. The wet meadow areas have good looking nesting cover but are evidently too wet to attract nesting birds.

B. Haying

Preparations for haying began in February. Two men were kept busy rebuilding earthen checks, spreader ditches and burning dead vegetation from the bottoms of dried up canals. This work continued into March when much time was spent pulling heavy drags over hay meadows to break up manure and effect a small degree of leveling.

Irrigation began on the first of April and the two irrigators continued at this until late June when they began drying up meadows in preparation for haying.

Eight permittees began harvesting an average hay crop from 1,778 acres of meadow on July 5. They finished on August 13, harvesting 2,385 tons at \$7.00/ton.

Hay harvested from each field was established by weighing a 2-4% sample of the bales in the field and multiplying the average bale weight by the number of bales made in that field.

The number of bales was established by tallying the haul slips furnished to the hauler by the refuge and collected daily, reading baler counters and checking the haystacks.

Irrigation was resumed on each field as soon as bales were hauled off. The resultant new growth was soon being utilized by waterfowl. Cattle were turned on following one complete irrigation cycle requiring from 5 to 12 days. Their clipping kept succulent regrowth available to waterfowl.

TABLE 6. HAYING AND GRAZING UTILIZATION

Date	Hay (Tons)	Grazing (AUM's)
1968	2,385	6,528
1967	3,908	5,684
1966	2,817	6,215
1965	4,018	4,586
1964	3,335	4,212
1963	4,346	4,617
1962	2,908	3,553
1961	2,833	3,847

C. Fur Harvest

Frank Terry, who has been trapping various refuges for over 23 years, returned as our trapper for the seventh time. Trapping with a quota of 1,000 muskrats began November 15, but Frank had to pull all of his traps on December 5 and leave the next day because of a bad hand infection. With only 291 muskrats and four mink caught, two local trappers, Jim Porter and Jack Gaskey, were given permits for the unharvested balance. They were not prepared to begin trapping until after the end of the year.

The fur catch for the past several years is shown below.

TABLE 7. FUR CATCH

	1968	1967	1966	1965	1964
Raccoon	(16)	4	3	5	0
Mink	4	5	11	26	22
Skunk	(179)	5	5	1	0
Badger		1	3	0	1
Coyote		1	2	0	1
Muskrat	291	233	713	659	347
Feral Cat	(53)	4	7	11	9

() = Removals during special Waterfowl Nest Predator Control Program

D. Timber Removal

None.

E. Commercial Fishing

None.

F. Other Uses

1. Mr. Frank Hillman placed 50 beehives on the refuge at 10¢/hive/season.
2. The City of Alturas was issued a permit at \$25.00 per year to allow establishing a new sanitary fill city dump on an excess 80 acre section of the Juniper Field. This arrangement was made pending the land being declared excess and the city acquiring it.

3. A permit was issued to the U.S. Air Force for establishing a radar calibration tower in the Juniper Field for a six month period.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

A. Canada Goose Banding

"The Annual Modoc Goose Roundup" took place on June 13 this year. This project has, in two years, evolved from a simple banding operation to a combination public relations and banding training session. It has received wide publicity in all media until simple logistics required a limit be put on the number of people participating.

This year personnel from Sheldon and Hart Mountain Refuges, Lakeview headquarters, 4 H Wildlife Clubs from Surprise Valley and Alturas, U. of California Wildlife extension agent, two news and television reporters, several private individuals and a Walt Disney movie crew were included—34 people.

A drive trap using 1,000' of wings was set up across a traditional escape route used by a population of geese raising about 225 goslings on the West Pit Unit. The drive began about two miles south of the trap with 23 people on foot, four horseback and five in vehicles.

Geese were moved from grainfields, marshes and hay meadows to the Pit River where the drivers drove them toward the trap. When the geese left the river and took to their familiar escape route, they were guided by the wings into the catch pen.

Banding the 171 goslings and 25 adults provided opportunity for instruction in handling, aging, sexing, band application and recording.

B. Duck Banding

Preseason bait trap banding operations were conducted in August and September. A total of 240 mallards and 14 pintail was banded. Demonstrations were held for several groups.

VI. PUBLIC RELATIONS

A. Recreational Uses

This year's total of 52,745 visits is triple that of last year which more than doubled the preceding year! Traffic counters installed at

all entrances have proven useful in determining time and place of use. Strategic placement at such locations as boat ramps or fishing areas can determine the degree of these activities. Although hunting (6,885) and fishing (8,770) visits each increased fifty percent, their combined use accounted for barely 30% of the total while last year it accounted for a little more than 50%.

Modoc County is widely publicized as a recreation and retirement mecca, a place "where the West still lives." The reportedly largest recreational development in the world, involving 65,000 acres boasts in its promotional literature that it "overlooks the famous Modoc National Wildlife Refuge."

Virtually all of the public use except hunting takes place at the Dorris Reservoir Recreation Area and includes most activities associated with water and land but not necessarily a wildlife refuge. Sky-diving, aircraft aerobatics, boat races, water ski competition and quick draw competition take place there during Modoc County's Annual Fandango Days celebration.

A good part of the increased use at Dorris Reservoir can be attributed to improvement of roads, parking lots, buoyed swimming area and picnic facilities. The 187 acre Dee's property, adjoining us to the east at the reservoir was recently acquired with LWCF monies and opened to the public after having been closed for some years by the former owners. It received the heaviest use of the entire area and is the site of the visitor contact center scheduled for completion in the summer of 1969.

B. Refuge Visitors

In addition to business and information-seeking visitors, a surprising number of people simply stop by to say hello. Many of these are locals who have become aware of our presence and are interested in knowing more about the program.

A total of 1,107 visits to our headquarters was recorded this year. Some of the less-frequent visitors are listed below.

DATE	NAME	AFFILIATION	PURPOSE OF VISIT
1968			
1/4	Del Baxter	Calif. F&G Warden	Law Enf. Coop.
"	Capt. B. Aumann	"	"
1/11	Les Killingbeck	U.S.F&WS trapper	Animal control program
1/25	Vern King	Cal. F&G Fish Biol.	Fish Management
2/10	C. Longenecker & Wife	Hart Mountain Ref.	Courtesy
2/25	E. McLaury	Malheur NWR, Biol.	Courtesy
"	A. B. Clagett	OSG Area Manager	Courtesy
4/2	L. White	County Agent	Rodent control program

