TULE LAKE

NARRATIVE REPORT

KLAMATH BASIN NATIONAL WILDLIFE REFUGES

Tule Lake, Lower Klamath, and Clear Lake
in California

Upper Klamath and Klamath Forest
in Oregon

Headquarters For All Refuges: Tulelake, California

1965

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife
Klamath Basin National Wildlife Refuges
Region I

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1965

PERMANENT PERSONNEL

Robert C. Watson.....E.O.D. 7/3/65.....Refuge Manager
Robert F. Russell.....Transferred 4/3/65.....Refuge Manager
William Nuess.....Refuge Manager
Gaylord L. Inman.....Refuge Manager
Palmer C. Sekora.....Refuge Manager
John T. Annear.....E.O.D. 6/17/65.....Refuge Manager
Delano A. Pierce.....Transferred 6/23/65.....Refuge Manager
Edward J. O'Neill.....Wildlife Biologist (Management)
Robert M. Abney.....Wildlife Biologist (Management)
Blake F. Chapman.....Shop Foreman
Henry Christensen.....Construction & Maintenance Foreman
James Mac Farlane.....Administrative Assistant
Pauline R. Chapman.....Clerk-Typist
Pauline Dixon.....WAE.....Clerk-Stenographer
Earl M. Irvine, Jr.....Heavy Duty Mechanic
Khlar Heaton.....Heavy Duty Mechanic
Harold P. Hardesty.....Truck Driver
Roland M. Shults.....Signmaker
S. Virgil Cobb.....Dragline Operator
Joe Fabianek.....WAE.....Dragline Operator
Coy C. Dyer.....Operator General H.D.
Peter A. Davies.....Transferred 12/31/65...Maintenanceman Foreman
Ivan L. Morfitt.....Caretaker
Edward R. Downing.....Maintenanceman
Lowell D. Green.....WAE.....Maintenanceman
Donald C. Griffith....WAE.....Maintenanceman
Raymond H. Hanson.....WAE.....Maintenanceman
Samuel D. Merriman....WAE.....Maintenanceman
Robert K. Van Wyck....WAE Resigned.....Maintenanceman

TEMPORARY PERSONNEL

Period of Employment

Jack M. Deer.....8/27/65 -.....Maintenanceman
Chris H. Molde.....8/16/65 -.....Maintenanceman
Edward R. Roethler....9/3/65 -.....Maintenanceman
Billy E. Sellers.....11/1/65-.....Maintenanceman
Billy W. Green.....8/20/62 - 1/29/65.....Laborer
Charles E. Osborn.....10/5/64 - 1/2/65.....Wildlife Biologist
Scott A. Jerrue.....6/22/65 - 8/20/65.....YOC Summer Trainee
Lee R. Whitman.....6/14/65 - 9/3/65.....YOC Summer Trainee

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C O N T E N T S

* Not applicable this report period.

I GENERAL

A. Weather Conditions*

Tabulated below is weather data for 1965. It was furnished by the Tulelake Irrigation District weather station, official observer for the U. S. Department of Commerce, Weather Bureau, Tulelake, California.

		Precipitation		Temperature	
	Snowfall 1/	Month	Normal 2/	Maximum	Minimum
January	12.0"	2.54	.94	51	1
February		.10	1.01	63	15
March	T	.07	.93	65	13
April	3.0"	1.50	.78	75	23
May		.39	1.29	80	20
June	T	2.26	.99	86	29
July		.07	.31	93	34
August		1.90	.22	90	34
September		.03	.55	88	21
October		.06	.93	87	15
November	7.0"	2.76	1.03	69	2
December	7.0"	.69	1.28	56	-10
Total	29.0"	12.37	10.26 Extremes	93	-10

1/ Measured at Refuge Headquarters.

2/ Average for the period 1932 through 1960.

*Annear and Nuess

Normal 1/	.94	1.01	.93	.78	1.29	.99	.31	.22	.55	.93	1.03	1.28	10.26
	January	February	March	April	May	June	July	August	September	October	November	December	Year
1956	2.17	2.21	.33	.74	1.72	1.26	.31	.11	.03	2.05	.30	1.70	12.93
1957	.89	1.23	2.21	1.02	2.14	0	.74	0	1.64	.97	1.84	1.98	14.66
1958	1.41	1.98	.93	.75	1.78	1.69	1.27	.95	.78	.20	1.01	.59	13.34
1959	.73	.69	.39	.53	.65	.08	0	.50	.50	.34	0	.34	4.75
1960	.57	2.11	1.61	.53	2.10	0	.05	.05	.44	.28	1.59	1.86	11.19
1961	.26	1.57	.71	.14	1.71	.71	.01	.20	.21	1.04	1.14	1.32	9.02
1962	1.17	1.45	1.06	.19	1.73	.50	0	.11	.34	5.04	.63	1.19	13.41
1963	.41	1.29	.53	1.22	1.42	.89	0	.20	.23	1.00	1.35	.69	9.23
1964	1.48	.11	.83	.54	.64	3.42	.69	.06	.02	.22	1.22	5.87	15.00
1965	2.54	.10	.07	1.50	.39	2.26	.07	1.90	.03	.06	2.76	.69	12.37

1/ Average for the period 1932-1960. Corrects data in 1961 September-December report. Correction based on Bureau of Reclamation data.

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The ravages of the December 1964 storm, which deposited precipitation ranging from 5.87 inches in the Tulelake area to 14.71 inches in the Chemult area, continued in January 1965. In the first eleven days 2.43 inches of precipitation was received, most of which was in the form of snow. Fortunately, low temperatures prevented a rapid runoff.

Late in January the temperature moderated melting the snowpack gradually. Clear and warm weather prevailed through February and most of March. Precipitation was almost totally lacking setting a 31 and 32 year record low for February and March respectively. Precipitation through the remainder of the year was above normal.

A tabulation of annual precipitation data covering the past decade follows. It is designed as an index of comparison for the current precipitation data.

B. Habitat Conditions

1. Water*

The water surface elevation of the 13,200 acre water and marsh area of Sumps 1A and 1B is controlled as directed by the Rules and Regulations - revised February 10, 1960 under the 1956 contract between the United States and the Tulelake Irrigation District. Objective levels are as follows:

Why repeat this?

Date	Objective Levels	Date	Objective Levels
April 1	4034.45'	August 1	4034.25'
May 1	4034.40'	September 1	4034.25'
June 1	4034.35'	October 10	4034.75'
July 1	4034.30'	November 1	4034.75'
		January 1	4033.50'**

** This objective level is not set to accomodate wildlife operation but is for flood control; however, it is a part of the contract.

Unprecedented water conditions occurred on Tule Lake Refuge in 1965 because of the great December 1964 flood and above normal precipitation in January, April, June and August. Pumping Plant "D" operated through the entire year with the exception of seven, nine, fifteen and six day periods in April, June, September and December respectively. A total of 143,302 acre feet was pumped shattering existing records.

* Nuess

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The sump elevation on January 1 was 4035.32'. Normally it would have been approximately 4033.50'. Despite capacity pumping, the sump climbed toward the maximum established level of 4035.50'. To relieve the situation and protect related facilities, emergency measures were taken releasing 6,500 acre feet into Reserve Sump 2 on January 27. Capacity pumping continued through March 21. On March 30, pumping was terminated with the sump at elevation 4034.47'; .02' above objective level.

In April the sump climbed to a high of 4034.90' when above normal precipitation was received. The Rules and Regulations, designed to control sump elevations, were adjusted to permit lowering the sump at a uniform rate to reach the July 1 objective level of 4034.30'.

Above normal precipitation was received again in June raising the sump to a high of 4035.02' on June 20. This necessitated a second adjustment of the Rules and Regulations recommending that the sump be lowered at a uniform rate to reach the August 1 objective level on 4034.25'. This was achieved on August 6. Limited operation of Plant "D" was necessary through the remainder of the month to maintain this level.

On September 2, pumping at Plant "D" was terminated and the sump was permitted to rise to the October 10 objective level of 4034.75'. This was reached on September 16 at which time pumping was initiated to maintain this level.

On November 5, Plant "D" operation was accelerated to four units with the objective of lowering the sump to the January level of 4033.50'. This elevation was reached on December 25 at which time pumping was terminated.

Incidence of botulism on Tule Lake was minor. Only 385 sick and dead birds were collected.

2. Food and Cover*

Winter weather virtually closed the Tule Lake Basin when ice capped water units and 8-10 inches of snow blanketed the countryside in early January. The first half of the month we estimated only about 20 acres open water available for birds and animals. During this deep-freeze interim a seasonal low of 9,500 ducks and geese remained. Ducks suffered considerable stress and geese survived quite well. February 4 surveys indicate only 3 acres open water on Sump 1-B and about 100 acres open on Sump 1-A.

*O'Neill

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Waterfowl spring food conditions were subjected to considerable damage and loss. The Southwest Sump unit received some 6,500 acre feet of winter floodwaters which spread over three-fourths of the unit from late December through April 20. Frey's Island was under water from January through April 1. The panhandle fields were flooded from late December throughFebruary 15. Field 1-A, east of headquarters, was about one-third flooded from early January through February. None of the League of Nations unit went under water, however, some 6,000 acres of the Frog Pond unit was flood-irrigated by Tulelake Irrigation District to help absorb surplus waters.

February 7-18 moderate weather saw 50 percent of water units reopened for incoming flights of spring migrants. All but 150 acres along the south boundary of Sump 1-B thawed the last of the month.

There was a steady decline in water levels until objective levels were reached by Tulelake Irrigation District pumping in late March. Snow received the first of April stopped field irrigation and the combined irrigation spillage and runoff caused sump levels to rise but without damage to nesting birds.

Ring-necked pheasants were in the limelight again as they congregated along adjacent highways and thoroughfares. Some 6,600 pounds of supplementary barley grain feed was spread and about nine miles of dike roads graded bare twice (18 miles) in a cooperative effort to cut down road kills. Fish and Game Warden Robert Robinson also put out 1,100 pounds of refuge-supplied grain on county roads and worked frightening flocks from main roads. The program didnot extend into the month of February as conditions improved.

At no time did spring migrating waterfowl present a depredations problem on neighboring lands. Irrigation, early burning and stubble and tillage of agricultural fields provided adequate gleanings. Mild weather here and northward allowed for an orderly spring migration without buildup in numbers using agricultural pastures and hayland. Stubble burning started March 17 (C fields in League of Nations) where ring-billed and California gulls moved in several hundred strong and competed for every available mouse exposed by farming activities. First irrigation of the year was in the League March 10.

Algae conditions (floating mats of filamentous) were bad during the summer, however, periodic rains and winds tended to sink and windrow providing better open water conditions than last summer. Basin-wide "washing" by floods has perhaps deposited more algae spores and nutrients than at any time in the last 50 years. There was a marked increase in all free floating varities. Comparative cover or blanketing at the peak follows:

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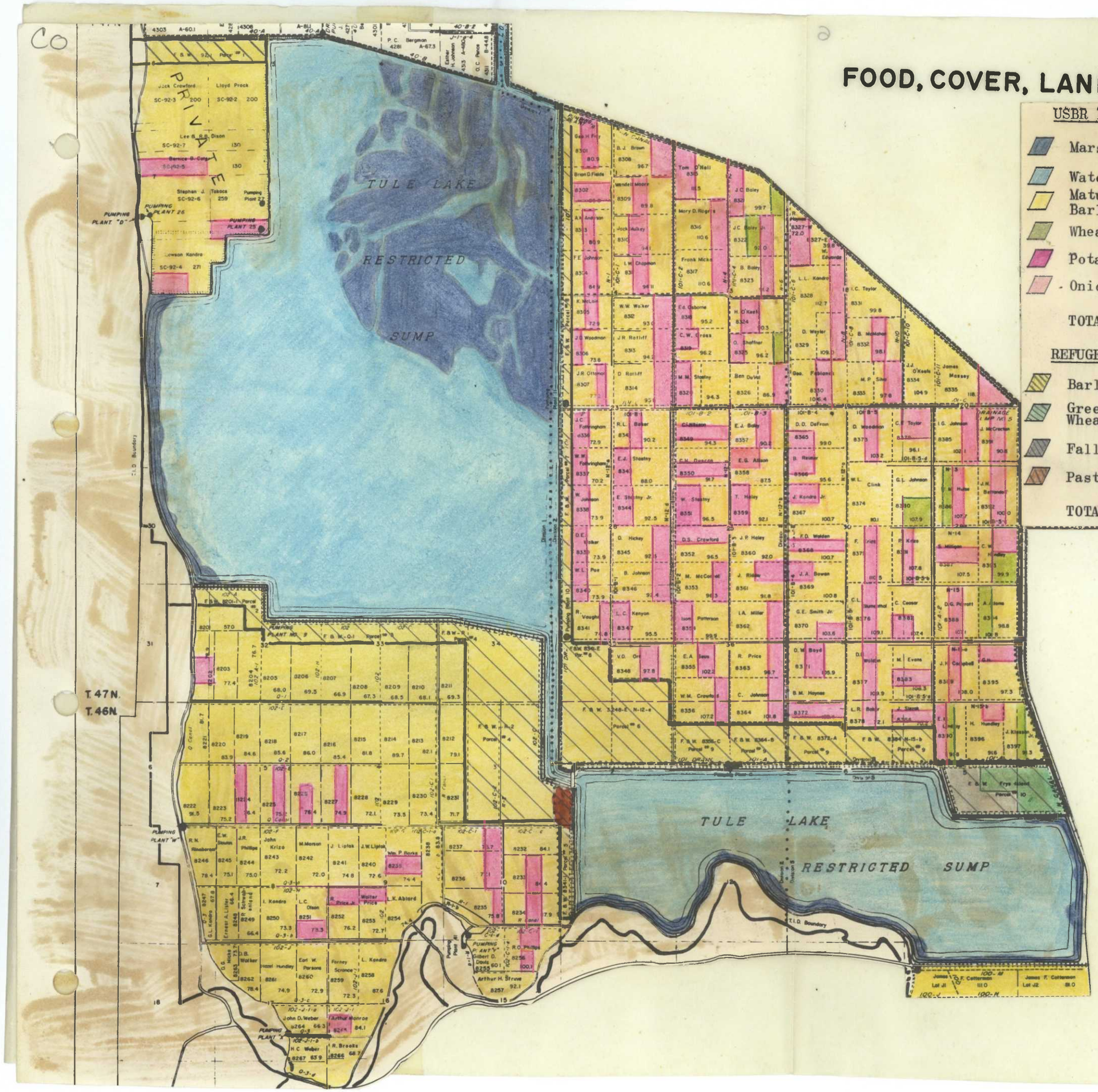
FOOD, COVER, LAND STATUS

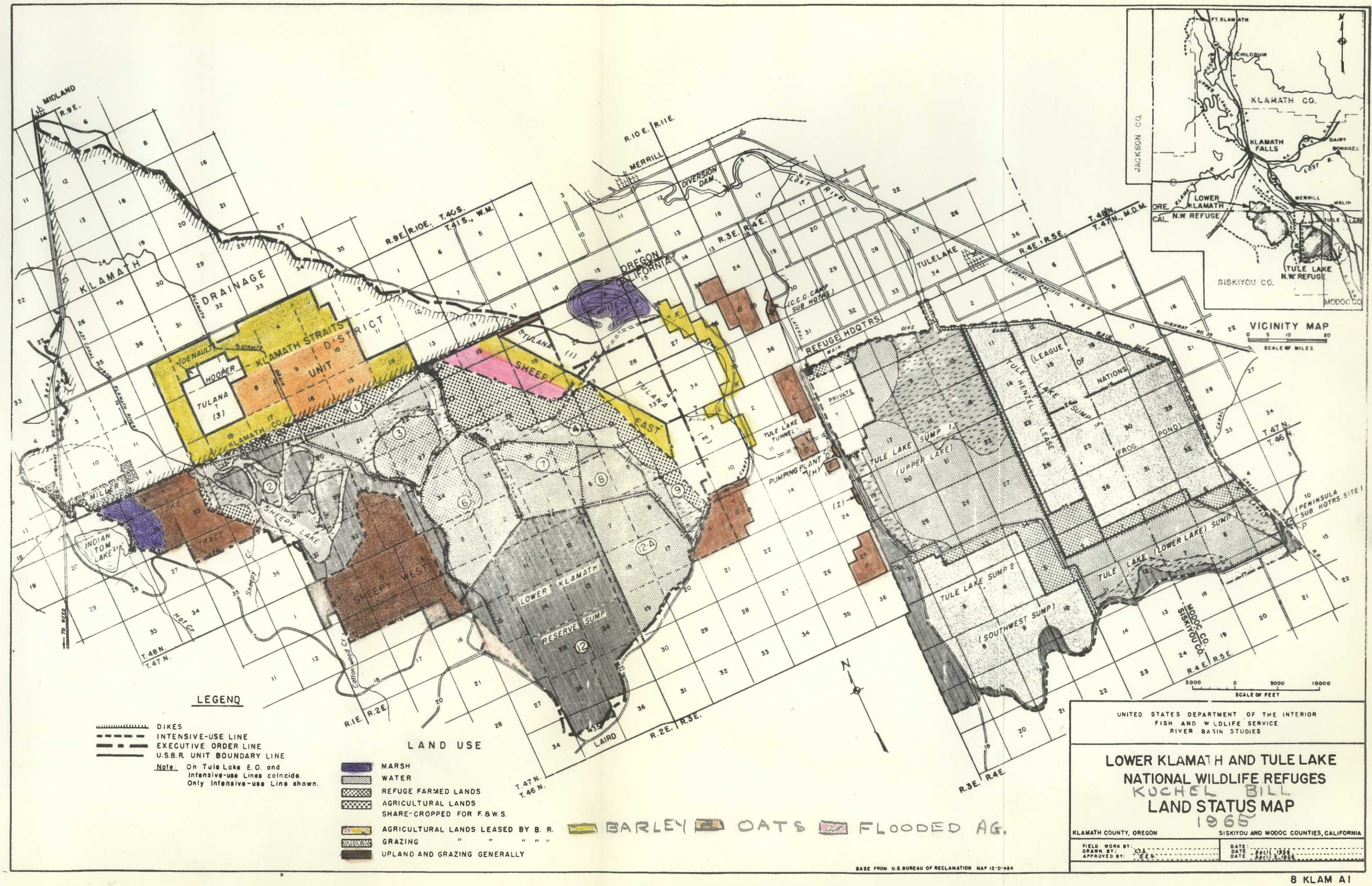


USBR LEASE LANDS-1965

Marsh / Water	13,200
Mature Barley	11,895
Wheat	197
Potatoes	2,509
Onions	21
TOTAL	14,622

REFUGE BUFFER FIELDS

Barley	2,141
Green Wheat	114
Fallow	154
Pasture	50
TOTAL	2,408


MIDLAND
R.9E.
KLAMATH DRAINAGE DISTRICT
KLAMATH STRAITS UNIT
(DENAULT)
HOOPER
TULANA (3)
KLAMATH CO.
SHEEPY LAKE
SHEEPY WEST
SHEEPY EAST
TULANA
MILLER
INDIAN TOM LAKE
TRACT
Sheepy
Hot Cr.
Cotton Wood Cr.
TO WEED
T.48N.
T.47N.
R.1E. R.2E.
R.9E. R.10E. T.40S. T.41S., W.M.
R.10E. R.11E.
MERRILL
DIVERSION DAM
Lost River
OREGON
CALIFORNIA
WHITE LAKE
R.3E. R.4E.
(C.C.C. CAMP SUB HQTRS.)
LATERAL
REFUGE HDQTRS.
MAIN
DIKE
PRIVATE
TULELAKE
R.4E. R.5E.
T.48N. T.47N., M.D.M.
CENTRAL PACIFIC RR
HIGHWAY NO. 39
TULE LAKE TUNNEL
PUMPING PLANT (H)
TULE LAKE SUMP 1 (UPPER LAKE)
TULE HENZEL LEASE
(LEAGUE OF NATIONS)
SUMP
FROG POND
TULE LAKE SUMP 2 (SOUTHWEST SUMP)
TULE LAKE (LOWER LAKE) SUMP
(PENINSULA SUB HQTRS. SITE)
MODOC CO.
SISKIYOU CO.
T.47N. T.46N.
LOWER KLAMATH RESERVE SUMP
LAIRD
R.2E. R.3E.
R.3E. R.4E.
R.4E. R.5E.
T.46N.
VICINITY MAP
SCALE OF MILES
JACKSON CO.
PT. KLAMATH
CHILOQUIN
KLAMATH CO.
KLAMATH FALLS
DAIRY BONANZA
LOST R.
LOWER KLAMATH N.W. REFUGE
ORE.
CAL.
MERRILL
MALIN
TULE LAKE N.W. REFUGE
SISKIYOU CO.
MODOC CO.
SCALE OF FEET
LEGEND
DIKES
INTENSIVE-USE LINE
EXECUTIVE ORDER LINE
U.S.B.R. UNIT BOUNDARY LINE
Note: On Tule Lake E.O. and Intensive-use Lines coincide. Only Intensive-use Line shown.
LAND USE
MARSH
WATER
REFUGE FARMED LANDS
AGRICULTURAL LANDS SHARE-CROPPED FOR F.&W.S.
AGRICULTURAL LANDS LEASED BY B. R.
GRAZING " " " " "
UPLAND AND GRAZING GENERALLY
BARLEY
OATS
FLOODED AG.
BASE FROM U.S. BUREAU OF RECLAMATION MAP 12-D-484
UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
RIVER BASIN STUDIES
LOWER KLAMATH AND TULE LAKE
NATIONAL WILDLIFE REFUGES
KUCHEL BILL
LAND STATUS MAP
1965
KLAMATH COUNTY, OREGON
SISKIYOU AND MODOC COUNTIES, CALIFORNIA
FIELD WORK BY:
DRAWN BY: C.V.A.
APPROVED BY: E.C.G.
DATE: APRIL 1956
DATE: APRIL 1956

8 KLAM A1

	1961	1962	1963	1964	1965
TL Sump 1-A	15%	15%	85%	30%	35%
Sump 1-B	30%	25%	90%	45%	30%

Spring-summer aquatic food plant production was considered good and adequate for nesting and summering species. Diving ducks used water areas extensively until the winter season at hand again restricted them to a few open holes in the ice at the close of the year.

