

Malheur National Wildlife Refuge  
Burns, Oregon

Narrative Report for Period January 1 to April 30, 1962

Roster of Permanent Personnel

John C. Scharff. . . . .	.Refuge Manager
Elmer T. Ash . . . . .	Dragline Operator
Roelan T. Blom . . . . .	Oiler
Noel L. Cagle. . . . .	.Construction and Maintenance Foreman III
Ivan J. Carey. . . . .	.Clerk-Typist
Quentin L. Currey. . . . .	.Maintenanceman
Thomas B. Davies . . . . .	.Maintenanceman
Eugene P. Heath, Jr. . . . .	.Administrative Assistant
Lynn C. Howard . . . . .	.Refuge Manager
Eugene Kridler . . . . .	Wildlife Management Biologist
Marselle Leake . . . . .	Shop Foreman II
Alfred S. Ludi . . . . .	.Building Repairman
Joseph P. Mazzoni. . . . .	.Refuge Manager
Norbert J. Schekall. . . . .	.Caretaker
Eugene E. Storm. . . . .	.Mechanic, Heavy Duty

Table of Contents

I	GENERAL	
	Weather Conditions. . . . .	1
	Habitat Conditions. . . . .	2
II	WILDLIFE	
	Migratory Birds . . . . .	3
	Upland Game Birds . . . . .	7
	Big Game Animals. . . . .	7
	Fur Animals, Predators, Rodents, and Other Mammals. . . . .	7
	Hawks, Eagles, Owls, Crows, Ravens, and Magpies . . . . .	8
	Other Birds . . . . .	8
	Fish. . . . .	9
	Disease . . . . .	9
III	REFUGE DEVELOPMENT AND MAINTENANCE	
	Physical Development. . . . .	10
	Plantings . . . . .	12
IV	RESOURCE MANAGEMENT	
	Grazing . . . . .	12
	Fur Harvest . . . . .	13
V	FIELD INVESTIGATION OR APPLIED RESEARCH	
	Progress Report . . . . .	13
VI	PUBLIC RELATIONS	
	Recreational Use. . . . .	17
	Refuge Visitors . . . . .	18
	Refuge Participation. . . . .	19
	Violations. . . . .	20
	Safety. . . . .	20
VII	OTHER ITEMS	
	Items of Interest . . . . .	21
	Photographs . . . . .	21
	Signature . . . . .	22
	NR Forms. . . . .	30

Malheur National Wildlife Refuge  
 First Period Narrative Report  
 January 1 to April 30, 1962

I. GENERAL

A. Weather Conditions.

Headquarters Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
January	10.4	.42	.87	53	-33
February	5.0	1.04	.81	54	- 6
March	4.6	.80	.74	63	15
April	0	.18	.49	80	20
Totals:	20.0	2.44	2.91	Extremes: 80	-33

P-Ranch Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
January	8.5	.53	.89	59	-32
February	T	.60	.82	57	- 2
March	2.0	.78	1.11	67	15
April	0	.27	.82	83	21
Totals:	10.5	2.18	3.64	Extremes: 83	-32

Double-0 Ranch Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
January	13.4	.86	.84	54	-36
February	3.0	.89	.66	49	- 3
March	T	.23	.59	65	13
April	0	.20	.46	78	21
Totals:	16.4	2.18	2.55	Extremes: 78	-36

Buena Vista Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
January	7.0	.38	.48	—	—
February	1.4	.62	.72	—	—
March	2.1	.30	.53	—	—
April	T	.42	.35	—	—
Totals:	10.5	1.72	2.08	Extremes: —	—

Headquarters Evaporation Station

	<u>Miles of Wind</u>	<u>Inches of Evaporation</u>
January	1,541	Owing to freezing conditions, evaporation pan was not operated during period.
February	1,487	
March	2,444	
April	2,527	
Total:	<u>7,999</u>	

Normal precipitation is based on a twenty-five-year average at the Refuge Headquarters Station, an eighteen-year average at the P-Ranch Station, a thirteen-year average at the Double-O Station, and a five-year average at the Buena Vista Station.

**B. Habitat Conditions.**

1. Water. As of April 1, snow measurements on the three watersheds which furnish water to the Malheur Refuge indicated a much improved water outlook from all three sources; but by the close of the period, Silver Creek had pretty well run out with only partial coverage of the area serviced on the Double-O Unit, Silvies River had scarcely run with no water indicated for the refuge from this source, and the Blitzen River and tributaries all run far short of the forecast. All snow packs have dwindled to the point that more than just normal warm weather will be required to supply any amount of water to the refuge from any source. Continued warm rains with snow at the higher elevations could much improve the general moisture condition, but percentagewise this is more than can be expected.

Snow packs on all three watersheds as of April 1 were normal or above, and all three streams were forecast to run 115% of normal. Soil moisture on all three watersheds was considerably below normal, but the additional snow water content would have more than compensated for this shortage. To provide a little better picture of the situation, measured flows of the three streams on April 5 and 6 indicated a flow of 789 cubic feet flowing in the Silvies River where it enters Harney Valley, 157 cubic feet from the Blitzen River upon entering the Valley, and 572 cubic feet from Silver Creek at the head of the Valley. These flows from the Silvies and Blitzen rivers were way short of the expected amounts at this time of the year but Silver Creek was running near or above normal. However, the Silver Creek flow dropped rapidly following the above measurement and by April 25 was flowing a scant 105 cubic feet. As of the close of the period, it promises to be the fourth dry year hand running, and conditions may generally assume those of the early thirties.

2. Food and Cover. Food conditions on the refuge were poor this year, especially for geese. Contrary to the open spring last year, most water areas this year were ice covered until midMarch, and large areas retained ice until early April as cold nights prevailed.

Boca Lake was completely flooded by mid-January and retained an ice cover until mid-March. Reflooding of 15,000 acres of Malheur Lake dry last year offered some food in the form of weed seeds, but the stubble grainfields adjacent to the central portion did not receive water because of the poor runoff. Some use of the fields was made by snow geese. The cold weather prevented pastures from being flooded to the usual degree in the Harney Valley, and the growth of grass was so retarded that geese found little grazing until the end of the period. Many small potholes dotted throughout the surrounding desert contained water from melted snow, and migrant swans found these attractive. The late growth of grasses did not offer much cover for early nesting ducks or geese. Although water conditions in the Blitzen Valley and Double-0 units were much improved over last year, Malheur and Harney lakes will dwindle to acreages present last summer when they were almost dry unless an accelerated runoff and/or copious amounts of precipitation materialize late this spring. An abundance of weed seeds and heavy cover is available, however, for upland game such as pheasants and California quail.

## II. WILDLIFE

### A. Migratory Birds.

1. Waterfowl. Total waterfowl use-days was the lowest in many years. Although duck use was up 236,000 days, the increase did not compensate for the drop sustained by swans and geese. The long, cold winter delayed the migration so populations remained far below normal until a sharp rise was experienced in mid-March, and the peak was more abrupt than usual. The peak of 148,000 waterfowl was 63,000 birds more than that of a year ago.

A table depicting use-days for the January-April period for the past nine years may be found on Page 4.

- a. Whistling Swan. The wintering population usually totaled less than 20 of these birds, most of which were found on the springs in the Double-0 Unit. First migrants appeared in late February, and numbers gradually increased until a peak of 740 took place in the last week of March. This peak was only a tenth of that experienced last year; however, the innumerable potholes scattered throughout a vast area of the nearby desert proved attractive to swans, and flocks up to several hundred were present on many such vernal pools. The over-all population throughout was, therefore, almost as high as that of a year ago. Less than 50 were present on the display pool at any one time. These fed on grain placed there for the pinioned birds and then retired to a loafing place on the river below the pool during the day. During late March and early April, a total of 44 were banded and dyed yellow.

Table 1. Waterfowl Use-days. Malheur Refuge. January 1 - April 30.

<u>Species</u>	<u>1962</u>	<u>1961</u>	<u>1960</u>	<u>1959</u>	<u>1958</u>	<u>1957</u>	<u>1956</u>	<u>1955</u>	<u>1954</u>
Swan	18,100	212,200	63,700	238,000	322,000	142,600	18,400	203,400	323,900
Geese	945,900	1,311,900	896,000	1,318,400	3,763,000	2,552,400	2,114,000	1,113,700	3,817,300
Ducks	<u>2,757,000</u>	<u>2,521,300</u>	<u>4,826,000</u>	<u>5,831,800</u>	<u>6,009,500</u>	<u>7,179,300</u>	<u>5,983,400</u>	<u>4,892,300</u>	<u>12,926,200</u>
Totals:	3,721,000	4,045,400	5,785,700	7,380,200	10,094,000	9,874,300	8,115,800	6,209,400	17,067,400

- b. Trumpeter Swan. No birds of the year were noted this winter when the resident flock moved into the display pool. Thus, the five cygnets produced during the summer apparently all perished. The three found at Skunk Farm Pond disappeared as the pond dried last summer, and the two in Benson Pond dwindled to one which was later moved by the adults to nearby Witzel Pond. In the fall, it was no longer in evidence, so the production last year can be considered to be a big, fat zero. The refuge flock dwindled from 25 to 21 birds during the winter, but rose to 25 in mid-February. Two known fatalities occurred this period. On March 11, an adult was picked up dead in the display pool, and on April 11 another was found dead in the West Canal near Grain Camp Dam of a broken neck sustained apparently from hitting the power line immediately adjacent. We suspect that some of our population migrate somewhere in the late fall because the wintering population generally is slightly less than those present in other seasons. Just where they go is a matter of conjecture, probably to some water area nearby.

Of especial interest was the trumpeter swan observed in early January near Inverness, a small community about 30 miles northwest of San Francisco. On February 18, the writer was detailed to check it out, and it proved to be a trumpeter swan by its voice. A conversation with the farmer on whose land the swan was frequenting revealed that a pair had been there since Christmas of 1961 but shortly afterwards one disappeared. The swan remained in the area until March. This is the first record of a trumpeter in California since 1937 and that was a sight observation open to doubt in northeastern California. Just where the Inverness bird came from is speculation. Alaska, British Columbia, or even Malheur?

- c. Geese. Use-days by geese were 366,000 less than the period last year. This was caused by the retarded snow goose migration. Although the first migrants were only a week later than last year, the third week of February, populations did not build up to sizeable numbers until the second week of March. The peak of 44,800 on the refuge was 10,000 better, but the valley population peak of 72,000 in late March was 14,000 less than the 86,000 of last year. Populations rose and fell much more abruptly also. Chief cause was the delayed spring which retarded green growth of grasses and kept many areas ice locked. Flooding of pastures was also later and of less acreage during their migration.

We started the period with many more Canada geese wintering here, 5,425 then 10,000 viz. 3,500 then 3,000, but the extremely cold weather in the latter two weeks of January caused them to move elsewhere. Some returned in late February so that a few more than normal were present at the close of April. Nesting conditions are more favorable in the Blitzen

Valley and the Double-0 units and pairs are less concentrated. Indications point to a more successful breeding season here. The first broods were noted on April 28 when three were seen, and many more are rapidly popping out in various areas. Three endangered clutches were picked up from haystacks being fed off to cattle and placed in the small incubator at headquarters. One brood of six was produced in the refuge display pond, and excites considerable interest by visitors.

White-fronted geese did not total any more than 200 at any one time, and these were found near Buena Vista. No cackling geese were noted this period.

- d. Ducks. Use-days by ducks was up 236,000 and arrested the steady decline of the past nine years. The peak of 102,000 was almost double that of last spring. The gain by pintails (999,500 to 1,568,700) overshadowed the drop by mallards (465,500 to 329,700), green-winged teal (185,325 to 103,040), shovelers (185,325 to 141,750), and widgeon (373,300 to 338,100). The shoveler migration was two weeks later than last year. Some increase was noted for scaup and canvasback, mainly because of the water in Boca Lake. Populations, total and by all species except ruddies, are much better at the close of this period than a year ago. Although the prospects on Malheur Lake are bleak, water conditions in the Blitzen Valley and the Double-0 units, the best production areas, are much better than last year. What is much needed now is warm weather to really stimulate vegetative growth for nesting cover. Populations on Harney Lake were almost absent because of low water and the absence of food.

2. Other Waterbirds. The first migrant coots arrived during the week of March 11-17, two weeks late, and numbers built up more slowly than usual. Total use-days were 214,000 days less as a result. Numbers present at the end of April (15,000) are slightly better than a year ago but only about 1/15 those present in good water years. It is very difficult to arrive at an average because numbers fluctuate violently year to year depending on the amount of water and sago seeds and tubers present in Malheur Lake. Nest building is now in progress.

Arrival dates for most species were generally a week or two later than last year. The only noteworthy exceptions were for snowy egrets and horned grebe which appeared a week earlier. Numbers are slightly better than last year but are far below other years. The near elimination of carp in Malheur Lake resulted in poor food conditions for most of these birds. Many eared grebes now frequent Boca Lake. The pelican, gull, and tern nesting island in Harney Lake is part of the shoreline again.

Sandhill crane populations on the refuge peaked at less than half of last year, but over-all basin populations were about the same.

No large flocks frequented the Buena Vista area, normally a favored area, and were scattered mainly throughout the south 1/3 of the Blitzen Valley. A flock of 450-500 migrants were frequently seen in a meadow just east of Burns on Highway 20 and remained there until at least April 23. The first nesting on the refuge commenced April 9, and by the end of the period it was in full swing. A total of 47 nests have been found to date, and indications are that at least 100 pairs are nesting this year compared to the estimated 75 pair last year.

3. Shorebirds. Although Malheur Lake reflooded much of the central portion which became dry last summer, fewer mudbanks and shore line areas are available for these birds because of the invasion of vegetation last spring and summer. This coupled with the later migration has kept populations about the same as last year. Franklin's gulls are present in larger numbers (150) than the past year's. Avocet populations are less than half of last year, and most are found at Stinking Lake and the rest of the Double-0 Unit. Cancellation of the late April airplane flight left us without a reliable basis for final estimation of shorebird populations or activities at the end of the period.
  4. Doves. Just a handful of mourning doves were present at the end of April, and little significant information can be derived now.
- B. Upland Game Birds. It became necessary to feed quail and pheasant during the week of snow and intense cold in January to tide them through that time. One quail was found frozen stiff in its tracks the night the temperature dipped to  $-33^{\circ}\text{F}$ . No significant loss occurred to quail, pheasant, or chukar on the refuge; however, we heard reports that many perished near the town of Drewsey, about 40 airline miles northeast of headquarters. No gray partridges have been seen this winter; and if they still exist here, the population is exceedingly low.
- C. Big Game Animals. The refuge antelope band has dwindled to a minimum of eight animals. A decline in populations throughout the whole general Harney County area continues. The refuge band of three bucks and five does is usually found in or near the Wright Field.

Most deer wintered off the refuge, but with the flooding of meadows and the resulting growth of green grass, the usual spring drift in has commenced. To see 25-30 near the P-Ranch subheadquarters is not uncommon. Conversation with State biologists revealed that "muleys" wintered well despite the cold winter. The fawn crop survival the past two years has been very low, and we hope the trend is reversed this year.

- D. Fur Animals, Predators, Rodents, and Other Mammals. Muskrat populations are still very low except in the upper part of the Blitzen Valley. Many houses were present in the East Knox Pond marsh, but few were in Benson Pond. A check of 14 houses in Knox Spring Pond

revealed 12 to have been opened by coon and/or coyote. Remains of 'rats were found in two of them.

Rodents are increasing again, and gopher activity in ranches near headquarters was very pronounced this spring. Jackrabbits are still very scarce—a blessing.

Some reduction of coyotes was practiced this winter and spring, but they were not too troublesome. Four were noted near headquarters one evening in late March which played like dogs for a half hour. Bobcats were only occasionally seen.

One porcupine was trapped in the display pool, and several more were killed in trees near one of the residences. Fortunately, no damage occurred to our precious few trees.

Several feral cats and raccoons, working over our pinioned flock of waterfowl, were trapped in the display pool. No significant changes in the raccoon population occurred elsewhere.

- E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies. The last bald eagle was recorded April 9. The peak population of 12 (9 adults and 3 immatures) occurred on March 7. Most were found on and around Malheur Lake, but fish pickings were slim because of the virtual absence of carp and other rough fish. During the cold spell in mid-January, an immature was noted several times harassing waterfowl in the display pool.

The departure of the large flocks of Canada geese from the refuge in mid-January because of cold and ice signaled a dispersal and reduction in the golden eagle population. We know of 3 pairs on and another just off the refuge this spring. Whereas no eaglets were produced in the Harney Lake nests last year, this year there are two active nests each with two eaglets.

Several rough-legged hawks still remained at the end of April after numbers steadily dwindled this spring. Swainson's hawks numbers still do not approach those of former years. One nest was active near Five Mile in April. A few red-tailed and Cooper's hawks were seen throughout the period as was an occasional prairie falcon and peregrine falcon.

Horned, short-eared, and long-eared owls were present in the usual numbers, the former being the more common. Sparrow hawks are virtually absent.

Considerable nesting activity of magpies took place in April. Average clutch size approached 6 eggs. A number of nests with eggs were destroyed. Magpies are too abundant.

- F. Other Birds. The abnormally cold and windy spring has retarded the migration of small birds through this country for the second

consecutive year. Although spring arrival dates for most species are very similar to those of past years, numbers are much lower. Many vesper sparrows passed through on April 28 but were virtually absent on May 1. Thousands of violet-green and tree swallows were present during the last week of April.

No unusual records were made this period, but the purple finch netted and collected on November 3, 1961, was subsequently identified as the subspecies rubidus, Washington purple finch, by Richard Manville of the Bureau staff at the U.S. National Museum. This is the first record of its occurrence in southeastern Oregon. This record, plus a number of others obtained last year, has been submitted for publication in The Condor. A number of other recent records were published in the March-April, 1962, issue of that periodical.

- G. Fish. Krumbo Reservoir was restocked to rainbow trout after its treatment last December with rotenone for the elimination of roach. A total of 5,854 trout, 1,506 lbs., averaging  $7\frac{1}{2}$ - $9\frac{1}{2}$  inches in length were released on April 4 to insure fishing by July 1, the opening date. These had their adipose fin clipped so data could be gathered later. Although the reservoir did not fill as much as expected, sufficient water should be available by that date barring unforeseen complications.

A thousand pounds of rainbows, 3.09 fish per lb., were liberated in the Blitzen River on April 18. A little high and muddy water hindered fishing somewhat when the season opened on April 21. The few fishermen present then were able to catch sizeable numbers. Most fishermen went to Mann Lake east of the Steens where they caught very few fish but partook of much fresh air and wind. At present the Blitzen has little pressure.

Future plans for Krumbo call for releasing 1,200 lbs. of rainbows averaging 10 fish per pound in late August or early September. These will have their left ventral fin removed.

If we are able to keep Boca Lake flooded this summer, it will be stocked with Williams Lake strain rainbows this summer in an effort to restore the run up the East Canal to Bridge Creek and the upper Blitzen River.

- I. Disease. In December, a Canada goose brought in by a hunter who had killed it near Witzel Lane in the Blitzen Valley was sent for autopsy to the Department of Veterinary Medicine at Oregon State College. This bird had visceral abscesses as well as several on the legs. Examination disclosed that these contained avian tuberculosis organisms.

The adult trumpeter swan found dead in the display pool on March 11 was also examined by Dr. Dickinson of Oregon State, but they could find no signs of pathological disease. The gizzard contained grain hulls and grit. The bird contained a moderate amount of fat, but when skinned out by us, it did not possess the usual blanket of fat

underneath the skin fascia. No mechanical injury was found. The bird was about five years old, so old age can be ruled out.

### III. REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development.

1. Restoration of Dikes, Bridges, Roads, Structures, and Other Improvements - Cagle. Reconstruction of the Kado Lane Bridge was completed during the early part of the period. Bridge timbers, cut by permit in January of 1961 on the Malheur National Forest, decking and running planks were installed.

There were 3,240 cubic yards of dirt and rock fill hauled in conjunction with the Kado bridge job.

A cesspool hole and sewer field were dug and complete sewer system installed for the recently acquired 10' x 50' trailer house.

During March and April, approximately 5,980 cubic yards of cinders and gravel were hauled for use as road surfacing material around the headquarters area.

Repairs to the Brenton Cabin Bridge were required in mid-March. The rising waters of the Blitzen River undercut the west abutment and the bridge settled about one foot in the northwest corner. An attempt to locate solid footing beneath the west abutment failed, but a new concrete base was poured anyway to prevent the bridge from settling any further. The west end of the bridge was then jacked up to level and a concrete cap poured on top of the abutment. Replacement of a small amount of bridge decking and rip-rapping on both sides of the bridge remain to be done; however, the bridge has held so far. The lumber in this bridge is so badly decayed that it will have to be completely replaced within the next few years.

One 24" x 20' corrugated metal pipe was installed in the P-Ranch area and two 24" x 12' pipes were installed in the Sod House Ranch area during the period.

Land within the display pond enclosure at headquarters was cut into several small islands with a network of channels connected to the spring. This was done in hope that waterfowl nesting in the pond will be encouraged and that the chronic predation problem in the pond, primarily by raccoon, will be alleviated.

Several miles of road were graded in the Double-O, Sod House, and P-Ranch areas.

The refuge alfalfa field was harrowed with the spring tooth harrow prior to the irrigation season.

Preparations were being made at the close of the period to surface P-Lane and riprap the north dike of Knox Pond.

2. Equipment Maintenance and Repair - Leake. Nine 5,000-mile inspections were completed during the period.

The D-4 Caterpillar starting motor was given a valve job.

The three new Studebaker pickups were outfitted for service. Decals, fire extinguishers, first-aid kits, mud and snow tires, three new rear bumper trailer hitches, and seat belts were installed.

The double reduction tandem rear drive gears were removed from the Diamond-T transport and taken to Portland where new higher reduction gears were installed in the cages to increase speed from 28 mph to 40 mph. The gears were reinstalled in the transport tractor unit in the headquarters shop. The transport is now a much more efficient unit.

Dodge pickup I-49806 received new king pins and bushings and a valve job.

Dodge pickup I-49502 was given a valve job, rings and connecting rod bearings were replaced, and the brakes were relined.

The clutch and brake were relined in the front power control unit on the International TD-18A crawler tractor.

International dump truck I-49849 received a valve job. The rings, connecting rod bearings, and one piston was replaced.

Ford pickup I-49802 was given a brake relining and valve job.

Koehring dragline No. 1 was completely overhauled from the turntable up, excluding the engine. The following parts were installed: new bevel gears and bearings on swing shaft, new swing clutch lining, new gears and bearings on new inhaul and hoist shaft, relined hoist brake, new bushing on swing shaft, new boom hoist idler gear, new swing pinion gear. This machine has operated since 1947 and sometime in the near future a new turntable will have to be purchased and installed.

The 100-ton hydraulic press was reinforced and rebuilt so that it can be used more efficiently and safely.

Koehring dragline No. 2, obtained from surplus early in the period, received some minor repairs. A new swing shaft pinion gear and water cooling system hoses, gaskets, and clamps were installed. The machine was steam cleaned, bolts tightened, etc.

A considerable amount of time was spent steam cleaning, lubricating, washing, installing new springs, repairing shock absorbers,

etc., on various refuge equipment throughout the period.

3. Carpenter Department - Ludi. The new National 10' x 50' expandable trailer house, purchased in August, 1961, was set up. In addition to the sewer system previously mentioned, water for domestic use was piped in and the trailer was insulated throughout the underside. An electric line and meter were installed and porches and steps constructed.

The refuge carpenter shop was moved from Buena Vista to headquarters. The shop is now temporarily located in the mess hall pending rebuilding of the old blacksmith shop, which will be the permanent location of the carpenter shop.

Several bolt storage bins and a worktable were built for the carpenter shop.

The tables in the mess hall were repaired.

The basement of the manager's residence was sprayed twice for control of termites.

Shingles lost from wind action were replaced on the Rome dwellings garage building, oil house, and Kado lumber storage shed at headquarters.

#### B. Plantings.

4. Cultivated Crops. A number of cooperative farming permits have been issued at the Double-O, on Malheur Lake, and in the Blitzen Valley; but owing to adverse weather, no seedings were made during April.

### IV. RESOURCE MANAGEMENT

- A. Grazing. Considering the conditions, carrying capacities of fields in most instances were fair to good. In a number of cases, permittees took advantage of concentrates in making their feed reach farther, which naturally increased the refuge carrying capacities.

By late March, indications for above normal forage production on turnout ranges seemed assured; but a cold, dry April with above average and below average temperatures retarded all growth and much damage was noted to shrubs and annual weeds as well as deciduous trees.

An increased amount of summer grazing is being undertaken this year, but stocking numbers have plagued refuge personnel as well as ranchers because of the dry, bleak, and cold growing conditions. It is quite evident that the stocking of summer-grazed fields will always present a problem in order to maintain the conditions suitable for waterfowl use.

- C. Fur Harvest. Owing to the scarcity of fur-bearing animals brought about by lack of water, no removal program was initiated during the 1961-1962 season.

## V. FIELD INVESTIGATION OR APPLIED RESEARCH

### A. Progress Report.

1. Waterfowl Banding. During the period, the following were banded:

Whistling swan	42
Canada goose	2
Mallard	798
Widgeon	157
Gadwall	5
Pintail	6
Redhead	63
Canvasback	8
Lesser scaup	12
Ring-necked	3
Common goldeneye	129
Bufflehead	1
Hooded merganser	1
Coot	1

Total: 1,228

2. Colored Whistling Swan Project. An additional 42 whistling swans were banded and dyed yellow to augment the 102 dyed last fall. Contrary to last spring when we had many swan in the refuge and about 250 used the display pool, only a tenth were present this year, and about 65 frequented the pool. Trapping conditions were more difficult.

All birds were weighed to determine condition and for comparison with those weighed last fall as well as from other areas. Measurements of bills and wings were taken. The presence or absence of a red streak, "grin patch", on the lower mandible, as well as the color, of one was present, was recorded. Coloration and size of the spot on the lores were also recorded.

Kortright, in his Ducks, Geese, and Swans of North America, p. 69, states that the narrow salmon-red streak on the mandibles is found only on the trumpeter and is lacking on the whistler. Banko, however, in his book The Trumpeter Swan, mentioned on pp. 66-67 that he had noted that some whistlers with the yellow spot on the lores also exhibited this red streak on the mandibles but stated that not enough specimens had been examined to furnish a general rule. We had given little thought to these conflicting views until we had correspondence with Mrs. G. Miller, of Inverness, California, regarding the trumpeter found there (as mentioned previously in

this narrative under Wildlife). She had corresponded with Mr. H. A. Hochbaum, of the Delta Research Station in Manitoba, who felt that the red streak was found only on the trumpeter. All the whistlers we examined here this spring had red streaks of varying degrees of hue. Those of immatures generally were darker.

All exhibited a spot on the lores which varied considerably in size and ranged from a light gray to a bright yellow in color.

Average weights for the spring sample were still below those listed in Kortright. Our spring was 41% of the fall sample (42 to 102); weights were higher for all except adult females, indicating a weight gain on the wintering grounds in California. The short distance during the spring migration from the latter area to here, compared to the much longer distance from their Arctic breeding grounds to Malheur, must have some bearing on the difference plus the availability of food along these routes. This spring, we were unable to retrap birds which had been weighed and dyed last fall; this would have been highly desirable. Comparison of the weights of our spring-dyed birds with those banded and dyed red in the spring of 1961 at the Shiawassee Refuge in Michigan reveal that other than adult females, all categories of the Malheur birds were heavier. The Shiawassee sample size was half that of the Malheur sample. We plan to examine as much literature as possible on whistling swan weights from other areas, but it is becoming very apparent that there is relatively little such information, especially published data.

A bird banded as an immature male on March 21, 1961, was retrapped on March 22, 1962. It was classified as subadult by its bursa but had all white plumage and lores of medium yellow and size. The band contained a dent which had all the appearances of being made by shot. This was the only return we had of previously banded birds. To date, no recoveries have been received of the 223 birds banded here the past year.

Almost all winter sight observations from the birds dyed here last fall were from the Sacramento and San Joaquin Valley in California. Exceptions were those few from the Willamette Valley in the vicinity of Corvallis and McMinnville. The frequency of reports dropped drastically upon termination of the hunting season; and late winter and early spring reports from California, except from the Klamath Basin, were almost nonexistent. Most of this may be attributed to the lack of observers in the field at that time. A small number of fall-dyed birds reappeared here this spring.