DATE	NAME	AFFILIATION	PURPOSE OF VISIT
4/3	R. H. Shields	Asst. Ref. Sup. BSF&W	Recreation Plans & L. Exch.
"	Jack Waddell	BSF&W, Portland	Recreation plans
4/6	Dr. D. Niles	U. of Calif, Prof.	22 bird students.
4/8	Barbara Jobe	Rep. Sacto Bee	Multiple water use story
4/17	Richard Teague	U. of C. Ext. agent	Ref. familiarization
4/19	Bob Savage	U. of C. Ext. "	Wildrice planting
4/21	Harry Payne	Former City Councilman	Pit River flood ctr. proj.
4/21	Lloyd Leonard	Contractor	"
4/25	Rev. Jose Vicent	Minister	Courtesy
5/2	George Perry	Project Engineer	Highway relocation
"	Bill Stockton	"	"
5/3	Joel Shouse	Co. Engineer	Flood control proj.
5/6	Tom Carlson	SCS Unit Leader	Refuge S&M prog.
5/22	Ken Fairbrother	Cal. Dept of Harbors	Dorris boating laws
5/24	Don Smithpeter	Engineer, BSF&W	Well drilling conf.
5/27	R. & J. Connors	Well Drillers	"
5/28	Jack Richardson	Asst. Mgr. Lakeview	"
6/13	Chuck Draper	Walt Disney Photog.	Filming goose banding
6/13	Gary Kenwood	"	"
6/15	Ed Fish	Wildlife Coord. BLM	Courtesy
6/24	Rich Johnson	Cadast. Eng. Portland	Survey Rec. Area
6/25	Doug Thayer	Cal. F&G Mgr.	Ref. Antelope Hunt
6/26	Clyde Muir	Cal Land Use Analyst	Evapo-Transp. Study
7/8	Bub Frasar	Road Foreman	Road Const.
7/8	Craig King	Modoc Co. Sanitarian	Water testing
7/9	Wm. Brockman	Corp of Eng.	Survey Godfrey portion
"	Wm. O'Brian	"	of Pit River "
7/29	Ray Brennan	Surp. Valley Elect.	Dorris Power Line
8/19	Robert Shields	BSF&W Div of Ref.	U.S. 395 proposal
"	Thor Risedahl	Reg. Engineer	Dorris Resvr. Survey
8/28	Rich Wonacott	Wd Serv. Superv.	Animal control
9/25	Dick Munding	Realty Supervisor	U.S. 395 routing
"	Jim Turner	Realty Appraiser	"
"	Jim Welch	"	"
"	Lee Deeter	"	"
9/25	Bill Derby	Asst. Co. Agent	Weed control
10/4	Scotty Stutz	WLDF Biologist	waterfowl mgmt.
10/16	Neal Phillips	Alturas Mayor	City dump site prep.
"	Paul Baker	City attorney	"
11/5	Craig King	Co. Health Officer	Mosquito control prog.
11/7	M Musha	U.S. Air Force	Radar site prep.
11/7	J. Wittemyer	Attorney	Evapo- Transpiration Inf.
"	Keith Hartzell	Civil Engineer	"
"	J. W. Shannon	Water Use Adv.	"
"	H. F. Blaney	" Consultant	"
11/21	Bob James	Dist. Ranger	Courtesy
"	Ron Bassett	"	"

DATE	NAME	AFFILIATION	PURPOSE OF VISIT
11/21	Jay Noviak	USDA Invest.	Cattle & Wheat Enumer.
12/4	Frank Ferguson	Power Co. Mgr.	Relocate power line
12/12	Vern King	Cal. F&G Mgr.	Fish mgmt.
12/16	Bob Sloss	News paper reporter	Hunting news
12/20	Bob Savage	WLDF Ext. Agent	Wildrice project
12/26	Capt. Bill Aumann	Calif. F&G Warden	Ref. enforcement
"	Del Baxtor	"	"
"	Harold Carling	"	"

C. Refuge Participation

The refuge continued participation in Cornell University's Nest Record Survey and 73 nest records were submitted.

The refuge continued as an observer in the Western States Phenological Survey.

Almost weekly news items were issued. These were carried by several newspapers and magazines as well as by radio and television. The Annual Goose Roundup and the Waterfowl Nesting Predator Control Program received exceptional coverage.

The refuge's mounted birds were on display at the Modoc County Fair and the California State Exposition. About 107,000 persons viewed these exhibits with 8,500 refuge leaflets and 7,250 bird lists distributed.

A total of 1,040 persons were conducted on refuge tours. Five slide shows and 21 films were presented.

The SCS held part of a soils tour on the refuge. Individual personnel participated as follows:

Larochelle - Attended Interstate Antelope Committee Meeting in Alturas

Attended a panel meeting of the Vya-Surprise Valley Soil Conservation Districts in Cedarville, California. Members of the panel included Congressman Johnson, Assistant Interior Secretary Anderson, Forest Service Chief Cliff, BLM Director Rasmussen and Region I Assistant Director Crawford.

Took part in the Order of the Antelope Trek.

Met with the Modoc County Commissioners on several occasions.

Met with the Alturas City Council regarding a dump site on the refuge.

Continued in the Alturas Kiwanis Club; elected first vice president; functioned on the Board of Directors; chairman of youth activities.

Served as an instructor in the NRA Hunter SAFETY Training Program.

Member of the Executive Council of the Modoc County Boy Scouts. Conservation leader of Cub Scouts and a Den Dad.

Member of Steering Committee of the Northern California Resource Conservation and Development Committee.

Conducted two field sessions for a Natural Resources class from the University of California at Berkeley.

Attended a Range Renovation workshop sponsored by Northrup King Seed Co. at Cedarville, California.

Assisted in organizing the Northeastern California Scout O'Rama.

Conducted a Nature Program at the Alturas Federated Churches' Blue Lake Children's Camp.

Participated in all activities of the Alturas Sun Club.

Participated in high school graduation excercises at Modoc Union High and Surprise Valley High School.

Attended a Range Tour of Modoc County range improvements sponsored by the County Agent.

Hoshaw - Attended all meetings and training sessions of the Alturas Volunteer Fire Department.

Attended a "Cat Care" school sponsored by the Caterpillar Company.

Completed an advanced First Aid Course sponsored by the Alturas Volunteer Fire Department.

Russell - Attended all meetings and training sessions of the Alturas Volunteer Fire Department.

Completed an advanced First Aid Course sponsored by the Alturas Volunteer Fire Department.

D. Hunting

The refuge was open to waterfowl hunting from October 19 through January 12. The 87 day season saw 6,885 hunters use the 1,440 acre public hunting area which was open every day. Bag checks of 1,263 hunters during the season show that a total of 189 geese and 8,802 ducks was killed.

Opening day saw 825 hunters afield as compared to 385 last year. Waterfowl had been making heavy use of the flooded grain fields and meadows in the hunting area and hunters averaged 3.4 ducks for the day. A total of 26 Canada geese was also taken.

The incredible activity of the first day completely scattered birds that had been using the hunting area and success dropped to 1.5 ducks; only three geese were taken. Refuge waterfowl populations were halved. *by following the first week of hunting*

Success remained low for the next three weeks due to constant hunting—despite poor success and clear weather. A change of weather in early November and the arrival of 32,000 cackling Canada geese and 9,000 ducks greatly improved hunting. Most of the inexperienced or novice hunters had given up by this time.

Hunter numbers greatly decreased following the usual Thanksgiving increase and waterfowl, especially Canada geese, again began using the hunting area. This was the time when the more dedicated and skilled waterfowlers came forth—those who disdain all but drake ducks and will take only honkers while passing up cacklers. Success at this time was better than average and improved markedly when a large flight of mallards came in during early December.

The last two weeks of the season provided perhaps the best hunting when large numbers of mallards moved in and comprised most of the waterfowl population. Hunters simply shot their daily limit of three mallards and quit for the day since mallards were all that was flying.

In retrospect, some considered this the worst and others the best of recent seasons for this area. The record shows it to have been simply a bit less than average.

E. Violations

The enforcement program was a cooperative effort between the refuge and California Fish and Game. Apprehensions increased 50% over last

year and all were taken before Judge Leo Stiel of the Alturas Municipal Court. Judge Stiel was invited to visit the refuge prior to hunting season and offer his comments. He accepted and felt that regulations and posting were adequate.

As can be seen from the following summary, late shooting and closed area violations were the most common. Unplugged gun cases were fewer than last year.