For the second year spring precipitation in the form of cold June rains hit the basin at a critical time causing considerable loss in early duck nests due to a half-foot water raise. Losses were noted especially in Sump 1-A where mallard nests and eggs were noted afloat through the high water period of about 10 days in mid-June.

At the beginning of the fall hunting season it was estimated refuge grains had been about 30 percent comsumed. At that time lease land grain was completely harvested and row crops about 50 percent out.

Tall clover and sunflowers continued to stage a good reinvasion of perifery levees and roads due to cutback in the widespread use of herbicides by refuge, irrigation district and Bureau of Reclamation crews.

Fall planted wheat (Gaines) in the east half of Frey's Island was given daily, intensive use by some 200 to 300,000 cacklers in addition to varying numbers of snow, white-fronted and Canada geese. The crop was literally cropped to the ground level and held there for weeks.

II WILDLIFE

A. Migratory Birds*

The first week of January, while hunting was still in progress, we estimated Canada geese were 25 percent paired. This is believed the earliest flock separation activity ever recorded in northern California.

*O'Neill

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TL First flocks of migrant snow geese returned from the southlands February 8 and promptly moved over to Lower Klamath where some 40 percent of the previous fall barley (sharecrop) was still inundated from winter flood waters pumped out of the Tulelake basin.

Forms NR-1 and NR-1A depict general influxes and peaks for ready reference. Some specific arrival notes included: Wood Duck, February 14; Cinnamon Teal, February 17; and definite waterfowl influx started February 18. Whistling Swan moved north from the Tulelake basin March 13.

Annual Canada goose breeding pairs survey, conducted the week of February 20 disclosed 89 pairs using Sump 1-A and perifery. First Canada goose nest (6 eggs) was noted March 6 by trapper Gosnell on Sump 1-A. First brood note of the season (6) was by the writer on April 4. Total gosling production was down 7 percent compared to 1964 due perhaps to widespread water and habitat in the general area; too cold, wet periods in April and May when some 50 percent of large combined broods were lost; and gull depredations at a time when other food sources were low.

By the last week of March the estimated 390 Western Grebes using Sump 1-A were 75 percent paired and actively dancing-displaying.

Among ducks the first brood of the season (mallard) was recorded on Lost River May 5 by Operator Dale Green. The following day another brood emerged on Sump 1-A following which new broods were noted daily. Nesting peaks were somewhat delayed due to cool weather with the lowest numbers of total ducklings for a three year period. Precipitation of June 14 caused a half-foot water rise, as noted elsewhere in this report. Renesting activity never reached expectations. Redheads showed a slight increase in production. Season tally showed a 59 percent increase in total production over 1964 when all species were considered. There was a comparable increase in coots.

Fall migration into the basin was one to two weeks delayed for some species. First fall flock of geese to arrive was white-fronts (150) which showed up August 24. Total peak numbers approximated the 1964 migrations. Fall-winter use was up nearly 10 percent. The mild, open fall weather, and inter-change from Lower Klamath accounts for this increase. In October and November the flyway population of Cacklers was again present as noted under the Food and Cover section and Form NR-1.

Nine Emperor geese showed up the latter half of November. Two Tule geese were checked (after being dressed) at the local Mallard picking plant during November. A cross between an Emperor and a white-cheeked goose (Canada race) was brought in by a hunter in October.

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Mid-November freezeups and several inches of snow again saw abrupt drops in numbers after which there was a continuous, weekly decline until seasonal lows were reached the last days of the year.

Among marsh and wading birds Green herons were observed on Sump 1-A in July. Nesting Night herons and egrets were uninterrupted and successful. American egrets nested and incubated over a much longer span of weeks and Snowy egrets were generally later than American egrets in nesting activity. White-faced ibis again nested on Sump 1-A but total numbers vary only slightly each year. First spring note of white pelicans was March 12 when two showed up. Latest fall record was the week of November 20 when 11 were seen. Again, Eared grebes persisted in renesting (or second stage) through the month of August. Favorite nesting area was the open water of the southeast portion of Sump 1-B where floating algae mats and sago pondweed provided necessary habitat.

B. Upland Game Birds*

Ring-necked pheasants started separating into breeding flocks the first week of March. Incubation of eggs started about mid-May, based on early broods seen. The earliest brood note was in early June. Wet, cold days in June were considered most decimating single factor involved in reproduction. Renesting was only a token effort and extended into mid-August in a few unusual instances. Considering this to be the second successive "tough" spring total numbers is probably the lowest in 25 years. Cock-hen ratio was high in the fall but considering total population we were surprised hunting was considered good this fall.

The Frog Pond unit yielded a higher pheasant kill than any other unit opened to hunters.

Valley Quail appeared hard hit by spring rains and cold. Lowest number of birds in four years was tallied along Hill Road and the south boundary.

The chuckar population continues on a downward population trend. On-off area estimates place the total at 30 to 50 birds.

C. Big Game Animals*

Mule deer numbers using the Sheepy Ridge-Southwest Sump area has dropped slightly (40) under previous, recent years tally of 50 to 60. Winter losses on ice accounted for 5 animals this year. Pheasant hunters and their dogs forced two of these out on Sump 1-B in November after complete exhaustion. This annual problem could be overcome with islands on Sump 1-B.

Antelope continued to show along Sheepy Ridge on occasions.

*O'Neill

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D. Fur Animals, Predators, Rodents and other Mammals*

Coyote: Population status similar to last year. On-off area estimates place our population at an average of 20 animals. During the year Bureau Predator Control workers eliminated 25 adult animals by aerial shooting and trapping. Most of these had drifted in from adjacent National Park lands. Controls were initiated to protect sheep herds which intermittently grazed grain stubble in the Southwest sump, Panhandle and Frog Pond.

Raccoon: Although this species is low in total numbers using the area the population continues to show an increase.

Skunk: Estimated population shows signs of increase, however, not in the same proportion reported outside of the refuge proper. Undoubtedly last winter and spring floodwaters, as well as the activity of U.S. Bureau of Reclamation and Tulelake Irrigation District raising the west levee of Sump 1-B and the east and south levee of Sump 1-A, raised havoc with the denning and life cycle to the extent the refuge doesnot support a population in comparable density to areas outside.

Bobcat: It is estimated only several of the subject animals inhabit the area on an off-on basis. Sheepy Ridge and the south boundary were only areas inhabited from sightings and tracks.

Muskrat: There has not been a substantial increase in numbers this year among muskrats. Tough winter-spring conditions of water drawdown, followed by inundation, were main factors of control in reproduction and survival. The most successful trapping period came after the early February thaws.

Others: Cottontails and jackrabbits showed little status change if any. Numbers are still lower than four to five years ago. Marmots showed less reproduction gains than for two years. There were less grain depredations and control applications than at any time over the past four years. December 13 a small female was captured above ground on A Dike. Porcupines are at their lowest number in several years. Only an occasional individual shows up at headquarters or along Sheepy Ridge.

Microtus: The population of meadow mice didnot errupt as anticipated. Numbers generally continue on a comparative level as per the last four years with some minor variations and localized build-up in widely separated areas over the Tulelake basin. (See also under: Field Investigations and Applied Research).

Weasels are still increasing in numbers. Muskrat trappers took four weasels this year compared to one last. Increased sightings and road kills confirm increases noted.

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Feral goats inhabiting Sheepy Ridge were observed on occasion. Winter counts indicate three males, 4 females and 1 yearling (Pierce and Sekora). In June the writer observed two kids in the group. Rarely do these animals leave the rocky terrain of Hotel Rock.

Feral cats have not changed notably over the last two years. Flood conditions forced many from unual haunts and worked a hardship in areas like the Frog Pond and Southwest Sump. Pheasant hunters and their dogs again took a toll of the animals the first two days of the season when most of the refuge is opened. The population seems to continue rather static through the years.

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

Winter population counts of Golden eagles are down some 50 percent this year, however, Bald eagles showed a more than double gain in numbers over last winter. This is believed accountable in part by the snow free mild winter season and the fact a considerable number of the Goldens prefer to follow the Interstate Deer Herd wintering in the Devil's Garden country. In February two dead Goldens were found in the Frog Pond unit where they had apparently toppled from the county road power line. Patuxent Research lab findings hadnot been received at this writing.

All other raptors appear to have enjoyed favorable population numbers and adequate food sources.

One Cooper's Hawk was added to this years observations for Tule Lake in December. The species is an infrequent visitor.

F. Other Birds*

Say's Phoebes returned (Peninsula Station) as early as January 30. Three Bohemian waxwings were at headquarters March 8 along with some 12 Cedar waxwings. The flock remained until April 23. A lone Orchard oriole showed up March 12. Townsend's warblers (3) arrived March 20 along with numerous Audubon's. Russet-sided towhees were here (2) as early as April 17 and as late in the year as December 15. Western kingbirds (4) arrived April 17 at the same time the first Swainson's thrushes (2) and Hermit thrushes were noted. Fall movements of passerines through the country were very leisurely in view of mild weather in September and October.

This has been a good year for Mourning doves with indication of fair reproduction as well as fall migrational influxes. First

*O'Neill

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nesting activity was noted May 9 when a nest with one egg was found at headquarters. Fall hunting (September) saw greatly increased pursual of the species over previous years.

G. Fish*

There appeared a definite increase in the rough fish population. Samples, for other studies, netted more fish per gill-net hour than for similar efforts over the past four years. In August there were some noteworthy losses (several hundred) among Tui chubs in and adjacent to the N Canal, particularly along the north and west sides of the League. Water sample checks by Health, Education and Welfare indicate lethal concentrations of endrin at the time.

A white sturgeon, measuring 64 inches was found during June in one of the Southwest Sump irrigation ditches. The species is not peculiar to the basin and evidence indicates this is one of some 200 which were imported from the Columbia River and released at the mouth of the Williamson River on Upper Klamath Lake in the 1950's. Access to the Tulelake basin has been by fresh water canal importations from Upper Klamath Lake. Through the years almost 20 percent of this introduction has been either retrieved or observed from time to time.

H. Reptiles*

Earliest spring note of reptiles (Blow snake) was along the south boundary, adjacent to the Lava Beds, where three were seen April 23. Popular opinion among field personnel is that rattlesnakes are increasing in the general area, however, none were seen on the refuge throughout the year.

I. Disease*

In mid-August a mild incidence of botulism occurred on the Tule Lake upper sump involving some 15 sick ducks and 385 dead mallards, pintails, redheads, scaup, gulls and unidentified ducklings. Hospital treatment with antitoxin injections was unsuccessful for some reason. Lab tests by Bear River Research Station indicated; "The blood of 2 of the 3 birds (lesser scaup and mallard) was positive for type C botulinal toxin..." also, "A small, gram-negative bacterium has been isolated from the tissues.." of some of the shorebirds, etc. sent in.

Sample collection of some of the same birds affected were checked by the H. E. W. lab in Klamath Falls, Oregon with following results.

*O'Neill

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Species	Parts per billion chlorinated hydrocarbons	
2 mallards (livers)	DDE	144
	DDD &/or DDT	60
	Heptachlor Epoxide	20
	Dieldrin	38
1 gadwall (liver)	DDE	95
	Heptachlor Epoxide	16
	Dieldrin	72.1
	Endrin	51
1 shoveler (liver)	DDE	330
	DDD &/or DDT	40
	Heptachlor	40
	Heptachlor Epoxide	25
	Dieldrin	7.8
	Endrin	9.8

Fowl cholera, though comparably mild, persisted among waterfowl species again this year.

On or about February 1 whistling swan and white-fronted geese in the Sacramento River delta area or Bouldin Island became infected (California Fish and Game correspondence). It has been long suspected all of our cholera-affected birds move in from the California delta-bay area. Since there is no practical treatment current pickup of dead is attempted but generally not practical because of iced-over units, predatorsand manpower limitations. February 20 to March 8 some five snow geese and one white-fronted goose were picked up on Sump 1-A. Lab tests confirmed cholera among these. Losses persisted through March with known loss of 18 snows, 7 white-fronts, 1 swan and 1 Ross' goose. About 100 dead geese were noted along the marsh front when we were able to check the area.

Lead poisoning was confirmed in several ducks (both divers and puddlers), swans, and Canada geese found dead around the marsh in the late winter.

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III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development*

The southeast section of B-2 was restaked and a carryall scraper was used to retouch the field, after the winter flood, preparing it for seeding to grass.

Field D-6 was restaked following the winter flood and land levelling resumed in late May. The carryalls finished rough levelling three fields in July and three fields in December. The last three fields are still to be land planed.

This area is being levelled for experimental grass and legume seeding in an effort to curb spring goose damage on private pastures and alfalfa fields.

Three of the fields were land planed, fertilized, disced and seeded to Gaines wheat for fall and spring goose browse.

Started triple land planing approximately 80 acres on the south side of B-2 in one of the most heavily nematode infested sections of the South West Sump.

After land planing is completed, the field is to be deep plowed, portions fertilized and seeded for experimental nematode control.

Fifteen inch turnouts were installed in Tule Lake Buffer Fields B-4 and B-5. They will permit more efficient irrigation of these fields.

The Northwest 25 dragline cleaned the irrigation ditch on the south side of B-2 and also the irrigation ditch supplying water to B-2. Both these ditches were damaged as a result of the winter flood.

B. Plantings**

2. Trees and Shrubs

In the early part of July, eight willow trees were planted around the duck hospital in an attempt to provide shade, beautify the area and, at the same time, provide additional nesting habitat for the passerines utilizing the headquarters area. Due largely to deer depredation, four of the trees will have to be replaced.

* Christensen
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Another step in the refuge beautification program was undertaken when Mrs. Chapman, our clerk typist, purchased some giant marigolds and some double-ruffled petunias. A strip of lawn was removed just in front of the office and the flowers were planted there.

4. Cultivated Crops*

It was not necessary to pre-irrigate refuge agricultural buffer lands because of flood conditions and opportune above-normal precipitation. Spring farming operations commenced on April 19 and were completed May 7. Utah winter barley was planted on 201 acres and hannchen barley on 1,940 acres.

In mid-May, 100 acres located in D-4 and 5 was replanted because of damage by mites and frost.

In July, B-1, 3, 6, 7 and portions of B-2 were irrigated.

Levelling operations on three of six fields totalling 114 acres in D-6 were completed in July. Between August 3-20 these fields were pre-irrigated and planted to Gaines winter wheat. Levelling operations on 104 acres in the remaining three fields was completed in December.

In August 1964 an Austrian winter pea - Gaines winter wheat crop was planted in a 50 acre field located in the southeast corner of B-2. It did not survive because of excessive moisture.

Early in June, after flood waters had been removed, the area was seeded with a mixture of 66 percent Kentucky bluegrass, 17 percent Dutch white and 17 percent alsike clover at a rate of 13 pounds per acre. Response of this seeding has been disappointing and reseeding will be necessary.

Ample food was produced on Tule Lake buffer fields for resident and fall migrants even though production on all fields was materially reduced by the root knot nematode (Meloidogyne nassi) infestation (see FIELD INVESTIGATION OR APPLIED RESEARCH). Production records for 1961 through 1965 are tabulated below.

Year	Acres	Crop	Bushels Produced	Bu. Per Acre
1961	2,390	Hannchen Barley	154,190	64.5
	110	Utah Winter Barley	8,250	75.0
	2,500		162,440	64.9
1962	2,500	Hannchen Barley	104,166	41.6
1963	2,403	Hannchen Barley	124,928	52.0
1964	1,939	Hannchen Barley	114,930	59.3
	202	Utah Winter Barley	14,520	72.0
	2,141		129,450	60.5

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Year	Acres	Crop	Bushels Produced	Bu. Per Acre
1965	1,940	Hannchen Barley	89,830	45.3
	201	Utah winter barley	11,280	56.1
	2,141		101,110	50.7

Four thousand five hundred twenty nine (4,529) bushels of hannchen were harvested for seed and the remainder was left standing for feed.

Operation and maintenance assessments per acre of irrigable land (2,409.7 acres in refuge buffer lands) for 1966 are $9.00 per acre for a total cost of $21,678.30.

C. Collections and Receipts

2. Specimens*

In January, requests for collection of 25 coots to complete California Fish and Game analysis of some 10,000 stomachs gathered state wide were complied with.

In March, 3 white-fronted geese were collected for California Fish and Game researchers for protein difference determinations (chromatography and electrophoretic separation) in the current white-fronted-tule goose investigations.

Some nine specimens of winter plumage ducks were gathered during the season and submitted to Patuxent researchers to further studies on wing analysis and characteristics for confirmation and for the key manual in production.

In March, a cooperative pesticides monitoring program (project P-R, FW-1-R) was initiated between the Bureau and California Fish and Game Department. Over a two-year period one or two bird species will be selected for future monitoring of degree of contamination of wild birds by chlorinated hydrocarbon insecticide. Locally the Bureau will submit two to three eggs from the nests of 18 species of birds including waterfowl, passerine, marsh, shorebirds and raptors.

Some 90 percent of our requested collection was met during the spring.

For the pesticides in eagle-research monitoring program by Patuxent, two golden eagles (found dead) were sent in in March.

In June, one mule deer and seven antelope leg hocks were submitted to Public Health's animal investigation program for radiation (90_{sr}).

*O'Neill

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Samples included soils and vegetation of the area. All collections were from hunters or known road kills during the 1964 season. Again in December, four antelope hocks and two mule deer hocks were sent to the Public Health labs for analysis.

In November the Canadian Wildlife Service was furnished four live cacklers, three white-fronts, two snow geese and one Ross' goose for a waterfowl park-display area at Vancouver, B.C.

Also in November the Portland Zoo was supplied 23 white-fronted geese, three mallards, one Canada goose, one snow goose, and 14 cackling geese.

D. Control of Vegetation*

A total of 3,343 acres were sprayed for noxious weed control at a cost of $1,825.25, or $.55 per acre. All but 25 acres of that total was sprayed by aircraft. Principle herbicide used was the amine salt of 2,4-D.

For a complete breakdown of vegetation control see the following table.

IV RESOURCE MANAGEMENT

B. Haying**

Due to extremely favorable moisture conditions this year, one permit was issued for the purpose of removing the overstory of old vegetation which inhibits spring growth along the south berm of Lava Beds National Monument entrance road from pumping plant "B" to "N" Canal and berm on south side of Frey's Island.

C. Fur Harvest***

A total of 6,540 muskrats were harvested off the Tule Lake and Lower Klamath Refuges by six permittees during the 1964-65 trapping season, November 16, 1964 through March 31, 1965. The bulk of this harvest was taken from mid-February through the end of March. During this period, warm temperatures kept the marshes open, providing excellent trapping conditions. Trapping results are tabulated below:

Permit Number	Name	Tule Lake	Lower Klamath	Totals	Gov't Share	Trapper's Share
T-8834	Gosnell	4,006		4,006	1,001	3,005
T-8835	Bloch	1,755		1,755	438	1,317
T-8832	Coil)	35		35	9	26
T-8833	Llewellyn)					
T-8827	Stonecypher		626	626	125	501
T-8828	Mitchell		118	118	17	101
	TOTALS	5,796	744	6,540	1,590	4,950

The average price per pelt was $1.14 on the open market compared to $1.29 in 1963-64 and $.98 in 1962-63.

*Annear **O'Neill ***Sekora

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TULE LAKE PEST PLANT CONTROL 1965

Species	Mixed Weeds*	Mixed Weeds*	Mustard(Brassica spp.)	Mixed Weeds*
Control Dates	7/30,8/3,9/7	7/21,8/18-19,9/7	6/17	5/29,6/11-13, 6/27
Growth Stage	Various	Various	Seedling	Seedling
Acreage	3	2	20	3,318
Location	N Canal Lost River English Channel	Headquarter's park lot N Canal	Headquarters A-1 Dike	Frey's Island Headquarters field B, C, D fields
Chemical	Trysben	Trysben	2,4-D Amine	2,4-D amine
Diluent	Water-15 gal/Ac.	Water-15 gal/Ac.	Water-12 gal/Ac.	Water-2 gal/acre
Rate(lbs/Ac)	2.0	2.0	2.5	.50
Method	Ground rig-Hand wand	Ground rig-Hand Wand	Ground rig-hand wand	Aircraft
Cost:				
Material	$ 25.50	$ 17.00	$ 27.00	$ 895.86
Labor & Equipment	26.85	17.90	52.00	763.14
TOTAL	$ 52.35	$ 34.90	$ 79.00	$1659.00
Cost/Acre	$ 17.45	$ 17.45	$ 3.95	$ .50
Apparent Kill	90 %	90 %	90 %	95 %
Actual kill in past years	90 %	90 %	90 %	95 %
Remarks:	Canada thistle primarily(Cirsium arvense)	Perennial sow thistle perimarily (Sonchus arvensis)		Nettle(urtica) mustard (Brassica) Bassia(Echinopsilon) Lambsquarter (Chenopodium)

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V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report*

1. Banding

Due to limitations of manpower and the weather conditions following closure of the hunting season, no spring waterfowl banding was accomplished.