Reports of dyed birds this spring north of here were frequent and tentatively indicate routes through eastern Oregon and Washington, northern Idaho, and western Montana. A substantial number of reports were received from northwestern Montana, and especially from the Flathead Valley and Lake area. On April 1, a total of 21 were observed in the northern part of that lake by State of Montana

wardens. The route from that point moved up through southern Alberta in April, and a few reports from that area are still trickling in.

Notification of technicians in the flyway paid dividends, but from letters we received, we feel that a project of this sort needs publicity other than that, especially to heads of various Canadian wildlife agencies. Canadian officials from whom we later received reports were unaware of the project until we contacted them personally. Then the reports began to come in, and all evinced considerable interest in the program. Publicity through the flyway council apparently broke down somewhere at that end. Some of our own Bureau personnel credited the California Department of Fish and Game with the work. Releases were made to some newspapers, but we should have contacted others not only in the states but also Canada and Alaska. Lastly, the personal touch in contacting cooperators and newspapers can't be beat for eliciting cooperation. We learned a lot from this project.

On the following pages are tables of weights for the different seasons and areas and also a map depicting points of observations. Each dot does not necessarily indicate one observation because many were received from some areas such as the Delta area near Sacramento and Stockton, the Klamath Basin refuges, Summer Lake, and Flathead Lake.

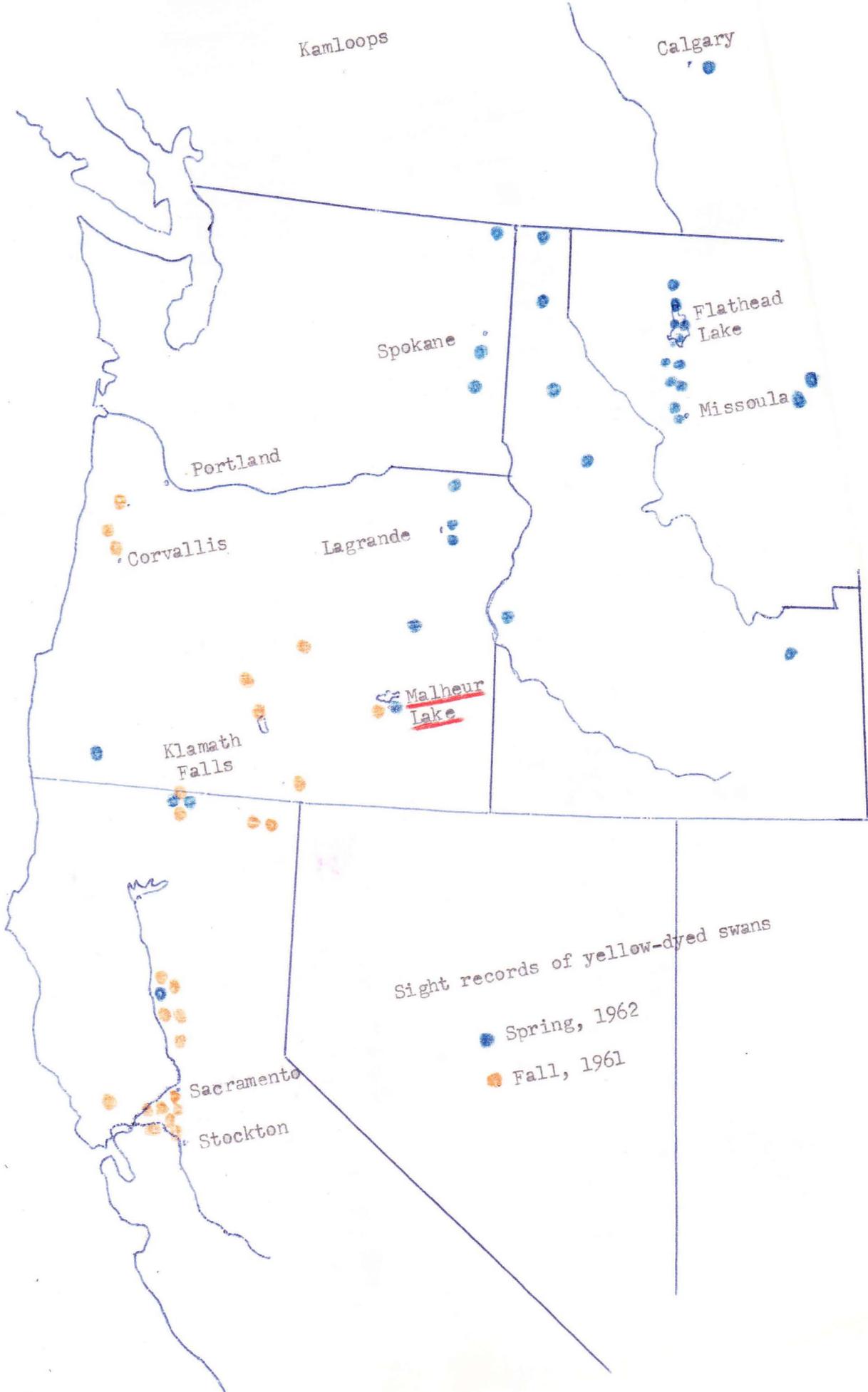
Weight comparisons with Kortright's figures are difficult because unknown yet are the age compositions of that sample as well as whether they were migratory or not. Unknown also are the geographic distribution of that sample or whether it was a single population or weights gathered over a period of years.

Table 2. Average weights of whistling swans in pounds and ounces - number weighed in parentheses.

	Malheur		Shiawassee	Kortright
	Fall, 1961	Spring, 1962	Spring, 1961	Season unknown
Adult males	13-6 (17)	14-3 (10)	12-5 (6)	
Adult females	11-14 (21)	11-5 (9)	11-12 (3)	
Immature males	10-3 (14)	12-8 (1)	10-9 (5)	
Immature females	9-9 (8)	11-5 (10)	10-8 (7)	
Males (all)	11-12 (39)	13-14 (17)		16-4 (26)
Females (all)	11-1 (47)	11-4 (25)		13-14 (36)

Table 3. Ranges of whistling swan weights in pounds and ounces - number weighed in parentheses.

	<u>Malheur</u>		<u>Shiawassee</u>	<u>Korfricht</u>
	<u>Fall, 1961</u>	<u>Spring, 1962</u>	<u>Spring, 1961</u>	<u>Season unknown</u>
Adult males	9-12 to 17-0 (17)	11-13 to 15-15 (10)	10-8 to 14-8 (6)	
Adult females	9-12 to 14-6 (21)	9-15 to 14-7 (9)	11-4 to 12-8 (3)	
Immature males	8-8 to 12-8 (14)	12-8 (1)	9-0 to 12-0 (5)	
Immature females	8-0 to 12-4 (8)	10-5 to 12-14 (10)	3-12 to 11-8 (7)	
Males (all)	8-8 to 17-0 (39)	11-7 to 15-15 (17)		12-0 to 18-10 (26)
Females (all)	8-0 to 14-6 (47)	9-7 to 14-7 (25)		10-8 to 18-0 (36)



Kamloops

Calgary

Spokane

Flathead Lake

Missoula

Portland

Corvallis

Lagrande

Malheur Lake

Klamath Falls

Sight records of yellow-dyed swans

● Spring, 1962

● Fall, 1961

Sacramento

Stockton

Table 4. Weights of yellow-dyed whistling swans, 3/26-4/3/62, in pounds and ounces.

	<u>AM</u>	<u>SAM</u>	<u>IM</u>	<u>AF</u>	<u>SAF</u>	<u>IF</u>
	11-13	11-7	12-8	9-15	9-7	10-5
	12-13	12-11		10-0	10-8	10-5
	12-15	13-14		10-4	10-15	10-7
	13-12	14-8		11-1	11-11	10-9
	14-4	14-8		11-2	12-3	11-5
	14-7	14-9		11-5	12-9	11-7
	14-8			11-5		11-8
	15-5			12-8		11-15
	15-14			14-7		12-3
	15-15					12-14
Average:	14-3	13-9	12-8	11-5	11-4	11-5
Number:	10	6	1	9	6	10
Males . . . . .	13-14	of 17	Adults . . . . .	12-13	of 19	
Females . . . . .	11-4	of 25	Subadults . . . . .	12-7	of 12	
Adult & subadult			Immature . . . . .	11-6	of 11	
male . . . . .	13-15	of 16	Adults & subadults.	12-10	of 31	
Adult & subadult						
female . . . . .	11-4	of 15				

3. Sandhill Crane Project. Research Biologist Erwin Boeker, of the Denver Lab, was here during the period of April 13-May 10 to locate a sufficient number of crane nests so that 30 eggs could be collected. Over 40 nests were located; and on May 10, a total of 29 eggs were collected by him, Biologist William Huey, of the New Mexico Game Department, and refuge personnel. These eggs were collected in the early morning and placed in a styrafoam-lined crate kept heated by heating pads. Eggs, Boeker, and Huey all were flown to Sante Fe by commercial airliner where the eggs will be placed under Bantam hens for incubation. At this writing, 24 eggs have hatched and 3 pipped. The purpose of the project is to gain information about crane propagation which may be of value in any program for the whooping crane. A more complete report will be submitted in the next narrative report.

## VI. PUBLIC RELATIONS

- A. Recreational Use. Public use of the refuge was comparatively light during the period. Although conditions for wildlife observations and photography were generally good, the unusually cold, windy weather which persisted throughout the late winter and early spring months dampened the spirits of many a potential visitor.

Angling on the Blitzen River was light even though water conditions remained excellent throughout the month of April.

A total of 410 persons registered at the museum during the period, representing eleven states, two provinces of Canada, and the Republic of Panama (Canal Zone).

The annual run of visiting groups began in March and will continue throughout May and June. A lively uptrend in recreational use of the area is to be expected during the summer and fall months, however.

#### B. Refuge Visitors.

##### January

- 3-5 Bob Ducret, Delmer Davis, and Lewis Bohl, Branch of Engineering, BSF&W, Portland, Oregon, mapping control data.
- 9 John McKelvey, Oregon State Police, Burns, Oregon, visit.
- 15-19 David B. Marshall, Regional Refuge Biologist, and Leonard Conkling, of Charles Conkling & Sons, Inc., commercial photographers, Portland, Oregon, photography.
- 17-19 Lewis Bohl, Branch of Engineering, BSF&W, Portland, Oregon, map control.

##### February

- 1-2 Harold Hardesty, Regional Transport Driver, Tule Lake NWR, delivering surplus tanks from Deer Flat NWR.
- 8 Harold Hardesty, as above, hauling surplus Koehring dragline from Bureau of Reclamation project at Palisades, Idaho.
- 13 Harold Hardesty, as above, hauling Koehring dragline boom and attachments from Palisades, Idaho.
- 16 Russell Zink and Alvin Coons, BSF&W Mammal Control Agents, Crane, Oregon, predator control work.
- 23 William Anderson, California Fish and Game, photography.

##### March

- 2 James O. Stephen, Oregon State Police, Burns, Oregon, courtesy call.
- 7-8 Ray Glahn, Pilot-Biologist, BSF&W, Portland, Oregon, waterfowl aerial census.
- 9 Earl Mantifel, Oregon State Highway Department, Burns, Oregon, courtesy call.
- 13 Anthony Erskine, Canadian Wildlife Service, Sachville, New Brunswick, bufflehead study and tour.
- 20 Ron Abell, feature writer, Eugene, Oregon, story on Malheur NWR for Ruralite, an electric coop. magazine.
- 27 Donald L. Bussey, Oregon State Police, Burns, Oregon, to visit refuge museum.
- 28 Ray Staso, Salem, Oregon, and Al Walker, Las Mirada, California, wildlife editors.

- 28 John McKelvey, Oregon State Police, Burns, Oregon, courtesy call.

April

- 4 Lee Kuhn, Fish & Game Dept., Oregon State University, Corvallis, Oregon, big game class tour.
- 6 Fred Kreller, U.S.G.M. agent, Pendleton, Oregon, official visit.
- 7 Russell Jackman, Range Specialist, OSU (retired), Corvallis, Oregon.
- 8 Sidney O. Howick, U.S. Weather Bureau, Portland, Oregon, checking and servicing refuge weather stations.
- 10 Ray Glahn, Pilot-Biologist, BSF&W, Portland, Oregon, aerial census.
- 11 Erwin L. Boeker, Denver Research Lab, sandhill crane study.
- 17 Clair Aldous, Refuge Manager, Ruby Lake NWR, Ruby Valley, Nevada, 100 sacks of barley.

C. Refuge Participation.

1. Refuge Manager Scharff. On January 18, attended the local BLM grazing board meeting held in Burns, Oregon.

Attended the Pacific Inter-Bureau Fire Conference in Portland on January 23-24.

On February 6, attended the BLM State Board meeting held in Portland.

On April 2, a meeting was attended in Burns to lay plans for grasshopper control on beds north of Malheur Lake in the event they hatch in sufficient numbers to create a hazard.

Attended the Harney County Chamber of Commerce meeting on April 10. On this same day, the SCS water forecast meeting was attended in Burns.

The Harney County Chamber of Commerce meeting in Burns was attended on April 17.

2. Biologist Kridler. Gave illustrated talk to Grant County Sportsmens' Association at John Day, Oregon. Forty-eight in attendance.

Participated in "wing-ding" of Bureau and state biologists on February 12-17. Approximately 20,000 wings collected during the past hunting season in the Pacific Flyway were read for age, sex, etc.

Gave four separate illustrated talks to Burns High School biology classes on March 6.

Conducted Anthony Erskine, Canadian Wildlife Service, on tour of refuge and also help on bufflehead project on March 13.

A talk about waterfowl management was given to 25 members of the big game class of Oregon State University led by Prof. Lee Kuhn on April 4. The group was conducted over the refuge on April 5.

An illustrated talk on waterfowl and refuge operations was given to 22 science students and three adults of the Longview, Washington, high school on April 20. The group was conducted over the refuge the next day.

On April 27, an illustrated talk was given to 27 ornithology and natural history students from the Eastern Oregon College of La Grande. The next day, they were conducted over the refuge.

### 3. General.

On March 5, Messrs. Ash, Blom, Cagle, Howard, Kridler, and Mazzoni gave blood to the Red Cross in Burns.

A good selection of ducks were trapped and delivered to Portland for use in the Bureau display at the boat show there in February.

A display of mounted waterfowl and pictures was set up in a store window of Harris Hardware on the main street of Burns for National Wildlife Week during March 18-24. The display drew considerable attention.

On April 27, Assistant Refuge Manager Mazzoni conducted the Hines 6th grade biology class on a tour of the refuge. The group consisted of 27 students and three adults.

- E. Violations. One violation occurred during the period which was prosecuted in State court. This case was handled by Oregon State Police game officer John McKelvey. The violation consisted of angling without an anglers license. A fine of \$29.50 was paid.
- F. Safety. The Station SAFETY Committee this period consisted of Joseph P. Mazzoni, chairman, and Roelan T. Blom and Quentin L. Currey, members.

The Committee conducted three committee meetings, one Station SAFETY meeting, one fire drill, and made the quarterly SAFETY inspection.

Two committee meetings were held at the site of refuge construction projects. Each project's operation was inspected, and various hazardous aspects of heavy equipment operation were discussed and recommendations made to eliminate them.

Various SAFETY literature received during the period were reviewed by the Committee and selections made for routing to all personnel.

The film "The Art of Being Passed" was shown and discussed at the Station SAFETY meeting. This is the third film in a series of six on defensive driving which are being routed through the Region by the Regional Office. Selected SAFETY literature, bulletins, etc., were presented for discussion.

The fire drill consisted of a simulated fire in the headquarters barn hayloft. A lively discussion followed regarding the best procedure to follow in controlling such a fire. All men present were shown the location of the main electrical switches and given instructions as to which are to be thrown in case of fire in one of the headquarters buildings.

Our SAFETY record stood at 651 accident-free days at the end of the period.

## VII. OTHER ITEMS

### A. Items of Interest.

1. General. A number of live waterfowl were trapped for use in the research project by Bureau biologists of the Branch of Research in regards to jet planes and waterfowl at Edwards Air Force Base in California.

During the period of January 8-10, Refuge Manager Scharff and Administrative Assistant Heath attended the Program Scheduling meeting held at the Tule Lake Refuge Headquarters.

Foreman Cagle and Assistant Refuge Manager Mazzoni participated with Messrs. Henning and Whaley of the SCS in a snow survey on the Steens Mountain on February 22.

During the period of March 7 to April 2, Refuge Manager Scharff worked in the Regional Office on the Malheur Refuge Master Development Plan. During this period, a trip was made with Howard Sargeant to Los Banos, California, on a land acquisition contract.

On March 13, the new headgates for the Grain Camp Dam arrived and were unloaded at headquarters. Rehabilitation of Grain Camp Dam is scheduled for Fiscal Year 1963.

On March 21 and 22, Administrative Assistant Heath accompanied Mr. Bob Whaley of the SCS on the regular annual Steens Mountain snow survey.

Administrative Assistant Heath was a member of the Northwest Board of Civil Service Examiners in Portland from March 26 to 28 while assisting with the processing of SF-57's received as a result of Announcement No. 11-4-1 for Maintenance man (Equipment Operator). Such a rash of applications were received that several refuge

field employees were called in for screening assistance.

A total of 91 bills for collection amounting to \$92,286.60 were issued this period for grazing and rental of facilities.

On April 4, a plant of 5,854 rainbow trout was made in Krumbo Reservoir. These fish were 7½" to 9" in length and arrived in excellent condition. The temperature of the truck water and the lake water were identical, both being 55°.

## 2. Composition Credits.

- a. J. C. Scharff. P. 2 Sect. I A; Sect. I B 1; Sect. III B 4; Sect. IV; Sect. VI B; Sect. VI C 1; Pars. 2, 4, & 9 Sect. VII A 1.
- b. Eugene Kridler. Sect. I B 2; Sect. II; Sect. V; Sect. VI C 2; Pars. 2 & 3 Sect. VI C 3; Par. 1 Sect. VII A 1; all NR forms; colored photos & captions; black & white Photo 34-62.
- c. Joseph P. Mazzone. Sect. III A; Sect. VI A; Pars. 1 & 4 Sect. VI C 3; Sects. VI E & F; Pars. 3, 5, & 6 Sect. VII A 1; black & white photos, except 34-62, & captions.
- d. Noel L. Cagle. Basic information for Sect. III A 1.
- e. Marselle Leake. Basic information for Sect. III A 2.
- f. Alfred S. Ludi. Basic information for Sect. III A 3.
- g. Ivan J. Carey. P. 1 Sect. I A; Par. 8 Sect. VII A 1; preparation of personnel roster page; typing of NR forms, photograph captions & cover; assembly of completed narrative report.
- h. Eugene P. Heath, Jr. Par. 7 Sect. VII A 1; preparation of table of contents; minor editing; typing pp. 2-22.

B. Photographs. Our photograph selection follows the signature page.

C. Signature.

June 8, 1962  
Report Completed

Approved Regional Office

J. C. Scharff - Refuge Manager



*55-62*  
1/17/62, 9-62. Kado Bridge reconstruction.



*53-62*  
1/17/62, 7-62. Kado Bridge reconstruction installing running planks.



*69-62*  
2/22/62, ~~19-62~~. Snow survey on Steens Mountain near  
Fish Lake.



*65-62*  
2/22/62, ~~23-62~~. Snow survey on Steens Mountain with  
Snow Cat.



3/29/62, 30-62. Repairing Koehring dragline No. 1.



4/23/62, 34-62. New nesting islands in Headquarters display pond.



4/4/62, 31-62. Initial restocking of Krumbie Reservoir with rainbow trout following rotenone treatment.



3/9/62, 28-62. Widening road and developing additional parking space east of shop at headquarters.



4/5/62, 33-62. Oregon State University annual Big Game class field trip at Knox Pond.



*56-62*  
1/18/62, 10-62. Razing old cold-storage building at Double-O station.



Immature swans were much darker than adults after dyeing - as to be expected.



Adult swan taking off from display pool. Birds were visible for about a mile shortly after release.



Asst. Mgr. Mazzoni holds dyed adult whistling swan. Color was a bright yellow, but after exposure for several months deepened to orange-yellow as on photo. Late afternoon when picture was taken.

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

W A T E R F O W L

REFUGE Nalheur National Wildlife

MONTHS OF January TO April, 1962

(1) Species	(2) Weeks of reporting period									
	12/31-1/6	1/7-13	1/14-20	1/21-27	1/28-2/3	2/4-10	2/11-17	2/18-24	2/25-3/3	3/4-10
<b>Swans:</b>										
Whistling	20	10		3	9	12			75	200
Trumpeter	23	23		21	21	21			25	25
<b>Geese:</b>										
Canada	5,425	10,000		825	250	225			1,400	725
Cackling	25	10								
<del>Brent</del> Ross'										
White-fronted	1								45	45
Snow										
Blue										
<del>Other</del> Total Geese	5,451	10,010		825	250	225			1,445	770
<b>Ducks:</b>										
Mallard	4,550	4,150		3,100	3,000	3,250			2,650	2,500
<del>Pink</del> Barrow's Goldeneye									1	
Gadwall	125	50		25	25	150			160	300
Baldpate	1,575	1,550		1,525	1,500	1,550			625	775
Pintail	1,175	250		50	25	25			1,525	2,350
Green-winged teal	50	25		10	10	25			50	50
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood	5									
Redhead	10	25		10	10	10			225	125
Ring-necked	50	50		35	25	50			20	50
Canvasback	5	5		10	10	10			10	25
Scaup	175	150		125	150	150			75	150
Goldeneye	100	150		125	100	100			250	275
Bufflehead	30	25		20	25	25			10	25
Ruddy	50	50		25	25	25			5	25
<del>Other</del> Herg. Common	15	5		5	10	10			20	10
Herganser Hooded	35	20		10	10	10			10	10
Total Ducks	7,950	6,505		5,075	4,925	5,390			5,636	6,670
<b>Coot:</b>	75	50		50	50	50			50	50

3 -1750a

Cont. NR-1

(Rev. March 1953)

WATERFOWL  
(Continuation Sheet)

REFUGE Malheur National WildlifeMONTHS OF January TO April, 19 62

(1) Species	(2) Weeks of reporting period								(3) Estimated	(4) Production	
	3/11-17	3/18-24	3/25-31	4/1-7	4/8-14	4/15-21	4/22-28	waterfowl	Broods: Estimate	seen : total	
	11	12	13	14	15	16	17	days use			
<b>Swans:</b>											
Whistling	400	450	740	200	2	4	2		15,444		
Trumpeter		25	25	24	24	24	24		2,611		
<b>Geese:</b>											
Canada	700	650	600	700	830	850	950		222,110		
Cackling									245		
<del>Brant</del> Ross'					200				2,100		
White-fronted	45	45	40	45	200	200	100		5,362		
Snow	8,000	16,000	44,800	32,000	700	500	300		716,100		
Blue											
<b>Other Total Geese</b>	<b>8,745</b>	<b>16,695</b>	<b>45,440</b>	<b>32,845</b>	<b>1,930</b>	<b>1,550</b>	<b>1,350</b>		<b>945,917</b>		
<b>Ducks:</b>											
Mallard	2,100	1,600	1,350	2,000	2,250	2,250	2,250		329,700		
<del>Black</del> Barrow's Goldeneye									7		
Gadwall	300	300	350	600	800	1,000	1,500		42,245		
Baldpate	1,000	2,400	5,900	6,200	7,000	7,000	6,000		338,100		
Pintail	20,000	42,000	87,000	42,000	9,050	9,000	8,000		1,568,700		
Green-winged teal	500	1,000	3,100	3,000	2,200	2,100	2,500		103,040		
Blue-winged teal				10	50	50	100		1,479		
Cinnamon teal		25	50	100	200	500	1,000		13,125		
Shoveler	50	100	600	1,000	2,500	6,000	10,000		141,750		
Wood											
Redhead	150	200	400	500	525	1,000	1,500		34,930		
Ring-necked	50	50	50	50	25	25	25		4,760		
Canvasback	250	500	900	1,100	1,175	1,200	1,200		45,010		
Scaup	500	800	1,350	1,400	1,600	2,000	2,200		78,400		
Goldeneye	300	400	450	300	125	100	100		23,625		
Bufflehead	100	125	350	225	160	200	200		11,060		
Ruddy	25	50	100	150	200	500	1,000		16,205		
<b>Other Herg. Common</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>50</b>	<b>25</b>	<b>50</b>	<b>50</b>		<b>3,045</b>		
<b>Herganser Hooded</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>25</b>	<b>10</b>	<b>10</b>			<b>1,855</b>		
<b>Total Ducks</b>	<b>25,400</b>	<b>49,625</b>	<b>102,025</b>	<b>58,710</b>	<b>27,890</b>	<b>33,235</b>	<b>37,875</b>		<b>2,757,027</b>		
<b>Coot:</b>	<b>100</b>	<b>550</b>	<b>1,325</b>	<b>6,000</b>	<b>10,700</b>	<b>11,000</b>	<b>15,000</b>		<b>316,400</b>		

(over)

	(5)	(6)	(7)	SUMMARY
	Total Days Use	Peak Number	Total Production	
Swans	18,095	765		Principal feeding areas _____
Geese	965,217	45,440		_____
Ducks	2,757,027	302,025		Principal nesting areas _____
Coots	316,400	35,000		_____

Reported by Eugene Kridler  
Wildlife Management Biologist

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

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

3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge Malheur National Wildlife Months of January to April 1952

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Western Grebe	10	4/4	300	4/30						300
Horned Grebe	1	4/19	10	"						10
Eared Grebe	10	4/20	5,000	"						5,000
Pied-billed Grebe			1,000	"						1,000
White Pelican	1	4/7	50	"						50
Double-crested Cormorant	1	4/5	100	"						100
American Bittern	1	4/17	?	"						?
Great Blue Heron	5	Prev. Per.	100	"						100
Common Egret	2	" "	250	"						250
Snowy Egret	1	4/16	50	"						100
Black-crowned Night Heron	1	4/12	100	"						100
Sandhill Crane	2	2/23	415	4/9						500
Virginia Rail			Present in undetermined numbers not common							
Sora			"	"	"	"	"	"	"	
Forster's Tern	2	4/28	10	4/30						10
II. <u>Shorebirds, Gulls and Terns:</u>										
Wilson's Phalarope	10	4/28	100	4/30						100
Avocet	40	4/4	1,000	"						1,000
Common Snipe	25	Prev. Per.	500	"						500
Dowitcher	100	4/19	500	"						500
Least Sandpiper	30	4/19	1,000	"						1,000
Western Sandpiper	10	4/19	500	"						500
Marbled Godwit	2	5/1	10	"						10
Greater Yellowlegs	1	3/30	50	"						50
Willet	10	4/5	450	"						500
Long-billed Curlew	2	3/25	500	"						500
Killdeer	10	Prev. Per.	2,000	"						2,000
Snowy Plover	1	4/19	100	"						100
California Gull			750	"						750
Ring-billed Gull	10	3/7	1,500	"						1,500
Franklin's Gull	10	4/18	150	"						150

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove	3	4/5	50	4/30					50
White-winged dove									
IV. <u>Predaceous Birds:</u>									
Golden eagle	13	1/1	13	1/1	12	4/30			20
<del>Duckwing</del> Bald Eagle	14	1/1	14	1/1	1	4/9			15
Horned owl	200	1/1	300	4/30	300	4/30			300
Magpie			2,000	4/30					2,000
Raven			200	4/30					200
Crow			50	4/30					50
Rough-legged Hawk	100	1/1	100	Jan-Feb	2	4/28			100
Swainson's Hawk	2	4/11	20	4/30					20
Marsh Hawk	250	1/1	250	4/30					250
Red-tailed Hawk	2	1/1	10	4/30					10

Reported by Eugene Kridler  
Wildlife Mgt. Biologist

#### 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.

3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Melheur National Wildlife - Months of January to April, 19462

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
						Hunting	For Re- stocking	For Research		
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total	Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse					Unknown	0	0	0	25	
Calif. Quail					1:1	0	65	0	6,000	Undetermined movement on on-off basis to adjacent lands in spring
Ring-necked Pheasant					1:1	0	0	0	2,500	
Chukar					Unknown	0	0	0	250	Movement off in spring
Gray Partridge					Unknown	0	0	0	?	None seen this period