DATE	VIOLATOR	OFFENSE	OFFICER	DISPOSITION
10/19	McRoberts, E.(N)	Hunt closed area	Larochelle	25.00
"	Sushkoff, N. (N)	"	"	\$25.00
"	Loft, C. R.	Unplugged gun	"	Dismissed
"	Abersold, S. R.	"	"	
10/20	Ehn, H. L.	Hunt closed area	Russell	\$25.00
"	Price, D. E.	"	"	
10/26	Dewart, E. A.	Unplugged gun and Late Shooting(24 mins.)	Larochelle	\$50.00
"	Dewart, D. C.	"	"	25.00
10/27	Geaney, P. (N)	Late shooting(10 mins.)	"	20.00
10/27	West, B. J.	"	"	20.00
"	McFarland, R. E.	" (32 mins.)	"	25.00
"	Vick, E. E.	" "	"	25.00
10/28	Melton, J. R.	" (10 mins.)	Baxter	Suspended fine
11/17	Gilweit, E. (N)	Hunt closed area	Larochelle	\$25.00
"	Gray, I. M.	"	"	25.00
"	Gray, J. C.	"	"	25.00
"	Wolfe, W. K.	"	"	25.00
11/11	Lala, J. J.	Take whistling swan	Carling	75.00
11/16	Welchel, R. J.	Hunt closed area	Russell	25.00
11/25	Jackman, D. M.	Late shooting	Carling	25.00
"	Belding, M.D.	"	"	25.00
12/18	Perron, R. T.	Overlimit ducks	Carling	55.00

F. SAFETY

Monthly staff and SAFETY meetings were held throughout the year. Pertinent SAFETY literature was distributed as it came in and then discussed at the next monthly meeting. Appropriate films were shown at several meetings.

Mechanic Hoshaw and Maintenceman Russell completed advanced First Aid courses sponsored by the Alturas Volunteer Fire Department.

Anti-roll devices and SAFETY belts were installed on both wheel tractors.

A 1,200' floating log boom was constructed at the Dorris Reservoir swimming area to segregate boats and swimmers.

The refuge has never had a lost-time accident since it was first manned in 1961 - 2,979 days ago.

VII. OTHER ITEMS

A. Items of Interest

Kenneth "Skip" Walch, Assistant Manager was called to active military duty with the Air Force on January 26, 1968.

Negotiations continued on the proposed U.S. 395 route that would cross the refuge through prime habitat. Proposed land exchanges would possibly mitigate expected losses. No decision has yet been reached.

The Corps of Engineers has applied for a right-of-way through part of the Godfrey Tract in order to complete a flood control project for Alturas.

Modoc County received \$12,125.00 in lieu of taxes.

The U.S. Air Force was given permission to establish a temporary radar calibration tower on the Godfrey Tract.

Credits. This report was completed by Assistant Manager Larochele. Lakeview personnel edited and typed it.

SIGNATURE PAGE

Submitted by:

W. D. Carter

(Signature)

W. D. Carter

Refuge Manager

(Title)

Date: _____

Approved, Regional Office:

Date: _____

(Signature) _____

(Title) _____

5-1750
Form NR-1
(Rev. March 1953)

OK. J

WATERFOWL

REFUGE

Modoc

MONTHS OF

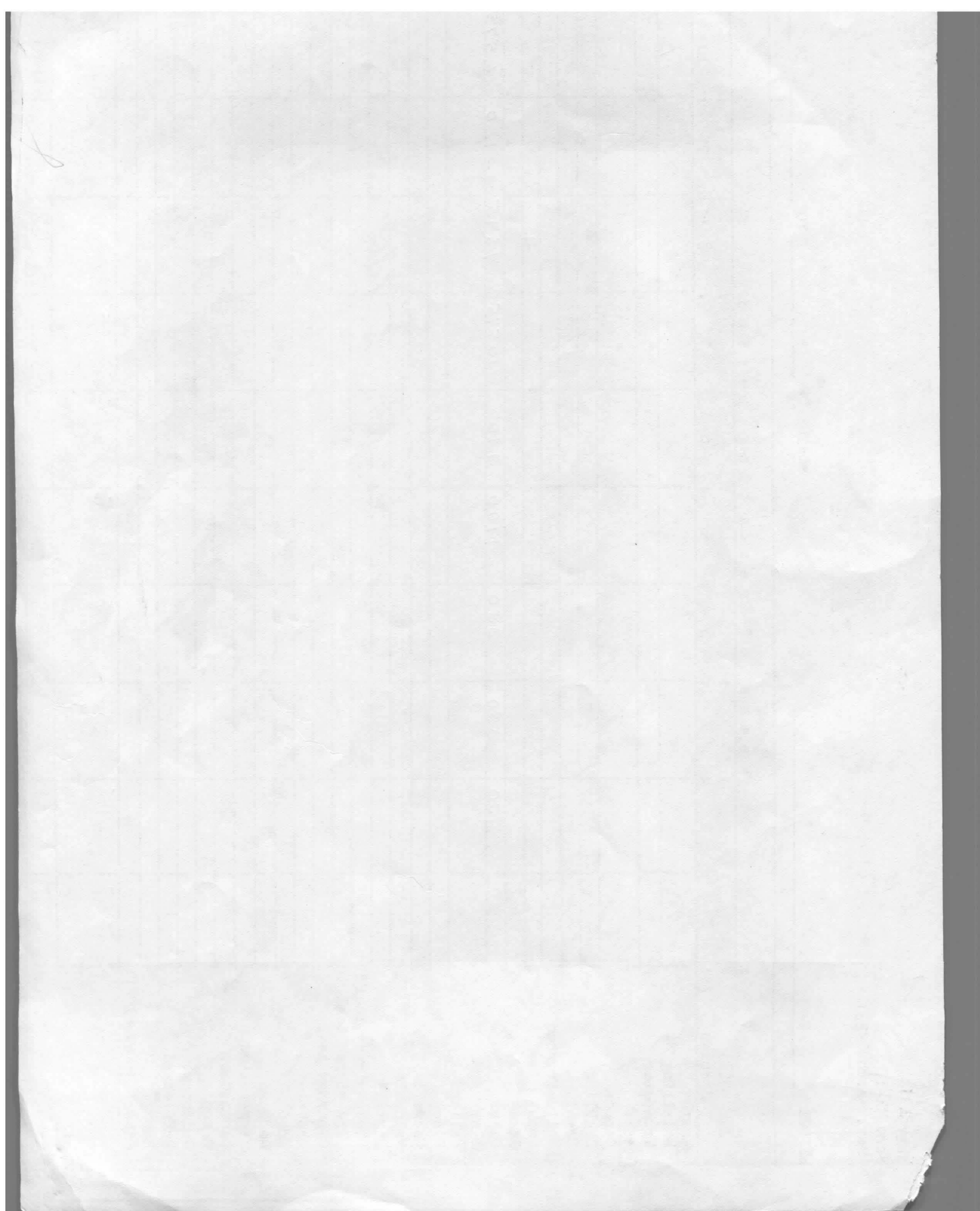
Jan

TO

April

, 1968

(1) Species	(2) Weeks of reporting period									
	12-31-67 1-6-68	1-7-13	1-14-20	1-21-27	1-28-2-3	2-4-10	2-11-17	2-18-24	2-25-3-2	3-3-9
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling	10	10	10	25	25	275	450	625	500	125
Trumpeter										
Geese:										
Canada	7,600	4,000	3,300	3,300	6,000	1,300	1,800	2,200	2,200	1,900
Cackling	50	50	50	50	500	5,800	8,700	6,750	10,500	6,200
Brant										
White-fronted							25	50	25	150
Snow							350	250	400	300
Blue-Ross								25	25	25
Other TOTAL GEESE	650	450	350	350	1,100	7,100	10,875	9,275	13,150	8,575
Ducks:										
Mallard	400	200	200	300	500	600	1,600	1,900	1,900	1,900
Black										
Gadwall	25	10	10	25	25	25	25	75	75	100
Baldpate	25	25	10	10	50	50	50	50	75	200
Pintail	-	-	-	-	900	1,700	400	500	1,900	3,000
Green-winged teal	25	10	10	25	25	25	75	75	100	100
Blue-winged teal										
Cinnamon teal								-	10	25
Shoveler									-	75
Wood									-	10
Redhead								25	25	50
Ring-necked										-
Canvasback						-	25	25	25	50
Scaup										
Goldeneye	25	10	10	25	25	10	10	75	75	25
Bufflehead	25	10	10	-	-	-	25	150	150	150
Ruddy	25	10	10	10	10	25	50	100	200	250
Other MERGANSERS	10	-	-	-	-	10	25	25	10	10
TOT. DUCKS	560	275	260	395	1,535	2,445	1,285	2,000	3,535	4,945
Coot:	10	10	0	0	5	10	100	300	500	750