The California Fish and Game Department cooperative (Pittman-Robertson) program met our fall pre-season quotas (1,000 pintails; 1,000 mallards) with the following:

Species	Male	Female	Totals
Mallard	763	237	1,000
Pintail	581	310	891
Redhead	69	31	100
		TOTAL	1,991
White-fronted goose			483
Ross' goose			7
Cackling goose			1,417
Lesser Snow goose			769
		TOTAL	2,676

During the nesting season another 100 common egret nestlings were banded in the Sump 1-A colony.

The following tabulations show returns of banded birds which came in during the year.

2. Meadow Mouse (Microtus m.)

As indicated elsewhere in this report (Sec. II, D.) population eruption among microtus did not present a problem. The week of February 15 trapping samples by state and county workers along the east edge of the Frog Pond unit gave rise to a suspected population eruption in the making (300 trap nights with 79 microtus taken of which 61 were pregnant females). April 6-8 sample trapping showed 65 microtus among which there were no pregnant females.

*O'Neill

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1965 BAND RECOVERIES (STATION AND FOREIGN)*

Tule Lake - Lower Klamath Refuges

Species / Location	Canada Goose	Cack. Goose	White-front	L. Snow goose	Mal-lard	Pin-tail	Gad-wall	Bald-pate	G-W Teal	Cinn. Teal	Shov-eler	Red-head	Coot	D-B Corm.	G-B Heron	Calif. & R-B Gull	White Pelican	TOTALS
California	17	42	2	41	33	59	1	1	1	1	17	7	5	4	5	5	8	249
Oregon	5	2		12	5	7						4			3	2	1	41
Alaska		5		3		1												9
Alberta	2			2	2	4												10
B. Columbia				1	1													2
Idaho	1				2												6	9
Illinois				1														1
Mexico												1			1		4	6
Nevada												1		1			2	4
Russia				2														2
Saskatchewan				1		1												2
Texas						1												1
Utah						1												1
Washington	1			1	1	2												5
Unknown	1	2	1	1		6						1						12
TOTALS	27	51	63	65	44	82	1	1	1	1	17	14	5	5	9	7	21	354

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Two check lines of 100 trap nights manned by the writer from March through August plus the data from a permanent, year-around, formalin jar deadfall-drift fence project did not indicate any cause for alarm. It is still very difficult to "census" microtus and, after two years of inaccurate prediction, it appears much is lacking in our ability to project or predict population eruptions.

Meetings were held locally with both counties, Tulelake Irrigation District, Bureau of Reclamation and farmers concerning implementation of the all-out poisoning program planned and agreed to one year ago. Weather delayed the field work schedule considerably. Early April to May saw an estimated 200 acres of ditch banks in the League and Frog units were baited (1,080 treated oat groats; 5 pounds of 2 ounce or 20 percent treated, mixed with clean grain) by personnel of Modoc, Siskiyou Counties and the California State Agriculture Department. Application of poisoned grain was by jeep-mounted cyclone broadcasters covering a 30-foot width per pass. Refuge buffer strips (C fields and north of Sump 1-B) were covered by the writer and others with hand cranked broadcasters. The task of monitoring the 200-odd miles of canal and drain banks fell to the writer to scrutinize wildlife losses, if any.

Rodent control supervisor Frank Weatherbee cooperated in assistance of running population checks before and after baiting areas. Some 300 live trap days were spent checking the "A" Dike and north Sump 1-B levee area during which accurate tabulation was compiled on all species of rodents which were marked and released.

Although serious population numbers never materialized, the effort demonstrated effective reduction of the existing breeding population by 80-90 percent on treated banks. It was concluded further that no immediate or visible losses of wildlife took place. This is the first time a consolidated effort has ever been programmed by all local interests and controlling agencies before serious losses had been incurred. Total cost of bait was estimated at $200.

3. Nematode Infestation

As related in previous report, nematodes cause module-like enlargements of the root system to a depth of several inches, deteriorate and collapse growth resulting in little or no harvest.

Throughout the late winter months researchers at the University of California, Davis, determined the unknown species of nematode infesting some 600 acres of the Southwest Sump unit would thrive on at least five host plants or crops in Tulelake Basin.

Several meetings were held locally and at Davis, California to resolve problems and formulate plans. In June it was announced by University

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of California Entomologist Dr. M. W. Allen that an English nematologist (Franklin) working on similar infestations in England and Wales had "scooped" U.S. Nematologists by describing the same unknown nematode, Meloidogyne naasi, that inhabited the Tule Lake Refuge.

By late summer the U. S. Bureau of Reclamation (primary land controlling agency) had completed 65 man days in field survey and checking of the area covered during nine hours of aerial, helicopter work. A total of 68,801 acres in the basin of which some 28,257 were inspected and 4,559 found infested. No infestations were noted on private land although the possibility is very good since there has always been a high degree of travel and exchange of equipment, etc. between private and lease lands. Aerial (infrared) photos were likewise used to spot infested fields.

In July, greenhouse tests from Davis disclosed a known range of some 25 host plants including grasses, clovers, all true grains, potatoes, beets, onions, etc.

In late summer the California Bureau of Plant Pathology recommended that, since all of the known infested fields are on federal lands (mostly on refuge-farmed buffer strips), a quarantine be set up prohibiting movement of equipment from the area without thorough cleaning and that no potatoes grown in the area be used for seed purposes and that certification applications for future seed production be denied indefinitely.

5 acre?

In September, a cooperative two-acre study plot, with 20 replicates, was laid out in the Southwest Sump unit by the refuge, Bureau of Reclamation and University of California researchers. Several grain and root crops will be tried on land treated by deep plowing, Telone funigants, sprinkler irrigation, shallow cultivation, etc. to immediately study the situation for recommendations to local growers. After much administrative study, the Fish and Wildlife, Bureau of Reclamation, and the University of California have evolved a five-acre research study agreement with University nematologists wherein each will contribute $5,000 yearly for a four-year study to resolve the nematode problem.

4. Pesticides Studies

The study program by research involving several years of investigation into the loss of wildlife species through pesticides, either directly ingested or obtained through food chain organisms was continued throughout the year cooperating with James O. Keith.

Fish, water, birds, zooplankton, etc. sample collections were continued as in past years. A laboratory contract was initiated by Keith to

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process a backlog of collections and when this research is brought up to date, additional reports will be possible.

Cooperative Research Studies*

The water quality studies by Health Education and Welfare continued throughout the year. Although water quality studies are the main interest, the work involves considerable tests for pesticides and impurities which affect water quality for all interests in the Lost River-Klamath River drainages.

Cooperation involved collection of mallard, gadwall, and redhead ducklings along the course of Lost River and in Tule Lake waters for pesticides analysis. Fish, frogs, mussels, zooplankton, plants, water and benthos samples were likewise collected and analysed. A comprehensive report is forthcoming within the next year which will include: measure and identity of pollutants; relationship between land use and pollutants and wildlife losses; role of irrigation practices in surface water pollutants; effects of nutrients from agricultural land drainage; recommendations to control or eliminate damaging effects.

During the summer the product toxaphene showed up in increased amounts in samples after almost complete absence. DDT likewise showed increases with .8ppm in chubs at B-pump during one sample period. Dieldrin was suspected the cause of fish and bullfrog losses in August when tests ran rather high (see also: Wildlife, Diseases).

Health, Education and Welfare's findings substantially now illustrate that measurable amounts of hydrocarbons increase through July and the first part of August. In about mid-August there is a tapering off in amounts and concentration until September. Early August is the period of highest probable concentrations as conditions have existed the past two years. The obsorption of pesticides by fish show similar increases and declines; however, the curve is delayed with peak intake about or after mid-August.

Pesticides Monitoring Program*

A state-wide program to monitor pesticide levels in birds is being undertaken by the California Fish and Game Department. Cooperative collection of eggs in the Tulelake-Lower Klamath Basins were carried out under a two-year data gathering project involving certain shorebirds, waterfowl, passerines and raptors found throughout the state (see also: Collections, Specimens).

5. Grasshopper Control Program**

An infestation of grasshoppers intense enough to justify control measures was experienced again this year on Tule Lake Refuge. Technical assistance and funds for materials were furnished by the Plant Pest Control Division of the United States Department of Agriculture.

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Following is a breakdown of the 1965 control program:

Chemical and carrier: 8 oz. carbaryl (sevin) in 1/2 gallon of water per acre.

Method of application: Aircraft.

Results:

Pretreatment		Post-treatment				
Tule Lake						
Area	Density	24 hrs.	48 hrs.	72 hrs.	7 days	14 days
B-2	5 per sq.yd.	10	7	showers prevent obtainment of sufficient information for reporting	$3\frac{1}{2}$	no count made because of rain
B-4	$22\frac{1}{2}$	18	11		$7\frac{1}{2}$	
B-5	28	21	14		$3\frac{1}{2}$	
B-6	28	18	15		$5\frac{1}{2}$	
B-7	28	20	$13\frac{1}{2}$		$4\frac{1}{2}$	
Lower Klamath						
Unit 5	14	10	$7\frac{1}{2}$		6	
" 12	15	12	11		4	

A total of 1,800 acres was sprayed for grasshoppers. Cost was $2,432.40 or $1.35 per acre.

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VI PUBLIC RELATIONS

A. Recreational Uses* -Summarized on NR-6.

For the first time parts of Tule Lake Refuge were open to frogging. "N" Canal and that portion of Lost River north of the Tule Lake Marsh was open August 1 through September 30. Limits were 24 frogs of any size, taken anytime of day or night. There was negligible frogging use. Recommendations for 1966 are for no season based on the questionable consumptive value of the frogs and apparent lack of interest in the sport.

B. Refuge Visitors**

Date	Name	City & State	Affiliation
1/21	Art Huey	Portland, Ore.	USFWS
"	John Mack	"	"
2/3	Loren C. Holt	Sacramento, Calif.	USBR
"	R. Gene Pollan	Klamath Falls, Ore.	"
"	Herbert W. Finke	Sacramento, Calif.	"
Numerous	C. D. Lawrence	Klamath Fall, Ore.	"
2/8	Ted Picco	Tulelake, Calif.	USNPS
2/9	Marv Hoffer	Redding, Calif.	USFWS
Numerous	R. E. Talbert	Redding, Calif.	Calif. D. of A.
Numerous	Gordon C. Ashcraft	Redding, Calif.	Calif. F&G
Numerous	Douglas J. Thayer	Wendel, Calif.	"
Numerous	Elmer C. VonAllmen	Montague, Calif.	"
2/9	Tom E. Ramsey	Red Bluff, Calif.	"
Numerous	Leo Pyshora	Wendel, Calif.	"
2/9	C. F. Miller	Alturas, Calif.	"
Numerous	Frank A. Wetherbee	Sacramento, Calif.	USFWS
Numerous	Gene N. Deal	Tulelake, Calif.	Calif. D. of A.
2/25	Kenneth W. Wright	"	"
3/1	Joe Schuh	Klamath Falls, Ore.	None
Numerous	Rick Keck	Redding, Calif.	Calif. D. of A.
3/11	L. W. Hanna	Klamath Falls, Ore.	Vector Control
Numerous	Carl Overmier	Alturas, Calif.	PHS
Numerous	Harold Corbin	Portland, Ore.	USFWS
3/31	M. J. Weddin	Sacramento, Calif.	USBR
4/2-3	Roy Renoud	Portland, Ore.	CAS
4/8	L. C. Richards	"	Mining Eng.
Numerous	Ray Glahn	"	USFWS
4/10	Jim Yoakum and 10 Students	Arcata, Calif.	Humboldt State College

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Date	Name	City & State	Affiliation
Numerous	Randall F. Reeves	Redding, Calif.	SCS
4/14	Tom Stone	Eureka, Calif.	Calif. F&G
"	Mike McGourty	Klamath Falls, Ore.	SCS
4/21	Don Kettler	"	Herald & News
4/26	Don Adams	Tulelake, Calif.	USFS
4/27	Tom Rosten	Klamath Falls, Ore.	USBR
"	Samuel Benjamin	Washington, D.C.	Foreign Student
"	Paul Quick	Portland, Oregon	USFWS
4/28	Z. E. Parkhurst	"	"
"	Chester Woodhull	Redding, Calif.	Calif. F&G
"	Elton D. Bailey	"	"
Numerous	Vernon King	Alturas, Calif.	"
4/29	Kay Sanders	Klamath Falls, Ore.	PHS
Numerous	Bill Johnson	"	"
4/30	Bob Fay	Redding, Calif.	BLM
"	Bob Jennings	"	"
"	50 members of Outdoor Club	Portland, Ore.	7th Day Adventist Church
5/3	Gerald Davis	Corvallis, Ore.	OSC
"	Bob Brockson	"	"
"	Dave McIntyre	"	"
Numerous	James O. Keith	Davis, Calif.	U.S.FWS
"	Cameron Thatcher	Montague, Calif.	Calif. F&G
5/14	60 Students	Merrill, Ore.	Elementary School
5/18	25 Students	Tulelake, Calif.	Elementary School
5/20	Art Hayes	Tulelake, Calif.	USNPS
"	Russell Betts	"	"
6/16	Glen Crabtree	Denver, Colo.	USFWS
"	Maynord Cummings	Davis, Calif.	U of Calif. Berk.
"	Carl H. Coad	Portland, Ore.	D. of Justice
"	Dave Lenhart	Sacramento, Calif.	USFWS
6/15	Frank Melo	--	(Siskiyou County
"	F. N. Hartley	--	(Sportsmen
"	A. L. Newman	--	("
"	Bill Eoff	--	("
6/17	W. H. Hart	Davis, Calif.	U of Calif. Davis
"	Ken Baghott	Tulelake, Calif.	U of Calif. Berk.
Numerous	Dave Bunger	Klamath Falls, Ore.	USBR
6/22	Robert Hume	Chico, Calif.	USDA
Numerous	Harold L. Shaffer	"	"
6/23	Frederick W. Schuierer	Palo Alto, Calif.	Stanford Univ.
"	Mr. Anderson	"	"
Numerous	Bob Peyton	Alturas, Calif.	Calif. F&G
6/29	Gary D. Rundall	Medford, Ore.	BLM
"	Seth M. Parkinson	Pullman, Washington	USDA
7/7	Earl Ager	Tulelake, Calif.	County Supervisor
Numerous	Don Mausshardt	Klamath Falls, Ore.	USPHS
7/9	Dave Hopkins	"	"
7/12	L. M. Jansen	Chico, Calif.	USDA
Numerous	Mike Lawler	"	"

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Date	Name	City & State	Affiliation
7/13	Kenneth F. MacDonald	Portland, Oregon	USFWS-Retired
7/19	Bob Mullins	--	Calif. F&G
"	Ralph Carpenter	--	"
7/21	E.A. Brown and 8 Students	Medford, Ore.	High School
Numerous	Gil Harmon	Sacramento, Calif.	USDA
7/22	Don Lewis	Ruby Lake, Nevada	USFWS
7/31	Newell B. Morgan	Willows, Calif.	"
8/4	Kamel Y. Michaiel	Giza, Eqypt	Ministry of Agric.
8/8	15 N.W. Gifted Children	Seattle, Wash.	N.W. Gifted Child Assoc.
8/12	William Anderson	Gridley, Calif.	Calif. F&G
"	Jim Gilman	Redding, Calif.	"
"	Jack Slosson	"	"
"	Gary Monroe	Eureka, Calif.	"
"	Kenneth Conrad	"	"
Numerous	Frank M. Kozlik	Sacramento, Calif.	"
8/12	Floyd Hanzik	Honey Lake, Calif.	"
"	Robert A. Weld	"	"
Numerous	Harry A. George	Gridley	"
8/12	Malcolm E. McDonald	Utah	USFWS
8/18	Richard K. Tucker	Davis, Calif.	"
8/19	William E. Clark	Sacramento, Calif.	Calif. F&G
"	Brian Hunter	"	"
Numerous	Warren C. Rienecker	Gridley, Calif.	"
Numerous	Robert Dougall	Portland, Ore.	USFWS
"	Harold Kniskern	Tulelake, Calif.	TID
"	Don Chipman	Yreka, Calif.	Calif. F&G
8/26	Nicholas Whelan	Tulelake, Calif.	USNPS
8/26	Will Garner	Washington, D.C.	USFWS
"	Delmar Davis	Portland, Ore.	"
"	George Ducret	"	"
8/29-9/3	Kebede Ali	Ethiopia	Student
"	Raphael Wanjohi	Kenya	"
"	Edovard Benjamin	Rep. of Guinea	"
"	Cornelius Agobi-iwe	Nigeria	"
"	Robert D. Hostetter	Portland, Oregon	BLM
"	Warren Ahlstrom	"	USFWS
Numerous	R. A. Wonacutt	"	"
"	Lee R. Jocoby	"	"
"	David B. Marshall	"	"
"	Robert F. Russell	"	"
9/20	Fred Fahner	Tulelake, Calif.	TID
Numerous	Dave Allen	New York	Nat'l Geographic
10/7	B. Miyagowa	Davis, Calif.	U of Calif. Davis
"	Albert W. Johnson	"	"
"	Winfield H. Hart	"	"
10/12	William Graf	San Jose, Calif.	San Jose State College
10/13	Harold Norlin Johnson, MD	Berkeley, Calif.	Calif. PHS

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Date	Name	City & State	Affiliation
Numerous	Ed Lance	Tulelake, Calif.	TID
10/13	William Groves	--	Nat'l Geographic
10/22	John Lynch	Lafayette, La.	USFWS
"	J. Horton Jensen	Brigham City, Utah	"
10/26	Wendell Miller	Berkeley, Calif.	SCS
"	William Murphy	"	"
"	John Barnes	"	"
Numerous	R. D. Harris	Vancouver, B.C.	Canadian Wildlife Service
Numerous	Dave Bunger	Klamath Falls, Ore.	USBR
"	Robert F. Gray	Weed, Calif.	Calif. F&G
"	Vernon Ekedahl	Portland, Ore.	USFWS
12/14	Bill Scott	"	Portland Zoo
12/15	Dr. Richard Marston	Corvallis, Ore.	HEW

C. Refuge Participation*

Robert F. Russell - Refuge Manager

1/11/65 Attended water control meeting at Klamath Falls, Oregon with other organizations concerned with Klamath Basin water problems.

3/11/65 Along with John Van den Akker, Assistant Regional Refuge Supervisor, inspected proposed Siskiyou refuge and attended meeting on same sponsored by the Associated Chambers of Commerce in Dunsmuir.

3/24 Met with Siskiyou and Modoc County Agriculture Commissioners and Bureau of Reclamation regarding microtus control on Tule Lake Refuge.

Attended weekly Rotary meetings whennot on Regional Office detail.

Robert F. Russell and William Nuess - Refuge Manager and Assistant

2/10 Attended public hearing at Henley, Oregon to discuss depredations problems with interested ranchers, farmers and sportsmen. The meeting was chairmaned by Mr. Clint Lostetter Assistant Regional Supervisor, Branch of Management and Enforcement. Refuge Manager Russell explained the purpose, objectives, and program of the Klamath Basin Refuges with special emphasis on the refuge farm program designed to alleviate spring goose depredations. Game Management Agents Garratt and Rush explained Game Management's role in spring depredations control, including enforcement of migratory bird regulations, use of bird frightening devices, and assistance available from the local management and enforcement office. Approximately 100 attended.

*Sekora

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2/19	Met with the flood control group at the Pacific Power and Light Company at Klamath Falls.

Robert C. Watson - Refuge Manager

7/28	Met with representatives of Bureau of Reclamation and extension service regarding setting up a nematode control study plot.
9/1	Presented program at the Tulelake Rotary meeting with four African students as featured guests.
9/2	Attended meeting in Berkeley regarding establishment of nematode control study plot with representatives of the University of California and Bureau of Reclamation.
9/23	Attended meeting at Tulelake Experiment Station regarding quarantine restrictions in the Southwest Sump and Panhandle areas re nematode problem.
10/29	Attended 55th meeting of the California-Nevada Interstate Compact Commission in Reno, Nevada.
11/5	Escorted eleven members of the Tulelake Garden Club through Tule Lake Refuge.
11/26-27	Conducted Golden Gate Audubon Society on tour of Tule Lake and Lower Klamath Refuges.
12/17	Attended compact review meeting with Bureau of Sport Fisheries and Wildlife and Nevada Fish and Game Department personnel in Reno, Nevada.
	Attended weekly Rotary meetings the latter part of the year.