## 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.

Refuge Malheur National Wildlife

April 30, 1962

(1) Species		(2) Density		(3) Removals					(4) Disposition of Fur					(5) Total Popula- tion
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control	For Re- stocking	For Research	Share Trapping			Total Refuge Furs Shipped	Refuge Income	Furs Donated	Furs Destroyed
								Permit Number	Trappers' Share	Refuge Share				
Muskrat														1,500
Mink														50
Beaver														10
Coyote					100									50
Bobcat					10									50
Raccoon					15									100
Badger					5									50

REMARKS:

## INSTRUCTIONS

Form NR-4

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

- | (1) SPECIES:            | Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan. "List of North American Recent Mammals" by G. S. Miller, Jr., a very good reference, is now out of print, although a revision is scheduled for publication in the near future.)   |  |  |  |  |  |
|-------------------------|--|--|--|--|--|--|
| (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, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks. |  |  |  |  |  |
| (3) REMOVALS:           | Indicate the total number under each category removed since April 30 of the previous year. Also show any removals not falling under heading listed.  |  |  |  |  |  |
| (4) DISPOSITION OF FUR: | On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market and the total income to the refuge by species, including share-trapped furs and furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.   |  |  |  |  |  |
| (5) TOTAL POPULATION:   | Estimated total population of each species reported on as of April 30.   |  |  |  |  |  |
| REMARKS:                | Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.  |  |  |  |  |  |

Malheur National Wildlife Refuge  
Burns, Oregon

Narrative Report for Period May 1 to August 31, 1962

Roster of Permanent Personnel

John C. Scharff . . . . . Refuge Manager  
Eugene Kridler . . . . . Wildlife Management Biologist  
Joseph P. Mazzone . . . . . Refuge Manager  
Lynn C. Howard . . . . . Refuge Manager  
Lee C. Tower . . . . . Administrative Assistant  
Eugene P. Heath, Jr. . . . (transferred). . Administrative Assistant  
Ivan J. Carey . . . . . Refuge Clerk  
Noel L. Cagle . . . . . Construction and Maintenance Foreman III  
Marselle Leake . . . . . Shop Foreman II  
Eugene E. Storm . . . . . Mechanic, Heavy Duty  
Elmer T. Ash . . . . . Dragline Operator  
Roelan T. Blom . . . . . Oiler  
Quentin L. Currey . . . . . Maintenceman  
Thomas B. Davies . . . . . Maintenceman  
Alfred S. Ludi . . . . . Building Repairman  
Norbert J. Schekall . . . . . Caretaker

Roster of Temporary Personnel

Kenneth M. Cobb . . . . . Student Trainee - Wildlife Biology  
Benjamin R. Ausmus . . . . . Painter  
Ira R. Cox . . . . . Laborer  
Hal W. Hibbard . . . . . Laborer

# C O N T E N T S

	<u>Page</u>
I. General	
A. Weather Conditions. . . . .	1
B. Habitat Conditions. . . . .	2
1. Water . . . . .	2
2. Food and Cover. . . . .	3
II. Wildlife	
A. Migratory Birds . . . . .	3
B. Upland Game Birds . . . . .	7
C. Big Game Animals. . . . .	8
D. Fur Animals, Predators, Rodents, and other Mammals. . . . .	8
E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies . . . . .	8
F. Other Birds . . . . .	9
G. Fish. . . . .	9
H. Reptiles. . . . .	
I. Disease . . . . .	10
III. Refuge Development and Maintenance	
A. Physical Development. . . . .	11
B. Plantings . . . . .	13
C. Collections and Receipts. . . . .	13
D. Control of Vegetation . . . . .	13
E. Planned Burning . . . . .	13
F. Fires . . . . .	14
IV. Resource Management	
A. Grazing . . . . .	15
B. Haying. . . . .	
C. Fur Harvest . . . . .	
D. Timber Removal. . . . .	
E. Commercial Fishing. . . . .	
F. Other Uses. . . . .	
V. Field Investigation or Applied Research	
A. Progress Report . . . . .	16
B. . . . .	
C. . . . .	
D. . . . .	
E. . . . .	
VI. Public Relations	
A. Recreational Uses . . . . .	17
B. Refuge Visitors . . . . .	17
C. Refuge Participation. . . . .	20
D. Hunting . . . . .	22
E. Violations. . . . .	22
F. Safety . . . . .	22
VII. Other Items	
A. Items of Interest . . . . .	24
B. Photographs . . . . .	
C. Signature . . . . .	30
D. NR Forms . . . . .	

Malheur National Wildlife Refuge  
Second Period Narrative Report  
May 1 to August 31, 1962

I. GENERAL

A. Weather Conditions

Headquarters Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
May	1.1	1.22	1.15	75	24
June	.0	.30	.95	92	23
July	.0	.11	.30	95	30
August	.0	.17	.22	95	27
Totals	1.1	1.80	2.62	95	23
		<u>P-Ranch Station</u>		Extremes	

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
May	.0	1.88	1.90	74	29
June	.0	T	1.16	90	27
July	.0	.06	.19	95	35
August	.0	.38	.31	93	30
Totals	.0	2.32	3.56	95	27
				Extremes	

Double-O Ranch Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
May	1.0	1.63	.95	72	25
June	.0	T	.71	90	25
July	.0	T	.09	95	26
August	.0	.03	.14	93	31
Totals	1.0	1.66	1.89	95	25
				Extremes	

Duena Vista Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
May	3.0	1.46	1.08	-	-
June	.0	T	.48	-	-
July	.0	.33	.34	-	-
August	.0	.25	.20	-	-
Totals	3.0	2.04	2.10		
				Extremes	

The evaporation pan and wind gauge reflect the following monthly records:

	<u>Miles of Wind</u>	<u>Inches of Evaporation</u>
May	2,376	6.38
June	1,123	9.42
July	968	10.60
August	1,067	10.00
Totals:	<u>5,534</u>	<u>36.40</u>

This period has been one of dry, windy weather, with temperatures perhaps below normal and a frost every month. Cereal crops received repeated setbacks as the low areas on which they are generally grown are more frosty than the locations of the weather stations. Alfalfa fields frosted every month of the field period and, one refuge grain field froze out entirely in May, and another field suffered at least a fifty per cent loss. The cold May precluded the usual rate of snow melt and no time during the period was there any flooding of any streams.

#### B. Habitat Conditions

1. Water. For four years hand running, the Malheur Refuge has been plagued by short water. No water was received by Malheur Lake from Silvies River which is the main source of supply for Malheur and Harney Lakes. The early promise for water in the form of a snow pack was much improved, but a cold windy melting period never allowed a sufficient amount of water to reach the stream beds to afford any wide distribution. The small amounts of water which did come, did not allow for the flooding of any appreciable area to accommodate the early nesters. Silvies River only afforded irrigation for a small part of Silvies Valley with no water for the lower reaches and Malheur Lake. Silver Creek flow did not reach the lower valley and Double O to do much good. The Blitzen River produced the most water comparatively speaking, but no water was diverted on to some areas of refuge land, and the private ranches at the lower end of the Blitzen Valley were short. Krumbo Reservoir again received no water from the main channel, and as was expected, lacked several feet of filling. There was insufficient water from this source to fully satisfy all needs, but some buildup of the reservoir was in evidence by the close of the period.

August 29-30 reflected the following stream flows:

Blitzen River	30.2 c.f.s.
Bridge Creek	11.0 c.f.s.
Mud Creek	.20 c.f.s.
Krumbo Creek	3.39 C.F.S.
McCoy Creek	3.24 c.f.s.
Cucamonga Creek	Dry
Kiger Creek	9.74 c.f.s.

Comparing the above records with the flows of a year ago indicates much improvement, but still not normal. These improved flows undoubtedly are a result of the better snow pack on Steens Mountain a year ago.

2. Food and Cover. The breeding habitat was only slightly better overall than last year. Malheur Lake shrunk rapidly from about 10,000 acres in the Spring to less than 1,000 by late June, and water was but a few inches deep and contained no aquatic plants. Unless the airthrust boat was kept moving, it would become stuck even at the deepest part. Harney Lake contained less than 500 acres by the end of August, and this too, was only an inch or two deep. Only the deeper ponds in the Double O unit retained water during the Summer after the Spring irrigation season. Boca Lake and Knox Ponds were kept full and both served as excellent brood areas when most of the upper valley was dry by early July. Small ponds persisted in the Wright and North Sagebrush Fields, which also helped broods through the summer. Although the "P" Ranch area south of Bridge Creek contained excellent nesting cover, it was a poor production area because of the lack of water during July and August.

The western one-third of Boca Lake contained good stands of sago pondweed for the first year it was back as a water area. Knox Pond contained fair to good growths, while Benson Pond supported heavy growths of water crowfoot. The Double O ponds were choked with water milfoil. Malheur Lake was a blank. The food situation is the poorest in years owing to the lack of adequate amounts of aquatics and the reduction in acreages of small grains. Although summer grazing has helped to reduce undesirable emergents stands to some degree, too much grass is available to the stock, and most emergents become too coarse and rank and thus are not grazed heavily enough for good reduction.

Grainfields in the Buena Vista area need water in or nearby them for most effective utilization. The Knox Field grainfield is not as large acreagewise as last year, but should provide fair of food if flooded.

## II. WILDLIFE

### A. Migratory Birds

1. Waterfowl. Populations throughout the period were about a third more than last year, but still far below normal. Nothing that has resembled a late Summer migration has taken place. Even though duck use days were substantially above those of a year ago, up 38.9%, totals are only 21.6 the nine year average, 1953-61. The increase over last year is a result of better production here. The steady decline in goose use days was interrupted as the total was almost twice that of a year ago, but still only 28.9% of average.

In view of the lack of adequate food and water now present, plus predictions of a reduced flight, total waterfowl use days will doubtedly be much less than normal.

Table 1. Comparative Waterfowl Use Days for May through August, 1953-62.

<u>Year</u>	<u>Swans</u>	<u>Geese</u>	<u>Ducks</u>	<u>Coots</u>
1962	1,953	221,025	2,080,407	1,460,200
1961	3,913	146,181	1,496,920	767,725
1960	2,632	309,890	8,141,476	7,362,600
1959	2,275	483,000	7,500,000	3,360,000
1958	2,459	695,360	8,596,497	6,818,800
1957	1,647	652,000	9,401,000	7,579,000
1956	1,652	729,113	10,913,168	8,652,000
1955	3,000	1,327,350	11,840,050	11,375,000
1954	4,221	1,727,390	20,302,212	35,140,000
1953	2,847	1,637,646	18,960,835	25,945,000
Avg. <sup>53-62</sup> 53-61	2,480	763,100	9,613,400	10,243,700
% of Avg.	78.8	28.9	21.6	13.0
% of 1961 <sup>2</sup>	49.9	151.2	138.9	190.2

a. Breeding Period and Production. Although the serious drought continues to exist for the fourth consecutive year, better water conditions in the Blitzen Valley this year, the main production area, resulted in duck production, 18,425 birds, being about two and one half times that of last year, which was one of the poorest in years. Boca Lake was kept nearly full the entire period and did yoeman service in not only providing food and water to all waterbirds in general, but also was the main brood area in the entire refuge. On July 12 a total of 129 broods were recorded there, and others were undoubtedly overlooked as they mingled with waterfowl and coot out of effective viewing range. Gadwall, followed by cinnamon teal, redhead, and Canada Goose predominated through the season, although all the usual refuge nesting species were represented. Knox Pond was also kept nearly full and harbored good numbers of the aforementioned species. The ponds and marshes of the Wright Field produced fair numbers of both ducks and coots as did also a few temporary ponds and sloughs in the Sagebrush Field. The Double O still suffered from a lack of adequate nesting cover in the north ponds area, and produced less than its potential.

A shift of breeding pairs of redheads and gadwall from Malheur Lake to the lower end of the valley occurred in late Spring.

Gadwall production was thrice that of last year, mallard better than double, cinnamon teal double, and redhead better than double. Whereas no canvasbacks or scaup were raised last Summer, this season production was an estimated 350 and 175 birds, respectively. Overall duck production, however, is still far below that experienced in better water years, i.e., 27,000 in 1957; 46,000 in 1958, and 46,000 in 1960.

Canada goose nesting was hampered by late flooding of marsh areas, so the 1,100 goslings produced were only 135 better than those raised last year, but almost on par with the production in 1959 and 1960. Boca Lake and Knox Ponds were the main breeding areas: the Double O and the Silvies River near Frank Ruh's ranch contributed smaller numbers.

As the Harney Basin became dry during the late summer, geese congregated along river channels and canals, while others moved into the refuge.

One known, and two more possible, trumpeter swan cygnets were raised this year, so, although nothing to write home about, this is better than the zero of last year. The known cygnet was hatched on Benson Pond, but later it and the adults moved to the North Witzel Pond. The two possibles may have been raised on the Unit 8 Pond, but haven't been seen since the one observation there in July.

Table 2. Waterfowl and Coot Production on Malheur Refuge 1957 through 1962.

	<u>1957</u>	<u>1958</u>	<u>1959</u>	<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>
Canada Goose	1,900	3,109	1,300	1,290	965	1,100	<del>1,250</del> 1,400
Mallard	4,500	5,013	600	3,627	1,755	2,850	4,155
Gadwall	8,610	15,683	2,000	24,656	2,250	7,800	9,680
Widgeon		151	50	408	150	500	960
Pintail	600	1,067		740	550	750	1,825
G.W. Teal	750	538	30	300	100	50	185
B.W./C. Teal	1,100	3,555	2,800	6,209	1,225	2,300	5,005
Shoveler	1,000	1,200		350	175	700	1,075
Redhead	7,200	15,146	100	7,146	925	2,300	4,405
Canvasback	1,000	197		240		350	365
Lesser Scaup	500	84				175	345
Ruddy	1,000	528	10	1,016	225	650	955
C. Merganser	50	509	20	72	20	50	90
Total Ducks:	26,310	43,671	5,610	44,764	7,355	18,425	29,115
Coot	63,000	70,000	300	42,612	4,050	7,100	10,900

2. Other Waterbirds. The serious water shortage in Malheur Lake for the second consecutive year adversely affected the nesting and production of coots, grebes, herons, and other waterbirds. Coot production, 7,100, was 75% better than last year, but still much below average. Use days were 190% better than last year, but only 13% of the 1953-61 average. The better duck production areas served these birds equally well, but many broods were scattered through the refuge wherever there was even just a bit of water. The Eleocharis areas of the Wright Field were especially favored as nesting areas, and during an aerial census there in late May, gave an appearance of almost colonial nesting, as nests were quite close together, much more than usual.

A colony of 125 common egret nests in the hardstem bulrush in Malheur Lake was successful this summer because water remained around until young were able to leave. No snowy egret, black-crowned night heron, or great blue heron colonies existed on or adjacent to the refuge this year, and populations of all waders were far below those present during good water years.

White-faced ibis were present this year in greater number than ever recorded in the past 15 years. A colony containing 28 pairs was found on July 16 in the large pond in the North Sagebrush Field. We were able to find 10 nests built of hardstem bulrush and located anywhere from two to five feet above the water. A total of 18 young and 14 eggs were counted, and average clutch (mode) was 4. Young were of considerable variance in size. The colony was revisited on July 30, and at this time all eggs had hatched and many young had left the nests either before that time or at our approach. Several were found hiding in the vicinity of their nests. A total of 17 were banded during both visits.

Pelicans did not nest this year because of the lack of suitable nesting islands and food. These birds were scarce this summer, and it was only during late August that a peak of 200 occurred. Last year in July they peaked at 1,500, and in 1960 at 16,000 in August. Near elimination of carp in Malheur Lake last year drastically reduced their food supply. On August 3, six pink-dyed pelicans dyed as locals on the Lower Klamath Refuge, either in late June or early July, were observed on Boca Lake in company with about 130 undyed birds. Also with this flock was a blue bird which had been dyed on the Clear Lake Refuge. All were colored as part of a pesticides research program being conducted by Biologist James Keith of the Branch of Research. On August 26 a pink bird was observed at headquarters.

Grebes, especially eared and western, fared much better this year than last. Approximately 50 western and 150 eared grebe nests were located on one of the north ponds at the Double O, while a colony in excess of 550 eared grebe nests occurred on Boca Lake. Both species had small colonies on Knox Pond, while the smaller bird nested on ponds in the Wright and Sagebrush Fields.

Sandhill cranes nested primarily in the "P" Ranch area of the Blitzen Valley. An estimated 100 breeding pair were present on the refuge. A total of 29 eggs were collected and transported to Santa Fe for the crane research study. Late summer populations of 450 birds are slightly better than those registered a year ago. On June 26 the writer found a crane nest containing a day-old chick and an egg on the Frank Ruh ranch adjacent to the refuge. On June 29 a chick about a week old was found on the refuge.

3. Shorebirds, Gulls, and Terns. No ring-billed or California gull or Caspian tern colonies were known to have occurred on or near the refuge. The latter bird was only occasionally seen. Approximately 150 Franklin's gulls were noted daily wheeling above a pond in the North Sagebrush Field in late May and throughout June, but a search of the area on June 20 revealed only one nest with eggs although many adults dove on us while we were engaged in the search.

Stinking Lake harbored many gulls and shorebirds throughout the summer and its shores were utilized extensively by avocets as a breeding and feeding area. Millions of brine flies carpeted the shorelines during the early summer and the noise they made when disturbed reminded one of locust hordes.

Shorebird, gulls, and tern populations are still far below those found in years previous to 1961. Only curlew numbers approached those of former years. These birds were most abundant as nesters in the fields bordering Malheur Lake. Only an occasional snowy plover was noted during the summer. The late summer migration of all birds in this category is a remnant of those present in former years. Black terns were more abundant this year than last; i.e. 3,000 to 500, but Forster's tern numbers were very low.

In mid-June over 1,000 ring-billed gulls were noted feeding on cicadas emerging from the sagebrush mantled flats near Wright's Point. Activity began near the Voegler grain field east of Highway 205 and moved progressively westward to Sunset Valley for two weeks. Three gulls collected contained 11, 33 and 44 individual winged adults plus considerable partially digested remains of others.

4. Doves. Populations compare favorably to those of past years.
- B. Upland Game Birds. The breeding season for California quail and pheasants was two to three weeks later than normal. At first it was felt that the severe cold of last winter had caused losses more serious than thought at the time; however, throughout the summer new broods kept appearing. Broods of very small quail, bumblebees, were noted in late August. Although production does not quite measure up to last year, it was still excellent. Pheasants did better than last year.

Sage grouse are on the rise, and more broods were seen this year than last. The same pertains to chukars. No gray partridge were seen.

- C. Big Game Animals. The refuge herd numbers approximately 75 animals, and of these, all but about 10 frequent the area north of Malheur Lake. On July 17, three different groups totaled 7 adults and 10 kids, 6 adults and 6 kids, and 3 adults and 3 kids, respectively. A buck kid was bottle-raised this summer by Mgr. and Mrs. Scharff to give company to, eventually much more, Weewee the doe at the headquarters enclosure. Both animals are objects of considerable interest to visitors.

Mule deer does made considerable use of the Blitzen Valley as a fawning area, and many sets of twins have been noted. One doe with three fawns was observed several times near the Witzel patrol station. As the summer progressed, many more animals drifted in from surrounding sagebrush areas to browse on clover, shrubs, and the like, especially in the "P" Ranch area. Populations are similar to those of last year.

During the week of July 15-21, a local rancher noted a cow elk near Stinking Lake.

- D. Fur Animals, Predators, Rodents, and other Mammals. The jack-rabbit cycle is on the rise, and populations both on and off the refuge are considerably higher than last year, but as yet they do not constitute a problem.

Muskrat numbers are still very low owing to the lack of suitable habitat. At present Knox Pond harbors the greatest numbers. Malheur Lake needs to be back in production before the refuge rat population begins to come back to former levels. No trapping will take place this year.

Coyotes continue to increase and yapping and howling is a nightly occurrence near refuge headquarters. Wiley Coyote will dine on jumprabbits this winter more than the past several years.

Raccoon are not as plentiful as last year. Weasel have been observed more frequently. Yellow-bellied marmot populations were higher, and the Narrows of the Blitzen Valley were a favored denning area. Gopher mounds were much more abundant this year.

- E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies. Two known Swainson's hawk's nests were active this year, but numbers of these birds are below those of former years.

Two golden eagle nests along the south side of Harney Lake produced two young each this year. These nests were unproductive last year. Ravens were common during the period, and while a group of college students was being conducted on a tour of the refuge, one was seen stealing an egg from a goose nest.

Crow populations were extremely low all period and presented no problem.

A steady attrition on magpie adults and young reduced the very abundant population to one we can now classigy as abundant.

Two small horned owl young were still in their nest near Romelli Bridge as late as June 16.

- F. Other Birds. Several species of birds considered rare or non-existent here until several years ago were netted here at various times during banding operations at headquarters; i.e. 3 catbirds in May and June, 3 red-eyed vireos in June, (all netted at the same time) and another one in August, a redstart in June and two more in August.

A summer record for a northern shrike, July 29, was obtained by the nets.

Spring arrival records for all birds were maintained as in past years. Reports for "Audubon Field Notes" were submitted during June and August.

- G. Fish. Fishing pressure on Krumbo Reservoir was very light during the summer. Opening day, July 1, found only 78 fishermen, and but half of these were successful. Average catch was .94 trout per fisherman. The next day 17 tried their luck and averaged one fish per fisherman. Word got around that fishing was "lousy" and thereafter very few fishermen were noted during the summer. Tables No. 3 and 4 contain data obtained during the first two days of fishing.

Notethat 11 of the 52 fish checked were not fin clipped and were from 7-12 inches in size. Couple this with the fact that only fin-clipped fish were planted this past April after the reservoir was drained and water pockets treated with rotenone last fall and a presumed 100% kill of fish, rough and trout, obtained, it suggests very strongly that natural reproduction in Krumbo Creek was much better than anticipated. On August 3 a gill net was placed in the reservoir and left overnight. The next day 15 trout only were in the net, and of this total, only one was fin clipped. More netting is planned to gain insight as to survival of the spring plant, and also to push vigorously for more help from our fisheries biologists so that a thorough study be made of the entire planting program here to determine if it is justified economically or recreationally.

Table No. 3. Fisherman Use and Success, Krumbo Reservoir  
July 1-2, 1962

	July 1	July 2	Total
Fishermen checked	47	8	55
Unsuccessful Fishermen	26	4	30
% Unsuccessful	55	50	55
% Successful	45	50	45
Total fish caught	44	8	52
Fish/Fisherman	0.94	1.00	0.95
Total fishing hours	224	30	254
Avg. hrs. fished/F-man	4.8	3.8	4.6
Fish/hour fished	.20	.27	.2

Table No. 4. Size Range of Trout Caught, July 1-2, 1962  
Krumbo Reservoir

Size	July 1		July 2		July 1-2	
	Fin- Clipped	Un- Clipped	Fin- Clipped	Un- Clipped	Fin- Clipped	Un- Clipped
7-9"	0	4	0	1	0	5
10-12"	7	6	2	0	9	6
13-15"	27	0	5	0	32	0
Totals	34	10	7	1	41	11

Table No. 5. Size and Weights of Rainbow Trout Gillnetted on  
Krumbo Reservoir, August 3, 1962.

Size	Number	Clipped	Unclipped	Ave. Wt. (oz)
7-8	5	0	5	3.1
8-9	7	0	7	4.0
9-10	0	0	0	0.0
11-12	0	0	0	0.0
12-13	2	1	1	14.0

On August 29 a total of 924 lbs. of rainbows averaging 5-3/4" in size and 13.3 fish per lb. were liberated. These fish had their left ventral fins clipped.

To get better utilization of hatchery fish, we strongly recommend that the trout season the reservoir run concurrently with the state season which opens in late April. Furthermore, more intensive study be given to survival of planted fish.

I. Disease. Botulism was almost nonexistent this summer. Only one mallard exhibiting its symptoms was found. The water left in Malheur Lake contained little aquatic animal or vegetative life and was exceptionally clear.

### III. REFUGE DEVELOPMENT AND MAINTENANCE

#### A. Physical Development.

##### 1. Restoration of Dikes, Bridges, Roads, and Structures.

The north dikes of Knox Pond were surfaced and riprapped this period and the division dike surfaced with rock boat landing ramps. A total of 8,500 cubic yards of rock was hauled on this project.

A good access road was provided to the material pit and this road surface watered and properly worked. This road provides a yearlong access to riprap material and reduces the hazard of dust when hauling was done over the dry alkali beds.

The Brenton Cabin bridge was repaired and the river banks above and below the bridge riprapped. The large highwater return flow to the river from the Island Field was also riprapped and strengthened.

The fencing program for the year was gotten underway. Seven and one half miles of fence line was cleared and one and one quarter miles of new boundary fence constructed. In some places this is going to be rather slow work, as old fences have to be removed and cleaned up before new construction can start.

Three tenths of a mile of low dike was constructed on which to place the boundary fence consisting of approximately 3,000 cubic yards of earth. This work was done with a cat and can, and will, keep the fence on dry ground during high water periods. One 18" pipe was installed to allow for the ebb and flow of the water.

The road from the "P" Ranch to Frenchglen was straightened up and resurfaced. This is a most difficult piece of road to maintain as hardpan is close to the ground surface and the surfacing material has a tendency to spread away from the roadbed during spring breakup and with hard use. Probably over the years as much as three feet of surfacing has been hauled on this particular piece of road. In excess of five thousand cubic yards were hauled this period.

The refuge alfalfa hay was cut and baled and distributed to various stations where required.

In excess of 100 miles of roadsides were mowed during the period. Needed clean-up about stations was accomplished.

Two dump trucks were received on temporary loan from Stillwater Refuge for use on the graveling and riprap work.

These vehicles had only been recently received from surplus. Generally, they were in pretty good shape, but considerable motor and other repair work will be required before they are usable for any long period of time.

Some work was done toward rehabilitation of Grain Camp Dam, and bridge by moving materials to site.

Approximately 100 miles of fence was maintained during the period.

Pipe and headgates were ordered for the completion of the Diamond Drain project.

2. Carpenter Department. A new roof was provided on the Kado dwelling.

A glass cage was built for holding birds and for photography purposes.

The complete toilet assembly was replaced in Quarters No. 14. A new Formica drain board was provided in the same dwelling and the kitchen partly repainted.

A number of refuge signs were repaired and refinished.

Two fourteen foot board gates were constructed in the shop for use at the "P" Ranch.

Quarters Number 8 was repaired and completely painted inside and outside. The garage and utility building was also painted.

The usual current repairs were accomplished at the various stations.

3. Repairs to Equipment and Shop Work. A complete motor overhaul was given the Bay City Crane Truck motor consisting of new piston rings, valve job, two new pistons, gaskets, etc. A new set of oil pan gaskets was placed in the Bay City Crane diesel engine unit.

A SAFETY measure was taken in placing the shop steam cleaner in better working order. The diaphragm valves were reworked, a new electric motor was provided and a new transformer igniter was installed. With the installation of the igniter no fire outage is possible.

Ten 5,000 mile checks and inspections were made.

On the D-T tractor new fingers and springs were placed on the starting motor Bendix. A new gear lock installed in transmission, new final drive sprocket and bellows seals placed and clutches and brakes adjusted.

A new 4 x 4 Chevrolet one half ton pickup was received and a horse rack made and installed. Decals, license plates, seat belts, first aid kit and wrap around rear bumper with trailer hitch were installed. This vehicle is stationed at the Double O.

Two new International 340 Utility wheel tractors were received on May 18, one being for Ruby Lakes Refuge. A new radiator grille guard was made and installed on the Ruby Refuge tractor. On the Malheur tractor a new mower was attached, grease gun holder provided, oil can bracket and other minor improvements.

Much time is required by the shop personnel on miscellaneous repair jobs, such as installing springs, replacing broken axles, changing tires, mounting shock absorbers, repairing radiators, signal lights, and wiring, brake jobs and glass repair, along with grease jobs and oil changes.

Other maintenance jobs consisted of miles of fence repaired, water control structures maintained, roads, bridges and cattle guards kept in order and buildings, yards and other physical structures maintained to a good standard.