3-10a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE MODOC MONTHS OF January TO April, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use		(4) Production Broods: Estimated seen : total	
	3/10-16 : 11	3/17-23 : 12	3/24-30 : 13	3/31-4/6 : 14	4/7-13 : 15	4/14-20 : 16	4/21-27 : 17	4/28-5/4 : 18				
Swans:												
Whistling	25	5	190	75	5				16,485			
Trumpeter												
Geese:												
Canada	1,900	1,400	1,400	1,400	1,400	1,400	1,400		153,300			
Cackling	7,200	8,500	19,000	11,000	13,000	10,000	6,300		795,550			
Brant												
White-fronted	400	225	175	175	225	300	15		12,355			
Snow	500	125	25	25	25	15	15		14,210			
Blue Ross	15	15	15	15	5				980			
Other Total Geese	10,015	10,265	20,615	12,615	14,655	11,715	7,730		976,395			
Ducks:												
Mallard	1,400	2,000	2,750	2,750	1,800	1,800	1,800		145,600			
Black												
Gadwall	600	1,200	1,500	1,500	1,000	750	600		52,815			
Baldpate	300	700	750	750	500	500	500		31,815			
Pintail	1,200	4,000	4,000	1,500	1,300	750	500		151,550			
Green-winged teal	300	300	1,000	600	450	300	300		26,040			
Blue-winged teal												
Cinnamon teal	100	400	700	700	700	700	700		28,245			
Shoveler	300	300	450	450	450	350	300		18,725			
Wood	25	25	25	25	25	25	15		1,225			
Redhead	75	300	900	1,500	600	400	400		29,925			
Ring-necked	10	150	150	10	10				2,310			
Canvasback	150	400	400	750	200	100	100		15,575			
Scaup		10	750	600	600	200	200		16,520			
Goldeneye	25	100	75	75	25	25	25		4,480			
Bufflehead	400	400	650	650	450	300	100		24,290			
Ruddy	700	750	750	1,200	700	250	250		37,030			
Other Mergansers	25	25	25	25	25	15	15		1,715			
TOTAL DUCKS	5,610	11,060	14,875	13,085	8,835	6,465	5,805		587,860			
Coot:	1,000	1,500	1,500	2,500	2,500	2,000	2,000		102,795			
				(over)								

	(5) Total Days Use	(6) Peak Number	(7) Total Production	SUMMARY
Swans	16,485	625		Principal feeding areas <u>Refuge meadows, ponds and</u>
Geese	976,395	20,615		<u>grain fields</u>
Ducks	587,860	14,875		Principal nesting areas _____
Coots	102,795	2,500		
				Reported by <u>O. E. Larochele</u>

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

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

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

WATERFOWL

REFUGE Indoo

MONTHS OF May TO August, 19 68

(1) Species	(2) Weeks of reporting period									
	4/20-5/4	5/5-11	5/12-18	5/19-25	5/26-31	6/1-6	6/7-13	6/14-20	6/21-27	6/28-7/6
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	1,600	1,600	1,600	1,600	1,200	1,000	1,000	1,100	1,300	1,500
Cackling	1,500	50	25	25						
Brant										
White-fronted	15	15								
Snow	5						5	10	10	
Blue Ross										
Other Total Geese	2,970	1,665	1,625	1,625	1,200	1,000	1,005	1,110	1,310	1,500
Ducks:										
Mallard	1,800	1,800	1,300	1,300	1,300	1,300	1,500	1,500	1,300	1,300
Black										
Gadwall	600	600	600	600	600	600	600	600	600	600
Baldpate	500	500	750	300	200	100	100	100	100	100
Pintail	500	500	500	300	300	300	750	750	600	600
Green-winged teal	300	300	50	50	50	50	50	25	25	25
Blue-winged teal	25	25	25	25	25	25	25	25	25	25
Cinnamon teal	700	700	700	600	600	600	600	600	600	600
Shoveler	300	300	300	300	200	75	75	75	75	75
Wood	15	15								
Redhead	600	600	600	600	600	600	600	600	75	75
Ring-necked										
Canvasback	100	25	25	10						
Scaup	200	200	600	600	600	50	50	50	50	50
Goldeneye	25	25	10		25	10	10	10	10	10
Bufflehead	100	100	100	25	25	25	25	10	10	10
Ruddy	250	100	100	50	50	25	25	10	10	10
Other - Gen. Herg.	15	10	10	10	10	10	10	10	10	10
Total Ducks,	5,830	5,600	5,270	4,370	3,500	3,615	3,605	3,600	3,080	3,030
Coot:	2,000	1,100	800	800	600	600	600	600	600	600

3-150a

Cont. NR-1
(Rev. March 1953)WATERFOWL
(Continuation Sheet)REFUGE MONTHS OF TO August, 1968

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	11	12	13	14	15	16	17	18			
Swans:											
Whistling											
Trumpeter											
Geese:	1,600	1,750	1,750	1,750	1,750	2,000	2,750	2,750	205,800	139	768
Canada									11,200		
Cackling									210		
Brant									210		
White-fronted											
Snow											
Blue											
Other	1,600	1,750	1,750	1,750	1,750	2,000	2,750	2,750	217,420		
Ducks:	1,300	1,300	1,300	2,500	3,000	6,250	7,500	7,500	315,350	87	726
Mallard											
Black				750	750	1,250	1,250	1,750	83,650	37	232
Gadwall				100	100	250	500	750	33,250		
Baldpate			3,500	3,500	750	750	750	1,000	110,250	29	286
Pintail			250	250	250	250	250	250	27,375	1	4
Green-winged teal			25	250	250	250	250	250	9,625		
Blue-winged teal			1,100	1,100	1,750	1,250	1,250	1,750	106,100	127	1,052
Cinnamon teal			50	50	100	100	100	100	16,800	2	11
Shoveler			10	10	10	10	10	25	805		
Wood			10	10	10	10	10	25	19,950	3	12
Redhead			25	25	150	150	150	200	2,450		
Ring-necked			25	25	50	50	50	50	3,395		
Canvasback			10	25	25	50	50	50	12,505		
Scaup									40		
Goldeneye									3,750		
Bufflehead			50	50	150	150	150	150	1,500	1	16
Red-billed					25	25	25	25	1,575		
Other	3,055	3,075	6,895	8,505	6,705	10,885	12,305	13,950	747,250		
Coot:	600	600	800	1,100	1,250	1,250	1,500	1,500	118,300	113	585
				(over)							

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	:	:	:
Geese	217,120	2,920	768
Ducks	747,250	13,950	2,556
Coots	118,300	2,000	585

SUMMARY	
Principal feeding areas	Refuge ponds, grainfields and meadows
Principal nesting areas	Dikes, ditchbanks, islands and artificial nests.
Reported by	C. E. Laroche, Jr.