William Nuess - Assistant Refuge Manager

1/25	Attended Klamath County Land Use Committee meeting at Klamath Falls, Oregon.
6/3	Attended Flood Control meeting in Pacific Power and Light Company office at Klamath Falls, Oregon
6/16	Attended Tulelake Basin Pheasant Habitat Development Program meeting which is under sponsorship of the Tulelake Kiwanis.
8/4	Conducted Mr. Kamel Yacoub Mickaiel, Plant Pathologist, Ministry of Agriculture, United Arab Republic, on tour of Lower Klamath and Tule Lake Refuge.

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8/8	Conducted 15 members of the Northwest Gifted Child Association, from Seattle, Washington, on tour of Tule Lake and gave talk on Bureau objectives and operations.
9/14	Presented program to 32 members of the Mt. Shasta Rod and Gun Club. Discussed current waterfowl regulations and hunting areas.
1965	Served as Assistant Scout Master, member of the Board of Review and Merit Badge Counselor, Tulelake Troop 44 in 1965.

Edward J. O'Neill - Wildlife Management Biologist

1/25-29	Participated in the Pacific Flyway wing analysis at Yuba City, California.
2/17	Attended organizational meeting of the Klamath Basin Chapter of the American Range Management Society.
3/4	Along with Messrs. Jim Keith and M. Morton met with members of U. S. Public Health regarding pesticide research program.
4/10	Gave talk and conducted tour of Lower Klamath and Tule Lake for 11 wildlife management students from Humboldt State College.
4/27	Attended Inter-Agency Big Game Habitat Recommendations meeting conducted by the Oregon Game Commission at Bend, Oregon.
5/1	Gave two talks to 49 members of the Seventh Day Adventist Outdoor Club, and conducted a tour of Tule Lake for same.
5/14	Gave talk, conducted tour of Lower Klamath for 60 Merrill, Oregon grade school students.
5/15	Gave slide talk, conducted tour of Tule Lake for two groups, 23 students of Southern Oregon College Natural History and Ornithology classes.
5/18	Conducted field botany trip for 25 Tulelake elementary school students on Tule Lake and Clear Lake Refuges.
6/9	Attended Interstate Inter-Agency Wildlife Range Habitat Management Symposium at Klamath Falls, Oregon.
6/10	Attended California section tour and meeting of the American Society of Range Management at Susanville, California.

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6/12	Gave talk and conducted tour for 60 members of the American Society of Foresters on Klamath Forest Refuge.
6/15	Conducted Mt. Shasta Sportsmen's Club on tour of Lower Klamath to inspect algae duckling losses as claimed at public meeting by County Supervisor Earl Ager.
6/17 & 30	Participated in general meetings regarding nematode research, infectation and possible controls.
7/18-8/7	Detailed to Creston, British Columbia, at the request of the Canadian Wildlife Service, to participate in formulation of a cooperative marsh development program for the Duck Lake - Kootenay Flats area.
8/12-13	Conducted tour for 14 California Fish and Game Department biologists and Game Managers and served as training instructor on local marsh management and plant collections.
11/14-16	Attended sessions of the Northwest Section of the American Society of Range Management at Corvallis, Oregon.
12/28	Gave talk and showed film to 60 members of St. Augustines Church, Merrill, Oregon.
Jan.-June	Served on Tulelake High School P.T.A. Adult Programs and Discussions Committee.
1965	Served as scribe for monthly Tulelake Basin Inter-Agency Forum meetings and tours.

Palmer C. Sekora - Refuge Manager

5/13	Gave talk to Future Farmers of America banquet at Yreka, California concerning refuge history and operations.
5/15	Conducted car and canoe tour of Tule Lake Refuge for Klamath River Boy Scout Troop 12.
5/21	Conducted 20 members of the Eugene, Oregon FFA on tour of Tule Lake Refuge.
6/10	Attended Interstate - Interagency Wildlife Habitat Management Symposium tour of the Clear Lake, Mt. Dome areas.
9/23-27	Detailed to Malheur Refuge to assist with law enforcement and check station duty during annual archery hunt.

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Gaylord L. Inman - Refuge Manager

6/12	Conducted 35 members of the Creswell, Oregon Future Farmers of America on tour of Lower Klamath Refuge.
7/15	Showed movie and conducted tour of Lower Klamath and Tule Lake Refuges for 15 teachers of the Southern Oregon College Summer Conservation Education class.
7/21	Showed movie and conducted tour of Lower Klamath and Tule Lake Refuges for nine members of the advanced biology class from Medford, Oregon High School.
11/17	Showed movie and gave talk regarding refuge operations to 30 members of the Klamath Falls, Oregon Izaak Walton League.

Delano A. Pierce - Refuge Manager

3/8-19	Attended two-week Supervisor Training Course conducted by the International Association of Chiefs of Police at Denver Colorado.

Miscellaneous

1/29-30	O'Neill, Pierce, and Sekora attended the California-Nevada Section meeting of the Wildlife Society at Davis, California.
2/26-27	O'Neill and Sekora attended the Oregon Wildlife Biologists meeting and formation of a wildlife society section at Corvallis, Oregon.
3/27-5/1	Pierce and Inman attended the Refuge Manager Training School at Arden Hill, Minn.
6/4	O'Neill, Nuess, and Sekora attended the antelope hunting game commission public hearing at Alturas, California.
6/15	Nuess and O'Neill attended the Tulelake Pesticides Review Committee meeting.
7/13	Watson, Nuess, O'Neill, Morfitt, and Shults participated in the formal dedication of Lower Klamath Refuge as a registered National Historic Landmark.
7/14	Watson and Nuess met with California State Agriculture Department representatives regarding a nematode control survey.

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8/8-9/20	Sekora and Inman participated in the Canadian Banding program at Brackett Lake, N.W.T. and Mills Lake, N.W.T. respectively.
8/11	Watson and O'Neill met with U.S. Public Health Service representatives regarding submission of data to assist PHS in the Upper Klamath Lake algae study.
8/29-9/2	Refuge personnel hosted four African students under the African Student Conservation Training Program sponsored by the National Park Service. Students participating in the training program were from Nigeria, Ethiopia, Kenya, and the Republic of Guinea.
9/9-13	Refuge personnel assisted with Bureau-Refuge display at Tulelake-Butte Valley Fair.
Sept.-Oct.	Refuge personnel assisted Dave Allen, photographer, from the National Geographic Magazine, take pictures of waterfowl and refuge activities for a story the magazine will publish on the National Wildlife Refuge system.
10/8	Refuge personnel met with state and federal game enforcement officers in preparation for the waterfowl hunting season.
10/9	Watson and Nuess conducted a pollution abatement party, headed by Major General Pletcher, Deputy Surgeon General of the Air Force, on tour of the Tule Lake water facilities.
10/9	Ed Downing showed movies to 75 members of the Seventh Day Adventist Outdoor Club of Merrill, Oregon.
10/23-24	Watson and Sekora conducted members of the Portland Audubon Society on tours of Tule Lake and Lower Klamath Refuges.
11/6	Watson, O'Neill, and Sekora conducted members of the Tulelake Basin Inter-agency Forum on tour of Tule Lake Refuge.
11/19	Watson, Mac Farlane, Inman, and Sekora attended the peace officers dinner in Tulelake sponsored by Mrs. Victoria Thaler.
11/26-27	Watson and O'Neill conducted Biologist Bob Harris, Canadian Wildlife Service, on tour of Tule Lake Refuge.

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D. Hunting*

Waterfowl: During the straight 90-day waterfowl season, October 9 to January 6, an estimated 15,700 hunters harvested approximately 24,340 birds for an average of 1.55 birds per hunter per day on the Tule Lake hunting area. Goose kill averaged .79 per hunter and duck kill .76 per hunter per day. Estimated crippling loss was 4,900 birds.

Marsh hunting was excellent from the opening through mid-November with an average daily bag of well over two birds. Drawdown of the sump was initiated by the Tulelake Irrigation District November 4. As usual this limited boat travel into many areas of the marsh. Cold weather closed much of the marsh by mid-November but a few potholes remained open through the season's end to provide some hunting for those hardy enough to hike to them. Marsh hunters averaged, for the season, .50 geese and 1.72 ducks for a total average of 2.22 birds per hunter per day.

Field hunting improved over last year although migration was two weeks later. "Bluebird weather" dominated the first two weeks and resulted in poor hunting success. The migrational peak occurred the first of November as did the first of several fast moving storms that frequented November. This combination provided excellent hunting that lasted through mid-November when snow and freezing temperatures stimulated a mass waterfowl movement out of the area. However, goose hunting remained excellent in the League of Nations and on the east side of the Frog Pond till the first of December and again from mid-December to the season's end. Field hunters averaged .97 geese and .16 ducks for a total of 1.13 birds per hunter per day.

Geese accounted for 51 percent of the bag with the white-fronted goose making up 38 percent of the total kill. Pintails and mallards accounted for 22 percent and 15 percent of the bag respectively.

The colored hunting sign program initiated in 1962 on the Klamath Basin Refuges was modified this year with the addition of metal signs to replace the paper and wood signs. The size, sign legend, and color scheme remain the same. This replacement will eliminate having to remove the majority of these signs during the off season, maintain and store them. This should result in an annual savings of approximately $3,000.

Hunter success data for the past five years is shown in the following table.

*Sekora

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WATERFOWL HUNTER-SUCCESS DATA - TULE LAKE REFUGE*

Year	Total Hunters (Hunter Days)	Goose Bag	Duck Bag	Total Bag	Geese/Hunter	Ducks/Hunter	Total Birds/Hunter
1961	7,689	4,767 1/	9,150 1/	13,917 1/	.62	1.19	1.81
1962	11,586	5,909	6,141	12,050	.51	.53	1.04
1963	13,822	11,887	11,748	23,635	.86	.85	1.71 2/
1964	13,527	10,145	10,281	20,426	.75	..76	1.51
1965	15,701	12,404	11,933	24,337	.79	.76	1.55
5-year Average	12,465	9,022	9,851	18,873	.71	.82	1.53

NOTE: Waterfowl figures used include only birds bagged whereas column 9 of NR-1C includes the crippling loss as reported by hunters.

1/ Corrected 1961 figures

2/ Corrected 1963 figures

*Sekora

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PERCENT SPECIES IN BAG

Species	1965	1964	1963	1962	1961
Geese					
Canada goose	2	2	1	2	2
Cackling goose	7	4	7	3	6
White-fronted goose	38	38	32	42	21
Snow goose	4	5	10	3	5
Ducks					
Mallard	15	14	11	13	10
Widgeon	2	3	2	5	5
Pintail	22	24	24	24	34
Green-winged Teal	4	2	3	1	2
Shoveler	3	2	7	3	8
Redhead	1	1	0	0	0
Other	2	5	3	4	7

Pheasants: During the sixteen-day season, November 20 to December 5, an estimated 2,619 hunters bagged approximately 1,755 rooster pheasants for an average of .67 bird per hunter day. The opening weekend received 75 percent of the total hunter use and 83 percent of the total birds bagged this period.

One complaint opening weekend was that the birds were holding too tightly. Some hunters admitted their dogs even caught birds before the birds could leave the ground.

The bag limit was two roosters per hunter per day with a season limit of ten.

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Hunter success data for the last five years is shown in the following table:

Year	No. of Hunters	Estimated Birds Killed	Hunter Success
1961	2,824	1,115	.39
1962	2,034	1,164	.57
1963	3,446	2,515	.73
1964	2,010	1,590	.79
1965	2,619	1,755	.67
AVERAGE	2,587	1,628	.63

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WATERFOWL AND PHEASANT HUNTING ONLY DURING REGULAR CALIFORNIA SEASON

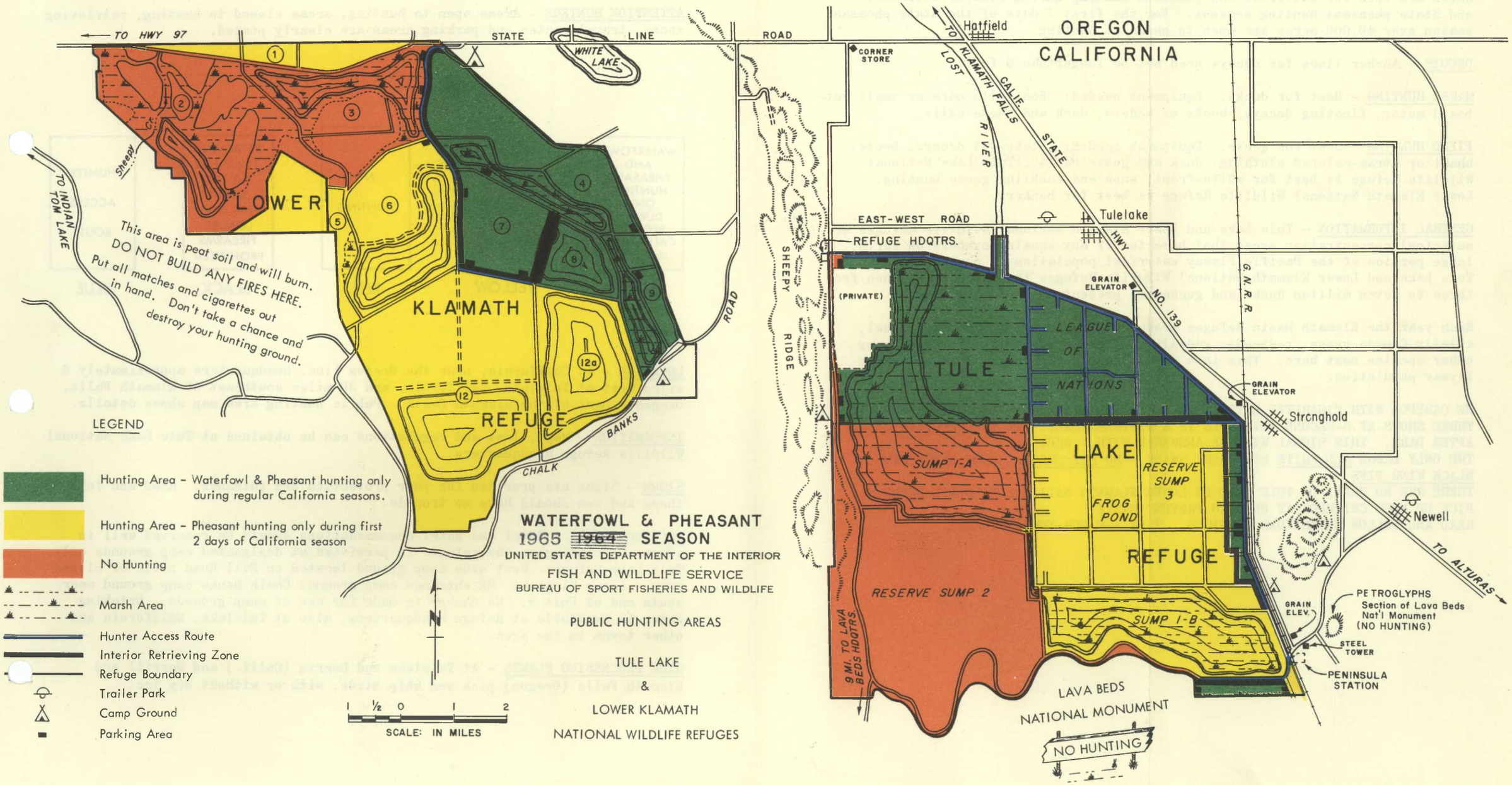
PHEASANT HUNTING ONLY DURING FIRST 2 DAYS CALIFORNIA SEASON

NO HUNTING

RETRIEVING ZONE FOR 100 YDS BEHIND THIS SIGN LOADED FIREARMS PROHIBITED

HUNTER ACCESS ROUTE

HUNTING PERMITTED BEYOND THESE SIGNS AS INDICATED



WATERFOWL & PHEASANT
1965 ~~1964~~ SEASON

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

PUBLIC HUNTING AREAS

TULE LAKE
&
LOWER KLAMATH
NATIONAL WILDLIFE REFUGES

WEATHER CONDITIONS - Average day and night temperature: November 40° to 10°. Water areas freeze about November 15.

LICENSE - Valid State license and pheasant tags are required. No charge made by U. S. Fish and Wildlife Service for hunting privileges.

HUNTING PRIVILEGES - All hunters have equal rights on a first-come-first-served basis to hunt in any area within the public hunting ground. Respect the other fellow's location. Including water and marsh areas about 22,000 acres are open for waterfowl and pheasant hunting during regular waterfowl and State pheasant hunting seasons. For the first 2 days of the State pheasant season over 40,000 acres are open to pheasant hunting.

DECOYS - Anchor lines for decoys need not be longerthan 6 feet.

MARSH HUNTING - Best for ducks. Equipment needed: Boat with oars or small outboard motor, floating decoys, boots or waders, duck and goose calls.

FIELD HUNTING - Best for geese. Equipment needed: Stake-out decoys, boots, khaki or straw-colored clothing, duck and goose calls. Tule Lake National Wildlife Refuge is best for white-front, snow and cackling goose hunting. Lower Klamath National Wildlife Refuge is best for honkers.

GENERAL INFORMATION - Tule Lake and Lower Klamath National Wildlife Refuges are waterfowl concentration areas that have few if any equals anywhere on earth. A large portion of the Pacific Flyway waterfowl population is concentrated on Tule Lake and Lower Klamath National Wildlife Refuges through October when from three to seven million ducks and geese are present.

Each year the Klamath Basin Refuges produce approximately 75,000 waterfowl, chiefly Canada geese, redheads, gadwalls, mallards and teal. However, many other species nest here. This is a significant contribution to the Pacific Flyway population.

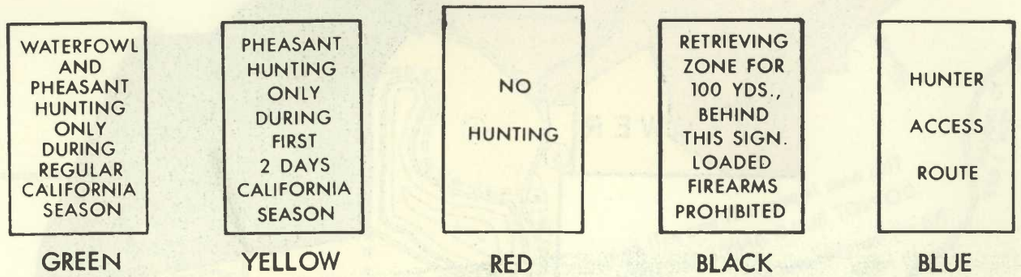
BE CAREFUL WITH CIGARETTE BUTTS. DO NOT BUILD FIRES ON PEAT SOILS.
THREE SHOTS AT 3-SECOND INTERVALS IS A DISTRESS CALL. IT IS EFFECTIVE ONLY AFTER DARK. THIS SIGNAL WILL BE ANSWERED WITH 1 SHOT.
THE ONLY LARGE ALL WHITE BIRDS ARE SWANS - DO NOT SHOOT. SNOW GEESE HAVE BLACK WING TIPS.
THERE ARE NO BRANT ON TULE LAKE OR LOWER KLAMATH NATIONAL WILDLIFE REFUGES.
PICK UP YOUR CRIPPLES AT ONCE TO PREVENT WASTE.
READ AND FOLLOW DIRECTIONS ON SIGNS. THEY ARE FOR YOUR GUIDANCE.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
TULE LAKE - LOWER KLAMATH
NATIONAL WILDLIFE REFUGES

SIGNS & GENERAL HUNTER INFORMATION

ATTENTION HUNTERS - Areas open to hunting, areas closed to hunting, retrieving zones, travel routes and parking areas are clearly posted.

WATCH FOR THESE SIGNS



LOCATION - In California, near the Oregon line; headquarters approximately 5 miles west of Tulelake, California, and 30 miles southeast of Klamath Falls, Oregon - part of the Klamath Basin. Public hunting area map shows details.

INFORMATION - Maps, laws and regulations can be obtained at Tule Lake National Wildlife Refuge Headquarters.

SIGNS - Signs are provided for your protection and guidance. Read and follow these and you should have no trouble.

ACCOMMODATIONS - Hotel and motel accommodations should be reserved well in advance. Camping on the refuges is permitted at designated camp grounds only. Tule Lake Refuge: West side camp ground located on Hill Road north of closed area. Lower Klamath: NE entrance camp ground; Chalk Banks camp ground near south end of Unit 9. No charge is made for use of camp grounds. Drinking water is available at Refuge Headquarters, also at Tulelake, California and other towns in the area.

GAME PROCESSING PLANTS - At Tulelake and Dorris (Calif.) and Merrill and Klamath Falls (Oregon) pick and ship birds, with or without dry ice.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife
Tule Lake and Lower Klamath National Wildlife Refuges
Headquarters: Tulelake, California

GENERAL INFORMATION TO HUNTERS

Waterfowl hunting is available on 16,000 acres of water and marsh and agriculture fields on Tule Lake and Lower Klamath National Wildlife Refuges. Areas open to waterfowl hunting are also open for pheasant hunting during the California State pheasant season. Additional refuge areas are open to pheasant hunting only during the first two days of the pheasant season.