B. Plantings.

1. Aquatic and Marsh Plants. None
2. Trees and Shrubs. Only a few replacement trees were planted this period. Some yellow pine were transplanted, but they failed to grow. We were of the opinion that growth was too far along, which created too much of a shock at planting time.
3. Upland Heraceous Plants. None.
4. Cultivated Crops. A total of approximately 900 acres of grain was planted on the refuge this period. This was widely distributed over the refuge. Much of it froze out in May and none of it has resulted in a bumper crop. The planting consisted of barley, oats and rye. Approximately 150 acres of volunteer rye made some grain which has been heavily used by sandhill crane.

C. Collections and Receipts

1. Seed or Other Propagules. None.
2. Specimens. See "Field Investigations."

D. Control of Vegetation. Other than spot spraying of two very small whitetop spots, no spraying took place this period.

E. Planned Burning. None

- F. Fires. As mentioned earlier in this report, water conditions were generally much improved over the same period last year, particularly in the Blitzen Valley unit, and, as a result, soil and vegetation moisture held up well into the summer months. The fire hazard conditions became critical during mid-August, and will undoubtedly remain so until our first substantial winter storm.

We have again been fortunate not to have experienced any serious fires during this critical period; however, we did have two fires which could very well have been quite serious had it not been for favorable weather and moisture conditions and prompt action on the part of refuge personnel and refuge haying permittees.

At 1:30 P.M. on August 5, a fire broke out in the northeast end of the Duck Pond field. The fire was started by a spark from the exhaust of a swathing machine which was being used by a haying permittee. While the permittee was beating out the flames with his jacket, his wife used the swather to rake-bunch wind-rowed hay away from the burning area. Once they had the fire in check, they mowed and raked two additional strips of Juncus around the fire and had it pretty well under control by the time refuge personnel arrived.

As the fire was still smoldering in the peat-type soil, refuge personnel sprayed water on it with the Bean sprayer and fire truck until it was determined that the burned area was completely cold. The fire burned about one-quarter acre of Juncus and the amount of hay lost was negligible.

At 4:30 P.M. on August 26, a second fire broke out in the Baker Field. Twelve members of the haying crew working in the field began suppression activities immediately upon its discovery. These men, assisted by refuge personnel from nearby "P" Ranch and Frenchglen had checked the spread of the fire by the time refuge pumpers arrived from Buena Vista and Headquarters to bring it under control. As this fire was also burning in peat soil, it was necessary to haul and dump Blitzen River water on it for almost 12 continuous hours. Hot spots continued to show up so a watch was maintained for several days by refuge personnel and the haying contractor's crew.

The hay crew believed this fire was started by a spark from the exhaust of one of the Power Buck machines being used in the field; however, an inspection of the exhaust systems on these machines revealed them to be in excellent condition, indicating that a cigarette discarded by one of the Power Buck operators was more likely to have been the cause.

The fire consumed about 9 acres of meadow-land which had been mowed and rake-bunched. Damage from loss of hay was estimated at \$135.00

## IV. RESOURCE MANAGEMENT

- A. Grazing. Generally forage production on the refuge is short of a normal. The Blitzen Valley unit is good. Water from the Diamond drainage was sufficient to produce a normal amount of forage in that unit.

The "P" Ranch and Buena Vista units are both near normal, and the Sod House unit in its entirety is perhaps 75% of a normal. The alluvial part of the Blitzen River bordering on and within the boundary of Malheur Lake is perhaps only about 30%.

Malheur Lake proper is real short, but this shortage could be relieved somewhat by early rains augmenting the annual foxtail growth.

The Double O unit produced a normal amount of forage on the part irrigated by the springs, but only a partial irrigation was had on a small part of the area irrigated by Silver Creek, and the AUM take from this part will be short.

The summer grazing areas on the refuge produced excellent results, and waterfowl use from the closely cropped grass was good.

In Harney County there are about 300 ranchers running cattle, and of this number, about seventy are refuge permittees.

Of the one hundred thousand cattle being run in Harney County, about 20% will be on refuge lands at one time.

The county as a whole is dry and in the process of being declared a drought area to comply for concentrated feeds under the Government drought feeding program.

Many of the ranches located on the lower reaches of Silvies River, and short creeks have had four years of failure or near failure, and many operators are hurting feed-wise.

This condition would be much worse if it were not for refuge forage.

## V. FIELD INVESTIGATION OR APPLIED RESEARCH

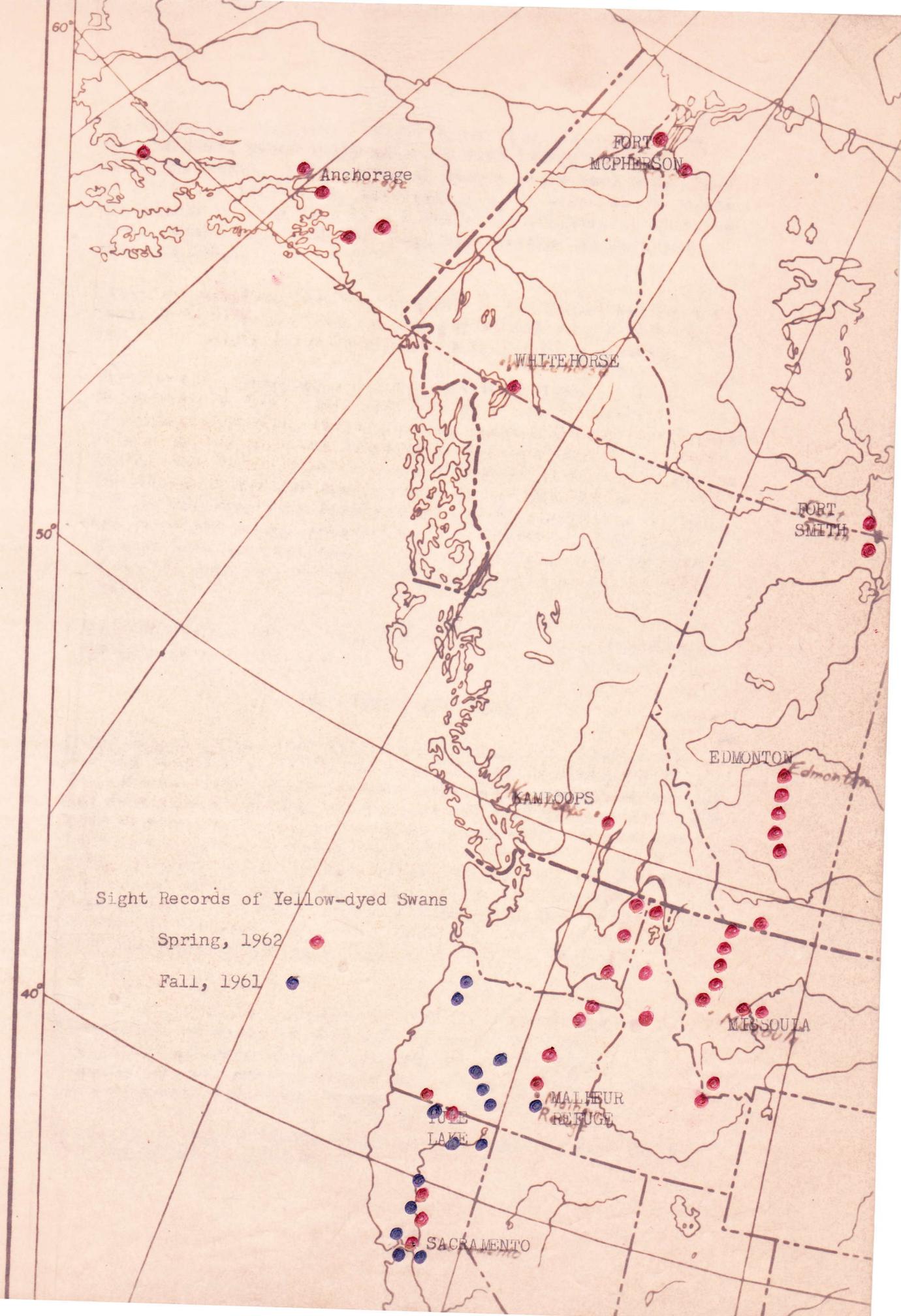
1. Aquatic Plant Survey of Malheur Lake. No survey was conducted this year because of the lack of water.
2. Colored Whistling Swan Project. During May and early June, a very satisfactory number of reports about observations of whistling swans dyed yellow here were received. Most April sightings were made in northwestern Montana, northeastern Washington, northern Idaho and southern Alberta. On April 29 two were sighted near Anchorage, Alaska, and single birds were observed on May 1 on the Copper River near Cordova and on May 2 near Gulkana.

These were very surprising because there were no reports previous to those dates north of the Edmonton, Alberta area. Then on May 12 a report of one bird was received near Fort Smith, Northwest Territories and a week later 19 dyed individuals in a group were observed in the same general area. Reports were received later of three near Inuvik, North West Territories and at the MacKenzie delta near Fort McPherson.

Just which route the Alaska birds took is still uncertain. Was it a mountain route through British Columbia, or did they swing west from Fort Smith through the Northwest Territories? In view of these uncertainties we intend to trap and dye yellow more samples this fall and next spring, if we are fortunate in trapping more, to fill out the gaps in Canada and Alaska. Also, it behooves the Bureau to learn more about swan populations since it has opened the door to hunting them by giving Utah a partial season. Other states will be banging at the door.

Data to date indicate that swans which migrate through the Malheur area nest in Alaska and the MacKenzie delta in the Northwest Territories of Canada and winter in the Sacramento and Stockton areas of California. A map depicting points of observations is on the following page. Each dot represents point only and not numbers of observations.

3. Sandhill Crane Project. We have received no information regarding the eggs collected here by the Branch of Research during May other than the fact that 27 of the 29 eggs had hatched. We had hoped to capture and dye yellow 10 young birds hatched here, but were successful in capturing only 2 which were old enough to be dyed. When this refuge receives a cannon net, plans call for banding migrants and/or resident birds. Very little migratory data is available on the crane populations of Malheur.
4. Pesticides Study. Bird, rodent, and vegetative specimens were collected this period in conjunction with the grasshopper control program.



Specimens were collected before areas were treated with seven and diieldren, immediately after, a week later, and a month after treatment. Bird counts on sample areas were made prior to and after treatment. Specimens will be examined for presence and extent of chemicals by the Denver Laboratory. A more complete report will be forthcoming upon receipt of information from the lab.

5. Waterfowl Banding. During the period, 154 flightless Canada geese were banded. Duck banding operations are in full swing now. The refuge quota is 500 mallards and 500 pintails.
6. Experimental Installation of Mallard Nest Boxes. A total of 20 cylindrical nest boxes were installed in various areas and in various habitats, but all the at recommended six inches above water. No use of these boxes were made by ducks or any other birds. The water level in one pond raised to within an inch of the bottom of one box several weeks after placement, and this box was utilized as a feeding platform by a muskrat. We were not surprised by the nonacceptance of these boxes by ducks because this area has more than enough cover. What is lacking is enough stable water areas during the nesting and brooding seasons.

To give these a fair trial, however, they should be available through several seasons.

## VI. PUBLIC RELATIONS

- A. Recreational Uses. Bird watching, angling, photography, and camping continue to be the main recreational attractions of the refuge. Owing to the drought conditions prevailing throughout this part of Oregon, angling has not been good. Early, the Blitzen River was good, and held up fairly well. Krumbo was only fair, and has received little play after the first few days, of opening. An opening season the same as other nearby State water would undoubtedly make this a more attractive fishing area. The nearby Fish Lake Resort on Steens Mountain reports an increased use over a year ago, and it appears that this same observation holds true so far as the refuge is concerned.

A total of 1,342 individuals registered at the museum during the period, as compared to 1,118 for the same time in 1961. The folks registered from thirty-one states, Washington, D.C., Brazil, England, and British Columbia. Every month of the report period showed an increase.

- B. Refuge Visitors. Official visitors and others of note during the period were as follows:

May

- 5 Mr. and Mrs. Harold Preston Portland, Oregon  
 5 John McKelvey, Oregon State Police Burns, Oregon  
 Carol and Malcolm Renfrew  
 University of Idaho Moscow, Idaho
- 14 Jas. Stephen, Oregon State Police Burns, Oregon  
 16 J.A. Stewart, U.S.D.A. Pendleton, Oregon  
 Joe Capizze, Oregon State  
 Department of Agriculture Salem, Oregon  
 Kenneth Goeden, Oregon State  
 Department of Agriculture Salem, Oregon  
 H.B. Buschicker, U.S.D.A. Pullman, Wash.  
 I.S. Jackson, U.S.D.A. Pendleton, Oregon  
 R.B. Thrailkill, U.S.D.A. Oakland, Calif.
- 17 G.N. Jamison, Oregon Historical  
 Society Burns, Oregon  
 Wm. Cramer, Oregon Historical  
 Society Burns, Oregon  
 Murl Bennett, Oregon Historical  
 Society Burns, Oregon
- 26 Phil Brogan, Publisher,  
 Bend Bulletin Bend, Oregon  
 Giles French, Publisher  
 Moro, Oregon Moro, Oregon  
 Thos. Vaughn, Oregon Historical  
 Society Prtland, Oregon
- 23 Fred R. Sankey  
 Predator & Rodent Control Baker, Oregon
- 26 Mary Ann Campbell,  
 Portland Daily Register Portland, Oregon
- 28 Ray Glahn, Pilot-Biologist, Portland, Oregon  
 30 Art Gerity, B.L.M. Shoshone, Idaho

June

- 1 Fred A. Anderson and family Tigard, Oregon  
Fred, now a successful attorney, was  
 the first clerk assigned to Malheur  
 Refuge in 1935.  
 Evelyn Gilcrest,  
 Gilcrest Family P.L.S. Co., Berkely, Calif.  
 Mary F. Gilcrest, " " " Berkely, Calif.  
 Betton Dewitt, " " " " Berkely, Calif.  
 Florence J. Dewitt " " " " Berkely, Calif.
- 2 Harold and Lydia Moulton  
 Oregon Audubon Society Portland, Oregon
- 4 U. E. Gras,  
 Sequoia Audubon Society Sequoia, Calif.
- 11-12 Ray M. Glahn, Pilot-Biologist Portland, Oregon
- 12 Jack R. Fawcett,  
 Ruby Lake Refuge Ruby Valley, Nev.
- 12-14 Howard Spragg, Position Classifier,  
 Office of Personnel, BSF&W Portland, Oregon
- 13 Ellen C. Munson,  
 Sacramento Audubon Society, Sacramento, Calif.

June

- 26 Alvin B. Coon, Predator Control Crane, Oregon  
 Russell L. Zink, " " Crane, Oregon  
 Helen Brooks, Oregon Historical Society Portland, Oregon

July

- 1 Lenard Penhale, Director, Beaches and Parks Sacramento, Calif.  
 3 Marie Mans, Regional Editor, Middle-Pacific Coast "Audubon Field Notes" Berkely, Calif.  
 10-11 Chas. Rouse, Biologist, U.S.F.W.S. Lakeview, Oregon  
 7-11 Charles Conkling, Photographer, Portland, Oregon  
 11 Fred Dunnell, B.L.M. Burns, Oregon  
 12 Russell L. Zink, Predator Control Crane, Oregon  
 14 Mr. and Mrs. Thos. Harper Tule Lake Refuge Tule Lake, Calif.  
 Kenneth Goeden, Oregon State Dep't of Agriculture Salem, Oregon  
 18 D.S. Jackson, U.S.D.A. Pendleton, Oregon  
 19 Guy E. Connolly, F.W.S. Lakeview, Oregon  
 19 Eldon L. McLaurry, F.W.S. Lakeview, Oregon  
 21 Cecil Williams, Denver Lab. Director, Branch of Research Denver, Colorado  
 23-25 John B. Vanden Aker, Ass't Regional Refuge Supvr. Region 1, BSF & W. Portland, Oregon  
 24 Frank Cleaner U.S.G.S Baker, Oregon  
 W.T. "Jack" Frost, S.C.S. Portland, Oregon  
 Spud Savage, S.C.S. Baker, Oregon  
 30 Orvis C. Gustad Predator Control Prairie City, Ore.  
 Alvin B. Coons Predator Control Crane, Oregon

August

- 3 Ray Novotny, County Agent, Burns, Oregon  
 7 Dick Jackson, U.S.D.A. Pendleton, Oregon  
 7 T.O. Morrow, U.S.D.A. Pendleton, Oregon  
 7 Miles Langdon, Oregon State Game Commission Hines, Oregon  
 11 Giles French, Editor Sherman County News Moro, Oregon  
 15 Charles A. Repenning, U.S.G.S. Menlo Park, Calif.  
 20-21 Dr. F.W. Sturges, Southern Oregon College Ashland, Oregon  
 22 Albert Wiesendanger Keep Oregon Green Salem, Oregon

August

22-23	J.A. Sanders, Science Institute,	Monrovia, Calif.
	E.C. Sanders, " "	Monrovia, Calif.
	Jerome Sanders, President, Pasadena Audubon Society	Monrovia, Calif.
23	Ray Novotny, County Agent,	Burns, Oregon
25	Wayne Morse, Ore. U.S. Senator,	Washington, D.C.
	Karl S. Landstrom, Director, B.L.M.	Washington, D.C.
	Gary Goodfellow, A.S.C.S.	Burns, Oregon
	Ray Novotny, County Agent	Burns, Oregon
	Geo. W. Johnson, Exec. Sec. Oregon Cattlemen's Assoc.	Prineville, Oregon
	Forest Sneva, Squaw Butte Range Experiment Station	Burns, Oregon
	Howard P. Delano, B.L.M.	Portland, Oregon
	Ernie Palmer, B.L.M.	Portland, Oregon
	P. Tiller, Harney Co. Commissioner	Burns, Oregon
	Kent Giles, B.L.M.	Burns, Oregon
29	James Keith, B.S.F. & W. Research Biologist,	Davis, Calif.
30	Edw. Donohue, Subdivision Insp. Grant Bowder, Oregon Real Estate Dep't.	San Francisco, Cal. Salem, Oregon
31	Cecil Downing, Ex-CCC enrollee, 1935-37	Spokane, Wash.
29	Orvis C. Gustad, Predator Control	Prairie City, Oreg.
31	Ray Glahn, Pilot-Biologist Regional Office, BSF & W	Portland, Oregon

- C. Refuge Participation. On May 15 Refuge Manager Scharff attended a meeting in Burns, where final plans were made for treatment of grasshopper infested areas on Malheur Refuge. This meeting was attended by County representatives, interested ranchers, U.S.D.A. administrators, representatives of Oregon State Dep't of Agriculture, and Harney County Agricultural Agents.

On May 26 the annual tour of the Oregon Historical Society was hosted on the Malheur Refuge. Adjacent areas of historical interest were visited. The group of approximately 150 assembled at the refuge headquarters in the morning where coffee and cookies were served by refuge women. Lunch was served at the Barton Lake round barn and a steak fry enjoyed at the "P" Ranch for the evening meal. Mrs. Kenneth Pruitt of the Frenchglen Hotel prepared the dinner and members of the Masonic Lodge of Burns furnished the grills and cooked the steaks. Mrs. Pruitt was assisted in serving by neighboring ranch and refuge women folks. The tour was enjoyed by all, and many favorable comments were heard with respect to the planning, route of travel, and Mrs. Pruitt's part in serving the dinner.

On May 3, Biologist Kridler conducted the ornithology class of Walla Walla College on a tour of the refuge after giving a slide talk to them on waterfowl management and refuge operations.

On May 4, Biologist Kridler conducted the ornithology class of the College of Idaho on a tour of the refuge. A slide talk was given to them that evening.

Biologist Kridler and Ass't Refuge Manager Mazzoni participated in various panel discussions during the May 8 Interagency Meeting in Burns. Representatives of the Bureau of Land Management, Forest Service, Agricultural Research Service, County Agent's Office, and State Game Commission were present. Various bureau objectives and research needs were discussed.

On May 12 the Oregon Council of Seventh Day Adventists were given a program and conducted on a tour of the refuge by Biologist Kridler.

Biologist Kridler attended the annual meeting of the Western Birdbanders Association in Oakland, California on May 19-20, at his own expense and time. He was elected first vice-president.

The Oregon Audubon Society was conducted on a tour of the refuge June 2 by Biologist Kridler.

On June 15-16 Biologist Kridler gave an illustrated talk about conservation, wildlife, and refuges to members of the adult conservation class, (all teachers) of the College of Idaho, and conducted them on a tour of the refuge.

On July 9 Scharff, Kridler and Mazzoni attended an inter-agency meeting in Burns, and furnished the program for the day. This group will meet bi-monthly, the program to be rotated among the various agencies.

Refuge Manager Scharff and Biologist Rouse spent July 10 with the Sunshine Garden Club on their annual trek to Steens Mountain. This botanizing group of thirty-seven spent the entire day identifying wild flowers and making pictures.

Ass't Refuge Manager Mazzoni conducted the ornithology class of the Northwest Nazarene College on a tour of the refuge on July 13.

The adult natural history and ornithology classes, (all high school science teachers) were given talks about wildlife, birds, refuges, etc., and later conducted on a tour of the refuge by Biologist Kridler on July 27-29.

On July 31 Refuge Manager Scharff gave the weekly Burns Chamber of Commerce program. The program consisted of showing about thirty large color pictures, taken in Harney County on and adjacent to the refuge.

Twenty-two members and guests were present.

On August 3-4 the ornithology and natural history classes of Walla Walla College were given slide talks and conducted on a tour of the refuge by Biologist Kridler.

Refuge Biologist Kridler and Manager Scharff conferred with Management Appraisal team in the Regional Office on August 7. While in the Regional Office other matters of interest were discussed with various Regional Office personnel.

Refuge Manager Scharff spent the entire day of August 20 with Dr. Sturges and a summer school class of fourteen visiting the refuge from the Southern Oregon College of Education. Assistant Manager Mazzoni showed the film, "Wings Over Blitzen Valley", and Biologist Kridler spoke on various aspects of waterfowl management.

On August 25 Refuge Manager Scharff assisted the Oregon Cattlemen's Association, county officials, and B.L.M. personnel in hosting Senator Wayne Morse and Karl S. Landstrom, Director of Bureau of Land Management, in showing them about the refuge, and Steens Mountain area. A number of range improvement areas were visited. Mrs. Scharff and Mrs. Cagle served coffee and cookies to the group upon their visit to the refuge headquarters. A total of fifty-five were in the party.

- D. Hunting. None this period.
- E. Violations. No known violations occurred during the period.
- F. Safety. The Station SAFETY Committee this period consisted of Marselle Leake, Chairman; Tom Davies, Member; Bob Blom, Member; Gene Heath, Secretary.

The Committee conducted three Committee meetings, one Station SAFETY meeting, and a quarterly fire drill.

The first two SAFETY Committee meetings were held at the site of refuge construction and maintenance projects. Various aspects of heavy equipment operation and over-all project SAFETY was reviewed and recommendations made. As a result of these meetings, a longer exhaust stack was installed on the TD-18A tractor to carry exhaust fumes higher and away from the operator and minor adjustments made to various other pieces of equipment. All fire extinguishers attached to vehicles and heavy equipment were checked at each project visited.

On June 29, 1962, the Committee met at the location of rip-rapping operations in Knox Field to investigate a lost-time accident involving Dragline Operator Elmer Ash. Dragline Operator Ash and Oiler Roelan T. Blom were transferring a barrel of diesel fuel from a Ford pickup to a Studebaker pickup.

The pickups were backed together with the tailgate on the Studebaker down and chains hooked into the tailgate. The tailgate of the Ford pickup was laying on top of the Studebaker tailgate, and the chains not hooked. While the barrel of fuel was being transferred from the Ford to the Studebaker, a chain on one side of that pickup broke and the hook on the other side straightened out letting Mr. Ash fall into a sitting position on the bed of the Ford pickup with his legs between the two pickups. The barrel of fuel slid and pinned Mr. Ash's leg against the Ford pickup causing injury to his left leg and knee. Fortunately, Mr. Ash's leg was not broken; however, his left kneecap was severely bruised and his left calf bruised and lacerated. The laceration was such that Mr. Ash was required to spend almost three weeks in the local hospital. The SAFETY Committee felt that this accident was preventable and recommended that, in the future, when it is necessary to transfer barrels of fuel from one pickup to another, the tailgates be dropped completely down and the pickups backed together. This leaves approximately 7" of space between the pickups due to the wrap-around construction of bumper-trailer hitches used on most of our pickups, however this opening would be less hazardous than the flimsy tailgate chains.

The fire drill consisted of a simulated grass fire in the vicinity of the old Mess Hall east of the main headquarters area. The fire truck and Bean-sprayer were demonstrated by attending personnel. An informative discussion was held at the end of the drill with various aspects of range fire fighting being discussed.

The timely "Brush and Fire Fighting" film was shown and discussed at the Station SAFETY meeting. J.T. Barnaby's, Chairman of the Regional SAFETY Committee, message to Bureau employees regarding our personal responsibility to work and live (SAFELY) was read and discussed. Each employee was given a copy of an excellent U.S. Postal Department release entitled "6 Steps to SAFETY". Chairman Leake asked that all personnel give a little thought to firearm and general hunting SAFETY practices with the various hunting seasons coming up. Mr. Leake discussed several gun-handling practices which require special attention. Other items discussed: signal lights on new Studebaker pickups are improperly placed as they blind the driver when used at night; refuge burning barrels should not be dumped during periods of high fire potential; and maintenancemen on the three sub-stations were instructed to inspect and recharge all soda-acid fire extinguishers.

SAFETY Committee Chairman Marselle Leake is to be commended for organizing and conducting what was generally considered to be "one of the best Station SAFETY meetings we've had in a long time." The meeting generated a lot of interest and worthwhile discussion.

A recent accident involving one of our grazing permittees served to bring a little known potential SAFETY hazard to our attention and may be of interest to Narrative Report Club.

The permittee was using propane gas to operate a pump for stock watering purposes at a well located a mile or so from his ranch headquarters. The operation apparently required a fairly large flow of gas from the 25 gallon propane tank being used and he had been experiencing difficulty with the propane freezing up. In his attempts to determine if the gas was beginning to freeze, he laid his bare hand against the tank. At the instant of contact the hand adhered to the tank and began to freeze. The 200 pound plus permittee was unable to detach his hand and had to unhook the tank and carry it to a nearby watering trough where he finally dislodged his hand by pouring water on it. The permittee suffered severe damage to the hand and was required to spend almost two weeks in the local hospital in Burns. It will be another four to six weeks before he regains complete use of the affected hand.

Our SAFETY record stood at 67 days at the close of the period. The previous period consisted of 708 accident-free days.

#### VII. OTHER ITEMS

- A. Items of Interest. Refuge Manager Scharff attended a meeting of the American Society of Range Management State Committee for the Annual Youth Camp which was held in Bend on May 4. At this time County Committee Chairmen were appointed, camp location selected and other detailed matters taken care of. The Malheur Refuge had hosted this camp in 1960 and 1961, but it will be held on the Malheur National Forest this year.

On June 11 Kenneth Cobb, student assistant, reported for duty. He arrived just in time to break into the grasshopper control program in a big way.

Refuge Manager Scharff assisted the local County Agent and Squaw Butte Range Experiment Station personnel in hosting a group of County Agents from eleven western states and Hawaii on June 13.

A BLM demonstration of range survey methods was attended by Refuge Manager Scharff on June 19. This demonstration was attended by a number of interested ranchers and proved to be real information to all those in attendance.

The annual County Grass Tour was attended by Refuge Manager Scharff on June 23. The tour covered sprayed ranges, range seedings, water pumping systems, and reservoirs. Mr. Scharff placed second in the bull weight contest and won an electric prod. Biologist Kridler has already requested the use of this prod to goose the geese into the banding trap.

On July 15 Eugene P. Heath, Refuge Administrative Assistant transferred to the Sheldon-Hart Mountain Refuge, at Lakeview, Oregon. Gene had worked in the Malheur office for ten years and his backlog of information on Malheur will be sorely missed. A going-away party was held before the departure of the family and over sixty neighbors and friends were in attendance.

Mr. Louis Bohl from the Regional Office of Engineering visited the refuge from July 17 to 20, planning on the ground for a suitable map for use in development planning and general refuge use.