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

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

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

WATERFOWL

REFUGE Madoc MONTHS OF September TO December, 19 60

(1) Species	(2) Weeks of reporting period									
	9/1-7	9/8-14	9/15-21	9/22-28	9/29-10/5	10/6-12	10/13-19	10/20-26	10/27-11/3	11/3-9
	1	2	3	4	5	6	7	8	9	10
Swans:			75	5	5	10	10	75	100	150
Whistling										
Trumpeter										
Geese:	3,000	3,000	3,000	3,000	3,200	3,100	4,200	3,100	2,400	2,600
Canada					600	1,100	2,000	1,000	1,000	32,000
Cackling										
Brant						15	50	50	100	300
White-fronted						10	10	10	600	1,100
Snow										
Blue										
Total Geese	3,000	3,000	3,000	3,000	3,800	4,525	6,260	7,160	7,100	36,000
Other										
Ducks:	8,100	8,100	8,750	9,500	9,500	13,500	13,500	7,500	9,000	11,000
Mallard										
Black	1,000	1,500	1,000	1,200	1,200	2,000	2,500	1,300	1,200	1,500
Gadwall	750	750	1,000	1,200	1,750	2,500	2,500	1,500	1,200	1,000
Baldpate	1,500	2,500	2,500	2,500	4,000	4,700	7,500	3,000	3,000	6,000
Pintail	750	1,000	1,000	1,100	1,100	2,000	3,750	2,000	2,500	2,000
Green-winged teal	250	750	750	100						
Blue-winged teal	2,500	2,500	1,500	250	25	25	25			
Cinnamon teal	100	750	1,000	1,100	1,500	1,750	2,000	1,200	1,500	4,000
Shoveler	25	25	25	100	100	100	50	50	10	10
Wood	200	200	200	200	600	750	750	500	500	500
Redhead	50	50	10					10	75	100
Ring-necked	75	100	100	50	50	50	75	75	25	300
Canvasback	50	50	25	25	25	25	25	100	300	300
Scaup			10	10	10	10	10	10	50	50
Goldeneye	50	50	50	300	300	300	300	300	500	750
Bufflehead	150	150	200	200	400	400	400	400	750	750
Ruddy, Cos. Herg	25	25	10	10	10	10	10	10	10	10
Other Ducks	16,475	18,500	18,130	18,115	20,670	28,120	31,395	18,005	21,320	30,270
	1,500	1,500	2,000	2,750	4,000	4,000	4,000	2,500	2,500	3,000
Coot:										

3 - 50a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Hodges MONTHS OF September TO December, 19 68

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen: total	
	11/10-11	11/17-23	11/24-30	12/1-7	12/8-14	12/15-21	12/22-28	12/29-1/4/69			
Swans:											
Whistling	600	600	1,500	700	150	125	125	125	31,685		
Trumpeter											
Geese:											
Canada	1,000	3,500	2,100	1,600	1,200	1,200	800	800	122,700		
Cackling	32,000	23,000	18,000	7,000	1,000	1,100	100	150	905,150		
Brant											
White-fronted	350	200	125	25	25				8,880		
Snow	1,100	300	100	50					22,960		
Blue											
Other Total Geese	37,150	27,000	20,325	8,675	5,225	2,300	1,200	950	1,259,790		
Ducks:											
Mallard	1,000	6,000	1,000	2,900	8,500	1,800	1,150	750	885,850		
Black											
Gadwall	1,000	1,100	600	100	100	100	50	25	151,725		
Baldpate	1,000	1,800	100	200	50	50	25	25	151,900		
Pintail	1,000	2,000	1,300	250	750	100	25		119,375		
Green-winged teal	1,800	1,200	500	250	100	25	25	25	154,175		
Blue-winged teal									12,950		
Cinnamon teal									17,775		
Shoveler	3,200	1,900	800	750	250	100			153,300		
Wood									3,165		
Redhead	200	200	25	10	75				16,370		
Ring-necked	100	25	25	10					3,185		
Canvasback	700	100	25	10					12,115		
Scaup	150	150	100	10					11,115		
Goldeneye	50	50	10	10	75	75	100	25	3,805		
Bufflehead	100	250	150	25	300	50			28,875		
Ruddy	300	250	50	50	50	25			31,675		
Other Can. Brgs.	10	10	10	10	15	10			1,765		
	20,210	15,035	7,975	4,885	10,925	2,335	1,375	850	2,007,880		
Coot:	1,100	800	600	300	300	100	75	25	217,350		
				(over)							

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	31,685	1,500	
Geese	1,259,790	37,150	
Ducks	2,007,880	33,395	
Coots	217,150	6,000	

SUMMARY
Principal feeding areas <u>Refuge ponds, marshes,</u> <u>grain fields and meadows</u>
Principal nesting areas _____
Reported by <u>O. E. Larchelle</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).

S-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge MODOCMonths of January to April 195 68

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Eared Grebe	2	4-3	45	4-30	Still Present					200
Western Grebe	3	4-18	10	4-21						50
Pied-billed Grebe	2	3-30	50	4-19						100
White Pelican	10	4-23	29	4-26						75
D-C Cormorant	2	4-17	2	4-17	2	4-17				2
Great Blue Heron	1	1-1	35	3-8	Still Present					50
Snowy Egret	9	4-8	65	4-26						200
B-C Night Heron	1	3-26	7	4-18						35
Am. Bittern	3	4-11	12	4-26						25
*Sandhill Crane	2	1-24	40	4-8						100
Virginia Rail	1	4-9	10	4-25						50
Sora Rail	4	4-9	10	4-19						30
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer		Res.	300	4-26	Still Present					750
Common Snipe		Res.	250	4-19						500
Long-billed Curlew	2	4-2	75	4-19						100
Spotted Sandpiper	7	2-24	125	3-20						300
Solitary Sandpiper	2	3-14	15	4-20						150
Willet	1	4-4	125	4-26						300
Long-billed dowitcher	5	4-5	25	4-19						100
American Avocet	2	4-2	65	4-19						300
Wilson's Phalarope	8	4-1	25	4-26						100
California Gull	3	2-11	1,200	4-19						2,000
Ring-billed Gull	1	2-25	75	4-12						200
Forster's Tern	3	4-19	125	4-25						400
Black Tern	1	4-26	15	4-25						100

(over)

(1)	(2)		(3)		(4)	(5)		(6)
III. <u>Doves and Pigeons:</u>								
Mourning dove	4	3/14	75	3/28	Still present			100
White-winged dove								
IV. <u>Predaceous Birds:</u>								
Golden eagle	3	1-1	8	2/13				15
* Duck hawk	2	1-8	2	4/8				6
Horned owl	Res.		25	4/30				25
Magpie	"		75	4/12				350
Raven	"		6	3/19				25
Crow	5	2-4	25	4/19				125
Turkey Vulture	1	3-22	13	4/25				50
Red-Tailed Hawk	Res.		16	4/25				50
Swainson's Hawk	4	1-1	9	4-5				25
Bald Eagle	2	1-1	5	2-6				10
Marsh Hawk	1	3-8	25	4/18				100
* Prairie Falcon	1	3-15	3	3-29				10
Sparrow Hawk	2	2-18	20	4-5				100
* Burrowing owl	1	3-4	1	4-26				10
Reported by O. E. Larochele								

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.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Redco Months of May to August 1956

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Hared Grebe	2	*	45	5/24	2					165
Western Grebe	3		5	8/9						40
Pied-billed Grebe	2		20	7/26						75
White Pelican	10		55	7/19						150
Great Blue Heron	1		50	8/23						300
Snowy Egret	9		120	8/16						400
N-C Night Heron	1		120	8/23						400
Am. Bittern	3		25	8/23						150
Sandhill Crane	2		80	8/16				9	11	150
Virginia Rail	1		75	8/16						250
Sora Rail	h		35	8/16						100
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer		Rare	150	8/30	2			18	125	1,500
Common Snipe		"	100	8/30						1,500
Long-billed Curlew	2	*	75	8/9						400
Spotted Sandpiper	7		500	8/16						2,000
Solitary Sandpiper	2		125	8/30						600
Millet	1		250	8/9						1,000
Greater Yellowlegs	2		200	8/23						1,000
Long-billed Dowitcher	5		200	8/20						750
American Avocet	2		100	8/30						500
Wilson's Phalarope	8		100	7/26						1,000
Calif. Gull	3		750	7/19				1	3	2,000
Ring-billed Gull	1		125	8/10						750
Forster's Tern	3		200	7/26						750
Black Tern	1		75	8/10						500