The waterfowl hunting season generally starts about mid-October and continues into early January. The pheasant hunting seasons coincide with general opening season dates for the States of Oregon and California. Oregon's pheasant season usually starts about mid-October and continues for approximately a month. California's pheasant season starts about mid-November and runs for about two weeks. Tule Lake and Lower Klamath Refuges are located in California; however, Oregon landowners in the Klamath Basin will oftentimes grant permission to hunt their properties, and public lands north of Lower Klamath Refuge in Oregon are open for both pheasant and waterfowl hunting.

Waterfowl and pheasant hunters are required to have a valid state hunting license. In addition, waterfowl hunters, who have attained sixteen years of age, must possess a current Migratory Bird Hunting Stamp, and pheasant hunters (California) must have valid pheasant tags. No fee or permit is required to hunt on the Federal Refuge public hunting areas; it is not necessary to check in or out of the hunting areas.

Duck populations are usually highest the second or third week in October. Goose numbers generally peak in late October and early November. However, the best hunting does not necessarily coincide with periods of highest waterfowl concentrations. Weather, food availability, hunting pressure and the feeding habits of the birds all affect the quality of waterfowl hunting and it is virtually impossible to accurately predict the best time and place to hunt.

Experienced hunters come equipped with decoys, all-weather apparel (especially boots), and frequently a boat. Hunters who get back in the more remote parts of the marsh or field public hunting areas and set up spreads of decoys almost invariably get better quality shooting and score better than do "firing line" hunters.

Pheasant hunting is generally best during the opening weekend.

Several duck picking establishments are available locally for processing and shipping waterfowl in fresh or frozen condition.

Cold weather and storms are likely to occur after mid-November and hunters should be prepared for unfavorable travel conditions. Freeze-ups may occur any time after mid-November.

Unimproved campgrounds are located near the public hunting areas; however, facilities are limited and use is restricted to the period immediately prior to and during the waterfowl hunting season. Trailers may be parked on the campgrounds.

A commercial boat livery is available on the west side of the Tule Lake marsh.

The Kiwanis Club of Tulelake sponsers a pheasant hunting program on private lands in the Tulelake basin. Several thousand acres are available to the hunter willing to pay a modest fee for this hunting privilege. Further information can be obtained by writing the Tulelake Kiwanis Club or contacting Club members.

Other enterprises such as private hunting lodges and clubs offering waterfowl hunting as well as guide service will be found in the general area.

Some farmers in the area allow hunting with permission. It is the responsibility of the individual hunter to contact land owners before hunting on private property.

Numerous motels and hotels as well as several trailer courts provide a variety of accommodations.

For further information, contact the Tule Lake Refuge headquarters personally or by mail, addressed to: Tule Lake National Wildlife Refuge, Route 1, Box 74, Tulelake, California 96134. For additional information on hotel, motel and trailer court accommodations, you may wish to write the Tulelake Chamber of Commerce, Tulelake, California.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife
Tule Lake and Lower Klamath National Wildlife Refuges
Headquarters: Tulelake, California

DIGEST OF HUNTING REGULATIONS - 1965 SEASON

PERMITS: All hunters must possess a valid California State hunting license. All hunters 16 years of age or older must possess an unexpired Duck Stamp validated by his signature written across the face of the stamp in ink before hunting migratory waterfowl. No other permit is required.

ACCESS ROADS AND PARKING: With the exception of the first two days of the pheasant hunting season when hunter travel and parking are permitted throughout the areas open to pheasant hunting, hunter travel is restricted to roads posted with Hunter Access Route signs, and the parking or leaving unattended of any vehicle on the refuge area shall be limited to those places posted for that purpose. Cars must be parked at all times so as to keep roads open.

BOAT AND BOAT TRAILERS: The use of airthrust boats is prohibited. Sculling is prohibited. Boats with motors attached when used for hunting must be beached, resting at anchor, or fastened within or tied immediately alongside of any type of fixed hunting blind. Boat trailers or vehicles may not be parked to obstruct boat launching sites. Shooting pheasants from boats prohibited.

DOGS: Not to exceed two dogs per hunter may be used to hunt waterfowl, coots, and pheasants.

RETRIEVING ZONES: The 100-yard wide strip within and contiguous to the exterior boundaries of the Tule Lake and Lower Klamath Refuges is designated a retrieving zone. Posted retrieving zones 100 yards in width are established as follows:

Tule Lake Refuge: (a) Along the south side of League of Nations Unit from Sump 1A to Frog Pond hunting unit, the west and south sides of Frog Pond hunting unit, and the east side of refuge buffer unit D-6; (b) Along the north side of the Panhandle Buffer Strip including the Panhandle Sump dike.

Lower Klamath Refuge: Along the west side of Unit 4, the west, south and east sides of Unit 7, and the west side of Unit 8. This includes the dike roads and berms.

Refer to Hunting Area Map for details.

Possession of firearms in the retrieving zones or closed portions of the refuges is prohibited, except that unloaded firearms may be taken through the zone or closed area when necessary to reach or leave the hunting area.

ACCESS TO THE HUNTING AREAS: Hunters may not enter the public hunting areas earlier than 1½ hours before start of shooting time and must be off the areas one hour after the close of shooting time. Entry to the public hunting area is contingent upon the right of Bureau of Sport Fisheries and Wildlife personnel engaged in enforcement work or in collection of hunter kill data to stop and search the vehicle in which enterer is travelling.

DECOYS AND OTHER PERSONAL PROPERTY: Leaving boats, decoys or other hunting equipment in other than designated areas (boat launching sites) is prohibited. Boats, decoys or other equipment so left one hour after close of shooting time will be subject to impoundment and disposal by sale.

WANTON WASTE OF MIGRATORY GAME BIRDS: Section 10.14, Code of Federal Regulations provides that no person shall kill or cripple any migratory game bird pursuant to this part without making a reasonable effort to retrieve the bird and include it in his daily bag limit.

HUNTING BLINDS: Any person may construct and use a hunting blind in a natural growth of tules or cover but construction of a blind does not establish priority to the blind or hunting area. Entry for the purpose of constructing a blind or surveying hunting conditions prior to the opening day of the waterfowl season shall be by special permit only. Blinds not removed by January 15 become Government property and subject to disposal. Portable blinds or blinds made of vegetative material may be used for hunting. The digging of pits or hunting therefrom is prohibited. Blinds in designated pass shooting areas may be constructed only at locations staked and appropriately posted by the officer in charge. Hunting in areas so staked and posted is prohibited except at staked blind sites.

WATERFOWL SEASON: Straight season from October 9, 1965 - January 6, 1966.

BAG AND POSSESSION LIMITS: (No open season for whistling swan and grebes).

Ducks: 4 birds per day, 8 birds in possession. The daily bag limit may not include more than 2 wood ducks, 2 canvasbacks; and, in the alternative, 3 mallards or 3 pintails or 3 in the aggregate of both species. The possession limit may not include more than 2 wood ducks, 2 canvasbacks; and, in the alternative, 6 mallards or 6 pintails or 6 in the aggregate of both species.

Geese: 3 geese per day and 6 in possession except that the daily bag limit may be increased to 6 provided 3 or more are white geese. The bag and possession limit may contain not more than 1 Ross' goose.

Coots: 25 per day or in possession.

Mergansers: American, red-breasted, and hooded. The daily bag limit is 5 and the possession limit is 10, of which not more than 1 daily and 2 in possession may be hooded mergansers.

SHOOTING HOURS: (Tule Lake - Klamath Basin, California) ½ hour before sunrise to sunset, including opening day)

Date	Start	Stop	Date	Start	Stop	Date	Start	Stop
Oct. 9	6:41 a.m.	6:35 p.m.	Nov. 2	6:09 a.m.	4:59 p.m.	Dec. 7	6:50 a.m.	4:35 p.m.
10	6:42 "	6:34 "	6	6:14 "	4:55 "	11	6:54 "	4:34 "
11	6:43 "	6:33 "	9	6:18 "	4:51 "	14	6:57 "	4:35 "
12	6:44 "	6:31 "	13	6:22 "	4:47 "	18	7:00 "	4:36 "
16	6:48 "	6:24 "	16	6:27 "	4:45 "	21	7:01 "	4:37 "
19	6:51 "	6:20 "	20	6:32 "	4:41 "	25	7:03 "	4:39 "
23	6:55 "	6:13 "	23	6:36 "	4:40 "	28	7:04 "	4:41 "
24	6:56 "	6:12 "	27	6:40 "	4:37 "	Jan. 1	7:04 "	4:44 "
26	7:01 "	6:08 "	30	6:44 "	4:36 "	4	7:04 "	4:48 "
30	7:06 "	6:03 "	Dec. 4	6:47 "	4:35 "	6	7:04 "	4:49 "
*31	6:07 "	5:02 "						

*Daylight saving time changes to standard time.

PHEASANT SEASON: Regular California State season: November 20 - December 5, 1965. (For refuge areas open to hunting during regular State season and special two-day season see refuge hunting map)

SHOOTING HOURS: 8 a.m. - 4:30 p.m.

LIMIT: Two male pheasants per day, ten male pheasants per season. Fill out, punch and attach pheasant tag IMMEDIATELY after taking a pheasant.

UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
Bureau of Sport Fisheries and Wildlife
Tule Lake and Lower Klamath National Wildlife Refuges
Headquarters: Tulelake, California

SUPPLEMENTAL HUNTER INFORMATION HANDOUT - 1965

The following information has been prepared to explain changes which have been made in the management of the refuges and the public hunting areas and to answer the more common questions posed by hunters.

(1) A number of changes have been made in the management of Lower Klamath Refuge which will affect hunting.

Two Unit "1" fields are flooded for quackgrass control and will remain flooded throughout most of the hunting season.

The south part of Unit "7" was sown to Gaines winter wheat in late August and early September. This will provide fall and spring browse for geese and should be very helpful next spring in controlling depredations to private pasture and hay land in the basin. The green browse should attract geese this fall and improve goose hunting. The north part of Unit "7" is in standing grain.

Unit "6" and Unit "8", which have a history of past botulism losses, were drained in July to eliminate botulism and to stimulate the growth of emergent marsh. They are now reflooded for the hunting season since the botulism hazard is past. The volunteer vegetative growth and native weed seeds should make these units very attractive to waterfowl as they are reflooded.

The last of the 1964 Christmas floodwaters were recently removed from the north part of Unit "6" and Unit "12". Engineering surveys must be conducted and repairs made to interior dikes before the units can be functional once again.

Public Law 88-567 (Kuchel Bill) dedicated additional public lands in Klamath basin to wildlife conservation. These lands will be open to hunting during the 1965-66 season and it is hoped to have the more important areas posted with green colored "Public Hunting Area" signs. They will include the following: (a) White Lake - 1,189 acres lying astride the Oregon-California border. Most of this area is flooded and should provide some excellent shooting; (b) Sheepy East - cropland lying east of Units "4" and "9"; (c) Sheepy West - grassland lying south of Unit "2"; (d) Isolated tracts upon and near Sheepy Ridge.

For additional information contact Refuge Headquarters.

(2) Public hunting maps of Tule Lake and Lower Klamath Refuges and the signs on these two areas have been color-coded. Areas open to waterfowl and pheasant hunting during regular seasons are shown on the map in green; areas open to pheasant hunting only for the first two days of the California State pheasant season are shown in yellow. Areas closed to all hunting are indicated on the map in red. Hunter access routes are designated in blue on the map and interior retrieving zones, in which hunters may enter without loaded firearms to pick up dead and crippled waterfowl knocked down, in black. Colored signs with which the refuges are posted conform to

colors used on the Tule Lake - Lower Klamath hunting area map. These signs are prominently displayed at all entrances to the Tule Lake and Lower Klamath public hunting areas. Red "No Hunting" signs are used only in problem areas such as along the open-closed hunting line within the refuge where "blue goose" boundary signs are not applicable.

(3) During the waterfowl and pheasant hunting seasons, roads within the Tule Lake and Lower Klamath Refuges public hunting areas open to hunters and the visiting public are posted with blue, Hunter Access Route, signs. All other refuge roads are closed and are so posted. Roads which are designated closed with signs are closed in all instances, whether or not the roadway is blocked with a cable.

(4) One of the questions frequently asked by hunters is why the Fish and Wildlife Service flys over the basin refuges shortly before and during the season. Some hunters have the impression that these flights are to haze birds back into the closed portion of the refuges where they are safe from the hunter. The purpose of aerial flights immediately before and during the hunting season is to obtain accurate census figures of the waterfowl population. This information is in great demand by newspapers, radio and TV, who wish to acquaint the hunting public with the waterfowl population. These flights have no affect on waterfowl hunting.

(5) A common question posed by hunters is why the refuge staff insists on feeding the waterfowl; the implication being we are feeding the birds within the closed area so that they will not be killed. In the fall of each year we endeavor to trap and band a sample of ducks and geese to obtain information on waterfowl mortality and migration routes. It is necessary to put out two or three bushels of grain each day to attract birds to the trap. It is obvious to anyone seriously considering the matter that two or three bushels of grain scattered around a trap are not going to affect the refuge waterfowl population which may number three million and which consume in excess of three quarters of a million pounds of food daily.

Nothing more demoralizing to mgr. than not to be backed up when "chips are down"!

TL E. Violations*

One hundred thirty three cases were made by refuge personnel on or near the Klamath Basin National Wildlife Refuges. Thirty one were violation of a refuge regulation that prohibits entering the hunting area prior to ninety minutes before legal shooting time. The U. S. Attorney in Sacramento declined to prosecute these particular cases and since State Courts have no jurisdiction over refuge regulations, we are left holding the proverbial "bag". An effort will be made to apply pressure on Federal Courts to accept these so called "trivial" cases through the Department of Justice in Washington. In addition, there is evidence that the California Game Commission might consider adopting regulations that would give the State jurisdiction over some, if not all, refuge regulations.

As in the past, the majority of cases involved late shooting and hunting in closed areas. Sixteen hunters were cited for overlimits of mallards and/or pintails. May other complaints were voiced about the wording "...three mallards or three pintails or three in the aggregate of both kinds". Most hunters indicated that different wording would have made the limit more explicit.

This was the first hunting season in many years that no hunter was cited for shooting a swan.

Robert L. Barber, Assistant Refuge Manager, Benton Lake National Wildlife Refuge, Montana and John Kiger, Assistant Refuge Manager, Desert Game Range, Nevada assisted with enforcement and bag check work for the first ten weeks of the hunting season. In addition to refuge personnel, Game Management Agents from Oregon and California and the local California State Game Warden cooperated in enforcement activities. Lava Beds National Monument personnel patrolled along the common refuge boundary line during pheasant season.

The following list contains cases that have cleared California Justice Courts in Tulelake, Newell, and Dorris, and the U. S. Commissioners Courts in Klamath Falls, Oregon, and Alturas and Sacramento, California. Section I lists the 1964 cases not included in the 1964 Narrative Report; Section II contains the 1965 cases cleared to date.

*Annear and Dixon

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Section I

Justice Court - Dorris

Date	Name of Violator	Violation	Officer	Fine
10/25	Roger L. Ellis	Hunt w/out license	Davies	Dismissed
11/7	Paul D. Smith	Late shooting -14 min.	Pierce	cannot be located
11/20	Lewis C. Foster	Late shooting-12 min.	Davies	$25.00
12/13	Willman C. Stetton	Late shooting-22 min.	Pierce	20.00
12/19	John L. Miller	Hunt w/out license	"	25.00

Justice Court - Tulelake

12/19	Charles W. Spierling	Late shooting-16 min.	Pierce	16.00

Justice Court - Newell

11/21	George W. Veale	Fail to punch ph. tag	McLaury	25.00
11/28	Bill Miller	Loaded gun in closed area	Inman	50.00
11/28	Francis J. Vistocco	" " " "	"	50.00
12/14	Jack O. Potter	Overlimit of geese	Pierce	50.00

Justice Court - Klamath Falls

11/7	John C. Lindmeir	Hunt in closed area w/out license or duck stamp	Sekora	25.00 15. sus.
"	Dale Musgrove	" " " "	"	Juvenile-license sus. 30 das.
"	Keith E. Jessup	Hunt in closed area	Sekora	25.00 15. sus.
"	Lloyd Mergal Albert J. Stone	Shoot protected species (swan-Joint possession)	Inman	150./100.sus 100./65. sus
10/20	John E. Tinker	Late shooting-23 min.	Pierce	Juvenile-license sus. 30 days.

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Section II

Justice Court - Tulelake

Date	Name of Violator	Violation	Officer	Fine
10/9	Albert G. Cooper	Overlimit/mallard and pintails	Davies	$25.00
"	Kirk A. Brauning	Exceeded aggregate daily limit-mallard and pintail	"	25.00 10.sus
"	Neil E. Buller	"	"	25.00 10. sus
"	Vlademir Kapsoff	Exceeded aggregate daily limit - pintails	Inman	25.00
"	Fedor Kapsoff	Exceeded aggregate daily limit-mallard/pintail	"	25.00
"	Lee H. Whitson, Jr.	"	"	25.00
"	Claude L. Gray, Jr.	"	"	25.00
"	Lee H. Whitson, Sr.	"	"	Case dismissed
"	Bruce H. Whitson	"	"	25.00
"	Harlan R. Whitson	Exceeded aggregate daily limit - mallards	"	25.00
"	Ben E. Chantry	Early shooting-11 min.	Watson	27.00
"	Albert G. Epes	" " 11 min.	"	27.00
"	C. Neil Vann	" " 12 min.	"	29.00
10/10	George O. Walgamott	Exceeded aggregate daily limit - Pintails	Inman	25.00
10/11	David B. Vaccaro	Exceeded possession limit of mallard and pintails	Barber	30.00
10/16	Douglas Winchester	Late shooting-12 min.	Davies	24.00
10/17	Robert R. Wheeler, Jr.	Late shooting-18 min.	Barber	Juvenile-no action
"	Jack W. Higgins	" " 18 min.	"	"

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Justice Court - Tulelake - Cont.

Date	Name of Violator	Violation	Officer	Fine
10/17	Gary A. Wheeler	Late shooting-18 min.	Barber	Juvenile-no action
"	Dennis W. May	Late shooting-18 min.	"	"
10/19	Kenneth Seibeck	Hunt in closed area	Davies	25.00
"	Raymond Hazelhiehn	Late shooting-13 min.	Barber	Juvenile-no action
10/23	James C. Raulston	Hunt w/out license	Nuess	25.00 12.50 sus.
11/1	J. Clayton Gary	Hunt in closed area	Christensen	25.00
11/4	Michael V. Rinaberger	Late shooting-13 min.	Barber	Juvenile-no action
11/6	Lennard W. Palmiter	Possess dressed bird	"	25.00
"	Kenneth R. Moore	" " "	"	25.00
"	Frank J. Martinez	" " "	"	25.00
11/7	John D. Ferguson	Late shooting-20 min.	Inman	25.00
"	Robert P. Gibson	" " 20 min.	"	25.00
"	James J. Zelny	" " 20 min.	"	25.00
11/12	Terry W. Alcorn	Late shooting-11 min.	Barber	Juvenile-no action
11/14	George P. Barber	Overlimit of dark geese	Davies	25.00
11/25	William P. Olkjer	Possess dressed bird	Nuess	10.00
"	Bobby P. Milligan	" " "	"	10.00
12/5	Randy R. Messenger	Hunt in closed area	Inman	10.00
"	John Randall Messenger	" " "	"	10.00
"	Harold C. Jensen, Jr	" " "	"	10.00
"	Harold C. Jensen, Sr.	" " "	"	10.00
11/4	Larry L. Thomas	Late shooting-13 min.	Barber	26.00 fine sus.

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Justice Court - Newell

Date-	Name of Violator	Violation	Officer	Fine
10/11	Louie J. Lomonaco	Late shooting-12 min.	Barber	25.00
"	Manley G. Suess	" " 10 min.	"	25.00
"	Paul J. Benson	" " 10 min.	"	25.00
11/19	Lloyd E. Parker	Hunt in closed area	Davies	25.00 10. sus.
11/18	Frank C. Henning	" " "	Kiger	25.00

Justice Court - Dorris

10/21	Lloyd E. Cantrall	Hunt in closed area	Inman	25.00 10. sus
"	Ernest R. Harvey	" " "	"	25.00 10. sus
10/22	Gerald E. Hanks	Shoot & kill non-game protected bird-Gull	Inman	25.00
10/24	Fred L. Holland	Hunt in closed area	Kiger	25.00
"	Mildred Holland	" " "	"	25.00
10/28	Lester Jerome	" " "	"	25.00
"	James F. Gallagher	" " "	"	25.00 15. sus.
10/29	Gilbert W. Gendreau	Late shooting-15 min.	Davies	15.00
"	Edwin Earl Keith	" " 15 min.	"	15.00
"	Terry L. Frazier	Hunt in closed area	Sekora	25.00
"	Charles R. Walton	" " "	"	25.00
10/30	Chester H. Spiering	Dressed bird in field	Barber	15.00
10/31	Floyd D. Breshears	Late shooting-10 min.	Sekora	Juvenile- no action
11/6	Gary L. Arntz	Hunt in closed area	Sekora	25.00 fine sus.
"	Wayne W. Singley	" " "	"	"
"	Garvan B. Bowman	" " "	"	"

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Justice Court - Dorris - Cont.