On July 12 a new Thermo-Fax copying machine was delivered by a Boise, Idaho representative of the company. After having the use of this machine for a time, one wonders how it was possible to operate previously. Now with this machine and a Dictaphone much time can be saved in the office.

During the period of July 23-25 John B. Vanden Akker, Assistant Regional Refuge Supervisor, gave the refuge a general inspection. This was Mr. Vanden Akker's first visit to the area which will be of value to him in his planning assignments.

Lee Tower reported for work on the Malheur Refuge on August 2. Mr. Tower is fresh from Michigan and replaces Gene Heath. Mr. Tower is married and has three children.

Sixteen large color pictures averaging about 16" x 20" in size were furnished the Harney County Chamber of Commerce for use in an exhibit at the Oregon State Fair. These pictures were taken on the refuge and immediately adjacent Steens Mountain area.

Summary of the 1962 Grasshopper Control. In September of 1961 a cooperative grasshopper survey was conducted by the local County Extension Service and officials of the U.S.D.A. Plant Pest Control Division. Their survey revealed that grasshopper populations had increased from slightly above normal numbers in 1960 to well above normal population levels on approximately 100,000 acres of Harney County lands. Of this 100,000 acres, it was determined that about 40,000 acres were infested with populations in the severe to very severe range according to U.S.D.A. standards, (15 or more per square yard).

This 40,000 acres included much of the area between Lawn and Malheur Lake, the area south of Hines, some of the area near Silver Lake (Double O area later included) and much of the Barton Lake area.

Although several species of grasshoppers were involved in this menace, the Cannula, or Clear-winged grasshopper, was the chief offender in the severe to very severe areas.

*not complete - see Sept - Dec. NR, 1962  
for additional  
OO treatment -  
Jen*

All indications at that time pointed towards extensive damage by grasshoppers in the spring and summer of 1962 if control measures were not taken; therefore, in January of 1962, a meeting of interested Federal, State and private individuals was called in order that the extent of the infestation and resultant damage could be properly assessed; methods, materials and costs of control be discussed and evaluated; and the feelings of the affected parties, with regards to an organized control program, be determined. At the close of this meeting, a committee, composed of local ranchers and Government officials, was appointed to organize and develop a preliminary control program in the event that later grasshopper egg-bed surveys indicated that such control was necessary.

By mid-May of 1962, it became apparent that insufficient precipitation and/or run-off had been received to materially affect the grasshopper egg deposits and a control program was initiated officially on May 30, with considerable organizational planning taking place.

The *Camnula* species of grasshopper, unlike the other species involved, congregate in restricted areas (delineated by vegetative and soil type) to deposit their eggs; therefore, it was originally thought that treatment of the egg beds with ground spray units would effectively control the grasshopper infestation and control was begun on this assumption. It soon became apparent, however, that it would be impossible to cover all known egg beds before grasshoppers throughout various sections of the control area reached the flight stage; therefore, the method of treatment was expanded to include "strip spraying", that is, spraying a swath of insecticide in strips 75 to 150 feet apart, depending upon existing wind conditions, throughout a known infested area, thereby effecting control over a much greater area, than actually is sprayed.

The program was designed to protect some 45,000 acres. The county and local ranchers cooperated in spraying. A total of 15,750 acres on private lands, providing control to 25,000 acres.

The rate of application in this area was three-fourths ounce of 100% Dieldrin in one gallon of water per acre. A total of 8,566 acres were sprayed on the refuge, providing control for about 20,000 acres. A breakdown of the refuge control program follows:

1. Location: That general area on the north side of Malheur Lake between the MacKenzie tract on the west, and the Heinz tract on the east. Also, that portion of the Double O commonly referred to as the North Fields.
2. Species Involved: *Camnula pellucida* - Clear-wing grasshopper

3. Control Operations: Application of insecticide was commenced on 5/28/62 and completed on 6/21/62. No spraying conducted on weekends.
4. Cooperators: All spraying conducted on Refuge lands in cooperation with U.S.D.A. Plant Pest Control Division, A.R.S.
5. Method of Accomplishment: All spraying was accomplished with Dodge power-wagons equipped with buffalo turbines, 90 gallon capacity, furnished by the U.S.D.A. One unit was used from 5/28/62 to 6/6/62, and commencing 6/12/62, two units were used through the completion of the spraying on 6/21/62. Spray rigs were left in the field with fuel and insecticide being transported to them. Water for the insecticide was supplied by two tank trucks furnished and driven by Fish and Wildlife Service personnel.
6. Materials Used: 165 gallons of 1.5E dieldrin were used at the rate of  $\frac{1}{2}$  ounce 100% dieldrin mixed with one gallon of water per acre. Also, 432 pounds of 80% Sevin were used at the rate of  $\frac{1}{2}$  pound Sevin mixed with one gallon of water per acre. A total of 7,920 acres classified as non-sensitive, that is, not key waterfowl breeding grounds under present conditions, were sprayed with Dieldrin and 646 acres classified as sensitive were sprayed with Sevin, giving a total of 8,566 acres.
7. Cost of Operation:

Fish and Wildlife Service:

Personnel - Salaries (Excludes permanent personnel)  
One driver \$115.05

Vehicles

Two tank trucks 158.50  
Three pickups 36.40

TOTAL: \$309.95

Plant Pest Control Division:

Personnel - Salaries (Excludes permanent personnel)

1 W-4 Pest Control driver \$248.40

Per diem: (all personnel) 847.00

Vehicles: 841.74

Transportation Requests 256.75

Telephone: (estimate) 40.00

Insecticide:

Dieldrin-165 gals. @ \$5.00 825.00

Sevin-432 lbs. @ .72 311.04

TOTAL \$3369.93

## State of Oregon:

## Salaries and Equipment

None. Ken Goeden, Entomologist with the State Department of Agriculture was officially present as an observer on the control work being performed by the County.

8. Total Cost of Program (Excluding salaries of permanent personnel)

Fish and Wildlife Service	\$ 309.95
Plant Pest Control Division	<u>3,369.93</u>
GRAND TOTAL:	\$3,679.88

9. Average Cost Per Acre \$0.43

The above cost data was prepared by Mr. Dick Jackson, Inspector, Plant Pest Control Division, and, unfortunately, does not include salaries of permanent personnel. Consequently, the .43 per acre figure does not represent the true cost. Actual total refuge contributions to the control program amounted to \$925.52.

Shortly after the completion of the control program, it became apparent that the grasshoppers had not been completely controlled on the infested areas. The egg beds were far more extensive than anyone had imagined and later hatches in areas not sprayed on the refuge and private lands began filtering into those areas that were sprayed. A tremendous reduction in the hopper infestation was accomplished, however, and hopper damage sustained during the past summer was no doubt much less than might have been experienced had no control program been initiated.

Considering the results of a grasshopper population survey conducted in July by Plant Pest Control people it appears that Harney County will be faced with another grasshopper control program of far greater magnitude next year if there isn't a drastic change in the weather trend.

As a result of concern over the possible detrimental effects of Dieldrin on wildlife, a study was initiated by the refuge in conjunction with the grasshopper control program to determine what effects, if any, might be experienced. Details of the study have been presented earlier in this report under "Field Investigations", or as Applied Research.

1. Composition Credits.

- a. J.C. Scharff. P.2, Sect. I A; Sect. I B 1; Sect. III B 1; Sect. IV; Sect. VI A, B, parts of C; Sect. VII A
- b. Eugene Kridler. Sect. I B 2; Sect II; Sect. III C and D; Sect. V; Sect. VI parts of C; Color photography
- c. Joseph P. Mazzoni. Sect. III F; Sect. VI F; Sect. VII, Grasshopper control summary; Black and white photography
- d. Noel L. Cagle. Basic information for Sect. III A 1
- e. Alfred S. Ludi. Basic information for Sect. III A 2
- f. Marselle Leake. Basic information for Sect. III A 3
- g. Ivan J. Carey. Preparation, Page 1, all photo pages, mounting and caption typing; NR 1B; NR 2
- h. Lee C. Tower. Table of Contents; Personnel roster; Typing, pages 1-29; NR 1; NR 1A; Cover; Assembly of completed Narrative Report

B. Photographs. Our photograph selection follows the signature page.

SIGNATURE PAGE

Submitted by:

\_\_\_\_\_  
(Signature)  
John C. Scharff

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

Date: September 19, 1962

Approved, Regional Office:

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

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

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



7/3/62. Adult Swainson's hawk. Kridler.



6/11/62. Swainson's hawk with young. Five-Mile road.  
Kridler.



7/15/62. Black tern on nest. Bird is acquiring winter plumage. Kridler.



7/15/62. Western grebe on nest. Double-O. Kridler



7/15/62. Killdeer shading eggs from sun. Kridler.



62-34. Mgr. & Mrs. Scharff bottle raised antelope buck as company for "Feevee" the doe in headquarters enclosure. One and one will make? Kridler.



62-13. Rig used for spraying dieldrin in grasshopper control program, 6/4/62. Kridler.



62-14. Grasshoppers on the move. Still in the nymph stage. 112 on this 20" x 21" sheet. In many places they were much thicker. 6/4/62. Kridler.



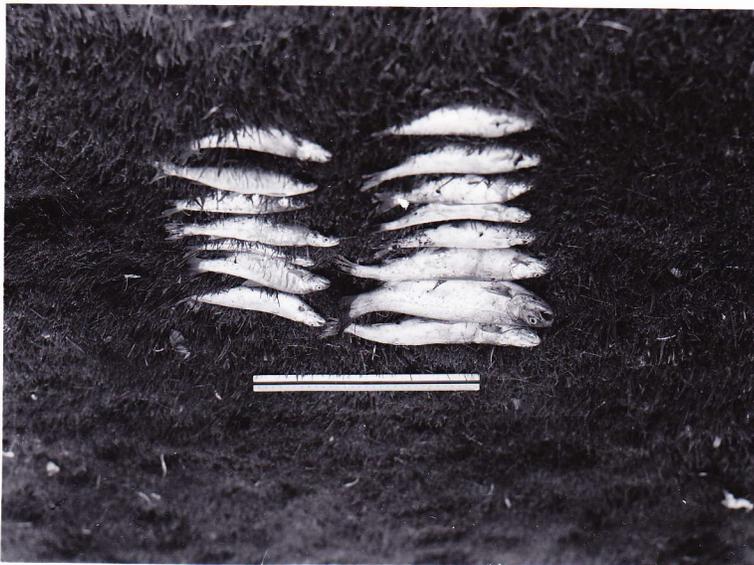
62-25. 7/2/62. North side of Malheur Lake, just south of the Colantino Ranch. Representative of Festuca growth on dry Malheur Lakeshed. This area not seriously affected by grasshopper infestation. Hanson.



62-26. 7/2/62. North side Malheur Lake, west and south of the old Beins place. Typical of grasshopper damage to Festuca stands. Hanson.



62-21. 7/1/62. Only a few persons tried their luck opening day of fishing at Krusko this year. Kridler.



62-32. 8/3/62. Result of gill-net set in Krusko Reservoir. 10 Rainbow - no trout. Heston.



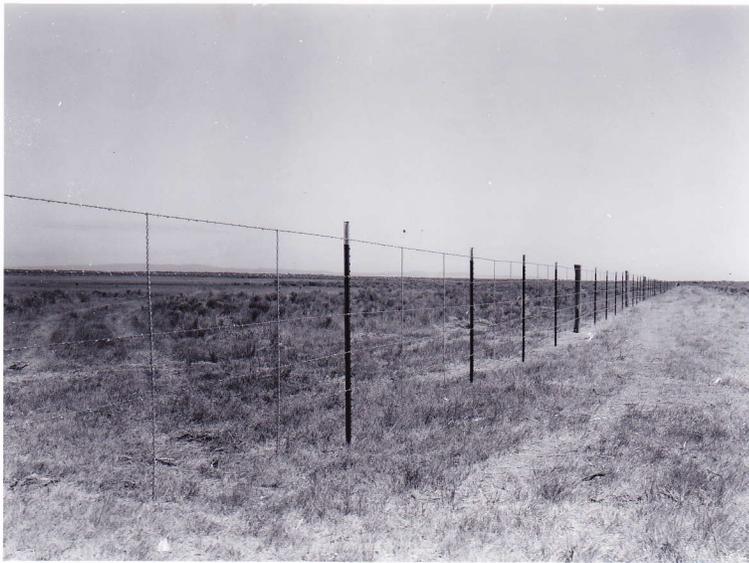
62-44. 9/7/62. Detail of corner construction  
on new Halibur Lake boundary fence,  
Newport.



62-45. 9/7/62. Detail of gate and corner  
construction on new Halibur Lake  
boundary fence, Newport.



62-16. 9/7/62. New boundary fence neatly  
diverted this neighbor's hay stack. Fence  
was built up to stack and continued on from  
the opposite side. Will complete fence when  
stack is fed out. Missouri.



62-19. 9/7/62. New five-wire boundary fence  
being constructed on south-east side Bellway  
Lake, Missouri.

To High!  
ELM.



62-42. 9/7/62. Dragline Operator Elmer Ash on Cat. D-7 with carryall, constructing fill across lakebed for new boundary fence in south-east Malheur Lake, Harney.



62-35. 9/25/62. Cattle rounded up by Border Patrol. From readers left to right. Sen. Norrey; Karl Lundstrom, Director of BIA; Geo. W. Johnson, Sec. Ore. Cattlemen Ass'n.; Dick Hotchkiss; Tom Jenkins, local rancher; John Scharff, Refuge Mgr.; Newton Hotchkiss, aspirant county judge.



" BILL "

W A T E R F O W L

REFUGE Malheur National Wildlife

MONTHS OF May TO August, 1962

(1) Species	(2) Weeks of reporting period									
	4/29-5/5	5/6-12	5/13-19	5/20-26	5/27-6/2	6/3-9	6/10-16	6/17-23	6/24-30	7/1-7
	1	2	3	4	5	6	7	8	9	10
<b>Swans:</b>										
Whistling Trumpeter	20	20	20	18	18	16	16	16	16	15
<b>Geese:</b>										
Canada	1,000	1,000	1,400	1,400	1,300	1,500	1,500	2,100	2,200	2,100
Cackling Brant										
White-fronted	100	75	60							
Snow	300	150								
Blue										
<b>Other Total Geese</b>	1,400	1,225	1,460	1,400	1,300	1,500	1,500	2,100	2,200	2,100
<b>Ducks:</b>										
Mallard	2,300	2,100	1,100	1,200	1,300	2,400	2,600	2,700	3,000	4,500
Black										
Gadwall	1,400	1,500	1,100	1,600	1,500	1,800	1,800	1,800	2,100	2,400
Baldpate	5,000	2,000	600	300	300	325	300	325	350	400
Pintail	7,000	1,000	400	350	325	400	600	700	1,000	1,800
Green-winged teal	2,600	700	200	200	100	100	50	75	75	100
Blue-winged teal	100	100	100	75	100	50	75	100	50	50
Cinnamon teal	1,000	700	400	700	650	700	800	900	950	1,100
Shoveler	9,000	3,000	800	400	350	350	400	450	450	475
Wood										
Redhead	1,400	1,000	900	1,200	1,000	900	900	950	900	1,000
Ring-necked	25									
Canvasback	1,100	400	100	200	150	125	150	150	200	225
Scaup	2,000	700	100	150	125	100	100	100	150	175
Goldeneye	100	25								
Bufflehead	100	25								
Ruddy	1,000	600	800	900	1,100	900	800	900	900	950
<b>Other Com. Merganser</b>	50	25	25	25	25	25	50	50	50	50
<b>Total Waterfowl</b>	34,175	13,875	6,625	7,300	7,025	8,175	8,625	9,200	10,175	13,225
<b>Coot:</b>	16,000	17,000	10,000	8,000	6,000	5,000	6,000	7,500	8,000	10,000

3 -1750A  
 Cont. NR-1  
 (Rev. March 1953)

WATERFOWL  
 (Continuation Sheet)

REFUGE Malheur National Wildlife

MONTHS OF May TO August, 1962

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	7/8-14	7/15-21	7/22-28	7/29-8/4	8/5-11	8/12-18	8/19-26	8/27-9/1			
Swans:											
Whistling Trumpeter	15	15	17	16	15	14	14	14	1,953	1	1
Geese:											
Canada	2,400	2,600	1,800	2,000	2,300	1,800	1,600	1,575	221,025	61	1,100
Cackling Brant											
White-fronted									1,645		
Snow									3,150		
Blue											
Other Total Geese	2,400	2,600	1,800	2,000	2,300	1,800	1,600	1,575	225,820		
Ducks:											
Mallard	4,900	5,100	4,800	4,700	5,000	5,800	6,000	4,600	448,700	67	2,850
Black											
Gadwall	3,500	4,200	4,000	5,000	8,000	9,000	6,600	3,100	422,800	214	7,800
Baldpate	600	600	150	300	500	700	700	850	100,100	9	500
Pintail	3,400	4,500	4,500	4,100	4,500	4,500	5,000	5,750	348,775	26	750
Green-winged teal	100	150	200	200	250	300	300	700	44,800	1	50
Blue-winged teal	50	50	100	50	25				7,525	87	2,300
Cinnamon teal	1,600	2,400	2,000	2,300	3,000	4,000	2,800	1,875	195,125		
Shoveler	500	600	600	800	1,100	1,100	1,300	2,400	168,525	26	700
Wood			1						7		
Redhead	1,100	1,150	1,100	1,400	2,000	3,000	2,100	1,550	164,850	87	2,250
Ring-necked									175		
Canvasback	225	200	200	100	150	150	150	150	28,875	8	350
Scaup	150	150	100	150	175	200	200	225	35,350	4	175
Goldeneye									875		
Bufflehead									875		
Ruddy	800	700	400	600	800	950	1,100	1,200	107,800	17	650
Other Com. Merganser	50	50	50	50	50	50	50	25	5,250	2	50
Total Waterfowl	16,975	19,850	13,201	19,750	25,550	29,750	26,300	22,425	2,080,407	548	18,425
Coot:	11,000	11,000	12,000	13,000	16,000	16,000	18,000	18,100	1,460,200	70	7,100

(over)

	(5)	(6)	(7)	
	Total Days Use	Peak Number	Total Production	SUMMARY
Swans	1,953	20	1	Principal feeding areas _____
Geese	225,820	2,600	1,100	
Ducks	2,080,407	34,175	18,425	Principal nesting areas _____
Coots	1,460,200	18,100	7,100	

Reported by \_\_\_\_\_

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

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

3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge Malheur National Wildlife Refuge Months of May to August 1962

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Western Grebe	Previous Period		600	8/15	200	8/31				600
Horned Grebe	"	"	2	5/5	2	5/5				
Eared Grebe	"	"	10,000	5/10	700	8/31	4	1,000	2,500	3,500
Pied-billed Grebe	"	"	Present throughout period			in undetermined numbers				
Double-crested Cormorant	"	"	50	June-July	15	8/31				100
White Pelican	"	"	200	8/31	200	"				250
White-faced Ibis	20	5/3	100	7/8	15	"	1	14	30	150
American Bittern	Previous Period		Present throughout period			in undetermined numbers				
Great Blue Heron	"	"	50	June	30	8/31				100
Common Egret	"	"	700	July-Aug.	50	"	1	125	250	700
Snowy Egret	"	"	50	8/31	50	"				100
Black-crowned Night Heron	"	"	150	May	50	"		100		120
Sandhill Crane	"	"	450	8/31	450	"		80	120	500
Virginia Rail	"	"	Present throughout period			in undetermined numbers				
Sora	"	"	"	"	"	"	"	"		
II. Shorebirds, Gulls and Terns:										
Wilson's Phalarope	Previous Period		7,000	7/25						10,000
Avocet	"	"	4,500	7/15	1,500	8/31				6,000
Black-necked Stilt	2	5/3	40	8/15	10	"				50
Common Snipe	"	"	Present throughout period			in undetermined numbers				
Dowitcher	"	"	4,000	8/31	4,000	8/31				5,000
Least Sandpiper	"	"	1,000	"	1,000	"				2,000
Dunlin	50	5/5	200	"	200	"				200
Western Sandpiper	Previous Period		4,000	"	4,000	"				5,000
Marbled Godwit	2	5/1	42	7/15	42	7/15				50
Greater Yellowlegs	Previous Period		100	8/31	100	8/31				250
Willet	"	"	600	5/1						1,000
Spotted Sandpiper	1	5/4	100	6/15						200
Long-billed Curlew	Previous Period		1,000	7/1						1,500
Killdeer	"	"	Present throughout period			in undetermined numbers				

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. <u>Doves and Pigeons:</u>									
Mourning dove									
<u>White-winged dove</u>			900	8/31	900	8/31			1,000
IV. <u>Predaceous Birds:</u>									
Golden eagle	Previous	Period	8	June-July	10	8/31	2	4	10
Duck hawk									
Horned owl	"	"	300	Period	300	8/31	30	60	300
Magpie	"	"	1,500	"	1,000	"			1,500
Raven	"	"	200	"	100	"			200
Crow	"	"	50	July-Aug.	50	8/5			50
Turkey Vulture	"	"	200	Period	200	8/31			200
Swainson's Hawk	"	"	25	August	25	"	5	10	25
Red-tailed Hawk	"	"	25	"	25	"			50
Marsh Hawk	"	"	150	June-Aug.					200
Short-eared Owl	"	"	Present	throughout	period	in undetermined numbers			
Long-eared Owl	"	"	20	May-July	10	8/31			25
Burrowing Owl	"	"	Present	throughout	period	in undetermined numbers			

Reported by Eugene Kridler

Wildlife Mgt. Biologist

#### 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.



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

#### INSTRUCTIONS

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- (5) Production: Estimated number of young produced based on observations and actual counts.
- (6) Total: Estimated total number of the species using the refuge during the period concerned.

3-1750  
Form NR-1B  
(December 1956)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Malheur National Wildlife For 12-month period ending August 31, 1962

Reported by Eugene Kridler

Title Wildlife Management Biologist

(1) Area or Unit Designation	(2) Habitat Type      Acreage	(3) Use-days	(4) Breeding Population	(5) Production	
Double-O (1)	Crops	160	Ducks 795,116	305	835
	Upland	17,140	Geese 329,238	66	90
	Marsh	1,100	Swans 6,272	2	0
	Water	900	Coots 351,680	105	285
	Total	19,300	Total 1,482,306	498	1,210
Harney Lake (2)	Crops	0	Ducks 114,100	0	0
	Upland	44,700	Geese 72,100	0	0
	Marsh	0	Swans 140	0	0
	Water	600	Coots 5,670	0	0
	Total	45,300	Total 192,010	0	0
Mud Lake (3)	Crops	0	Ducks 1,225	0	0
	Upland	2,990	Geese 37,870	0	0
	Marsh	10	Swans 0	0	0
	Water	0	Coots 0	0	0
	Total	3,000	Total 39,095	0	0
West Malheur Lake (4)	Crops	0	Ducks 108,675	0	0
	Upland	16,200	Geese 10,192	0	0
	Marsh	0	Swans 0	0	0
	Water	0	Coots 700	0	0
	Total	16,200	Total 119,567	0	0
Center Malheur Lake (5)	Crops	200	Ducks 3,121,816	450	993
	Upland	20,300	Geese 702,268	90	200
	Marsh	3,000	Swans 16,079	4	0
	Water	800	Coots 288,400	750	992
	Total	24,300	Total 4,128,593	1,294	2,185
East Malheur Lake (6)	Crops	0	Ducks 0	0	0
	Upland	13,500	Geese 0	0	0
	Marsh	0	Swans 0	0	0
	Water	0	Coots 1,855	0	0
	Total	13,500	Total 1,855	0	0
Sagebrush Field (7)	Crops	20	Ducks 142,835	940	2,910
	Upland	18,272	Geese 24,444	36	75
	Marsh	1,760	Swans 630	0	0
	Water	30	Coots 101,570	575	1,420
	Total	20,082	Total 269,479	1,551	4,405

(over)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF WILDLIFE  
4-1750  
Form No. 1  
(Rev. 1-1-56)

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 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.

### INSTRUCTIONS

- (1) **Area or Unit:** A geographical unit that, 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. Estimated acreage of each unit should be indicated.
- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of 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 the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, 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 each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.
- (3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven.
- (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.

3-1750  
Form NR-1B  
(December 1956)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
Fish and Wildlife Service

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Malheur National Wildlife For 12-month period ending August 31, 1962

Reported by Eugene Kridler Title Wildlife Management Biologist

(1) Area or Unit Designation	(2) Habitat Type      Acreage	(3) Use-days	(4) Breeding Population	(5) Production		
Buena Vista Area (8)	Crops	440	Ducks	119,595	575	1,855
	Upland	3,405	Geese	28,637	32	65
	Marsh	1,000	Swans	1,547	2	0
	Water	75	Coots	54,775	250	426
	Total	4,920	Total	204,554	859	2,346
Diamond-Skunk Farm (9)	Crops	0	Ducks	124,425	730	2,061
	Upland	4,685	Geese	8,596	106	200
	Marsh	4,890	Swans	549	2	0
	Water	25	Coots	77,665	400	1,136
	Total	9,600	Total	211,235	1,238	3,397
Narrows - Krumbo (10)	Crops	0	Ducks	181,202	420	1,330
	Upland	6,760	Geese	31,885	12	30
	Marsh	300	Swans	1,281	2	1
	Water	120	Coots	95,375	100	285
	Total	6,940	Total	309,743	534	1,646
Benson - Boca (11)	Crops	0	Ducks	1,047,760	2,100	5,756
	Upland	6,980	Geese	467,250	120	230
	Marsh	1,100	Swans	1,225	2	0
	Water	720	Coots	493,815	400	852
	Total	8,800	Total	2,010,050	2,622	6,838
Knox - P-Ranch	Crops	60	Ducks	1,356,565	1,070	2,685
	Upland	6,680	Geese	317,030	110	210
	Marsh	1,120	Swans	2,345	2	0
	Water	220	Coots	607,740	650	1,704
	Total	8,080	Total	2,283,680	1,832	4,599
Totals	Crops	880	Ducks	7,113,344	6,590	18,425
	Upland	161,612	Geese	2,029,510	572	1,100
	Marsh	14,240	Swans	30,068	16	1
	Water	3,270	Coots	2,079,245	3,250	7,100
	Total	180,022	Total	11,252,167	10,428	26,626
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF WILDLIFE  
3-1750

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(2) (1) (3) (2) (1)  
INSTRUCTIONS

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- (2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland consists of 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 the water category includes all other water areas inundated most or all of the growing season and extends from the deeper edge of the marsh zone to strictly open-water areas, 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 each type should be kept as accurate as possible through reference to available maps supplemented by periodic field observations and should agree with unit acreage.
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- (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.

Interior Duplicating Section, Washington, D. C.  
1956

UPLAND GAME BIRDS

Refuge Malheur National Wildlife Months of May to August, 1962

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name					Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse			8		Unknown	0	0	0	450	Better production on & off refug
Calif. Quail			32		1:1	0	0	0	7,500	Good production. Hatch much extended chronologically. Best in Blitzen Valley. Movement on & off refuge during period.
Ring-necked Pheasant			11		1:1	0	0	0	3,000	Good hatch but extended.
Chukar			4		Unknown	0	0	0	350	Good hatch this year.
Gray Partridge			None		Unknown	0	0	0	?	None seen this period

## 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.

Malheur National Wildlife Refuge  
Burns, Oregon

Narrative Report for Period September 1 to December 31, 1962

Roster of Permanent Personnel

John C. Scharff . . . . . Refuge Manager  
Eugene Kridler . . . . . Wildlife Management Biologist  
Joseph P. Mazzoni . . . . . Refuge Manager  
Lynn C. Howard . . . . . Refuge Manager  
Lee C. Tower . . . . . Administrative Assistant  
Ivan J. Carey . . . . . Refuge Clerk  
Noel L. Cagle . . . . . Construction and Maintenance Foreman III  
Marselle Leake . . . . . Shop Foreman II  
Eugene E. Storm . . . . . Mechanic, Heavy Duty  
Elmer T. Ash . . . . . Dragline Operator  
Roelan T. Blom . . . . . Dragline Operator WAE  
Quentin L. Currey . . . . . Maintenceman  
Thomas B. Davies . . . . . Maintenceman  
Alfred S. Ludi . . . . . Building Repairman  
Norbert J. Schekall . . . . . Caretaker

A Cobb  
Jan 1963

Roster of Temporary Personnel

Kenneth M. Cobb . . . . . Student Trainee - Wildlife Biology  
Benjamin R. Ausmus... (term.10-22-62) . . . . . Painter  
Ira R. Cox . . . . . Laborer  
Hal W. Hibbard . . . . . Laborer  
William G. Kinney . . . . . Laborer  
Marvin L. Jess . . . . . Oiler  
Leonard A. Tubbs . . . . . Oiler

C O N T E N T S

Page

I. General

- A. Weather Conditions. . . . .
- B. Habitat Conditions. . . . .
  - 1. Water . . . . .
  - 2. Food and Cover. . . . .