*Present from last quarter & still present

(over)

#Rare & Endangered

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove	4	1,900	4		8,000
White-winged dove					
IV. <u>Predaceous Birds:</u>					
Golden eagle	3	9	5/12		15
Duck hawk	2	1	8/10		3
Horned owl	Res	25	7/26	2	25
Magpie	"	150	8/17	7	500
Raven	"	5	5/5		25
Crow	5	25	5/25		100
Turkey Vulture	1	22	8/26		50
Red Tailed Hawk	Res.	9	5/25	2	50
Swainson's Hawk	4	11	6/30		50
Bald Eagle	2	4	5/1		10
Marsh Hawk	1	17	5/6	3	100
Prairie Falcon	1	5	5/18		15
Sparrow Hawk	2	13	5/30		100
Thurrowing Owl	1	3	8/11		10
Reported by G. E. Laveshelle					

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.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge..... Months of..... to..... 195.....
 Notice September December 705

(1)	(2)		(3)		(4)		(5)			(6)
Species	First Seen		Peak Numbers		Last Seen		Production			Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Hared Grebe	2	"	75	10-4	1	12-5				175
Western Grebe	3	"	2	9-16	2	11-22				125
Pied-billed Grebe	2		150	9-16	6	8				575
White Pelican	10		26	10-14	8	11-22				250
Great Blue Heron	1		37	11-3	14	8				300
Snowy egret	9		34	10-4	5	11-26				400
B-C Night Heron	1		26	10-28	4	8				300
Am. Bittern	1		18	9-6	1	11-22				150
W.A. Sandhill Crane	2		245	10-7	7	11-4				600
Virginia Rail	1		40	9-30	1	11-21				200
Sora	1		10	9-30	1	11-21				100
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer	300	"	525	10-28	1	8				1900
Common Snipe	250		1900	10-14	3	8				6000
Long Billed Curlew	2		35	10-18	4	11-11				300
Spotted Sandpiper	7		60	10-18	35	11-4				300
Solitary sandpiper	2		50	10-25	35	9-30				300
Willet	1		200	11-8	6	10-7				600
Greater yellowlegs	2		275	10-25	1	11-2				1000
Long-billed dowitcher	5		225	10-16	11	10-30				1000
American avocet	2		75	10-4	7	10-30				300
Wilson's phalarope	8		475	10-11	8	10-30				1200
California gull	3		1250	11-1	200	8				4000
Ring-billed Gull	1		125	11-4	3	11-14				1000
Forster's tern	1		75	10-18	3	11-7				1000
Black tern	1		100	10-18	3	11-7				500

* = Present from previous period

(over)

Rare & Endangered

8 = Still present

(1)	(2)	(3)	(4)	(5)	(6)		
III. <u>Doves and Pigeons:</u>							
Mourning dove	4	*	800	9-4	2	*	3200
White-winged dove							
IV. <u>Predaceous Birds:</u>							
Golden eagle	3	*	11	11-22	3	*	15
Duck hawk	2		2	11-4	1	11-13	3
Horned owl	4		25	11-29	25	*	25
Magpie	30		150	11-15	25	*	500
Raven	5		5	10-27	2	*	25
Crow	5		75	9-20	11	10-29	400
Turkey vulture	1		26	10-16	8	10-26	50
Red-tailed hawk	1		9	10-30	2	*	50
Swainson's hawk	4		11	11-4	2	*	50
Bald eagle	2		4	11-15	2	*	10
Marsh hawk	1		30	11-11	3	*	400
#Prairie falcon	1		7	11-26	1	*	15
#Harrowing owl	1		5	10-29	5	*	10
Reported by <u>Larry Larochelle</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.

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Nodoc

For 12-month period ending August 31, 19

Reported by O. E. Laroche

Title Refuge Manager

(1)	(2)		(3)	(4)	(5)
Area or Unit	Habitat			Breeding	
Designation	Type	Acreage	Use-days	Population	Production
Godfrey Unit	Crops	0	Ducks	71,450	200
	Upland	800	Geese	46,350	45
	Marsh	20	Swans	5,400	0
	Water	10	Coots	7,100	60
	Total	830	Total	130,300	128

West Unit	Crops	540	Ducks	1,005,550	1,350
	Upland	1,570	Geese	846,150	765
	Marsh	20	Swans	2,100	
	Water	30	Coots	109,500	110
	Total	2,160	Total	1,963,300	1,228

East Unit	Crops	60	Ducks	765,800	2,675
	Upland	2,155	Geese	518,215	485
	Marsh	50	Swans	3,450	
	Water	125	Coots	126,650	600
	Total	2,390	Total	1,414,115	1,828

Dorris Unit	Crops	0	Ducks	948,555	925
	Upland	370	Geese	315,450	105
	Marsh		Swans	7,400	
	Water	430	Coots	221,515	300
	Total		Total	1,492,960	723

Total	Crops	600	Ducks	2,791,355	5,150
	Upland	4,095	Geese	1,726,165	1,400
	Marsh	90	Swans	18,410	
	Water	598	Coots	464,765	1,000
	Total	5,383	Total	5,000,695	7,550

	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

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

- (1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

- (4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

- (5) **Production:** Estimated total number of young raised to flight age.

3-1750c
Form NR
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge MODOC NATIONAL WILDLIFE REFUGE

Year 1968

(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. 19 Oct. 25, 1968	538	12,600	Mallard-307, Green-wing teal-182, Pintail-178, Widgeon-68, Canada-36, Redhead-14, Coot-5, L. scaup-1	926	234	1,160	2,100	4,524
Oct. 26 Nov. 1	102	3,390	Mallard-11, Green-wing teal-7, Pintail-5, Canada goose-5, Widgeon-2, Ringneck-1	31	9	40	565	220
Nov. 2 - Nov. 8	87	2,100	Pintail-11, Mallard-10, Green-wing teal-6, Canada Goose-4, Widgeon-2.	33	7	40	350	160
Nov. 9 Nov. 15	91	2,400	Widgeon-16, Pintail-7, Mallard-6, Green-wing teal-4	47	13	60	400	264
Nov. 16 22	76	2,700	Mallard-13, Widgeon-12, Pintail-9, Green-wing teal-8, Cackler-8, Shoveler-6, Canada-5, Coot-3.	64	16	80	450	480
Nov. 23 29	116	3,750	Cackler-19, Mallard-11, Pintail-6, Shoveler-5, Goldeneye-5, Bufflehead-4, Green-wing teal-2, Canada-2.	54	16	70	625	378
Nov. 30 Dec. 6	46	1,200	Mallard-11, Pintail-8, Cackler-8, Canada-6, Shoveler-4, L. Scaup-2	39	11	50	200	215
Dec. 7 13	31	1,000	Mallard-23, Cackler-10, Shoveler-3, Canada-1	37	8	45	200	288
Dec. 14 20	26	800	Mallard-14, Cackler-12, Canada-9, Shoveler-4	39	6	45	200	346
Dec. 21 28	30	1,000	Mallard-19, Canada Goose-9, Cackler-3, Green-wing teal-3	34	6	40	250	332
Dec. 28 Jan. 3, 1969	50	2,000	Mallard-39, Canada-13, Widgeon-7, Cackler-4, Bufflehead-3, Golden-eye-1	67	8	75	400	600

CONTINUED.