Date	Name of Violator	Violation	Officer	Fine
11/6	Harold Hudson	Hunt in closed area	Sekora	25.00
11/7	Charles G. Ferguson	" " "	Nuess	15.00
"	Peggy Ann Ferguson	" " "	"	15.00
"	Richard J. Holly	" " "	"	25.00
"	Arthur A. Gibbons	" " "	Davies	25.00
"	Warren F. Moore	" " "	"	Juvenile-no action
"	David N. Gibbons	" " "	"	"
11/8	Howard K. Welch	Early shooting-9 min.	Davies	10.00
11/11	John K. Harroun	Hunt in closed area	Kiger	Juvenile no action
"	Calvin S. Lees	" " "	"	15.00
11/20	Richard M. Garcia	" " "	Nuess	10.00
"	Ronald W. Miller	Early pheasant shooting - 31 min.	Davies	20.00
"	David L. Hall	Early pheasant shooting - 35 min.	"	20.00
11/22	Earl L. Newell	Hunt in closed area	Annear	25.00
"	James W. Craig	" " "	"	25.00
"	Ronald Butts	" " "	"	Juvenile No action
"	Mildred E. Newell	" " "	"	25.00
11/23	Russell Gatzke	Late shooting-12 min.	Nuess	15.00
"	Victor Z. Hanson	" " 15 min.	Davies	15.00
11/27	David A. Marshall	" " 21 min.	Inman	20.00
12/4	John C. McBeth	Daily overlimit-ducks	Barber	10.00

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Justice Court - Dorris - Cont.

Date	Name of Violator	Violation	Officer	Fine
12/3	Martin Martinez	Exceeded aggregate daily limit - Mallard/pintail	Barber	10.00
"	Myrna W. Weber	Exceeded aggregate daily limit - pintail	"	25.00
"	Donald C. Weber	"	"	25.00
12/30	Robert H. Cobun	Late shooting-17 min.	Inman	15.00

District Court - Klamath Falls

11/5	Eddie L. Now	Late shooting-19 min.	Sekora	30.00
11/7	Geryld E. Ellis	" " 17 "	"	30.00
11/8	Merlin L. Bade	Shooting from moving vehicle	Annear	30.00

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F. Safety*

Monthly staff and station SAFETY Committee mmetings were held as scheduled.

Four accidents occurred during the reporting period:

1. January 15: Khlar Heaton, Heavy Duty Mechanic, picked up an acetylene welding tank from the oil dock and carried it, over icy and snowy ground, into the shop. He experienced no pain at the time, but did feel slight back pains over that weekend. He returned to work Monday, but his back became more painful as the day progressed. Tuesday his back was X-rayed, revealing a twisted joint, which resulted in a pinched nerve. His subsequent recovery accounted for five lost-time days. The Station SAFETY Committee recommended objects of such size and weight should be handled by two men.

2. April 15: Lowell Green, Maintenanceman II, in the process of installing a headgate, was one of two men, working below, receiving rocks rolled from two men working above. A rock released by the left man above rolled diagonally, rather than straight down the bank, striking the man on the right (Mr. Green). Mr. Green normally received rock only from the man on the right and did not anticipate receiving rock from the man at the left. The rock struck his right index finger, smashing it against another rock. Mr. Green went immediately to the local doctor and was advised he had fractured the tip of his finger. He was treated and returned to work an hour later. It was recommended by the Station SAFETY Committee that when rock-placing work is being undertaken, special heavy-duty leather rock-handling gloves should be utilized.

3. April 28: Palmer Sekora, Refuge Manager Trainee, was lifting a sign into position for hanging at the Klamath Forest Refuge. The sign weighed approximately 150 pounds and Mr. Sekora was alone, so he was making use of a handyman jack to elevate the sign. The jack slipped, causing the sign to fall to one side, thereby pushing the top of the jack toward Mr. Sekora. The upper end of the jack struck him, resulting in a cut on his left temple and cuts and bruises on his nose.

   It was concluded by the SAFETY Committee that too much was trying to be accomplished with too little. They recommended that an additional person or two should be used when hanging signs. It was also recommended that the trip to the Klamath Forest Refuge (100 miles from headquarters) should be made by two people. This accident might have resulted in a severe

not necessary. We expect our people to use good judgement & exercise reasonable care & caution. R

*Annear

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head injury necessitating immediate first aid or further medical care. Lack of communication between this refuge and headquarters makes working alone a hazardous situation.

4. December 21: Palmer Sekora, Refuge Manager Trainee, was driving around a curve on an icy stretch of road. Although travelling only 30 MPH, the vehicle went into a sideward skid. The left wheels dropped into a ditch, which was sufficiently deep to cause the vehicle to roll over onto its top. Mr. Sekora was uninjured and easily climbed out of the truck. The SAFETY Committee concluded that an accident of this type is next to impossible to prevent. They did recommend that this accident be discussed at the next staff SAFETY meeting as a reminder to all employees of the hazards of winter driving.

No! Driving too fast for sliding road conditions R

Quarterly fire drills, fire station checks, and station SAFETY checks were made as scheduled. Physical checks of the fire extinguishers were made in June and November.

The following SAFETY accomplishments were made during the year:

1. Neosporin, an antibiotic ointment, was added to each of the first aid kits.

2. Two "Readisplints", the inflatable plastic splints, were purchased; and their use was demonstrated at a staff SAFETY meeting.

3. Two gallons of liquid plastic foam was injected in compartments below the seats of the two row boats and the pram.

4. The annual pre-winter quarters furnace inspection was performed and the heating units reconditioned.

5. The headquarter's water supply was chlorinated after samples had been taken showing the quality was below minimum health standards.

6. A new sawdust collecting system was installed at the Sign Shop to eliminate a severe health and fire hazard.

7. A flight helmet was purchased for refuge Biologist O'Neill to use while on census flights and other flying activities.

8. U. S. Public Health authorities destroyed a supply of parathion which was no longer being used.

9. A Jacobson braking system was installed on the engine of the Regional Transport.

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TL At the end of the year the refuge SAFETY record was 349 days. The previous SAFETY record was 246 days.

VII OTHER ITEMS

A. Items of Interest*

Lower Klamath was dedicated and registered July 13 as a National Historic Landmark. Lower Klamath was the first large area of public land to be reserved as a Federal wildlife refuge. Teddy Roosevelt issued the executed Order in 1908.

Dog shoots man - sad, but true. Two companions hunting from a boat on Tule Lake sent their dog to retrieve a crippled goose. Before helping the dog back aboard the boat, one hunter unloaded his gun, one did not. Just after getting the dog back aboard the loaded gun discharged, nearly blowing an arm off one hunter - the one who had unloaded his gun. It was later concluded that the dog had triggered the gun which had been leaned against the middle boat seat, safety-off. The wounded man was Robert Kater.

Roland Shults received a $200 incentive award for adoption of his suggestion of a quick assembly road barrier sign. Bob is in charge of the Regional Sign Shop which is located at Tule Lake Refuge. Bob's design was so good that Acting Regional Director Harry Goodwin says - the use of Shult's design is mandatory if you have occasion to fabricate a road barricade sign.

Harold Hardesty, Regional Transport Operator was honored and awarded a Safe Driving Certificate. Harold completed three years and 166,000 miles of accident-free driving.

Authorization was granted for the second successive year to the U.S. Forest Service, Winema National Forest, Klamath Ranger District protection crew to occupy and use the Upper Klamath National Wildlife Refuge cabin and facilities from June 15 to September 30.

Twenty eight depredation herding permits were issued during 1965.

Robert Watson transferred from Stillwater Refuge with a promotion to replace Mr. Russell. Mr. Watson is presently attending the Tenth Departmental Development Program in Washington, D. C. and Assistant Manager William Nuess is Acting Refuge Manager.

*Abney, Annear, RChapman

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*The Regional Transport Truck made 33 trips, travelled 51,652 miles and hauled the following during 1965:

Trip No.	Load	Origin	Destination
227	Sheep's Foot Roller	Tule Lake Refuge	Sacramento Refuge
	2,4-D Amine	Sacramento Refuge	Tule Lake Refuge
	Lowbed Trailer	Mare Island	" " "
228	Tires	Tule Lake Refuge	McNary Refuge
	Sign Frames	" " "	Willamette Refuge
	Truck Parts	" " "	Columbia Refuge
	Truck Crane	Columbia Refuge	Willamette Refuge
	Burlap Sacks	Willamette Refuge	Tule Lake Refuge
	I-Beams	McNary Refuge	Malheur Refuge
229	TD-18 Tractor	Sacramento Refuge	Tule Lake Refuge
	Oil Meter	Tule Lake Refuge	Sacramento Refuge
230	D-7 Tractor	" " "	Malheur Job Corps
231	LeTourneau Scraper	" " "	" " "
232	D-7 Tractor	" " "	" " "
233	Road Grader	Fort Lewis	Eugene, Oregon
	Steel Piling	McNary Refuge	Sacramento Refuge
234	Cargo Truck -2	Tule Lake Refuge	Malheur Job Corps
	Air Compressor	" " "	" " "
	Typewriter	" " "	" " "
	D-7 Tractor	Malheur Job Corps	Tule Lake Refuge
235	Stake Truck	Fort Lewis	Malheur Job Corps
	Truck Crane	" "	" " "
	Misc. Equipment	" "	" " "
236	Cargo Truck	Tule Lake Refuge	" " "
	Pickup -2	" " "	" " "
	Ambulance	" " "	" " "
	Lowbed Trailer	" " "	Columbia Refuge
	Fork Lift	Columbia Refuge	Malheur Job Corps
	Lowbed Trailer	" "	" " "
	Pickup	" "	" " "
	Fire Pump Trailer	" "	" " "
	Office Equipment	" "	" " "
	Tools & Miscellaneous	" "	" " "
237	Crane	Fort Lewis	Malheur Job Corps
	Dump Truck	Columbia Refuge	" " "
	Lowboy Trailer	" "	" " "

r * R Chapman

Trip No.	Load	Origin	Destination
238	D-7 Tractor	Tule Lake Refuge	Malheur Job Corps
	LeTourneau Scraper	Malheur Job Corps	Tule Lake Refuge
239	Cargo Truck -2	Tule Lake Refuge	Sheldon-Hart Mt.
	Pickup	" " "	Malheur Job Corps
240	Grain -2 Tons	" " "	Stillwater Mgt. Area
	Steel Shelving	" " "	" " "
	Road Grader	Hawthorne, Nev.	Malheur Job Corps
241	Pump	Kern-Pixley	Tule Lake Refuge
	Bookcase Sections	Sacramento Refuge	" " "
242	Steel Shelving	Tule Lake Refuge	C. M. Russell Range
	Steel Piling	McNary Refuge	" " " "
	D-8 Tractor	Bremerton, Wash.	Malheur Refuge
243	House Trailers -4	Camp Pendleton	Sheldon-Hart Mt.
	Dragline Bucket	Sharpe Depot	Tule Lake Refuge
244	Road Grader	Hawthorne, Nev.	Malheur Job Corps
245	Truck-Tractor	China Lake, Calif.	Stillwater Mgt. Area
	Generator -2	Stockton, Calif.	Tule Lake Refuge
	Forklift	McClellan AFB	Stillwater Mgt. Area
246	Rock Crusher	W. Glacier, Mont.	Columbia Refuge
247	Barley -460 Bu.	Sacramento Refuge	Salton Sea Refuge
	Road-rooter	Port Hueneme	Willamette Refuge
	Air Compressor	Kern-Pixley Refuge	Malheur Job Corps
	Forklift Truck	" " "	" " "
248	TD-18 Tractor/Dozer	Sacramento Refuge	Kootenai Refuge
249	Mooring Buoys -3	Hadlock, Wash.	Tule Lake Refuge
250	Mooring Buoy	Tule Lake Refuge	Sacramento Refuge
	Barley -400 Bu.	Sacramento Refuge	Turnbull Refuge
	Tanks -2	Ross Sub-Station	Tule Lake Refuge
251	Tractor -2	Desert Game Range	Malheur Job Corps
	Tires	" " "	Sheldon-Hart Mt.
252	Truck-Tractor	National City, Calif.	Tule Lake Refuge
253	Signs & Frames	Tule Lake Refuge	Willamette Refuge
	Dragline Bucket	" " "	Malheur Refuge
	Dragline Bucket	" " "	Malheur Job Corps

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Trip No.	Load	Origin	Destination
254	Garbage Truck	Fort Lewis	Tule Lake Refuge
255	Crane-Shovel	Fort Ord	" " "
256	Jeep	Ruby Lake Refuge	" " "
	Pickup	" " "	" " "
	Dump Truck	" " "	" " "
257	Dragline	Sacramento Refuge	Salton Sea Refuge
	Dragline Boom	Salton Sea Refuge	Sacramento Refuge
	Dump Truck	Salton Sea Refuge	Tule Lake Refuge
	Tractor Parts	" " "	" " "
	Barbed Wire	" " "	" " "
258	Trailer	Tule Lake Refuge	Stillwater Mgt. Area
259	Scraper	Sacramento Refuge	Willamette Refuge
	Dragline	Salton Sea Refuge	Sacramento Refuge

*Regional Sign Shop Operations - The shop constructed and distributed 134 recognition and information signs to various stations in Region I. Pre-hunting season posting of Klamath Basin Refuges with hunting-traffic control and area boundary signs was accomplished, as well as distribution of approximately 5,000 area-boundary signs throughout the Region.

A summary of the 134 signs constructed and distributed below; "single" or "double" under type, designates whether both sign faces were finished.

No.	Type	Size (ft.)	Framed & Supported	Destination	
9	Info. -single	2 x 5	no	1/25	Sacramento Refuge
3	Recog. -single	8 x 8	no	3/30	Bison Range
7	Recog. -double	5 x 8	yes	3/30	Bison Range
2	Bald Eagle -sgl.	4 x 6	no	4/13	(M&E) Tillamook
2	Info. -single	4 x 6	no	4/27	Klamath Forest Refuge
37	Info. -double	1 x 2	no	7/10	Sheldon-Hart Mountain
5	Recog. -single	4 x 7	yes	7/10	Sheldon-Hart Mountain
4	Info. -single	2 x 2	no	Aug.	Modoc Refuge

*Abney and Shults

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No.	Type		Size (ft.)	Framed & Supported	Destination	
1	Info.	-single	6 x 10	yes	9/3	Willapa Refuge
2	Recog.	-double	5 x 8	yes	9/10	Minidoka Refuge
41	Info.	-single	1 x 2	yes	9/10	Minidoka Refuge
5	Recog.	-double	5 x 8	yes	10/5	Willamette Refuge
3	Recog.	-double	5 x 8	yes	10/29	Kootenai Refuge
2	Info.	-double	1 x 2	yes	10/29	Kootenai Refuge
2	Info.	-single	1 x 7	no	10/29	(P&RC) Idaho
7	Recog.	-single	5 x 6	yes	12/8	Hawaii Island Refuge
2	Info.	-single	1 x 4	yes	12/14	Tule Lake Refuge

*Shop Foreman, Bud Chapman; Dragline Operator, Virgil Cobb; Heavy Duty Mechanics Earl Irvine and Khlar Heaton; and Regional Transport Operator, Harold Hardesty attended Caterpillar's school of instruction on new types of engines and hydraulic systems. This type of instruction contributes much to the interest, efficiency and qualifications of participating personnel. Messrs. Chapman, Irvine and Heaton also attended four other schools in Klamath Falls, Oregon: Welding Techniques, Equipment Painting, Automotive Brake Systems, and Transistorized Ignition Systems. Most of the classes were "night schools", and the participating personnel are complimented for their interest and initiative shown by their attendance.

*Bob Abney was detailed as Regional Job Corps Officer during the first half of the year for initial launching of the Regional Job Corps program. The Bureau's first Job Corps Conservation Center was built and activated at Malheur, and proposals were submitted for several other centers in the Region during the February-August assignment.

*Del Pierce was promoted and transferred to Malheur as Assistant Refuge Manager. Palmer Sekora was stepped up to succeed Del as manager of Klamath Forest Refuge.

*Pete Davies was promoted and transferred to Maintenanceman Foreman II at Sutter Refuge in the Sacramento group of refuges.

*The latest scoop - Administrative Assistant Jim Mac Farlane has just returned from temporary detail at the Malheur Job Corps Conservation Center. Jim has expressed a keen interest in Job Corps work since inception of the program, and was detailed to assist with the administrative work load at the center. Jim has submitted his application

*Abney

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for the vacant position of Administrative Officer at the Malheur Center. We feel that Jim's selection would be a credit to all concerned, and in keeping with the fine aims of the promotion plan,

*Tulelake Irrigation Manager Ed Lance will resign effective February 18, 1966 to accept a position with an engineering firm in Redding (C. Hill). Fred Fahner, Lance's assistant for the past two years has accepted the manager position.

pd *RChapman

TL

Aerial view of Christmas flood waters which almost topped north levee of Southwest Sump.

3/65 E. J. O'Neill

Same area as above viewed from south showing inundation of Southwest Sump after levee was cut at southwest edge of Sump 1-B to relieve pressure.

3/65 E. J. O'Neill

r


HILL ROAD
SUMP 1-A


SUMP 1-A
SHEEPY RIDGE
WATER LINE

One-half foot rain water fluctuation in June again inundated considerable habitat during critical duck nesting period.

(Photo from Lost River Bridge) 6/20/65 E.J. O'Neill

Same area as above, almost back to normal, 10 days later.

6/30/65 E.J. O'Neill

TL

One-half foot rain water fluctuation in June again inundated considerable habitat during critical duck nesting period.

(Photo from Lost River Bridge) 6/20/65 E.J. O'Neill

Same area as above, almost back to normal, 10 days later.

6/30/65 E.J. O'Neill

r


LOST RIVER

TL

Coot feeding on flesh of American Widgeon during freeze-up and winter stress period.

1/65 E. J. O'Neill

Removal of dense growth of smooth brome grass along panhandle dike by permittee to study advantage, if any, over periodic burning.

9/65 E. J. O'Neill

r

White Sturgeon (64 inches long; 50 lbs.) found in Southwest Swamp irrigation ditch. Scale spines indicated the specimen to be 20 years old.

6/65 E. J. O'Neill

One of three western grebes analyzed by H.E.W. lab at Klamath Falls, Oregon (composite samples) which showed following chlorinated hydrocarbons: DDE, DDD (and/or) DDT, Dieldrin, and Endrin.

7/65 E. J. O'Neill

Ring-billed and California gulls "mousing" for Microtus on C-Field block immediately following removal of barley stubble by fire.

4/65 E. J. O'Neill

TL

White Sturgeon (64 inches long; 50 lbs.) found in Southwest Sump irrigation ditch. Scale spines indicated the specimen to be 20 years old.

6/65 E. J. O'Neill

One of three western grebes analyzed by H.E.W. lab at Klamath Falls, Oregon (composite samples) which showed following chlorinated hydrocarbons: DDE, DDD (and/or) DDT, Dieldrin, and Endrin.

7/65 E. J. O'Neill

Ring-billed and California gulls "mousing" for Mictotus on C-Field block immediately following removal of barley stubble by fire.

4/65 E. J. O'Neill

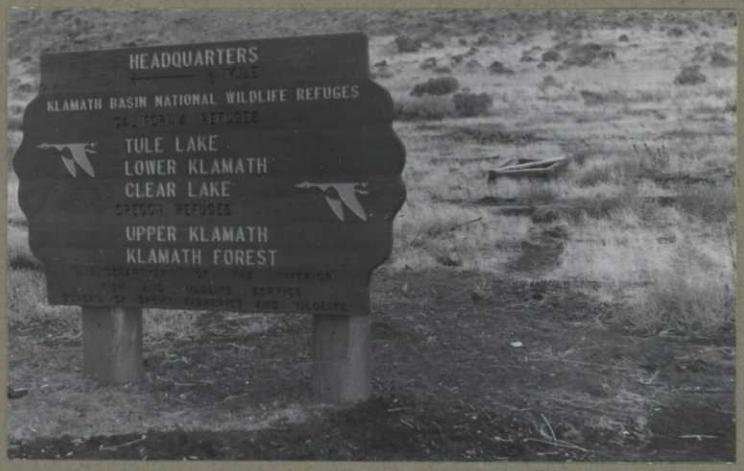
r

Exposure 134 10/29/61 Russell TL

A before and after comparison of when car meets immovable object, or in this case our recognition and directional sign at the west end of the East-West Road. Strangely enough the driver only suggered cuts to his upper lip and his passenger sustained no injuries. Needless to say the next sign will be to the south of this junction or in a place where the "Barney Oldfields" won't have a clear shot at it.