II. Wildlife

- A. Migratory Birds . . . . .
- B. Upland Game Birds . . . . .
- C. Big Game Animals. . . . .
- D. Fur Animals, Predators, Rodents, and other Mammals. . . . .
- E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies . . . . .
- F. Other Birds . . . . .
- G. Fish. . . . .
- H. Reptiles. . . . .
- I. Disease . . . . .

III. Refuge Development and Maintenance

- A. Physical Development. . . . .
- B. Plantings . . . . .
- C. Collections and Receipts. . . . .
- D. Control of Vegetation . . . . .
- E. Planned Burning . . . . .
- F. Fires . . . . .

IV. Resource Management

- A. Grazing . . . . .
- B. Haying. . . . .
- C. Fur Harvest . . . . .
- D. Timber Removal. . . . .
- E. Commercial Fishing. . . . .
- F. Other Uses. . . . .

V. Field Investigation or Applied Research

- A. Progress Report . . . . .
- B. . . . .
- C. . . . .
- D. . . . .
- E. . . . .

VI. Public Relations

- A. Recreational Uses . . . . .
- B. Refuge Visitors . . . . .
- C. Refuge Participation. . . . .
- D. Hunting . . . . .
- E. Violations. . . . .

VII. Other Items

- A. Items of Interest . . . . .
- B. Photographs . . . . .
- C. Signature . . . . .

Malheur National Wildlife Refuge  
Third Period Narrative Report  
September 1 to December 31, 1962

I. GENERAL

A. Weather Conditions.

Headquarters Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
September	0	.15	.56	88	23
October	0	3.54	1.01	84	20
November	0	.70	.90	68	5
December	T	.66	.91	57	5
Totals:	None	5.05	3.38	Extremes: 83	5

P-Ranch Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
September		.27	.56	90	26
October		3.12	1.23	81	21
November		1.56	1.04	69	6
December	T	.81	1.16	61	6
Totals:		5.76	3.99	Extremes: 90	6

Double-O Ranch Station

\*Incomplete Records

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
September		.04	.28	85	31
October		2.62	.76	80	20
November		.41	.83	67	10
December		.46	.97	60	30
Totals:		3.53	2.84	Extremes: 86	10

Buena Vista Station

	<u>Snowfall</u>	<u>Precipitation</u>		<u>Max. Temp.</u>	<u>Min. Temp.</u>
		<u>This Month</u>	<u>Normal</u>		
September		.11	.79	-	-
October		2.88	1.33	-	-
November	2.7	1.00	.81	-	-
December	T	.27	.51	-	-
Totals:	2.7	4.56	3.44		

\* Incomplete records at Double-O Station during December.

Headquarters Evaporation Station

	<u>Miles of Wind</u>	<u>Inches of Evaporation</u>
September	567	6.92
October	542	2.40
November	689	.39
December	527	
Total:	<u>2325</u>	<u>Disc. 11/7/62</u>

Weatherwise, this period was characterized by much less wind than normal, and considerably more moisture. The calendar year of 1962 produced a total of 9.29 inches of precipitation as against an 8.75 inches for a 25 year average. The month of October produced 3.54 inches of moisture which is a new record for the station. During the past 25 years only three months have produced in excess of three inches of water. A 26 year average for this report period is 3.26 inches of rainfall, as against 5.05 inches in 1962. Only one other like period supplied more water in the way of rainfall.

B. Habitat Conditions.

1. Water. Overall water conditions were much improved with the unusually wet fall. Malheur Lake increased in size from a few hundred acres to upwards of ten thousand surface acres. Krumbo Reservoir raised from 8:25 feet on the gauge to 13.35 by the end of the period for a depth increase of over five feet. Harney and Mud Lakes continue dry with the exception of a few acres along the western shoreline of Harney, which is fed by the Double-0 springs. Silvies River from the north didn't reach Malheur Lake, but many of the large sloughs filled for the first time since 1960, which should be an aid in spreading any spring water reaching this area.

Spring water at the Double-0 was spread over a greater area than normally, which added to the waterfowl attractiveness of the unit. The Blitzen Valley had water throughout the season, as did Boca Lake, East Knox Pond, Krumbo Reservoir, Witzel Pond, Unit 8 and Skunk Farm Ponds. The farmed part of West Knox Pond was flooded as well as part of Buena Vista pond after harvesting. After the heavy rains of October, considerably more area was covered by water, either through seepage or diversion. A considerable acreage in Diamond flooded for the first time in a number of years.

The general water outlook for stream flow from the watersheds furnishing water to the Malheur Refuge is rather bleak at this date. One favorable condition is the excellent ground saturation at all elevations. Cold freezing weather undoubtedly will sap some of the ground moisture, and the unfavorable weather which frequently prevails during the month of March often accounts for loss of a considerable amount of ground moisture.

2. Food and Cover. The amount of food available this year was much less than last. Malheur Lake contributed no pondweed nor was the single oat field there very productive. Pintails and other dabblers rafting on the lake fed in stubblefields north of the refuge. Birds utilizing the Blitzen Valley fared better, but their populations were much smaller than those on the lake. The western one-third of Boca Lake produced good stands of sago. Geese, mallards, and cranes made excellent use of the 105 acre barley field at Buena Vista and to a lesser extent the 57 acres of oats in that area. The 97 acre oat field in Suicide Swamp was attractive to both geese and crane after it had been harvested by the permittee. 110 acres of spelt planted at Buena Vista was largely a blank because it was frosted badly early in the growing season, and provided little food for wildlife. Flooding of the 75 acres of grain in the Knox Field came too late after the peak of the migration; hence, this area did not have the use it did last fall. Geese and cranes, however, had been feeding in it much of the summer. Canada geese heavily utilized the barley left standing at the Double-O although it was a thin crop. Fall rains and mild weather during most of the period enabled grasses, especially cheat, to become green, and geese and quail grazed considerably on such growth. Big game also benefitted. Harney Lake was almost dry this summer and very few ducks found it attractive as little aquatic life of any kind was present.

## II. WILDLIFE

### A. Migratory Birds.

1. Waterfowl. Although total waterfowl use for the period was greater than last year, it still remained substantially less than that of the past three decades. A number of factors are responsible for the continued exceedingly subnormal use. Chief among these is the drought still gripping eastern Oregon and which has reduced Malheur and Harney Lakes to mere remnants of their normal size. The loss of Malheur Lake as a food and water area is very serious. Contributing also was the leisurely migration of birds which, when they finally were driven out of Canada, apparently passed rapidly through. Reduced flyway duck populations, if early Service predictions are borne out inventory time, contributed to some degree.

Goose use was but 31% of the past 10-year average; swan 8%, duck 31.5% and coot 8%, but all except that for geese were better than last year. Duck use was double, and so was that for coot. Goose was not quite half.

- a. Swans. -Whistling Swans only peaked at 600 during mid-November. Many flights kept passing over the evening of November 15, but few tarried. Malheur Lake had no sago to attract them.

Use is directly correlated with the amount of sago in the lake - no sago, no swan.

- b. Two trumpeter swan cygnets were present on the refuge at the close of the period. One was produced on Benson Pond, and later the adults moved it to Witzel Pond. At the close of the period they were found on Krumbo Reservoir. The other may have been raised on Unit 8 Pond. Some pairs apparently move off the refuge during the summer because we tally more adults in the winter. Occasionally one was seen on a small water area east of here at Stinking Water Reservoir during the summer and now and then single birds are reported as scattered locations around us.
- c. Geese. Both peak numbers and use by geese were the poorest of the decade. We should average 1.4 million use-days for the period, but this year only 479,000 days were recorded.

Canada geese peaked at only 3,725, (this the last week of the year), and use was but 59% of last year. The mild fall contributed to some degree, but even upon the advent of freezing weather no great influx into the area materialized. Snow geese largely continue to pass us by, and the peak of 3,375 birds is the poorest in well over 10 years, yet we hear of flyway populations which are up considerably. Use was but half of last year, and 20% of the ten-year average. Most of these birds utilized the Double-O Unit, while the remainder rafted on Malheur Lake or grazed on plants growing on exposed lake bottom there. At times a few hundred were found on Skunk Farm Pond in the Blitzen. No cackling or Ross geese were recorded this year. White-fronts were present in September and early October in limited numbers.

On November 8 the writer and Pilot-Biologist Glahn saw an adult bluegoose on Harney Lake. It was there a week later. Blue geese are rare in Oregon. The last time one was seen here was on March 22, 1958.

- d. The steady and almost disastrous decline in duck peaks and use was interrupted this year as both were a little better than double those of a year ago. Use still was a third of normal and peaks about a fourth. Mallards and widgeon were not as abundant as last year or for any year in the last 10 years. Generally, use for both is in the millions, whereas this fall that for mallards was slightly better than a half-million and widgeon less than a third. The much better than 1961 populations of pintails, 61,300 to 14,300, were mainly responsible for the increase in total duck use and peaks. Both were the best since 1957. We were unable to attain our pre-season banding quota of this species because of their

relative scarcity and began to wonder whether we would see any numbers at all. In mid-October numbers jumped from 3,250 to 32,000 and increased to a peak of 61,000 in early November. During those times, Malheur Lake was a favored loafing area during the day and harbored 95-99% of the refuge population. Traps set out for swans were rapidly cleaned of their bait by these birds.

Green-winged Teal and gadwall populations were better than last year, but much below the average. Loss of Harney Lake affected the shoveler populations drastically for the second straight year.

What little diver use was made of the refuge was confined mainly to Boca Lake, Knox Pond, and the Double-0 units. Very little took place on Malheur Lake where these birds would have suffered concussions if they had tried to dive in the shallow water which had little food for them anyway. We cannot agree with Central Office thinking that divers are best served by leaving Malheur Lake alone instead of subimpounding it. For three straight years it has offered them nothing because what water we had was wasted through evaporation during the summers. In 1957 and 1958, good water years and lots of sago pondweed produced in the lake, populations of canvasback were 82,000 and 153,000. This year our peak was 300. In those years redheads peaked at 5,000 and 3,000, but this year 1,600, while last year at only 700. This year scaup, goldeneye, and bufflehead numbers were similar to a year ago, but ruddies were in short supply.

On Dec. 27 a male Barrow's goldeneye in full winter plumage was observed on the display pond by the biologist. This makes the third year in a row this species has been observed and/or collected here.

2. Other Waterbirds. Coots peaked at 23,000 early in September, and use days were more than double a year ago. Boca Lake and Knox Pond, especially the latter, were favored areas and the Double-0 also proved attractive. Fair amounts of sago in the former water units and milfoil in the latter were responsible. Malheur Lake hosted about 4,000 during the late summer, a trifle compared to most years. Use for the refuge is less than one-tenth the 1952-61 average. No coot problems here.

White pelican populations remain low because of the lack of carp in Malheur Lake. The 200 present at the beginning of the period were found in ponds in the Blitzen. Heron and egret numbers remain low for the same reason.

Sandhill crane numbers were about equal those of the past two years. The barley field at Buena Vista was the main feeding area, then some moved into the oat field there when it was harvested.

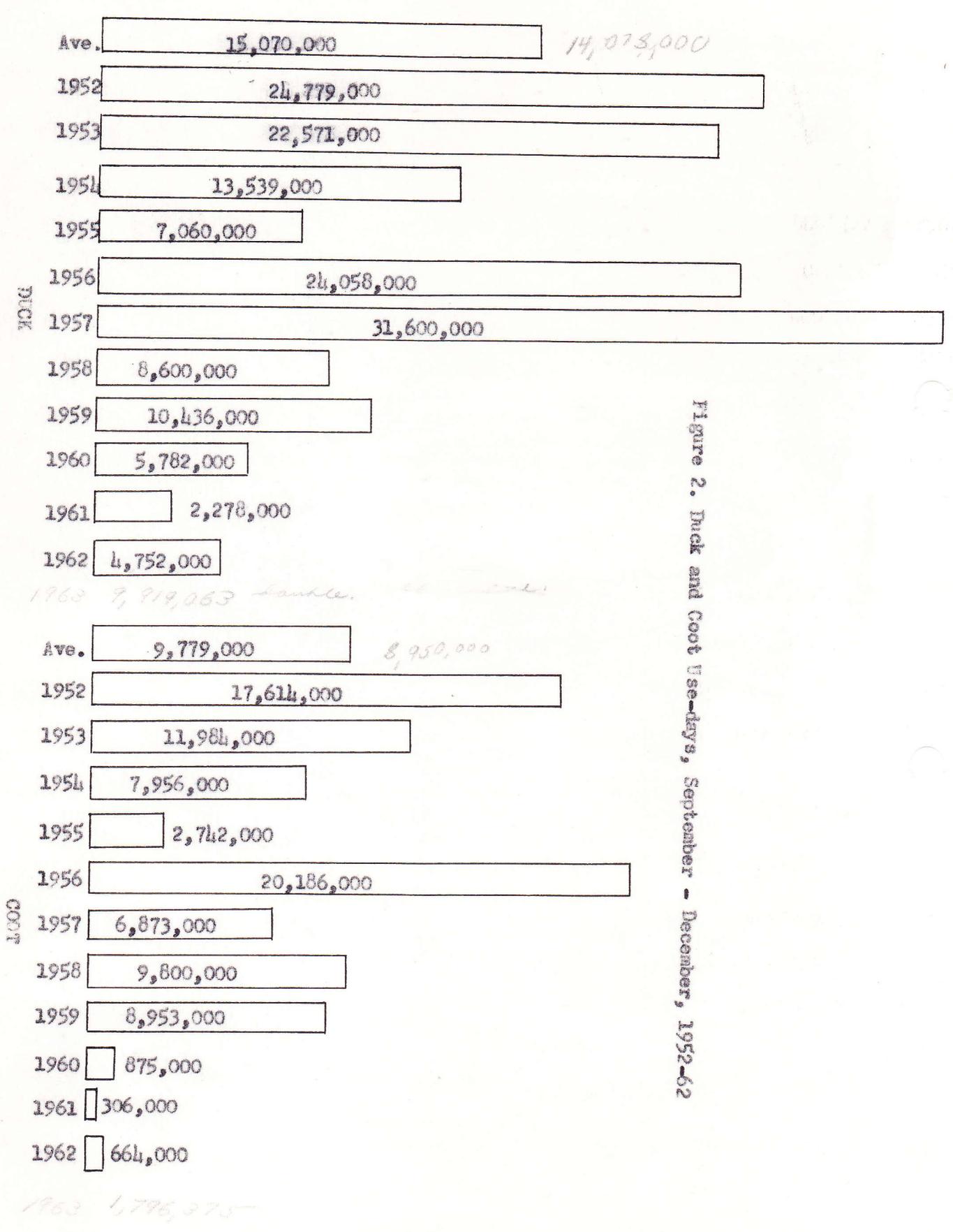
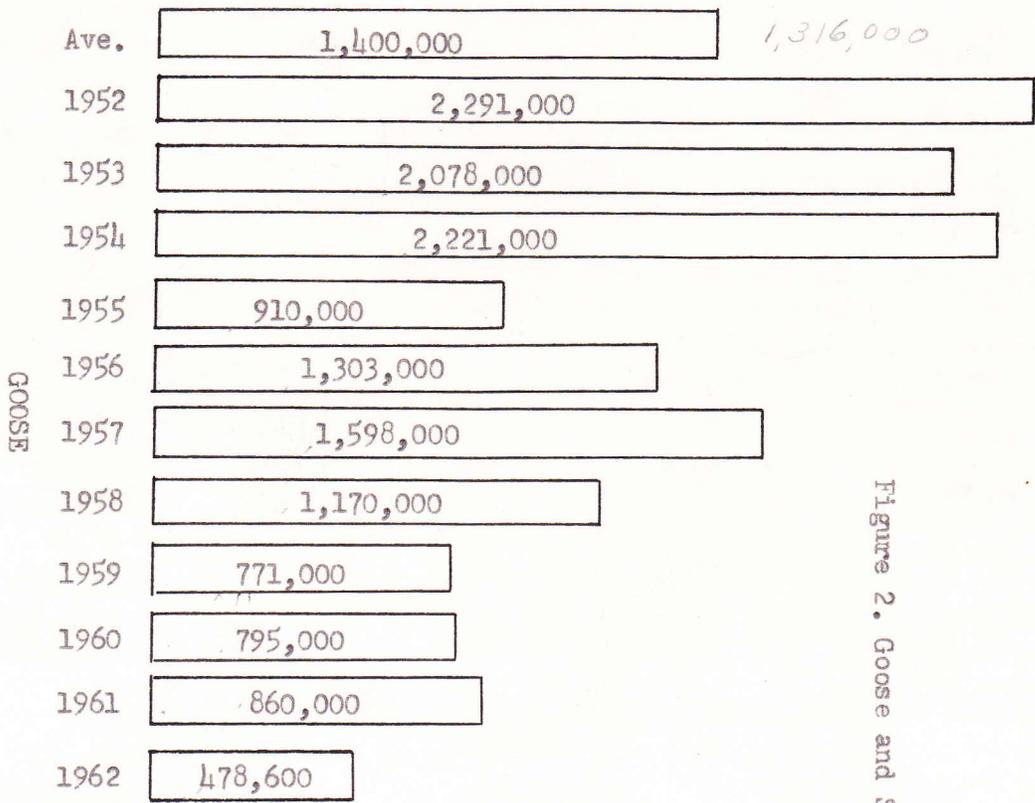
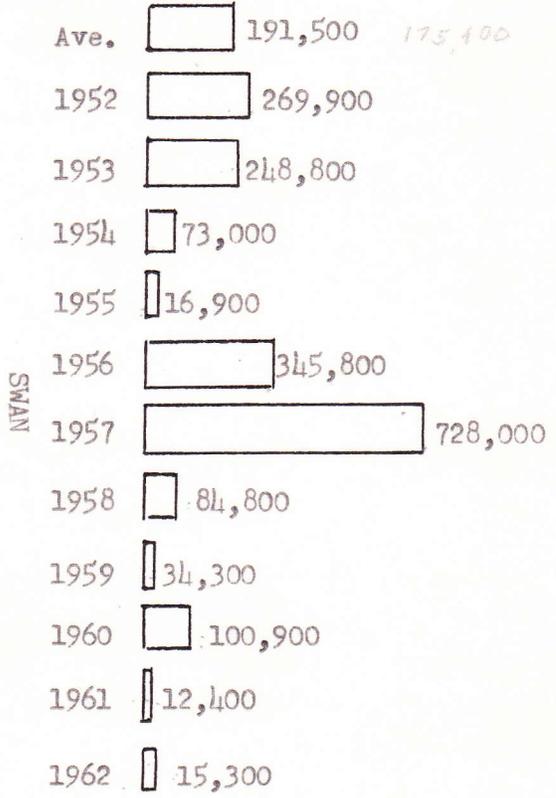


Figure 2. Duck and Coot Use-days, September - December, 1952-62



1963 908,005



1963 64,393

Figure 2. Goose and Swan Use-days, September - December, 1952-62

Each evening they flew to the Skunk Farm Pond to spend the night. They left us in mid-November, as usual.

3. Shorebirds, Gulls and Terns. The peak of the shorebird migration passed through before the start of the period. Numbers of most species remain lower than normal as neither Harney or Malheur Lakes proved to be too attractive. Three dowitchers were seen as late as November 21 on Malheur Lake - a late date for them here.
  4. Doves. Mourning dove populations were about the same as last year. By the end of September most had departed. One tarried until November 17.
  5. Upland Game Birds. Quail were in plentiful supply, and although not quite as abundant as last year, still reflected a good summer of production. Fall rains caused grasses to become green, and these birds utilized such food extensively. Many crops examined after mid-October were packed with green grass. Previous to that time ants constituted a large part of their diet. Hunting success was excellent as was that for chukars whose numbers were about those of last year. Favorite areas for both were the sagebrush-covered slopes and rimrocks west of the refuge boundary line from Unit 8 Pond to Frenchglen. Sage grouse were much more in evidence, and on September 16 about 125 were observed at the Pushup Pond Field. Pheasants were slightly more common than last year. Although the majority are found in the Boca Lake area, there was a wider distribution this fall. No gray partridge were seen this fall.
- C. Big Game Animals. Little change in antelope numbers took place between the summer and this period. Most still frequent the north side of Malheur Lake. More mule deer were present this fall than last. As usual, most frequented the Blitzen Valley, especially around the P-Ranch area. A late afternoon count from Buena Vista to the P-Ranch on November 7 disclosed that 157 animals recorded, 82 were does, 62 fawns, and 12 bucks. We know that we missed bucks, which tend to remain concealed in the willow thickets. No forked-horns were recorded, however. Five were 4-points, two 3-points, and five 2-points. Rutting was observed at Skunk Farm Pond. December saw a steady exodus from the refuge. The mild winter to date will be in their favor.
- D. Fur Animals, Predators, Rodents, and Other Mammals. The prolonged drought continues to raise havoc with muskrat habitat, and their populations remain very low. Not one new house was observed on Malheur Lake this fall. There will not be a trapping season this year. Jackrabbits appeared to be on the rise this summer, but now they are more scarce than a year ago. No sick or dead animals, other than highway kill have been noted. They just seemed to disappear. Cottontails are more abundant, especially along Highway 205 from Buena Vista to Frenchglen.

Beavers continue to be a nuisance in canals. One built a dam of driftwood and debris in a small channel of the Blitzen River, where it runs into the remains of Malheur Lake. There are no trees within a mile. Raccoons are down, and caused no trouble in the display pond this summer or fall.

Coyote and bobcat numbers are up a little. The increased vole and small rodent populations offer them better food conditions than they have experienced for the past several years.

- E. Hawks, Eagles, Owls, Crows, Ravens, and Magpies. Only one immature bald eagle has been seen this period. The remaining nine were adults. Total numbers are identical to last winter. The special eagle census conducted on December 26-28 resulted in a total of 20 golden eagles being observed, and six of these were immatures. Last year the census, comparable coverage, tallied 12, of which four were immatures. We conservatively estimate a refuge population of 30, the highest in a decade. We are 100% for them, for they are a noble bird, regardless of what some so-called game experts think. What so-called sportsmen cripple and lose in a day would feed many an eagle. At least they search for what they cripple.

Populations of other hawks appear to be unchanged, as do those of owls, with the exception of the short-eared which did not appear to be quite as abundant this fall.

Of interest was the burrowing owl noted near Lawen on October 18, (somewhat late) and a barn owl observed at headquarters on October 27. (rare here)

- F. Other Birds. Wintering populations of small birds are very low. This is most noticeable for robins, juncos, mountain bluebirds, and blackbirds. For the first time in many years no red-winged blackbirds were observed during the Christmas bird count, when 46 species totalling 3,931 individuals were recorded. A flock of 15 Clarke's Nutcrackers were seen during the count. These birds are extremely rare on the refuge.

No additions were made to the refuge bird list, but banding continues to turn up interesting things. Two northern waterthrushes were banded on September 5. These constitute the third and fourth records for the state. The second was also picked up here in 1961. Seven red-eyed vireos and seven American redstarts were banded here the past year. Both species were first recorded in southern and southeastern Oregon from this station in 1960.

A total of 2,049 individuals of 98 species of birds, other than waterfowl, were banded here in 1962.

- G. Fish. From October 23-30 the Silvies River from below Five Mile Dam to its terminus at the Ruh ranch was treated with rotenone for carp.

Drip stations were set up where feasible, while other stretches were treated by canoe. Pockets of water, principally found from the Ausmus property south, were treated on foot with the use of backpack pumps. No accurate tally of dead fish could be made, but the kill ran into the thousands. Carp ranged in size from 1-24 inches. A local pilot flying over the Bell-A ranch told of seeing dead carp lining the canals there by the "m-m-m-millions!". These had been carried down by the current. Isolated stretches, on the Voegeler property, especially, contained thousands of carp 2-4 inches in length. Local ranchers, through whose property we had to travel for access to the river were very cooperative and were pleased with the operation because near elimination of carp resulted in much clearer drinking water for stock. At no time were more than three men involved in the operation. The state game commission loaned us two backpack pumps for the operation. Purpose of the project was to eliminate carp brood stock being washed into Malheur Lake next Spring in the event of a winter of good precipitation. Prospects in October looked much, much rosier than they do now, for a runoff.

The Blitzen from Bridge Creek south was also treated to eliminate carp missed last year, but very few were found. The East Canal from Boca Lake south, and 5-Mile Spring were also treated. Several hundred dead were found in the latter. We suspect some, however, to be in Boca Lake. The West Canal from Frenchglen south was treated to box in carp trying to avoid rotenone in 5-Mile Spring. No dead carp were found in the lower reaches of the river or in the lake. Undoubtedly some may have been missed, but our observations and checks indicate the total population at present to be almost non-existent. The stage is now set for a good runoff into Malheur Lake if snow ever comes this winter.

Investigations of Krumbo and Boca Lakes by Fishery Management Biologist Morton included gill net sets in Krumbo the night of September 25. Results are listed in Table No. 4. Also caught were 17 roach, whose scales when read disclosed them to be fish of the year. Since the reservoir was treated last year, the question arises as to how the roach got in. A few may have been missed, (likely) or else eggs were present which hatched after treatment and the effectiveness of the rotenone had dissipated. The presence of 12 unclipped fish indicates some natural reproduction from Krumbo Creek. Only two fish with their anal fins clipped, indicates poor survival of the legal fish planted in April. The trout data agrees with that obtained with the sets made August 3. Excessive amounts of a banana-like algae, Amphizonema, plus low waters may be responsible for poor survival the past two summers. Another possibility is that strains other than the Williams Lake strain may not do as well as that strain. First and successful plantings were made with that strain, which we understand hatchery men care little about because it is not as easy to raise as others.

In order to get better utilization of planted fish, Krumbo will be opened to fishing on April 20 the coming spring, instead of July 1, as has been the case prior years.

Table No. 4

<u>Size</u>	<u>No.</u>	<u>L.V. Clipped *</u>	<u>Anal Clipped</u>	<u>Unclipped</u>
5-6	4	4	0	0
6-7	24	24	0	0
7-8	28	28	0	0
8-9	3	1	0	2
9-10	2	0	0	2
10-11	2	0	0	2
11-12	1	0	0	1
12-13	4	0	0	4
13-14	0	0	0	0
14-15	2	0	1	1
15-16	<u>1</u>	<u>0</u>	<u>1</u>	<u>0</u>
Totals:	71	57	2	12

\* Left-ventral fin.

Little waterfowl nesting takes place on its shores, and observations past years reveal little conflict between fishermen and waterfowl. The former stay in the deeper areas, and the latter, the shallow upper end, which contains considerable flooded growths of dead sage ✓

Plankton samples taken from Boca Lake September 26 contained large numbers of giant pink Cladocerans (water fleas) which will be excellent food supply. Water temperatures, depths, pH, etc. all were considered suitable for trout, so on October 2, approximately 75,000 Williams Lake strain rainbows averaging two inches in size were liberated. Purpose is to reestablish the run up Bridge Creek and the Blitzen for which Boca was locally famous, and which produced excellent sport.

- I. Disease. Only an occasional flapper was seen on the lake this summer and fall, so botulism was practically non-existent.

We heard several reports of sick small animals on the refuge, but were unable to pin them down to anything specific. One concerned a sick mink which was killed and discarded several weeks before the report. Another involved a raccoon with sores or boils on its back - reported a month or so after it was seen.

### III. REFUGE MAINTENANCE AND DEVELOPMENT 80

#### A. Physical Development.

##### 1. Restoration of Dikes, Bridges, Roads, Fence, and Structures.

The new gates were installed at the Grain Camp Dam which ran into quite a job, as new anchors and guides were designed for this structure. The first I beam anchors were too light, and collapsed with a minimum of water pressure. It was necessary to replace them with heavier beams. These were heavily reinforced with welded ribs, and it is believed that they will remain in place. In connection with this structure, much heavy riprap was placed to precheck any water damage near the structure. 2,104 cubic yards of riprap were hauled and placed on the Buena Vista and Center Canals just below Grain Camp Dam.