(over)

3-17500
Form 1-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge ACADIC NATIONAL WILDLIFE REFUGE

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippin Loss	
Jan. 4 10	30	1,500	Mallard-43, Canada Goose-14, Widgeon-9, Cackler-1, Coot-1	68	7	
Jan 11	40	600	Mallard-26, Canada-11, Widgeon-4, Cackler-3, Coot-3, Bufflehead-1	48	7	
TOTALS	1,263	35,040	Mallard-593, Pintail-224, Green-wing teal- 214, Canada Goose-121, Widgeon-120, Cackler-68, Shoveler-63, Gadwall-36, Red- head-14, Bufflehead-12, Coot-12, Golden- eye-6, L. Scaup-3, Ringneck-1	1,487	332	1,83

121
68
189

(over)

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge MODOC Months of January to April, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	780 acres grain fields, 2,220 acres Upland Total: 3000 acres	30							100	
Calif. Quail	780 acres grain fields, 2220 Upland Total: 3000 acres	15							200	

3-1752
Form R-2
(April 1946)

UPLAND GAME BIRDS

161

Refuge Nodoc Months of May to August, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	780 acres Orsin fields; 2,200 acres Upland Total: 3,000	30	4	40					100	
California Quail	As above	10	6	90					300	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1752
Form R-2
(April 1946)

UPLAND GAME BIRDS

161

Refuge Modoc Months of September to December, 1968

(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	780 acres grain fields; 2,200 acres upland. Total: 3,000	30							100	
Calif. Quail	As above	15							200	

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-17
Form NR-3
(June 1945)

BIG GAME

Refuge Madoc Calendar Year 1968

(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	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
Mule Deer	Entire refuge land area 4,763	25										200	25	
Pronghorn antelope	As above	15										125	10	

Remarks:

Reported by Larry Larochelle

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.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge MODOC

Year ending April 30, 1968

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs					(5) Total Popula tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re- stocking	For Re- search	Share Trapping			Total Refuge Furs Shipped	Furs Donated	Furs Destroyed
								Permit Number	Trappers Share	Refuge share			
Raccoon	1,000	40		4	1				100%				25
Mink	1,000	20		5					"				50
Striped Skunk	5,000	40		5	11				"				125
Badger	2,400	240		1	2				"				10
Coyote	5,000	200		1	7				"				25
Belding Gr. Squirrel	2,400	1.2							"				2000
Muskrat	1,400	1.4		233					"				1000
Blk-Tld.Jackrabbit	2,400	24											100
Mtn.Cottontail	2,400	48											50
? Feral cat	5,000	333		4	9				"				15

* List removals by Predator Animal Hunter

* List removals by Predator Animal Hunter

REMARKS:

O. E. Larochelle

Reported by _____

DISEASE

Refuge Hodges Year 19 68

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 Species	Actual Count	Estimated
_____	_____	_____
_____	_____	_____
_____	_____	_____

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

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

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

(1)

Refuge

Hoise

Year 19

68

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 Los
Yellow Blouse seed clover							South Gran. Field	#3/A	5 acres	15 lbs. seed	3/15	100%	
Honeyuckle Labelli							Headquarters	-	1 plant	shrub	3/20	100%	
Alkali bulrush							1/	#20/A	1/2 ac.	#7 seed	5/3	0	1/
Wild rice							1/	#15/A	1/2 ac.	#7 seed	5/3	0	1/
"	#35	R	10/1	1/	\$60	#35							

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

Total acreage planted:

Marsh and aquatic 6
Hedgerows, cover patches
Food strips, food patches
Forest plantings

Remarks: 1/ See part III b of Narrative Report

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Modoc County Modoc State California

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water- fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Hannehen Barley	300	6,362 Bu			270	5,670 bu	570		
								Fallow Ag. Land	75

No. of Permittees: Agricultural Operations 2 Haying Operations 5 Grazing Operations 14

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	3,756	6,528	19,504	3,875
				2. Other	17 horses	51	-	147
				1. Total Refuge Acreage Under Cultivation				425
Hay - Wild	2,385	1,778	16,695	2. Acreage Cultivated as Service Operation				

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.

REFUGE GRAIN REPORT

Refuge WCCC Months of September through December, 1954

(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
1. Mixed Barley	600#	400#	1,000#			800#	800#	200#		200#	0
2. Wild Rice		42#	42#		7#		35	35	35		0

Alturas, California

(8) Indicate shipping or collection points _____

(9) Grain is stored at Refuge _____(10) Remarks "1" used for banding bait, "2" received from Rice Lake NWR for planting trials.

*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.

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

MODOC

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1968

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)
6/20	Mustard & Morning glory	Grandma's Field	1 3/4	2,4-D low volatile ester	60 lbs.	2 lbs. /A	Water diesel	Boom Sprayer
7/9-12	Thistles Mustards Dock	Roadsides & ditch banks	30	As above				

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



(Top left)

A major chore in winter is keeping water control structures clear of ice to insure water delivery to Dorris Reservoir. (Larochelle)

(Top right)

This rectangular metal weir was fabricated in the refuge shop. It is used to measure water deliveries from Pine creek and to divert water to another user. (Larochelle)

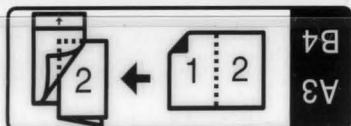
(Bottom left)

Wooden control structures are still being utilized. They have a life of about 10 years and should be replaced by metal or concrete. (3-15-68 Larochelle)

(Bottom right)

Metal flashboard risers are used to replace old wooden ones as money permits. (Larochelle)





(Top left)
The Parker Creek Diversion Canal fills with gravel each year. (Larochelle)

(Top right)
Three- to five-hundred yards of gravel are removed each year and used for road material at Dorris Reservoir. (Larochelle)

(Bottom left)
Modern haying equipment (swather & conditioner) now makes it possible to delay haying until mid-July and still harvest quality hay. About 1,778 acres yielded 2,385 tons @ \$7.00 for revenue of \$16,695. (Larochelle)

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Meadow dragging is a standard procedure used to aerate and condition hay meadows. (2-24-68 Larochelle)





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More modern haying equipment is the self-loading Stackmaster. Quick removal of bales permits quick re-irrigation and the production of succulent browse for waterfowl.

(Larochelle)

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Every fifth irrigation check was left unmowed in a test to determine the response of waterfowl nesting.

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A baled hay lifting device (bottom left) was designed by Assistant Manager Larochelle and fabricated by Heavy Duty Mechanic Hoshaw. The time required for weighing 2,000 bales was reduced by 50%. Maintenance man Wilson (bottom right) can weigh more bales in less time and never dismount from the vehicle. (Larochelle)





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The demand for nesting sites at Modoc is so great we are "making do" until something more permanent and attractive can be devised. (2-15-68 Larochele)

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Four of these floats were installed and all were used by geese. Earth islands and muskrat houses look better but don't raise more geese. (2-15-68 Larochele)

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The 55-acre duck pond had 54 muskrat houses this year. There were nine last year. The increase is attributed to higher water levels. (11-16-68 Larochele)

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Refuge trapper Frank Terry. Fur harvest attempts to control rats in irrigation system while leaving the house-building marsh dwellers. (11-26-68 Larochele)





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The level ditches soon filled around the islands. We will soon know what the geese think of them. (Larochelle)





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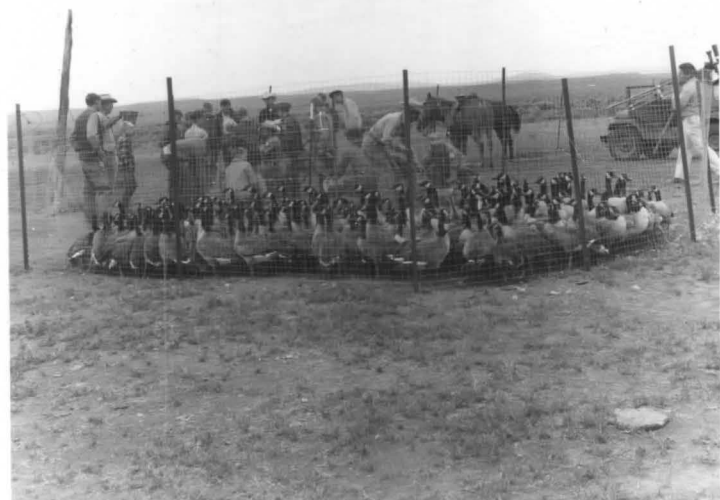
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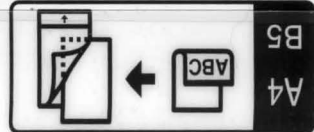
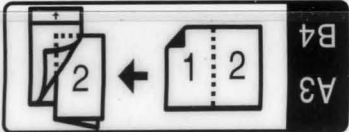
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Personnel from Sheldon & Hart assisted with the drive. Also present were 4-H clubs and news reporters. (Richardson)