Exposure 500 11/28/65 Sekora

r


HEADQUARTERS
KLAMATH BASIN NATIONAL WILDLIFE REFUGES
TULE LAKE
LOWER KLAMATH
CLEAR LAKE
UPPER KLAMATH
KLAMATH FOREST

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

RC

WATERFOWL

REFUGE TULE LAKE MONTHS OF JANUARY TO APRIL, 19 65

(A)-Aerial Survey

(1) Species	(2) Weeks of reporting period: 1/3-9 (1)	1/10-16 (2)	1/17-23 (3)	1/24-30 (4)	1/31-2/6 (5)	2/7-13 (6)	2/14-20 (7)	2/21-27 (8)	2/28-3/6 (9)	3/7-13 (10)
Swans:	(A) 1/3				(A) 2/4				(A) 3/4	
Whistling	300	200	20	100	40	20	600		3,200	2,000
Trumpeter										
Geese:										
Canada	880	1,000	1,000	1,500	1,000	1,000	1,210	2,100	1,020	1,200
Cackling	20	20	20	10		10	10	200	200	100
Brant										
White-fronted	400	250	100	100	100	100	120	15,000	20,000	31,000
Snow	10	500	200	200	200	250	9,000	50,000	100,000	50,000
Blue Geese'							20	100	100	100
Other TOTAL GEESE:	1,290	1,470	1,320	1,810	1,800	1,310	10,450	67,400	122,000	112,400
Ducks:										
Mallard	2,720	2,000	1,000	1,000	850	1,000	1,240	8,000	5,500	4,000
Black Unident.	1,200	5,000	5,600	5,000	800	200	400	200	200	10,000
Gadwall	100	100	100	100	100	20	20	4,000	4,000	8,000
Baldpate	1,050	2,000	2,000	1,500	200	200	250	5,000	18,250	10,500
Pintail	1,400	1,000	1,000	1,000	450	500	1,500	20,000	20,000	20,000
Green-winged teal	100	100	20	50		20	20	1,000	1,200	1,000
Blue-winged teal										
Cinnamon teal							10	50	60	200
Shoveler	1,000	1,200	1,200	1,500	1,700	2,000	1,800	4,600	4,400	8,000
Wood							10	10		20
Redhead	20	50	120	60	50	20	60	200	250	400
Ring-necked							20	20	20	50
Canvasback	10	100	100	150	200	100	70	2,000	2,040	2,500
Scaup	20	1,000	1,000	1,500	1,050	1,000	470	8,000	7,050	8,000
Goldeneye	10	20	50	200	400	200	150	200	350	200
Bufflehead	50	200	200	300	460	200	310	400	970	200
Ruddy	500	800	200	1,000	700	5,000	8,000	20,000	21,500	20,000
Other Co. Merganser	100	200	200	400	500	200	190	200	270	200
TOTAL DUCKS:	8,200	12,550	13,050	12,800	8,250	10,970	14,570	67,420	110,410	88,470
Coot:	100	100	100	100	100	100	120	1,500	2,550	10,000
GRAND TOTALS:	10,100	15,240	15,440	15,010	10,250	12,510	25,270	136,300	237,000	207,920

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rc Cont. I 1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE TULE LAKE MONTHS OF JANUARY TO APRIL, 19 65

(A)=Aerial Survey

(1) Species	(2) Weeks of reporting period: 3/14-20 (11)	3/21-27 (12)	3/28-4/3 (13)	4/4-10 (14)	4/11-17 (15)	4/18-24 (16)	4/25-5/1 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
			3/31(A)	4/8(A)							
Swans:											
Whistling	3,600	200	42	5	5	5	3		83,042		
Trumpeter											
Geese:											
Canada	1,000	1,000	980	1,000	1,000	1,200	1,500		141,470		
Cackling	200	300	300	300	500	500	500		22,610		
Brant											
White-fronted	32,000	33,000	32,950	30,000	30,000	30,000	20,000		1,926,750		
Snow	80,000	80,000	80,000	70,000	15,000	2,000	2,000		3,997,070		
Ross'	100	200	220	100	50	50	20		147,860		
TOTAL GEESE	113,300	114,500	114,450	101,400	46,550	33,750	24,020		6,235,810		
Ducks:											
Mallard	5,000	5,000	6,740	4,000	3,500	4,000	4,000		396,900		
Unidentified			14,000		20,000	5,000	8,000		522,950		
Gadwall	5,000	5,000	2,910	3,000	3,000	2,000	2,000		235,760		
Baldpate	20,000	10,000	7,300	6,000	6,000	5,000	4,200		679,490		
Pintail	100,000	80,000	65,250	25,000	20,000	15,000	3,500		2,744,700		
Green-winged teal	50	500	2,600	3,000	4,000	4,000	3,800		150,360		
Blue-winged teal											
Cinnamon teal	200	200	200	1,000	1,800	1,500	2,000		50,440		
Shoveler	10,000	30,000	39,770	20,000	20,000	14,000	3,000		1,151,890		
Wood	20	20		10	10	10	10		840		
Redhead	500	600	690	800	600	700	850		42,840		
Ring-necked	50	50		20	20	20	30		2,170		
Canvasback	2,000	1,000	770	400	150	100	70		117,320		
Scaup	6,000	6,000	6,000	3,000	2,000	1,500	1,100		357,700		
Goldeneye	200	150	120	50	50	40	10		18,170		
Bufflehead	700	500	340	400	250	200	180		46,380		
Ruddy	30,000	35,000	36,050	30,000	20,000	15,000	10,000		1,872,360		
Other Com Merganser	350	400	450	300	350	100	50		33,880		
TOTAL DUCKS	180,070	174,420	183,190	96,980	101,730	68,170	42,800		8,424,150		
Coot:	20,000	25,000	18,060	15,000	35,000	20,000	26,000		1,218,700		
GRAND TOTALS:	316,970	314,120	315,742	213,385	183,285	121,925	92,823		15,961,702		

(over)

	(5) Total Days Use	(6) Peak Number*	(7) Total Production
Swans	83,042	3,600	
Geese	6,235,810	122,800	
Ducks	8,424,150	183,190	
Coots	1,218,700	35,000	
Total	15,961,702		

*Not simultaneously

SUMMARY

Principal feeding areas Dikes, water areas of sumps 1a and 1b, adjacent green barley fields.

Principal nesting areas Muskrat houses, tule clumps

Reported by Edward J. O'Neill

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).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR
(Rev. March 1953)
A-Aerial Census

WATERFOWL

REFUGE **Tule Lake** MONTHS OF **May** TO **August**, 19**65**

(1) Species	(2) Weeks of reporting period: 5/2-8 (1)	5/9-15 (2)	5/16-22 (3)	5/23-29 (4)	5/30-6/5 (5)	6/6-12 (6)	6/13-19 (7)	6/20-26 (8)	6/27-7/3 (9)	7/4-10 (10)
Swans:						A-6/8				
Whistling	5	5	3	1	1	2	1	2	1	1
Trumpeter	1,000	1,500	1							
Geese:										
Canada	1,000	1,500	1,000	1,000	900	1,020	1,400	1,500	1,800	1,800
Cackling	500	50	50	30	30	30	30	20	20	20
Brant										
White-fronted	16,000	17,500	10,000	8,000	30	20	20	20	20	30
Snow	1,000	2,000	300	20	20	20	20	20	20	20
Blue										
~~Other~~ Ross'	20	20	20	2	1		1	1	1	2
Ducks: Total Geese	18,520	21,070	11,370	9,050	980	1,000	1,[illegible]	1,[illegible]	1,870	1,870
Mallard	5,000	3,000	3,000	2,800	3,200	2,700	3,000	2,300	4,000	2,700
~~Black~~ Unidentified	10,000	5,000	12000	500	2,500	3,000	4,000	1,000	500	1,800
Gadwall	2,500	2,000	2,500	3,000	2,000	2,700	3,000	2,200	2,500	2,000
Baldpate	3,000	4,000	3,000	3,500	100	50	50	50	50	50
Pintail	5,000	8,000	7,800	9,000	3,500	2,500	1,500	1,000	1,000	1,200
Green-winged teal	4,000	5,000	6,000	2,000	1,250	1,100	1,100	1,100	1,150	1,100
Blue-winged teal			10	10	10		20	20	20	10
Cinnamon teal	2,500	4,000	4,000	2,000	1,200	1,000	2,000	2,000	2,000	2,000
Shoveler	3,500	3,000	2,000	2,000	1,000	1,500	500	500	500	500
Wood	10	10	10	10	10					
Redhead	1,500	300	400	500	1,000	2,050	5,000	5,000	6,000	5,000
Ring-necked	50	150	30	10	20		60	150	20	10
Canvasback	100	100	100	100	100	200	100	100	100	100
Scaup	500	1,000	2,000	2,000	500	400	300	100	100	100
Goldeneye	20	10	10	10	10					
Bufflehead	200	300	1,500	200	50	40	40	30	20	20
Ruddy	820	2,500	2,000	5,000	2,000	2,200	2,000	2,000	2,000	2,000
~~Other~~ Com. Merganser	20		10	10			10	10	20	20
Total Ducks	39,320	22,870	26,570	24,000	20,550	21,210	22,450	19,590	21,[illegible]	20,710
Coot:	30,000	18,000	5,000	4,600	3,000	3,200	4,000	5,000	5,000	5,000
Grand Totals	87,850	77,950	52,940	47,[illegible]	26,530	25,500	28,930	25,[illegible]	28,260	27,580

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Cont. [illegible]-1
(Rev. March 1953)
(A) Aerial Census

WATERFOWL
(Continuation Sheet)

REFUGE Tule Lake MONTHS OF May TO August, 19 65

(1) Species	(2) Weeks of reporting period 7/11-17 11	7/18-24 12	7/25-31 13	8/1-7 14	8/8-14 15	8/15-21 16	8/22-28 17	8/29-9/4 18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:			(A) 7/27				(A) 8/23				
Whistling	1	1		1	1	1			180		
Trumpeter											
Geese:											
Canada	2,100	2,000	940	1,000	1,000	1,800	2,100	3,000	189,620	181	860
Cackling	20	20		20	20	20	10	10	6,500		
Brant											
White-fronted	20	20		20	20	20	50	500	260,580		
Snow	50	50		50	50	30	30	10	25,070		
Blue Ross'	1	2		2	1	1			520		
Other											
Total Geese	2,200	2,100	940	1,100	1,100	1,880	2,190	3,560	587,409	181	860
Ducks:											
Mallard	1,500	3,000	4,340	5,000	5,000	6,000	3,500	7,050	512,140	40	560
Black	500	1,000	1,800	1,500	3,000	5,000	7,500	10,000	417,650	34	1,250
Unidentified											
Gadwall	2,200	2,000	1,150	2,500	2,000	6,000	10,000	9,000	457,450	19	1,240
Baldpate	20	20		50	50	50	200	4,500	133,200		
Pintail	2,000	2,500	565	5,000	8,000	12,000	22,000	56,000	1,074,900	12	760
Green-winged teal	1,500	500		100	500	1,800	2,000	3,000	232,400		
Blue-winged teal	10	20		20	20	10		20	1,540	1	70
Cinnamon teal	2,500	1,800	50	2,000	2,500	3,000	3,000	3,500	237,350	1	70
Shoveler	900	1,000	120	1,000	1,500	3,000	4,000	8,000	243,040	1	170
Wood						10			420		
Redhead	4,200	2,000	565	1,500	2,000	2,500	3,800	3,000	327,710	143	10,980
Ring-necked	50	50		50	100	50	30	100	6,500		
Canvasback	150	100	25	200	250	200	200	200	18,270	4	140
Scaup	100	100	20	120	200	120	300	500	22,450		
Goldeneye	10	10		10	10				700		
Bufflehead	10	10		30	30	50	30	40	18,270		
Ruddy	2,000	2,500	3,150	4,000	4,500	4,200	5,500	7,000	409,790	72	8,740
Other Com. Merganser	10	10		30	20	10			1,530	1	40
Total Ducks	15,200	16,620	11,490	23,120	30,000	40,000	62,160	110,000	4,224,400	328	22,100
Coot:	5,000	10,000	25,670	30,000	32,000	30,000	40,000	50,000	2,194,290	86	3,060
Grand Totals	25,560	28,720	38,100	54,220	63,790	68,610	102,350	164,450	6,906,340	585	25,020

(over)

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans	100	5	
Geese	587,400	21,070	
Ducks	4,214,440	110,830	
Coots	2,194,200	50,000	
TOTAL	6,996,240		

*Not simultaneously

SUMMARY

Principal feeding areas Sumps 1-A and 1-B, water estuaries, etc. of high aquatic production

Principal nesting areas fringe marsh of sumps 1-A and 1-B

Reported by Edward J. O'Neill, Wildlife 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).

Interior Duplicating Section, Washington, D. C.
1953

pd

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

WATERFOWL

REFUGE Tule Lake MONTHS OF September TO December, 1965

(1) Species	(A) Aerial Census (2) Weeks of reporting period: 9/5-11	9/12-18	9/19-25	9/26-10/2	10/3-9	10/10-16	10/17-23	10/24-30	10/31-11/6	11/7-13
	1	2	3	4	5	6	7	8	9	10
Swans:	(A) 9/10			(A) 9/28		(A)10/18	(A) 10/19	(A) 10/25		(A) 11/8
Whistling									10	22
Trumpeter										
Geese:										
Canada	8,800	3,700	3,000	3,250	2,000	1,270	1,440	1,000	1,100	1,040
Cackling	10	10	10		10	1,630	40,000	[illegible]	200,000	[illegible]
Brant										
White-fronted	9,070	11,000	80,000	22,110	105,000	204,500	113,450	250,000	200,000	311,500
Snow	10	10	200	710	6,000	46,200	[illegible]	[illegible]	[illegible]	[illegible]
Blue Geese'									50	160
Other Total Geese	12,600	14,720	23,210	56,500	113,010	[illegible]	282,[illegible]	[illegible]	681,210	[illegible]
Ducks:										
Mallard	23,200	14,000	23,000	34,970	65,000	78,700	60,000	106,200	50,000	20,200
Black Unidentified	14,[illegible]	9,000	21,000	13,200	10,000	24,700	69,000	26,000	110,000	16,250
Gadwall	15,970	9,000	9,000	9,[illegible]	16,000	25,100	33,000	23,250	20,000	10,000
Baldpate	7,100	15,000	25,000	49,100	52,000	64,700	257,000	93,000	150,000	67,[illegible]
Pintail	183,630	102,000	100,000	104,[illegible]	171,000	182,500	1,[illegible]	1282,000	[illegible]	[illegible]
Green-winged teal	6,010	3,200	5,000	4,900	11,000	12,000	22,050	15,400	6,000	1,550
Blue-winged teal		40								
Cinnamon teal	520	1,000	200	50	1,500	200	600	1,500	1,000	100
Shoveler	12,230	16,000	21,000	23,510	24,000	20,200	33,440	7,300	20,000	50,500
Wood		20	10							
Redhead	8,110	3,100	2,500	1,050	1,200	1,500	900	700	3,000	1,670
Ring-necked		30	30		10				20	
Canvasback	610	430	810	550	640			4,500	3,500	3,220
Scaup	1,120	1,500	1,050	1,950	4,000	27,000	24,700	4,750	4,000	6,500
Goldeneye									50	220
Bufflehead	200	200	200	150	300	500		2,500	1,000	1,330
Ruddy	13,150	12,000	14,000	11,300	5,000	2,100	1,700	20,500	55,000	18,000
Other C. Merganser						100	100		200	450
Total Ducks	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	451,900	1,741,[illegible]	1,[illegible]	1,[illegible]	768,970
Coot:	115,800	120,000	110,000	101,400	120,000	171,850	204,700	286,000	250,000	175,000
Grand Totals	259,410	322,920	383,820	367,200	624,260	876,700	2,[illegible]	2,727,[illegible]	2,[illegible]	1,[illegible],310

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Cont. I 1

(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Tule Lake MONTHS OF September TO December, 19 65

(1) Species	(A) Aerial Census (2) Weeks of reporting period 11/14-20 (11)	11/21-27 (12)	11/28-12/4 (13)	12/5-11 (14)	12/12-18 (15)	12/19-25 (16)	12/26-1/1 (17)	(18)	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:			(A)11/30		(A)12/17						
Whistling	20	150	400	480	770	900	1,400		28,640		
Trumpeter											
Geese:											
Canada	1,280	040	850	700	1,170	1,000	1,200		215,740		
Cackling	57,100	18,000	22,700	10,000	200	200	200		6,525,240		
Brant											
White-fronted	120,700	9,000	11,100	8,000	4,000	1,550	750		11,247,110		
Snow	73,000	14,000	11,950	10,000	3,000	350	200		7,770,040		
Ross'	430	200		30		30	20		6,510		
Total Geese	272,110	41,240	48,000	28,730	8,970	3,180	2,370		25,100,000		
Ducks:											
Mallard	28,150	4,000	5,700	3,000	5,000	4,000	15,300		4,228,700		
Unidentified	25,000	5,000	2,000	4,000	4,000	10,000	4,000		2,640,100		
Gadwall	6,250	2,000	5,700	3,000	2,200	300	200		1,374,240		
Baldpate	71,300	4,000		2,000		1,500	2,000		6,001,000		
Pintail	23,000	8,000	5,750	4,000	3,000	4,000	12,000		24,140,710		
Green-winged teal	1,300	400	100	200	100	50	100		250,000		
Blue-winged teal									250		
Cinnamon teal	100								55,790		
Shoveler	25,000	7,000	20,000	12,000	7,000	5,000	5,000		2,552,530		
Wood									210		
Redhead	1,010	250	100	100	250	250	250		140,000		
Ring-necked	100		50	50	10	10	10		2,170		
Canvasback	2,000	2,000	2,000	1,000	400	150	200		155,000		
Scaup	7,100	6,000	6,000	4,000	3,000	1,000	1,000		740,000		
Goldeneye	140	210	40	100	220	100	150		9,660		
Bufflehead	200	400	1,010	1,000	200	200	200		75,000		
Ruddy	11,000	14,000	6,700	4,500		1,000	1,700		1,202,000		
C. Merganser	100	20	500	150		100	400		14,000		
Total Ducks	212,250	54,870	66,580	45,650	25,870	27,960	49,560		54,021,310		
Coot:	35,400	8,700	4,550	5,000	2,000	300	400		13,200,610		
Grand Total	519,760	104,960	118,080	79,800	37,610	32,340	53,730		92,522,320		

(over)

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans	28,640	1,540	N
Geese	26,103,560	945,320	0
Ducks	54,001,310	1,741,650	N
Coots	13,288,320	350,000	E
TOTAL	93,821,830		

*Not simultaneously

SUMMARY

Principal feeding areas Unharvested grain buffer fields, harvested Agriculture grain and row-crop fields in League of Nations, Frog Pond and SW Sump units and adjacent water units.

Principal nesting areas N/A

Reported by Edward J. O'Neill & Raylord L. Inman
(October census by Palmer Sakera & Ray Glahn)

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).