Old inoperable gates were removed from the Buena Vista Canal inlet and flashboards installed pending installation of new gates in this structure.

The Brenton Cabin bridge and related return flow spillway was strengthened with riprap.

The Division Dike between the East and West Knox Ponds was surfaced and strengthened, and two boat landings were made, surfaced, and riprapped.

Two cement structures were repaired and bedded in gravel on the Double-0 unit. Likewise, a number of structures were ripped and strengthened in the P-Ranch and Buena Vista Units.

A number of washouts were repaired in the Diamond Canal system.

Six miles of fall road blading was done in the P-Ranch unit. The new P-Ranch yard fence was constructed this period.

While the bountiful fall rains were gratefully received, the resultant water in the Diamond Unit has plagued the progress of the Diamond Drain project. The pipe order was received and delivered to the county road headquarters in lower Diamond Valley. Two 48" x 36' pipes with riser type headgates have been installed, as well as two pipes with screw headgates. These four pipes are bedded in 284 cubic yards of gravel, which should hold them for all time. 1550 feet of canal and levee was accomplished, to the tune of 6,085 cubic yards of earth moved.

At the Double-0, the Golden and St. Clair Canals were cleaned, a total distance of 6.2 miles, moving 32,486 cubic yards of earth. This job will certainly enhance the water management of this unit. These canals were cleaned 15 years ago, and the machine which cleaned them is still a good rig, working in Diamond Swamp. Incidentally, the operator which did the Double-0 operation 15 years ago is on the same machine at this time.

Eight and a quarter miles of new fence was constructed, 11-3/4 miles of old fence razed and much of the wire used in the new fence, and two and three quarters miles of boundary fence maintained to the standard of original construction. The above was accomplished by a three man fence crew, and in addition approximately 30 miles of fence was maintained by the maintenance men at the various station.

2. Carpenter Department. In addition to small current repair work to buildings, a number of major maintenance jobs were performed. The Springer house at the Refuge Headquarters was thoroughly renovated throughout. Repair of cupboard, kitchen drain board, window screens, etc. were accomplished. Both the dwelling and garage were painted; the dwelling inside and out.

At the Refuge Headquarters three other residences, the Rome dwellings' double garage, the service building, shop and barn were painted. Fuel tanks in connection with the dwellings were likewise painted.

A shelter box was provided, and a telephone installed on the north end of the service building at Buena Vista, as a convenience for any emergency, during times when no one is present at the dwellings.

A number of signs were taken down and refinished. The type of finish being used on the signs does not lend itself to weather exposure.

The south side of the repair shop was reshingled as a result of the wind ruffling up the composition shingles during the severe cold weather of last winter.

One dwelling at the Old CCC Camp was given one coat of paint. Storm windows were provided for Quarters No. 2 at Refuge Headquarters, sewer lines cleaned and septic tanks pumped out, about Refuge Headquarters.

An electric hot water heater and shower bath was installed at the Double-O, in the pump house, for use of bunkhouse occupants.

A utility box was built for a pickup. A bookcase was built for the office.

One 16 foot steel gate and a four foot steel gate were built for the new P-Ranch yard fence.

A small materials cabinet was constructed for the service building.

In addition to the above a number of small maintenance items were accomplished, such as a flue jack was installed at the P-Ranch dwelling. The topping of the nearby trees resulted in a down draft. A new thermostat was installed at one of the Rome dwellings, window screens built and repaired, a utility box installed on a pickup, and a number of other small maintenance items.

3. Repairs to Equipment and Shop Work. In addition to normal maintenance and minor repairs both in the shop and field, eleven 5000 mile inspection and tune-ups were done, a complete motor overhaul given International dump truck I-53954 and a valve and ring job, plus connecting rod bearings on Dodge pickup I-49806. New timing gear, gaskets and seals, and oil pan gaskets were installed on the motor of G.M.C. dump truck I-53956. A complete overhaul was given to the Hercules diesel motor in the Diamond T tractor unit. This transport will of necessity have to be fitted with a new power unit as early as possible, as the old outdated Hercules motor now in use has served its time. The present motor in this unit was manufactured in 1943. A new take-off shaft, coupling and universal was installed in the front-end hydraulic loader mounted on the A.C. wheel tractor. During the early part of this period the entire fleet of equipment was winterized with anti-freeze, thermostats checked, and replaced where required, radiator and heater hoses inspected and changed where needed, and in some cases, heaters repaired.

B. Plantings.

1. Aquatic and Marsh Plants. None
2. Trees and Shrubs. None
3. Upland Heraceous Plants. None
4. Cultivated Crops. Owing to the continued drought condition, little farming was done on the refuge, this period, and year, and this condition prevailed all over Harney Basin. Killing frosts every month of the year didn't contribute to the productivity of the areas planted.

On the refuge 362 acres of barley, 154 acres of oats, and 110 acres of speltz were planted for grain. Approximately 300 acres of volunteer rye produced some grain both for harvesting and waterfowl use left standing. 250 acres of oats was planted for hay, one field of 50 acres freezing out completely, and 200 acres located along the shoreline of Malheur Lake made good hay. This latter grain was planted in June, and was too late for grain. It was only by virtue of a cool summer that this late planting was a success, even for hay.

C. Collections and Receipts.

None

D. Control of Vegetation.

1. Summary of 1962 Weed Control. The rather extensive grasshopper control program which we were confronted with during the months of May through June sharply curtailed our weed control program and control activities were limited to small spot treatments, and one experimental project as summarized below.

a. Plant Species Sprayed.

White top (Hymenophyssa pubescens)  
Soil sterilent treatment - all vegetation in treatment area.

b. Growth Stage.

White top - intermediate to full  
Soil sterilent treatment - most plants dead, some grasses making new growth as result of heavy October rains.

c. Treatment Dates.

White top - July 5, 1962  
Soil Sterilent treatment - November 9, 1962

d. Acres Sprayed.

White top - about 400 sq. ft. or .009 acres.  
Soil sterilent treatment - 2004 sq. ft. or .46 acres.

e. Area Sprayed.

White top - Two patches along the Center Patrol Road in the Wright Field, and one patch just east of the Ramelli Bridge along the Lava Beds Road.  
Soil sterilent treatment - 4' strip around buildings number 20, 23, 18 and 34 at various rates of application.

f. Chemical Control.

White top - Amine salt of 2,4-D, 4# acid equivalent/gal.  
Soil sterilent treatment - Sodium Chlorate (Atlacide), 58% active ingredients/lb. of dry chemical.

g. Application Rates.

White top - .66 pint/5 gal. water. Estimated at 4# active ingredient/acre.  
Soil sterilent treatment - Bldg. No. 20 - 3#/sq. rod, 263.2# active ingredient/acre; No.23 - 5#/sq. rod, 488.8# active ingredient/acre; No.18 - 8#/sq. rod, 743.1# active ingredient/acre; No. 34- 11#/sq. rod, 1052.7# active ingredient/acre.

h. Method of Application.

White top - back-pack pump.  
Soil sterilent treatment - home made shaker can.

i. Cost.

White top:	Materials.....	\$1.17
	Labor.....	3.21
	Equipment Operation....	1.50
	Total:	\$5.88
Soil sterilent treatment:	Materials.....	\$6.05
	Labor.....	9.63
	Equipment Operation....	.05
	Total:	\$15.73

j. Apparent Kill as Evident at the End of the Growing Season.

White top - Those patches sprayed showed a definite wilting effect within seven days after treatment. The extent of the kill obtained will become more evident during the 1963 growing season.

Soil sterilent treatment - Brown patches in the new grass began to appear within 14 days following treatment. Extent of kill won't be evident, of course, until the spring of 1963.

k. Kill from Previous Year's Spraying.

White top - In 1960 about 75 acres of White top were sprayed in the Double-0 unit and in the spring of 1961 it appeared that we had obtained about a 90% kill. There was some doubt at this time whether or not this was a reflection of the true kill, as growing conditions in this area were very poor due to a dearth of water over much of the unit. In 1961 about 5 acres were sprayed and in the spring of 1962 it again appeared that we had obtained an 80-90% kill, as the noxious weed was now limited to very small patches scattered few and far between. Unfortunately, as mentioned above, we were unable to do any spraying in this unit this year; however, we feel that a small amount of annual spraying, beginning with the 1963 growing season, will serve to keep this troublesome weed in check.

Soil sterilant treatment - not used here for the past several years.

Sodium Chlorate was applied around all four sides of the above listed buildings with the exception of building 18. The south side of this building was not treated, as a further margin of SAFETY in protecting the Russian Olive trees growing 45 to 50 feet farther south. Three additional buildings in this immediate area were also left untreated and will be used as controls. This experiment was set up to test the effectiveness of Sodium Chlorate as a soil sterilent under local conditions, and applied at various rates to get some idea of the proper application necessary to achieve the desired results. We are hopeful that much of the laborous and costly hand weeding practices now applied may be eliminated by the effective use of a soil sterilent.

- F. Fires. During the period two small fires were experienced; one of about 9 acres and one of one quarter acre. The smaller of the two was caused by a spark from a breather exhaust, and the larger one probably was a smoker fire. The latter fire started on a day of low humidity and a brisk wind. Permittees and neighbors responded as usual from all directions and both fires were brought under control in a short time.

The refuge was fortunate in not having any serious fires' as the stage is always set anytime after the first fall freeze. The bountiful October rains brought the fire season to an abrupt end.

## IV. RESOURCE MANAGEMENT 20

- A. Grazing. The forage production for the calendar year of 1962 was certainly short of a normal, to say the least. The Double-0 unit was again short of water and much of the good grazing ground was again dry. The canal system for the part served by the warm springs was so fouled with vegetation and sediment that some areas were short changed. This condition is now corrected by the cleaning of these canals for the first time since 1948. Mud Lake country produced little forage, only salt grass and greasewood. Malheur Lake did surprisingly well for having such a small amount of water, as a bountiful supply of foxtail grew on the areas from which the water receded. The grasshoppers did some damage to forage, but mostly on the higher elevations of the lakebed.

The summer grazed areas in the Blitzen Valley again reflected good waterfowl use. It is noted on some of the summer grazed areas that Canada thistle is becoming more evident, and some control measures will be taken another year.

Generally, livestock have done quite well during the period. Owing to the extra amount of rainfall during October, all species of standing forage remained more palatable, and heavier use of standing forage was greater. By the same token, less bunched feed was used, and the fields are all holding much better than expected.

- B. Haying. With the exception of one permit for hay, all other hay is used on a grazing basis. The one permit was issued for the growing of oat hay in Malheur Lake bed. This proved quite successful owing to the cool summer enjoyed.
- C. Fur Harvest. No fur removal was undertaken this period.

## V. FIELD INVESTIGATION OR APPLIED RESEARCH 43

A. Progress Report.

1. Waterfowl Banding. Results of the preseason banding operations are as follows:

Mallard	1,152
Pintail	441
Redhead	68
Canvasback	5
Scaup	4
Widgeon	3
C. Teal	2
Gadwall	1
Coot	<u>121</u>
Total	1,797

We were unable to make our quota of 500 pintails owing to low populations even though traps were moved several times in attempts to achieve that goal. We exceeded our mallard quota of 500 in the process, by 652. Sex and age ratios are listed below.

Table 5. SEX AND AGE DATA OF PRESEASON BANDED MALLARDS AND PINTAILS

	<u>Mallard</u>	<u>Pintail</u>
	AM 351	AM 269
	IM 324	IM 67
	AF 285	AF 78
	IF 180	IF 27
	LM 8	-
	LF 4	-
Totals:	1152	441
% Adults:	59.2	78.6
% Immatures:	40.8	21.4
Imm. per adult:	.7	.3
Male " female:	1:4	3:2

2. Colored Whistling Swan Project. This project was continued this fall in order to get more information next spring from Alaska and northern Canada. Enough data was gathered last fall and winter to delineate the fall migration routes and wintering areas. It was decided to dye this fall in the event that conditions were such the coming spring that we would be unable to acquire a sample then. A total of only 37 were colored this fall. Whereas last year we trapped 102 between October 20 and November 9, and ceased operations on the latter date, this year we didn't trap our first until November 6. A week passed before we were able to get another. Then, on the 12th, we caught 11 at the same time. Operations continued until the 29th, when ice and the lack of birds caused operations to be suspended. Not that we had an abundance to start with. Swan flights did not linger more than a day or so, but most only rested on the lake overnight before moving on. Ducks consumed the bait placed in traps set out in the lake. Traps set in Witzel Pond began to be productive until closed by ice. On Nov. 15 several flights totaling 450 or more birds circled the traps in the display pool where our trumpeters were acting as decoys while feeding. A number set their wings, but then heeded the calls of the other flights moving south overhead and swung south also - sped on their way by sulphurous comments from a biologist below.

Three adult females banded and dyed last year were retrapped. All retained some dyed feathers in varying amounts ranging from only one each on the lesser and middle coverts on the right wing, to 17 on the coverts of both wings, and nine on the back of the body.

The third bird had a total of five dyed feathers on the lesser and middle coverts of both wings. On November 13 another which we were unable to retrap flew over the pool very low and well over one-third of the feathers on its body remained dyed so that it presented a mottled appearance. Molt is obviously incomplete in the summer.

Weights, measurements, coloration of lores and the edge of the lower mandible were recorded. All had some degree of red, (purplish in immatures), streaking along the lower mandible, so the statement is false that is made in some books that only trumpeters have this streak. Within a week the dye on the wings and scapulars of some birds began to change from a yellow to orange.

Even though the project received much more publicity this year than last, the number of reports of observation was far less. The sample was, of course, a third less to begin with. Some of the birds remained here for a long time. One was seen at the Double-0 on December 28. Reports from other areas conform to those of a year ago and were once more from Summer Lake, the Klamath Basin, and Alturas during migration and the Sacramento-Stockton area while wintering.

Average weights of adults were a half-pound lower than last fall, sub-adults one-eighth pound lower, while immatures were the same. Sample sizes of the first two were considerably less, while that for immatures was the same. (17). An adult female weighing 13 lbs. 8 oz. when dyed on Nov. 11, 1961 weighed 12 lbs.-15 oz. on Nov. 13 this year. Another weighing 10-12 on Nov. 2, 1961 weighed 10-1 on Nov. 19 a year later.

Two reports, both from Alaska, of birds dyed last fall or spring were received this period. One concerned a lone bird near Aniak on May 3, and the other three seen on June 29, near Iqushik. So far, eight different site localities in Alaska are involved. Several are from the Copper River and Anchorage areas, and the remainder from the western part of the Bering Sea - the furthest west, almost on the coast northeast of Nunivak Island.

This spring we intend to go all-out, and hope we can catch enough to fill out the gaps, so the project can be terminated.

3. Pesticides Study. No word has been received from the Branch of Research regarding specimens of birds, mammals, and vegetation submitted to them last summer for analysis in conjunction with the grasshopper control program. Department of Agriculture pest control officials are beginning to plan for possible operations this spring, and we are very interested in the results of the analysis, especially since dieldrin was, and may be used again.

Table 6. WEIGHTS OF YELLOW-DYED WHISTLING SWANS

Nov. 6-29, 1962 Pounds and Ounces

	<u>AM</u>	<u>SAM</u>	<u>IM</u>	<u>AF</u>	<u>SAF</u>	<u>IF</u>
	11-5	8-15	9-2	10-0	8-12	7-5
	12-4	11-2	9-7	10-1	11-11	7-15
	12-7		11-6	10-5	12-14	7-15
	13-7		12-15	11-2		8-0
	15-7		14-4	11-6		9-7
				11-14		9-8
				12-0		10-5
				12-2		10-7
				12-15		10-8
				13-9		11-0
						11-9
						<u>11-12</u>
Ave:	<u>13-0</u>	<u>10-0</u>	<u>11-4</u>	<u>11-6</u>	<u>11-1</u>	<u>9-6</u>
No:	5	2	5	10	3	12

Table 7. AVERAGE WEIGHTS IN POUNDS AND OUNCES

	<u>Sample Size in Parentheses</u>		
	<u>Fall, 1961</u>	<u>Spring, 1962</u>	<u>Fall, 1962</u>
Adult Males	13-6 (17)	14-3 (10)	13-0 (5)
Adult Females	11-4 (21)	11-5 (9)	11-6 (10)
Subadult Males	11-2 (8)	13-10 (6)	10-0 (2)
Subadult Females	10-10 (14)	11-4 (6)	11-1 (3)
Imm. Males	10-3 (14)	12-8 (1)	11-4 (5)
Imm. Females	9-9 (8)	11-5 (10)	9-6 (12)
Males	11-12 (39)	13-14 (17)	11-13 (12)
Females	11-1 (47)	11-4 (25)	10-7 (25)
Adults	12-8 (38)	12-13 (19)	12-0 (15)
Subadults	10-13 (22)	12-6 (10)	10-11 (5)
Immatures	10-3 (17)	11-6 (11)	10-3 (17)

## VI. PUBLIC RELATIONS

A. Recreational Uses.

1. General. Generally, recreational use of the Refuge indicated a slight increase over a year ago, and in all cases numbers reflect conservative data. The paved road toward Frenchglen was completed another six miles and the money already earmarked for another 12 miles during Fiscal Year 1964. The survey work on this new sector is largely done, and according to the best information, the contract will be let shortly after July 1 of 1963.

The BLM has connected the Steens Mountain Loop road and plan on the completion of this project during the summer of 1963. This road coupled with the Center Patrol Road through the Blitzen Valley part of the refuge will be one of the most popular scenic drives in Oregon. Along with the road plans is the development of three camping areas on beautiful sites. The multiple-use plans and development of the neighboring Steens Mountain area by the BLM overshadows the puny recreational efforts put forth by the refuge.

It is estimated that a total of 12,000 visitor days were enjoyed on the refuge during 1962. Of the total, 3% were hunters, 10% anglers, and 10,436 others. Of this latter number, perhaps 900 were business visitors. The balance of over 9,000 days represents recreational use.

A total of 2,080 persons registered in the refuge museum during 1962. The figure does not represent a total of museum visitations, as it is a well known fact that all visitors do not register. Visitors from 33 states, three provinces of Canada, Washington, D.C., England, Brazil and Panama were represented in the museum registration.

- B. Refuge Visitors. Official visitors and those of special note during the period were as follows:

September

- 1 Dr. Geo. Graham, Haverton, Pa., U. of Pa., Parasitologist
- 5 R. Higgins, Portland, Oregon, G.A.O.  
Max Read, " " G.A.O.
- 10 Thorvald Risdal, Portland, Ore.; R/O; Office of Engineering
- 11 Mrs. Edith Walford, " " ; Personnel Office, BSF&W
- 13 Prof. Wm. H. Behle, U. of Utah, Director of Biological  
Sciences, Salt Lake City, Utah
- 14 T. Risdal, R/O of Engineering, Portland, Oregon
- 19 Stephen E. Smith, Grade School Principal, Portland, Ore.
- 26 J.W. Thompson, Photographer, Seattle, Washington

- October
- 20 Kent Giles, Dist. Mgr., BLM, Burns, Oregon  
 Ray Novotny, County Agent, Burns, Oregon  
 Dick Hotchkiss, Pres. Harney Co. Cattlemen's Ass'n., Burns  
 21 Stephen Smith, Portland School System, Portland, Oregon  
 22-24 Chas. Conkling, Photographer, Portland, Oregon  
 25-26 Mark Morton, Fishery Biologist, BSM&W, Regional Office  
 26-27 Dr. Thompson, Seattle Slide Salesman, Seattle, Wash.  
 9 Fred Anderson Family, 1st Malheur Clerk, Tigard, Oregon  
 16 Dewey Flowers, U.S. Forest Service, Sumpter, Oregon

- November
- 8 Ray Glahn, Pilot-Biologist, BSM&W, Portland, Oregon  
 Aerial census  
 9 Dr. C.L. Holmes, U.S.D.A., Ontario, Oregon  
 Bangs' testing  
 17-15 Thorwald Hissel, Engineer, Portland, Oregon  
 17 John D. Wendler, Game Agent, BSM&W, Lakeview, Oregon  
 20 Dr. & Mrs. F.W. Reid, Wasco, Oregon; worked with Benson  
 on Malheur Refuge

- 5 Orvis C. Gustad, Predator Control, Prairie City, Oregon  
 Alvin Coons, Predator Control, Crane, Oregon  
 Russell Zink, Predator, Control, Crane, Oregon  
 David S. Hokans, E. Holden, Maine  
 Donald W. Klick, Boston, Mass.  
 Ted Hanson, Las Vegas, Nevada  
 14 Elmer H. Simpson, Desert Game Range, Las Vegas, Nevada  
 7 Loretta Springer McInnis, Darris, Calif. A native returns.

December

- 3 John C. Jones, BSM&W, Washington, D.C.  
 Melvin D. Smith, BSM&W, Portland, Oregon  
 6 Daniel Baker, BSM&W, Portland, Oregon  
 13 Barry Duncan, BLM, Burns, Oregon  
 John Gross, BLM, Burns, Oregon  
 28 John Wendler, Game Mgmt. Agent, Lakeview, Oregon BSM&W  
 Pat O'Keefe, BLM, Burns, Oregon  
 29 Col. P.C. Loolbourn, U.S.A.V.F., Reno, Nevada  
 Col. P.J. Wallen, U.S.A.V.F., Reno, Nevada  
 Major A.M. Rockwell, U.S.A.V.F., Burns, Oregon

6. Refuge Participation.

1. Refuge Manager Scharff. On September 12, 18, Oct. 23, and Dec. 11, Refuge Manager Scharff attended the Harney County Chamber of Commerce Luncheons.

Pictures were loaned the Harney County Chamber of Commerce for an exhibit at the Oregon State Fair.

On Sept. 20 Refuge Manager Scharff attended a BLM 'Show-Me' trip on a range management area adjacent to the refuge. About 25 interested BLM personnel, stockmen, game management men and the local press attended the meeting.

On October 1 Refuge Manager Scharff gave an hour's talk on early Harney County history to the Burns Grade School teachers. Thirty-four were in attendance.

On October 17 Messrs. Scharff, Kridler and Mazzoni attended an Inter-Agency meeting in Burns. The Bureau of Land Management had charge, of the program. Refuge personnel put on a previous program.

Two bait horses were provided by the refuge for use in the predator control program.

Refuge Manager Scharff attended the Northwest Section meeting of the American Society of Range Management, at Kamloops, B.C., on November 26-27. Several days annual leave was taken during the trip, and one day was spent in the Regional Office in Portland.

2. Biologist Kridler. Participated in 'Operation Recovery' part of the week of Sept. 1-7. Attended Inter-State Antelope Conference in Boise, Idaho on Dec. 4-6.

Gave illustrated talk about refuge and waterfowl to 75 members of Boise Natural History Society, at Caldwell, Idaho on Dec. 6.

Attended rural school boards meeting at Crane, Oregon, on Dec. 14.

Conducted Christmas Bird Count on Dec. 26.

Attended, as a member, the monthly meetings of Sodhouse School Board throughout the period.

Refuge Manager Mazzoni attended Washington State Weed Conference Nov. 5-6, at Yakima, Washington.

Administrative Assistant Lee Tower attended Regional Accounting Workshop, Portland, November 8-9.

Shop Foreman Marselle Leake completed 20 years of continuous service on Malheur Refuge in August, 1962, an item inadvertently missed in our last narrative.

On Sept. 6 Messrs. Higgins and Head of General Accounting Office on refuge reviewing quarters appraisals. Looked quarters over about refuge headquarters and reviewed all appraisal forms.

Mr. Thorwald Hisdal from the Regional Office of Engineering spent parts of two weeks during September assisting in re-placing the gates on Grain Camp Diversion Dam. While on the refuge, Mr. Hisdal looked over Malheur Lake toward plans of development.

On October 9 Refuge Manager Scherrl attended a meeting of the Stiles River Water Users for an improved delivery system. In all probability, nothing will come of the meeting.

On October 22 Robert Whaley of the SCS set up a short-wave radio set at the refuge headquarters to be used in connection with snow survey work.

Elmer H. Simpson of Desert Game Refuge visited Malheur Refuge on Nov. 14-15, picking up a truck load of grain for use on that area.

David Baker of the Office of Engineering in Portland visited the refuge on Dec. 6 and briefly looked over the Refuge Headquarters plot place toward a Master Plan of Development.

#### D. Hunting

1. Waterfowl. The public shooting grounds again remained closed this year due to the complete absence of water. This makes the fourth consecutive year of closure due to unfavorable water conditions.

2. Deer. The archery season was held in the Bitten Valley from Mitzel Lane south to the P-Ranch on Sept. 15, 16 and 17. One deer of either sex was legal. A total of 184 hunters checked into the area and killed 21 deer. A total of six bucks, eight does and seven fawns were taken for a hunter success of 11 per cent. Only one minor violation was observed, and, in a general way, it was a successful season.

The following page lists a detailed summary of the archery seasons on Malheur Refuge since 1956.

Summary of Archery Seasons on the Malheur Refuge

Year	No. of Hunters	Deer			Total	% of hunters Successful
		Male	Female	Fawn		
1956	135	17	14	2	33	24
1957	265	15	20	21	56	21
1958	275	14	29	18	61	22
1959	346	11	20	22	53	15
1960	295	3	8	9	20	7
1961	133	6	6	17	29	22
1962	184	6	8	7	21	11
1963	209	11	18	9	38	18

E. Violations

There were five violations during the regular firearms deer season consisting of five hunters apprehended shooting deer on the refuge. The case was made and handled by Oregon State Patrolman John McKelvey.

	Violation	Plea	Disposition by Court
1.	Hunting prohibited area	Guilty	\$104.50 with \$75.00 suspended
2.	" " "	"	104.50 with 75.00 suspended
3.	" " "	"	104.50 with 75.00 suspended
4.	" " "	"	104.50 Paid
5.	Hunting prohibited area	Guilty	\$104.50 Paid

During the archery hunt an unusually quiet season was enjoyed violation wise. Only one warning was issued for failure to have license on person when in the field.

F. SAFETY. The station SAFETY committee for the September-December, 1962 reporting period consisted of: Ivan J. Carey, Chmn., Lynn C. Howard, Elmer T. Ash, members, and Lee Tower, Secretary.

Three station SAFETY and personnel meetings were held this period. Allowing for specific excused absences, attendance at all meetings should be considered 100%. No lost-time accidents occurred during this period.

Station SAFETY committee held a meeting in the field at the site of the Grain Camp Dam construction. Ass't Refuge Manager Mazzoni acted for Messrs. Carey and Tower.

All SAFETY bulletins received at this station were discussed in the formal meetings. Three SAFETY meetings were held this period, with Messrs. Leake, Tower and Carey in charge, respectively. Films shown were: 'Grass and Brush Fire Fighting', 'How to Pass Safely', and 'National League Professional Football'. The last-mentioned received critical acclaim. Also shown were two excellent Service color films, 'Know Your Ducks' and 'Land of the Prairie Ducks'.

Miscellaneous SAFETY signs were posted in appropriate places throughout the Refuge.

It should be noted that the topping of trees at the P-Ranch Station and Double-0 Station, referred to in our September-December, 1961 Narrative Report, paid off handsomely on October 12, when a large tree blew down at the Double-0, toward the residence, but, thanks to having been topped a year ago, fell short of the fence, and caused no damage.

The walkway and guardrailing constructed on Grain Camp Dam eliminates many hazards heretofore existent.

The SAFETY committee this period has reviewed all past recommendations of its predecessors, and reports that all have been either corrected to date, or are in the actual process of correction.

National SAFETY Council posters are posted each Monday morning on our office bulletin board.

SAFETY seat belts have been ordered for vehicles not having a pair already installed, and new eaves troughs are being assembled for mounting over entrances of residences not already so equipped.

Our first SAFETY dinner was held September 21 at the Pine Room, a charming restaurant (?) in Burns. The losers cheerfully (?) poured up \$2.75 per man for delicious sirloin steak dinner for the winners.

Personnel at this Refuge are unanimously agreed that some physical token of recognition for a full year of accident-free employment be awarded. At the same time, it was brought out that SAFETY and safe working practices comprise a factor in personnel appraisal. The sentiment of the personnel is that an award is a positive attitude; the appraisal reflection alone, is a negative.