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Assistant Manager Larochelle banding a gosling. Like many other refuge activities outside interest has grown to a point where the original intent is overshadowed. (Jobe)





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Turn-in day on the refuge. Cattle utilized
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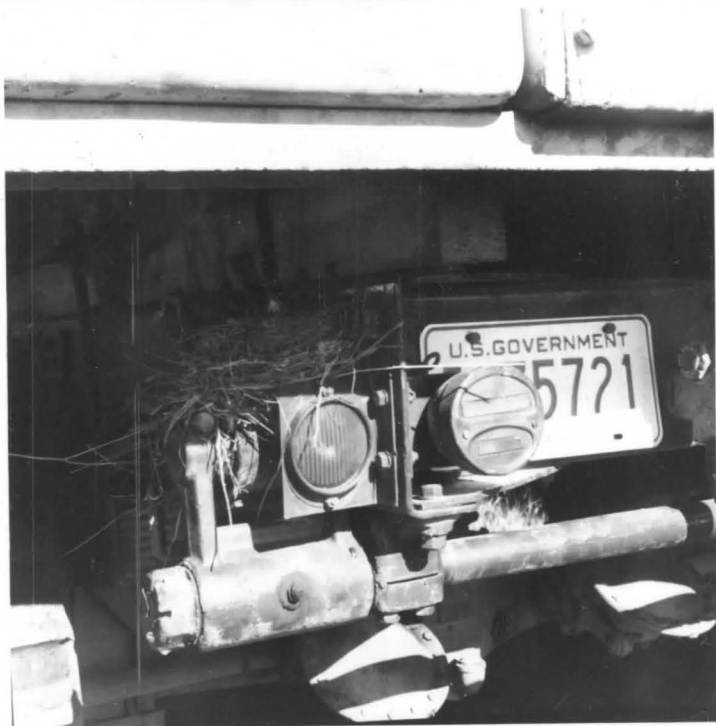
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A robin chose this as a nest site. It was a small inconvenience, but she brought off her brood.

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On opening day of waterfowl season, 825 hunters used the 1,440 acre public hunting area. (Larochelle)



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Maintenanceman Russell did most of the sk trapping & developed some good techniques handling a part of the 179 skunks, 14 raccoons, and 53 feral cats. (Larochelle)

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Goose Roundup Is Filmed For Disney Show

McClatchy Newspapers Service

ALTURAS — A camera crew from the Walt Disney television program, "The Wonderful World of Color" photographed the annual June roundup of Canadian geese at the Modoc Fish and Wildlife Refuge.

Paul Draper, who was in charge of the production, said the refuge was selected for

photographing many of the scenes dealing with the nesting and hatching of the geese. Some of the shots could be made only during the two to four weeks of the hatching season during June.

The film is a year-long project for Draper and his crew. The project will take them through the length of the Pacific flyway and finally into Canada.

Incorporated into the film will be the story of the role played in the production and protection of geese by the Fish and Wildlife Service.

During June, following the hatching of the goslings, the older birds become flightless. The refuge management yearly instigates a goose roundup to capture as many of the flightless birds as possible before they are out of their molt and back in the air.

The birds are driven into a wire coral and metal bands are fastened on their legs telling of the date of capture, sex and age. Then the birds are released back to their native nesting ground.

The banding is of great importance in determining the flyway of birds and their population centers.

Larry LaRochelle, manager of the Modoc refuge, created added interest for the Disney photographers when he invited members of the Surprise Valley Four-H Clubs to participate in the drive and help with the banding.



4-H CLUB MEMBERS Stephen Goodwin, left, of Surprise Valley and Mike Hill of Cedarville, Modoc County, hold goslings which will be banded by Larry LaRochelle, right, manager of the Modoc Fish and Wildlife Refuge. Bee Photo



(Top left)

A major chore in winter is keeping water control structures clear of ice to insure water delivery to Dorris Reservoir. (Larochelle)

(Top right)

This rectangular metal weir was fabricated in the refuge shop. It is used to measure water deliveries from Pine creek and to divert water to another user. (Larochelle)

(Bottom left)

Wooden control structures are still being utilized. They have a life of about 10 years and should be replaced by metal or concrete. (3-15-68 Larochelle)

(Bottom right)

Metal flashboard risers are used to replace old wooden ones as money permits. (Larochelle)





↑
FRONT



(Top left)
The Parker Creek Diversion Canal fills with gravel each year. (Larochelle)

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Three- to five-hundred yards of gravel are removed each year and used for road material at Dorris Reservoir. (Larochelle)

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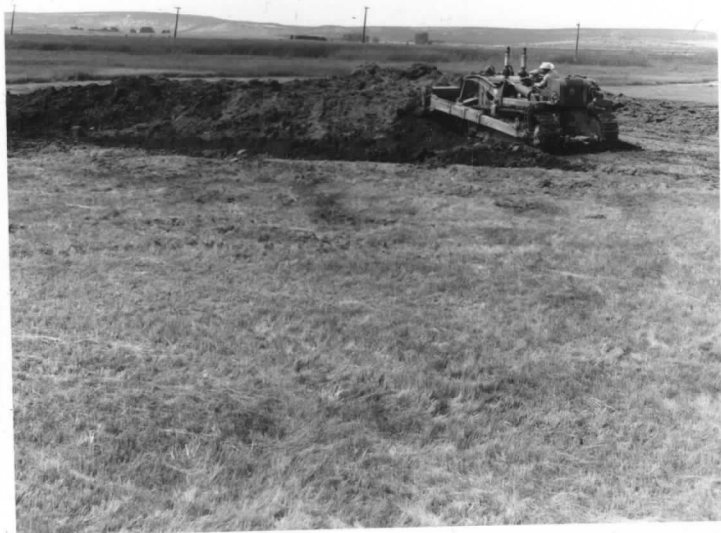


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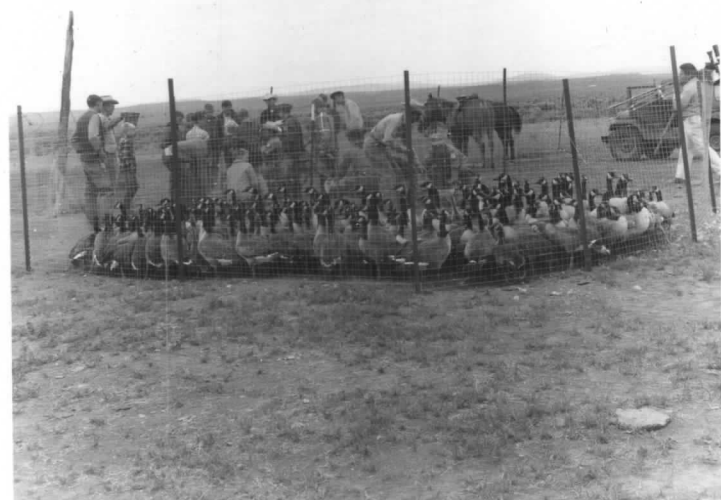
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A3/A4

B4/B5



B4

A3

FRONT



B5

A4

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