Two fire drills were held this period; September 4 and December 26. One minor accident, a temporary loss of hearing, caused by use of a jackhammer, was investigated by the SAFETY committee. There was no lost time.

This Refuge has 189 days since the last lost-time accident, at the close of business Dec. 31, 1962. Our immediate objective is to raise this figure to 554 days by Dec. 31, 1963.

#### VII. OTHER ITEMS

A. Grasshopper Control. In our summary of the 1962 Grasshopper control work in the May-August, 1962 Narrative Report, we inadvertently omitted some spraying done in the Double-0 unit in that reporting period.

Following is a summary of the control work done there at that time.

On July 11, 1962, a visit to the Double-0 grain field revealed that a rather high concentration of grasshoppers (Camnula sp.) were making serious inroads on the Hammchen Barley seeded there earlier this spring. The "Hoppers" had practically denuded a 10 to 15 foot strip about 75 to 100 yards long along the south-east corner of the grain field. Subsequent arrangements were made with the county to spray the area with Dieldrin.

On July 19, 28 acres of the grain field were sprayed, and on July 20 another 42 acres were sprayed with a ground pumper with boom at an application rate of  $\frac{1}{2}$  oz. Dieldrin/acre.

The treatment was quite successful. All costs were absorbed by the county.

-30-

Composition Credits.

- a. J.C. Scharff. Sect. I A & B-1; Sect. III B; III F; IV A,B,C  
VI A,B,C-1,E;
- b. Eugene Kridler. Sect. I B 2; Sect. II; Sect. V; Sect. VI C-2
- c. Joseph P. Mazzoni. Sect. III D; Sect. VI D; Sect. VII
- d. Noel L. Cagle. Basic information for Sect. III A 1
- e. Alfred S. Ludi. Basic information for Sect. III A 2
- f. Marselle Leake. Basic information for Sect. III A 3
- g. Lee Tower. Sect. VI F; All editing and typing; assembly of completed Narrative Report

SIGNATURE PAGE

Submitted by:

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

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

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

Approved, Regional Office:

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

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

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

Roll K-K No. 27 (9/4/62) Headquarters. Showing islands  
constructed in display pond to reduce losses of pinioned  
birds by cats, raccoons, and other predators. -Kridler-



27

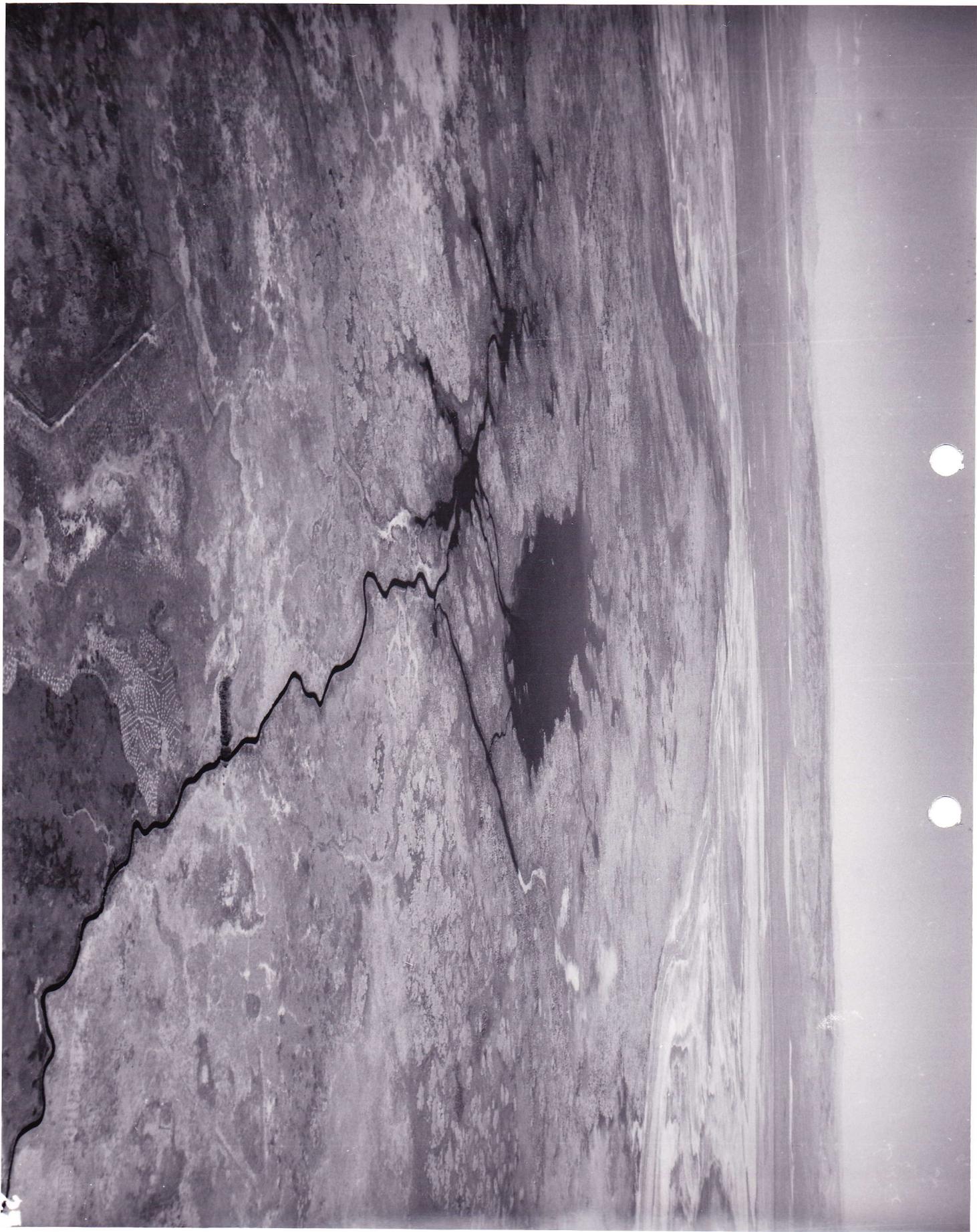
Roll K-K No. 26 (9/4/62) Boca Lake reflooded  
last winter served as most important brood area  
the past summer.

-Kridler-



Roll K-K No. 28 (9/4/62) Remains of Malheur Lake.  
Less than 1,000 acres of water, 1-2 inches deep.  
No aquatics-no anything. Blitzen River in foreground.

-Kridler-





88-62, 9/15/62; Blitzen River campgrounds on opening day of Refuge Archery Hunt. -Mazzoni



89-62, 9/15/62; This rather pleased archer took this nice four-point buck on the run with a shot behind the left shoulder. -Mazzoni



93-62, 12/6/62; 48" pipe with riser headgate installed  
at terminus of Diamond Drain, emptying into the Elitzen  
River. -Mazzoni



94-62, 12/13/62; Ditch dug for installation of drainage  
pipe from Skunk Farm Field to Elitzen River.  
(Diamond Drain Project) -Mazzoni



99-62, 12/17/62; New yard fence constructed at P-Ranch substation by Maintenance man Davies. -Mazzoni



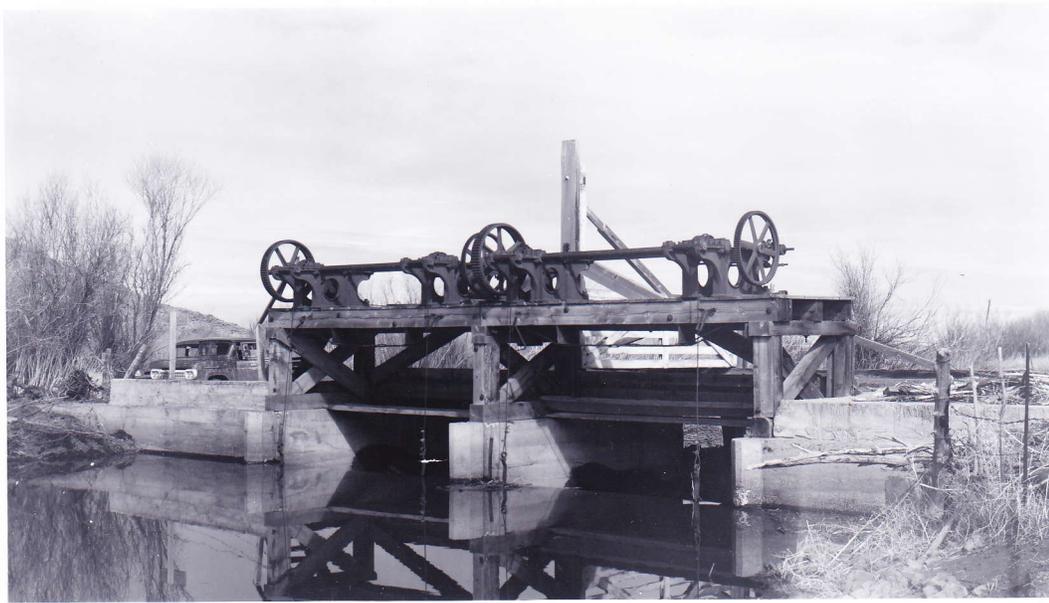
100-62, 12/17/62; Very attractive gate designed and constructed by Building Repairman Ludi and Shop Crew. -Mazzoni



95-69, 10/17/62: 24" drain pipe with screen-type  
boudgata installed. Should facilitate control of  
extensive areas of cattail and bullrush in this  
area. (Diamond Drain Project) -Jungoni



96-69, 12/17/62: Rebuilding old canal and constructing  
levee on south side. Lower end of Diamond Drain  
project. (Steen's Farm Field) -Jungoni



60-2; Grain Camp Dam as it looked prior to renovation.  
It took one big man or two small men many revolutions  
to raise heavy wooden gates. -Mazzoni



82-62, 9/28/62; With most of the old wooden structure  
removed, guides for the new galvanized metal gates are  
being installed. Laborer Jess and O&M Foreman Cagle  
-Mazzoni



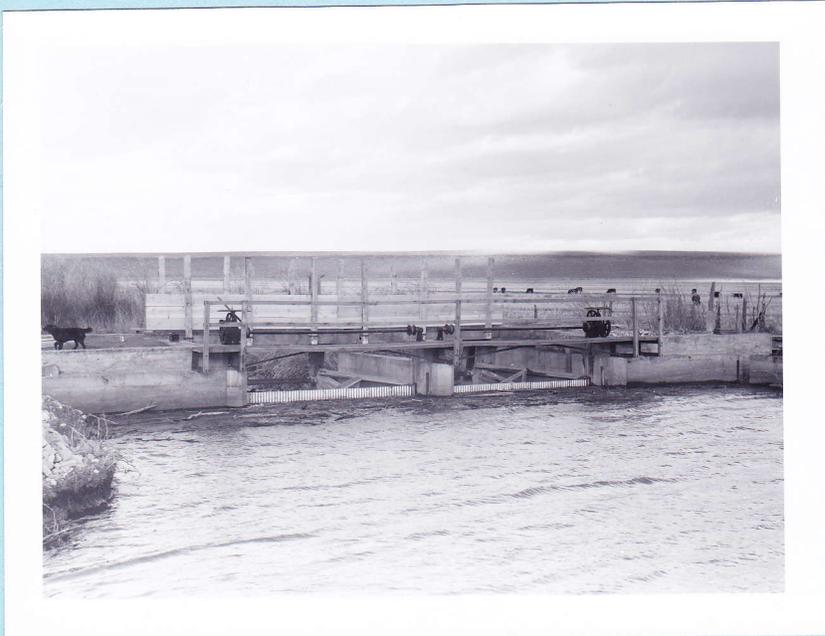
83-62, 10/2/62; Installation of radial arms for east gate. New re-enforced pivot points were required. Two visiting cowboys, Ash, Jess, Currey and Cagle operating crane.  
-Mazzoni



84-62, 10/2/62; Lowering 10' x 15'1" east gate into position. Currey on left, Cagle operating machine.  
-Mazzoni



85-62, 10/2/62; Melting east gate to radial area.  
Jess, Curray and Cagle. -Mazzoni



86-62, 10/2/62; Renovation completed.



87-62, 10/2/62; Addition of walk-way and guard railing has virtually eliminated SAFETY hazards connected with the operation of this structure. -Mazzoni



90-62, 10/5/62; Old willow fence cleanup at Double-0 substation. Section of new fence can be seen in upper right hand corner. -Mazzoni



81-62, 9/10/62; Section of St. Clair Canal in the  
Double-O unit prior to cleaning. -Mazzoni



103-62, 9/15/62; Same section a few days later.  
-Mazzoni



91-62, 11/19/62; Golden Canal cleaning job in Double-0 unit, Lower Swamp Field. Elom operating dragline.  
-Mazzoni



92-62, 12/13/62; Same section of canal following cleaning. Picture taken about 30yds. farther west than 91-62.  
-Mazzoni



97-62, 12/13/62; Cattail and bullrush infested section typical of much of the Golden Canal prior to cleaning.  
-Hazzoni



98-62, 12/13/62; Same section of canal. Slow going for Operator Eliza and his dragline. -Hazzoni

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

W A T E R F O W L

REFUGE Malheur National Wildlife Refuge  
Burns, Oregon

MONTHS OF September TO December, 1962

(1) Species	(2) Weeks of reporting period									
	9/2-8	9/9-15	9/16-22	9/23-29	9/30-10/6	10/7-13	10/14-20	10/21-27	10/28-11/3	11/4-10
	1	2	3	4	5	6	7	8	9	10
<b>Swans:</b>										
Whistling						30	38	50	65	136
Trumpeter	14	15	16	15	15	14	15	15	15	15
<b>Geese:</b>										
Canada	2,100	2,550	2,575	3,675	3,475	3,325	2,675	2,700	3,175	3,200
Cackling										
Brant										
White-fronted		75	125	700	1,000	1,400				
Snow			1	175	1,250	1,750	3,375	3,000	2,500	2,150
Blue					1	1				
<del>Other</del> Total Geese	2,100	2,625	2,701	4,550	5,726	6,476	6,050	5,700	5,675	5,350
<b>Ducks:</b>										
Mallard	5,900	7,250	6,450	6,375	4,300	2,200	4,375	5,225	5,875	7,450
Black										
Gadwall	3,475	1,750	2,950	1,300	1,400	1,475	1,800	1,250	1,125	650
Baldpate	1,150	1,200	1,275	350	1,125	1,300	4,950	4,925	3,200	2,700
Pintail	6,400	3,400	6,450	2,300	2,775	3,250	32,000	41,450	50,600	61,300
Green-winged teal	1,575	3,800	4,700	4,350	4,250	4,150	5,400	3,950	4,600	4,200
Blue-winged teal										
Cinnamon teal	1,550	600	850	450	400	275	50	50	50	50
Shoveler	2,825	3,650	2,625	1,800	1,350	900	1,075	800	650	450
Wood								5	5	
Redhead	1,600	725	1,425	900	650	400	575	400	400	175
Ring-necked							10	10	10	10
Canvasback	150	100	300	100	200	300	220	160	150	30
Scaup	250	300	475	200	300	400	450	400	265	125
Goldeneye										5
Bufflehead			25	10	20	25	50	50	75	100
Ruddy	800	1,225	1,050	900	700	500	450	425	250	285
<del>Other Com. Merganser</del>	25	20	10					25	75	70
Hooded Merganser										25
<b>Total Ducks:</b>	<b>25,700</b>	<b>23,920</b>	<b>28,585</b>	<b>19,635</b>	<b>17,470</b>	<b>15,175</b>	<b>51,405</b>	<b>59,125</b>	<b>67,330</b>	<b>77,625</b>
<b>Coot:</b>	<b>16,650</b>	<b>22,900</b>	<b>17,700</b>	<b>12,300</b>	<b>8,750</b>	<b>5,200</b>	<b>1,750</b>	<b>1,925</b>	<b>2,050</b>	<b>2,150</b>



3 -1750a

Cont. NR-1  
(Rev. March 1953)WATERFOWL  
(Continuation Sheet)REFUGE Malheur National Wildlife RefugeMONTHS OF September TO December, 1962

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total	
	11/11-17	11/18-24	11/25-12/1	12/1-8	12/9-15	12/16-22	12/23-29	18			
<u>Swans:</u>											
Whistling	600	200	200	150	150	128	158		13,335		
Trumpeter	15	15	21	21	21	21	21		1,988		
<u>Geese:</u>											
Canada	3,000	2,325	2,600	3,000	3,100	3,375	3,725		354,025		
Cackling											
Brant											
White-fronted											
Snow					5	5	5		23,205		
Blue	200	80							101,367		
Other									14		
<u>Total Geese:</u>	3,200	2,405	2,600	3,000	3,105	3,380	3,735		478,611		
<u>Ducks:</u>											
Mallard											
Black	5,000	3,800	4,000	3,500	3,000	2,150	5,600		577,150		
<del>Barrow's Goldeneye</del>									2		
Gadwall	550	425	450	500	500	450	400		145,950		
Baldpate	2,150	1,400	1,500	2,000	3,000	3,775	4,650		288,750		
Pintail	60,000	55,400	50,000	30,000	20,000	4,700	1,675		3,021,900		
Green-winged teal	3,000	2,100	2,000	1,900	1,600	1,475	1,400		381,150		
Blue-winged teal											
Cinnamon teal			5	5	5	5	3		30,436		
Shoveler	300	125	50	15	15	15	14		116,613		
Wood			5	5					140		
Redhead	300	100	100	100	50	50	25		55,825		
Ring-necked	25	50	50	100	100	115	100		4,060		
Canvasback	25	50	100	125	175	165	10		16,520		
Scaup	250	400	500	500	500	525	425		43,155		
Goldeneye	25	50	50	100	150	200	300		6,160		
Bufflehead	75	75	100	100	100	100	50		6,685		
Ruddy	250	200	100	100	75	75	25		51,870		
Other											
<u>Com. Merganser</u>		50	40	50	50	40	10		3,255		
<u>Hooded Merganser</u>		25	25	50	75	75	50		2,450		
<u>Total, Ducks:</u>	71,970	64,250	59,075	39,150	29,395	13,915	15,138		4,752,076		
<u>Coot:</u>	1,200	475	450	400	300	225	200		663,775		

(over)

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	15,323	615	
Geese	478,611	6,476	
Ducks	4,752,076	75,610	
Coots	663,775	22,900	

SUMMARY

Principal feeding areas Geese-Variou meadows and grain fields at D.V.; Ducks-grain field & Walheur Lake area.

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

Reported by Eugene Kridler

Wildlife Management Biologist

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

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

3-1751

Form NR-1A  
(Nov. 1945)MIGRATORY BIRDS  
(other than waterfowl)Refuge Malheur National Wildlife Refuge Months of September to December 195 62

(1) Species  Common Name	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total Estimated Number
	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	
<b>I. Water and Marsh Birds:</b>										
Western Grebe	Prov.	Period	300	9/1	5	11/8				300
Sarcel Grebe	"	"	700	"	1	12/10				1,000
Pied-billed Grebe	"	"	Unknown	"	10	12/31				
White Pelican	"	"	200	9/1	35	12/8				200
Double-crested Cormorant	"	"	50	"	30	9/15				75
White-faced Ibis	"	"	15	"	15	9/1				15
American Bittern	"	"	Present during			September	Unknown	numbers		
Great Blue Heron	"	"	30	9/1	20	12/31				50
Common Egret	"	"	50	"	1	12/31				100
Snowy Egret	"	"	50	"	50	9/1				50
Black-crowned Night Heron	"	"	50	"	13	9/8				50
Sandhill Crane	"	"	1,350	"	13	11/14				1,500
<b>II. Shorebirds, Gulls and Terns:</b>										
Aves	Prov.	Period	1,500	9/1	5	10/4				1,500
Black-necked Stilt	"	"	10	"	10	9/1				10
Common Snipe	"	"	500	Sept.	9	12/31				500
Lesser Scaup	"	"	1,000	9/1	3	11/31				5,000
Least/Western Sandpiper	"	"	5,000	9/1	9	11/5				5,000
Dunlin	"	"	200	"	200	9/1				200
Greater Yellowlegs	"	"	250	Sept.	2	11/1				150
Killdeer	"	"	1,000	"	1	12/31				1,500
Ring-billed Gull	"	"	800	"	40	10/24				1,000
California Gull	"	"	200	"	5	"				300
Black Tern	"	"	6	9/10	2	9/23				25

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u>					
Mourning dove		1,000	9/15	1	11/17
White-winged dove					2,000
IV. <u>Predaceous Birds:</u>					
Golden eagle	Prev. Period	20	12/26	20	12/31
Duck hawk	" "				
Horned owl	" "	300	Period		300
Magpie	" "	2,000	Nov-Dec.		2,000
Raven	" "	200	Dec.		200
Crow	" "	50	10/8	10	10/25
Bald Eagle	1 11/5	7	12/31	6	12/31
Red-tailed Hawk	Prev. Period	25	8/31	15	"
Rough-legged Hawk		100	Dec.		150
Swainson's Hawk	Prev. Period	25	9/1		25
Marsh Hawk	" "	100	Period		150
Prairie Falcon	" "	2	"		2
Osprey	1 9/18	1	9/18	1	9/18
Long-eared Owl	Prev. Period	10	9/1		10
				Reported by.....	
Barn Owl	1 10/27	1	10/28	1	10/27

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.

3-1752  
Form NR-2  
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Walheur Months of Sept. to Dec., 1962

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'vd.	Estimated Total		Hunting	For Re- stocking	For Research		
Common Name					Percentage				Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse					Unknown	0	0	0	100	
Calif. Quail					1:1	0	0	0	7,000	Some movement on and off refuge. Some removal by hunting on refuge boundaries. Probably no more than 300.
Ring-necked Pheasant					1:1	0	0	0	2,500	Slight movement on and off refuge. Probably 25 removed by boundary hunting.
Chukar					1:1	0	0	0	500	On and off basis. Majority west side up upper Blitzen Valley.
Gray Partridge					Unknown	0	0	0	?	None seen this period. Report of a few near "00" unit.

## 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.

3-1753  
Form NR-3  
(June 1945)

BIG GAME

Refuge Malheur Calendar Year 1962

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions	(7) Estimated Total Refuge Population		(8) Sex Ratio	
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss		Number	Source		At period of Greatest use
Common Name	Cover types, total Acreage of Habitat	Number												
Mule Deer			21	0	0	0	?	?	0	0		1,100	600	1:1
Pronghorn			0	0	0	0	?	?	0	0		70	60	

Remarks: **Mule Deer:** Much use on an on-off basis. Predation and disease loss unknown, but very light, if any.  
**Pronghorn :** No dead found from predation or disease.

Reported by \_\_\_\_\_

## INSTRUCTIONS

Form NR-3 - BIG GAME

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

DISEASE

Refuge Malheur Year 1962

Botulism

Lead Poisoning or other Disease

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 Only an occasional flapper noticed. Can be considered to have been practically nonexistent.

Kind of disease \_\_\_\_\_

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

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

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

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

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

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

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

Remarks None observed.



PUBLIC USE

Refuge Malheur National Wildlife Refuge

Calendar Year 1962

Total Use Visitor-Days	Hunting Use	Fishing Use	Miscellaneous Use
12,000	364 3%	1200 10%	10,436 87%

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

Hunting (on refuge lands):	Percent	Visitor-Days	Acres	Miscellaneous:	Percent	Visitor-Days
Waterfowl	-	-	-	Recreation *	92	9,586
Upland Game	-	-	-	Official	3	300
Big Game	100	364	16,000	Economic Use	4	425
Supervised by refuge <u>X</u> by State <u>X</u> No. of blinds <u>-</u>				Other	1	125

Hunting (off  
refuge lands): Estimated man-days of hunting on lands  
adjacent to the refuge 500 (These figures  
should not be included in hunting-use totals above).

Fishing:

Acres of ponds or lakes 90 and miles of streams  
17 open to fishing.

Comments:

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



Refuge Malheur Year 19 62

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

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

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

Total acreage planted:  
 Marsh and aquatic \_\_\_\_\_  
 Hedgerows, cover patches \_\_\_\_\_  
 Food strips, food patches \_\_\_\_\_  
 Forest plantings \_\_\_\_\_



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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Malheur National Wildlife Refuge County Harney State Oregon

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			
Barley	140	4520			222	4150	362		
Oats	130	3600			24	300	154		
Rye	62	620	30	290	208	250	300		
Spelts					110	660	110		
* - Volunteer from 300 acre seeding, 1961.									
								Fallow Ag. Land	50

No. of Permittees: Agricultural Operations 4 Haying Operations 1 Grazing Operations 63

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Oat	198.9	120	\$994.50	1. Cattle	38,042	112,914.7	\$170,015.95	95,000
				2. Other			\$120.00	
1. Total Refuge Acreage Under Cultivation								952
Hay - Wild		17,140		2. Acreage Cultivated as Service Operation				26

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 Malheur National Wildlife Refuge

Months of January through December, 195762

(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
Barley	7,064	-	7,064	285	100	2,835	3,220	3,844	1,000	2,844	
Wheat	300	-	300	-	-	-	-	300		300	
Oats	1,370	-	1,370	190	-	190	290	1,080	480	600	
Rye	967	181	1,148	-	-	353	353	795	500	295	
Spelts	310	-	310	-	-	-	-	310		310	

(8) Indicate shipping or collection points All grain received on Malheur Refuge

(9) Grain is stored at Pg Ranch, Buena Vista, Double-O, & Refuge Headquarters

(10) Remarks ¶1) The 1961 Sept.-Dec. NR incorrectly reported 7046 bu. of barley as being on hand at the end of the period. This figure should have been 7064.

\*See instructions on back. (2) 220 bu. barley to Ruby Lake Refuge; 65 bu. barley and 100 bu. oats to Desert Game Range

## 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.

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
P. O. Box 3737  
Portland 8, Oregon

*Banding  
Color Marking*

October 27, 1961

Memorandum

To : Pacific Flyway Committee and Cooperators  
From : Pacific Flyway Representative  
Subject: Swan Color Marking - Malheur Refuge

This is to advise that a number of whistling swans are being marked with yellow dye at Malheur National Wildlife Refuge in southeastern Oregon. Plumage dye being used will likely remain visible throughout this winter and next spring.

Should you observe any yellow color-marked swans, make note of the locality, date and total birds in the group and report the information to this office or to Malheur National Wildlife Refuge, P. O. Box 113, Burns, Oregon.

The purpose of this marking project is to determine migration routes of swans using Malheur Refuge during the fall, winter and subsequent spring period.

Extra copies of this memorandum are being supplied to pass on to other field personnel who may encounter these color marked birds.

*John E. Chatten*

DISTRIBUTION:

Brooks - Alaska - 5  
Hansen - Alaska - 10  
Hatter - B. C. - 10  
Gart Smith - Alberta - 10  
E. Paynter - Sask. - 10  
Bob Smith - 2  
H. Jensen - 2  
Lanckhart - 10  
Kebbe - 10  
Oglesby - 5  
Kozlik - 10  
Fleming - 4  
D. Smith - 6  
Bizeau - 6  
Freeman - Mont. - 10

JEC:mg

*Color Marking*

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
FISH AND WILDLIFE SERVICE  
BUREAU OF SPORT FISHERIES AND WILDLIFE  
P. O. Box 3737  
Portland 8, Oregon

October 27, 1961

Memorandum

To : Refuge Managers and U. S. Game Management Agents, Region 1  
From : Chief, Division of Wildlife, Portland, Oregon  
Subject: Swan Color Marking - Malheur Refuge

This is to advise that a number of whistling swans are being marked with yellow dye at Malheur National Wildlife Refuge in southeastern Oregon. Plumage dye being used will likely remain visible throughout this winter and next spring.

Should you observe any yellow color-marked swans, make note of the locality, date, and total birds in the group and report the information to this office or to Malheur National Wildlife Refuge, P. O. Box 113, Burns, Oregon.

The purpose of this marking project is to determine migration routes of swans using Malheur Refuge during the fall, winter and subsequent spring period.

Extra copies of this memorandum are being supplied to pass on to other field personnel who may encounter these color marked birds.

*Richard E. Sniffen*

cc Refuges, R. O.

DISTRIBUTION:

3 copies of this memo to each of the above persons.

JChattin:mg