Interior Duplicating Section, Washington, D. C.
1953

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge TULE LAKE Months of January to April 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	10	2/14-20	1800	4/25-30	Still	Present	2			4200
Western Grebe	27	2/28-3/6	700	"			2			700
Pied-billed Grebe	5	2/14-20	300	"	"	"				300
White Pelican	2	3/7-13	150	4/18-24	"	"				400
D-Crested Cormorant	10	2/28-3/6	40	4/4-10	"	"	1			100
G. Blue Heron	14	2/14-20	27	2/28-3/6	"	"				50
Common Egret	2	2/21-27	300	4/18-24	"	"	1			350
Black-Cr. Night Heron	9	2/14-20	350	"	"	"	1			300
Am. Bittern	3	3/28-4/3	15	"	"	"				20
II. Shorebirds, Gulls and Terns:										
Killdeer	5	2/14-20	200	May	"	"				250
Long-billed Curlew	10	4/4-10	10	4/4-10	"	"				20
Willet	2	4/11-17	20	4/18-24	"	"				20
Greater Yellow Legs	5	4/4-10	7	4/11-17	"	"				10
Lesser Yellow Legs	2	4/11-17	2	"	"	"				2
Least Sandpiper	200	4/18-24	1500	April	"	"				2000
Am. Avocet	24	3/28-4/3	50	"	"	"				70
Black-necked Stilt	6	4/25-5/1	6	"	"	"				10
Calif. Gull	10	2/14-20	1000	"	"	"				5000
Ring-billed Gull	230	2/14-20	10,000	"	"	"				10,000
Bonaparte's Gull	5	4/18-24	5	April	"	"				5
Forester's Tern	3	4/25-30	3	4/25-30	"	"				10
Dowitcher	10	4/25-30	10	"	"	"				

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	Previous	Period	50	April	Still	Present			100
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	"	"	3	2/14-20	"	"			10
Duck hawk	RESIDENTS								
Horned owl									
Magpie									
Raven									
Crow									
Bald Eagle	Previous	Period	12	2/28-3/6	"	"			35
Turkey Vulture	" 3	4/18-24	8	4/25-5/1	"	"			10

Reported by Edward J. O'Neill

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Tule Lake Months of May to August 19~~6~~65

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared grebe	Previous	Period	5,000	7/25-31	Still	Present	5	1,500	2,000	3,000
Western grebe	"	"	2,525	"	"	"		400	000	2,700
Pied-billed grebe	"	"	250	8/8-14	"	"		150	200	500
White pelican	"	"	175	5/30-6/5	"	"				2,000
Double-crested cormorant	"	"	150	8/22-28	"	"				400
Great-blue heron	"	"	40	8/8-14	"	"				100
Common egret	"	"	225	8/22-28	"	"		190	400	700
Snowy egret	"	"	30	8/8-14	"	"		10	20	50
Bl-crowned Nt. heron	"	"	300	"	"	"	2	150	300	500
American bittern	"	"	3	7/11-7/17	"	"				20
White faced ibis			20	8/8-14	"	"	1	10	20	30
Green heron	1	4/20	1		1	4/20				3
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	20	6/13-19	Still	Present	N			400
Long-billed curlew	"	"	15	8/8-14	"	"	●			100
Spotted sandpiper	"	"	12	"	"	"				20
Greater yellowlegs	"	"	5	"	"	"		D		20
Lesser yellowlegs	"	"	15	"	"	"				150
Least sandpiper	"	"	500	7/25-31	"	"		a		5,000
Dowitcher	"	"	150	8/8-14	"	"		t		4,500
Am. Avocet	"	"	800	8/22-28	"	"		30	50	2,000
Black-necked stilt	"	"	10	8/8-14	"	"		2	10	100
California gull	"	"	4,250	"	"	"				2,000
Ring-billed gull	"	"	8,000	"	"	"				8,000
Bonaparte's gull	"	"	20	"	"	"				50
Forester's tern			300	5/16-22	"	"		100	200	1,000
Black tern	"		2,200	7/25-31	"	"		30	80	7,000

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	Previous	Period	200	June	Still	Present		200	500
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	"	"	2	June	"	"			5
Duck hawk	Residents								
Horned owl									
Magpie									
Raven									
Crow									
Turkey vulture			10	July	"	"			50

Reported by Edward J. O'Neill, 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 Gruiiformes)
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.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Tule Lake Months of September to December 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous	Period	3,250	9/5-18	Still	Present	2	480	300	5,000
Western Grebe	"	"	9,800	"	10	12/5-18				10,000
Pied-billed Grebe	"	"	900	11/21-12/4	Still	Present				1,500
White Pelican	"	"	760	9/27	11	11/7-20				1,200
Double-Cr. Cormorant	"	"	200	"	Still	Present				500
Great-blue Heron	"	"	32	9/5-18	"	"				60
Common Egret	"	"	99	"	3	10/31-11/6				150
Snowy Egret	"	"	52	"	Same					100
Black-Crowned Nt. Heron	"	"	39	11/7-20	4	12/5-18				150
American Bittern	"	"	6	"	Same					50
White-faced Ibis	"	"	32	6/27-7/3	No	Record				40
II. Shorebirds, Gulls and Terns:										
Killdeer	"	"	250	9/5-18	Still	Present				350
Wilson's Snipe	"	"	50	"	5	12/5-18				200
Willet	10	9/5-18	Same		No	Record				10
Spotted Sandpiper	Still	Present	30	"	"	"				50
Lesser Yellowlegs	"	"	70	"	5	10/31-11/16				70
Least Sandpiper	"	"	4,000	"	200	11/7-20				5,000
Dowitcher	"	"	4,000	11/7-20	6	12/5-18				4,000
American Avocet	"	"	2,900	9/5-18	100	11/7-20				3,000
Black-necked Stilt	"	"	40	"	No	Record				50
California Gull	"	"	5,000	10/31-11/16	Still	Present				10,000
Ring-billed Gull	"	"	3,830	"	"	"				30,000
Bonaparte's Gull	"	"	50	9/5-18	10	12/5-18				50
Forester's Tern	"	"	1,200	"	No	Record				2,000
Black Tern	"	"	1,500	"	"	"				4,000
Caspian Tern	"	"	80	"	"	"				100

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous	Period	180	Sept.	Still	Present		200
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	"	"	3	12/5-18	"	"		5
Duck hawk	1	11/21-12/4	Same		No	Record		2
Horned owl	Resident							30
Magpie								100
Raven								5
Crow								5
Turkey Vulture	Previous	Period	9	11/7-20	Same			20
Red-tailed Hawk	"	"	12	"	Still	Present		30
Rough-legged Hawk	"	"	20	"	"	"		100
Bald Eagle	"	"	62	12/10-31	"	"		70
Marsh Hawk	"	"	25	11/7-20	"	"		50
Prairie Falcon	"	"	2	12/10-31	"	"		2
Sparrow Hawk	"	"	12	9/5-18	"	"		30
Cooper's Hawk	2	12/5-18	Same		No	Record		2

Reported by Edward J. O'Neill

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

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

CORRECTED COPY

WATERFOWL UTILIZATION OF REFUGE HABITAT

CORRECTED COPY

Refuge **Tule Lake** For 12-month period ending August 31, 19 **65**

Reported by **Edward J. O'Neill** Title **Wildlife Biologist**

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops		(123)[1] Ducks	23,250,190	5,284	15,945
I	Upland	674	Geese	5,060,820	228	600
	Marsh	3,290	Swans	90,530		
Sump 1-A	Water	6,132	Coots	7,300,000	1,680	230
	Total	10,219	Total	35,701,540	7,192	16,775
	Crops	(113)[1] 326	(139)[2] Ducks	9,860,450	3,548	8,355
II	Upland	860	Geese	3,950,180	106	150
	Marsh	200	Swans	20,350		
Sump 1-B	Water	3,578	Coots	1,900,210	640	2,700
	Total	4,964	Total	15,831,190	4,294	6,106
	Crops		(129)[1] Ducks	3,000,500	64	200
III	Upland	3,463	Geese	3,300,010	6	50
	Marsh		Swans	100		
League of Nations	Water	Ditches	Coots	661,000		60
	Total	3,463	Total	6,959,710	70	310
	Crops		(102)[1] Ducks	7,860,240	96	400
IV	Upland	7,881	Geese	5,005,860	8	10
	Marsh		Swans	450		
Frog Pond	Water	Ditches	Coots	621,000		
	Total	7,881	Total	13,537,550	104	410
	Crops		(918)[1] Ducks	20,168,130	48	200
V	Upland	6,054	Geese	6,965,340	28	50
	Marsh	2,436	Swans	15,500		
SW Sump	Water	Ditches	Coots	2,090,780		70
	Total	8,490	Total	29,239,750	76	320
	Crops	17,827	(2443)[1] Ducks	64,247,610	8,040	22,100
	Upland	3,970	Geese	24,282,210	376	860
TOTALS	Marsh	3,490	Swans	126,930		
	Water	9,710	Coots	12,462,990	2,320	3,080
	Total	34,997	Total	101,119,740	11,736	26,020
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

1 - Refuge farmed
2 - Refuge farmed - not cropped

(over)

CORRECTED COPY

INSTRUCTIONS

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

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

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

3-1750c
Form NR-1C
(Sept. 19[illegible])

WATERFOWL HUNTER KILL SURVEY

Refuge Tule Lake (March) Year 196 5

(Based on 12-1/2 percent sample)

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/9-15	374	1,939	Pintail(442), Mallard(314), White-fronted goose(113), Green-winged teal(37), Shoveler (44), Widgeon(24), Cackler(21), Cinn. Teal (18), Gadwall(12), Redhead(8), Canada goose(3), Lesser Scaup(3), Canvasback(3), Snow(1)	1,103	332	1,435	2,490	9,553
10/16-22	147	611	Pintail(97), White-fronted goose(72), Mallard(42), Cackler(20), G-W Teal(13), Widgeon(10), Shoveler(5), Gadwall(5), Canada goose(4), L. Scaup(3), Cinn. Teal(2), Snow goose(2), Redhead(1), Canvasback(1)	278	69	347	909	2,145
10/23-29	100	541	White-fronted goose(67), Mallard(36), Pintail(22), G-W Teal(8), Shoveler(7), Cackler(4), Widgeon(3), Bufflehead(3), Canada goose(2), Cinn. Teal(1), Snow(1)	154	42	196	536	1,246
10/30-11/5	108	539	Pintail(66), White-fronted goose(27), Mallard(25), Shoveler(11), Widgeon(9), G-W Teal(6), Cackler(5), Canada goose(4), Cinn. Teal(3), Gadwall(3), Snow goose(2), Redhead(2), Bufflehead(1), Ruddy duck(1)	165	44	200	645	1,248
11/6-12	114	623	Pintail(113), White-fronted goose(72), Mallard(26), Shoveler(12), Gadwall(7), G-W Teal(8), Widgeon(3), Cackler(3), Goldeneye(3), Snow goose(2), Canada goose (1), Redhead(1), Bufflehead(1), L. Scaup (1), Canvasback(1), Hooded merganser(1)	253	60	313	629	1,726
11/13-19	87	394	Pintail(71), Mallard(36), White-fronted goose(36), G-W Teal(16), Snow goose(13), Widgeon(10), Cackler(10), Cinn. Teal(1), Gadwall(1), Redhead(1), Bufflehead(1)	206	50	256	521	1,533

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

80348-60

3-1750c
Form NR-J
(Sept. 19)

WATERFOWL HUNTER KILL SURV

Refuge Tule Lake (Marsh) - Cont. Year 196 5

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
11/20-26	56	182	Mallard(16), Pintail(13), White-fronted goose(12), Shoveler(6), Snow goose(5), Cackler (4), G-W Teal(3), Widgeon(3), Canada goose (2), Hooded Merganser(2), Bufflehead(1), Ruddy duck(1)	68	15	83	356	508
11/27-12/3	29	135	Shoveler(15), Pintail(12), Mallard(9), Cinn. Teal(5), Widgeon(4), Bufflehead(4), G-W Teal(3), Cackler(2), Snow goose(1), L. Scaup(1)	56	18	74	147	375
12/4-10	5	39	Pintail(3), Mallard(3), Shoveler(1)	7		7	70	98
12/11-17	5	16	Pintail(2), Mallard(1), Widgeon(1)	4	1	5	79	79
12/18-24	8	10	Mallard(1), Cackler(1)	2	2	4	44	22
12/25-31	None						18	
1/1-6	None							
TOTALS	1,035	5,029	Pintail(841), Mallard(509), White-fronted goose(400), G-W Teal(144), Shoveler(109), W Widgeon(77), Cackler (70), Cinn. Teal(20) Gadwall(26), Snow goose(27), Canada goose (16), Redhead(13), Bufflehead(11), L. Scaup (8), Canhasback(5), Goldeneye(3), Hooded merganser(3), Ruddy duck(2)	2,206	623	2,829	8,544	18,534
Average per hunter		4.85	.50 geese 1.72 ducks	2.22	.61	2.83		
Tule Lake Marsh & Field TOTALS	2,707	10,982	Geese: 513, 1,626, 2,139 / ducks: 1783, 268, 2051	4,190	852	5,042	15,700	30,490
Tule Lake average per Hunter		4.05	.79 geese .76 ducks	1.55	.31	1.86		

Reported by: Robert Abney & Palmer Sekora
Field data by enforcement personnel

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

pd 3-1750c
Form NR-1[illegible]
(Sept. 19[illegible])

WATERFOWL HUNTER KILL SURVEY

Refuge Tule Lake (Field) Year 1965

(Based on 12-1/2 percent sample)

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/9-15	141	503	White-fronted geese(78), Pintail(12), Cackling goose(9), Mallard(8), Gadwall(4), Widgeon(3), Redhead(3), Green-winged Teal (2), Snow goose(2), Shoveler(1)	120	14	134	1,206	1,146
10/16-22	153	530	White-fronted goose(105), Cackler(29), Snow goose(9), Gadwall(4), Widgeon(3), Mallard(2), Pintail(2), Canada goose(2), Redhead(2)	158-	28	186	967	1,163
10/23-29	221	713	White-fronted goose(195), Cackler(50), Canada goose(17), Mallard(5), GW-Teal(5), Snow goose(4), Pintail(4), Shoveler(1), Bufflehead(1)	282	35	317	1,895	2,000
10/30-11/5	187	460	White-fronted geese(162), Cackler(41), Snow geese(29), Canada geese(5), Mallard (4), Pintail(3), Redhead(3), Widgeon(2), Gadwall(1)	250	23	273	1,322	1,929
11/6-12	231	834	White-fronted goose(311), Snow goose(19), Pintail(14), Mallard(8), Widgeon(8), GW-teal(5), Cackler(3)	368	36	404	1,158	2,042
11/13-19	250	800	White-fronted geese(212), Cackler(61), Snow geese(49), Pintail(16), Mallard(13), Canada geese(2), Bufflehead(2)	355	48	403	1,571	2,532
11/20-26	189	737	White-fronted goose(56), Pintail(9), Cackler(5), Mallard(5), Widgeon(4), Snow geese(3), Canada goose(1), Redhead(1), Shoveler(1), Bufflehead(1)	86	6	92	851	316
11/27-12/3	93	368	White-fronted goose(10), Snow geese(6), Cackler(4), Mallard(3), Canada geese(3), Ring-necked duck(1) Wood duck(1)	28	7	35	299	112

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

3-1750c
Form NR-1[illegible]
pd (Sept. 19[illegible])

WATERFOWL HUNTER KILL SURV[illegible]

Refuge Tule Lake (Field) - Cont. Year 1965

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
12/4-10	70	358	White-fronted geese(25), Cackler(11), Pintail(6), Canada geese (6), Mallard(5), Snow geese(2), Shoveler(2), Cinn. Teal(2), Widgeon(1)	60	7	67	257	345
12/11-17	43	104	White-fronted geese(25), Canada geese(14), Snow geese(2), Cackler(1)	42	8	50	99	115
12/18-24	30	102	White-fronted geese(12), Canada geese(10), Mallard(2), Cackler(1), Snow geese(1)	26	2	28	84	78
12/25-31	27	105	Mallard(26), Pintail(14), Cackler(5), Snow geese(4), White-fronted geese(3), Widgeon (3), Shoveler(2), Canada geese(1)	56	3	61	62	140
1/1-6	37	141	Mallard(28), White-fronted(15), Pintail(16) Cackler(4), Canada geese(4), Widgeon(1), Gadwall(1)		61	2	63	146
TOTALS	1,672	5,933	White-fronted geese(1207), Cackler(224), Snow geese(139), Mallard(107), Pintail(90) Canada geese(65), Widgeon(25), Green-winged Teal(12), Gadwall(10), Redhead(9), Shoveler (7), Bufflehead(4), Cinn. teal(2), Ring-necked(1), Wood duck(1)	1,894	218	2,112	9,160	11,960
Average Per Hunter		3.55	.97 geese .16 ducks	1.13	.13	1.26		

Reported by: Robert Abney, Edward O'Neill, and Sekora

Field data by all enforcement personnel

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

3-1752
Form N[illegible]
(April 1946)

UPLAND GAME BIRDS

Refuge TULE LAKE Months of JANUARY to APRIL, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifioally requested. List introductions here.
Ring-necked Pheasant	15,000 Ac Marsh, Upland		N			N			2000	
Valley Quail	3,500 Ac. Sage-Grasslands fringe agricultural		0	N			0	N	450	
Chukar Partridge	500 Ac. grasslands and fringe agricultural				N			N	30	

O'Neill

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.

R

3-1752
Form N[illegible]
(April 1946)

UPLAND GAME BIRDS

Refuge TULE LAKE Months of May to August, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	18,000 Acres Marsh, Upland		23	600	28M:100F	N			3,000	Wet, cold June weather again very hard on upland birds resulting in smaller, later (renesting) broods than in 1964.
Valley Quail	6,500 Acres Sage-Grasslands and Agric. fringe		5	150			O		500	
Chukar Partridge	2,500 Acres Grass-lands and fringe Agric.		1	20			N	E	50	

E.J. O'Neill

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

3-1752
Form NR-2
(April 1946)

pd

UPLAND GAME BIRDS

1613

Refuge **Tule Lake** Months of **September** to **December**, 19**65**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	**18,000 acres marsh, agricultural and upland-juniper**				**67:100**	**1700***			**3,500**	**Wet, stormy weather first two days of hunting during which all but SW Sump opened to hunting.**
Valley Quail	**5,500 acres sage, fringe agricultural and upland-juniper**					**N O N E**			**500**	
Chukar Partridge	**2,500 acres sage, fringe agricultural and upland-juniper**					**N O N E**			**30**	

Reported by: Edward J. O'Neill & Robert M. Abney

*(Field data by all refuge enforcement personnel)

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.

pd

3-1757
Form [illegible]-3
(June 1945)

BIG GAME

Refuge Tule Lake Calendar Year 1965

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Mule Deer	Fringe agricultural fields, canals, juniper-sage	Est. 10	N	0	N	E	9*		1			Est. 75	30	
Pronghorn Antelope	Juniper-sage	Est. 3	N	0	N	E						Est. 20		

Remarks:

* Dogs during pheasant season

Reported by Edward J. O'Neill

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 <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-
(June 1945)

SMALL MAMMALS

Refuge TULE LAKE Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control*	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	Cattail-Hardstem bulrush; 2900 acres							T-8834 T-8835 T-8832) T-8833)	2705 1317 26	1006) 438) 9)	1453			8,000
Coyote	Sage-Grasslands, Marsh 25,287 acres				25									(Intermittent) 20
Jack Rabbit	Sage-Grasslands & fringe agric. 3,781 acres													150
Cottontail	Sage-Grasslands & fringe agric. 3,781 acres													250
Mink	Sage-Grasslands & Marsh 25,287 acres													No Data
Raccoon	" " " "													Est. 10-20
Skunk	" " " "													Est. 150
Marmot	Grasslands-fringe agric. 3,781 acres				90									Est. 250
Weasel	Sage, Grasslands, Marsh 25,287 acres													50
Kangaroo Rat	" " " "													50

* List removals by Predator Animal Hunter

REMARKS:

Reported by Edward J. O'Neill

INSTRUCTIONS

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

(1) **SPECIES:** Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) **DENSITY:** Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) **REMOVALS:** Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headings listed.

(4) **DISPOSITION OF FUR:** On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) **TOTAL POPULATION:** Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32/15

3-1755
Form NR-5

DISEASE

Refuge Tule Lake Year 19 65

Botulism

Period of outbreak 8-11 to 10-8-65

Period of heaviest losses 8-11 to 8-14

Losses:

	Actual Count	Estimated
(a) Waterfowl	285	600
(b) Shorebirds	10	20
(c) Other	85	100

Number Hospitalized		No. Recovered	% Recovered
(a) Waterfowl	15	None	0
(b) Shorebirds	3	None	0
(c) Other	0		

Areas affected (location and approximate acreage)
Shallow water bays at marsh edge Sec. 4, 9, 16 and 21 Sump 1-A; approximately 100 acres

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.
Stagnant water from 0 - 10"; Sump 1-A is a permanent water area which serves as an agricultural irrigation sump serving part of Klamath County & Tule Lake Basin.

Condition of vegetation and invertebrate life
Floating mats filamentous algae covered 15% of Sump 1-A

Remarks
85 (22%) of ducks picked up were unidentifiable ducklings. Disease confirmed by Bear River Research Station.

Lead Poisoning or other Disease

Kind of disease (1) Fowl Cholera (2) Lead Poisoning

Species affected (1) Geese', Snow, white-fronted geese, W. Swan (2) Canada, white-fronted geese, pintail, & Ruddy ducks, W. Swan

Number Affected Species	(1) Actual Count	(2) Actual Count	(1) Estimated	(2) Estimated
Whistling swan		5		10
Canada goose		3		10
White-fronted	25	8	50	10
Snow goose	125	3	250	5
Ducks		7		100
Number Recovered	None	None	None	None
Number lost			200	35

Source of infection (1) Probably San Joaquin Co. Delta Area (2) Shallow places in hunting areas (Sump 1-A)

Water conditions Above normal amounts and levels due to winter flood conditions

Food conditions Better than average

Remarks Also, few Canada geese found dead on nests suspected pesticides losses
(1) Incidence was in March & April;
(2) Incidence was in February and March.

Disease (1) & (2) confirmed by Bear River Research Station and Calif. Fish & Game Dept. labs.

Reported by: Edward J. O'Neill, Wildlife Biologist

NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge **Tule Lake** Calendar Year **1965**

1. Visits

a. Hunting **16624** b. Fishing **0** c. Miscellaneous **53015** d. TOTAL VISITS **69639**

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	14474	10177	FWS
Upland Game	2150	13998*	FWS
Big Game	NONE		
Other	NONE		

*reverts to 10177 after first two days of pheasant season

Number of permanent blinds **0**

Man-days of bow hunting included above **0**

Estimated man-days of hunting on lands adjacent to refuge **3745**

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

NONE

1c. Miscellaneous Visits

Recreation **10650**** Official **6190**

Economic Use **36175** Industrial **0**

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	On Refuge NO. OF GROUPS	On Refuge NUMBER IN GROUPS	Off Refuge NO. OF GROUPS	Off Refuge NUMBER IN GROUPS
Sportsmen Clubs	1	4	1	60
Bird and Garden Clubs	4	120		
Schools	4	125		
Service Clubs			10	720
Youth Groups	3	80	4	285
Professional-Scientific	5	110	23	865
Religious Groups	1	50	2	135
State or Federal Govt.	17	184	11	345
Other (African Students)	1	4		

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	12	Radio Presentations	
Newspapers (P.R.'s sent to)	27	Exhibits Tulelake-Butte Valley Fair	1
TV Presentations		Est. Exhibit Viewers	1900

** includes 7600 visitors stopping briefly while enroute tothe Lava Beds National Monument.

3-1756
(Rev. 4/63)

Reported by: J.T. Annear

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

pd

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

(1)

NONAGRIC[illegible]TURAL COLLECTIONS, RECEIPTS, A[illegible] PLANTINGS

Refuge Tule Lake Year 19 65

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Bulrush	20,000	C		Harvested		8,800	Unit B-2*	12#/A	50 Ac.		June	Poor	
Tall wheat-grass	1,000	R	2/23	Pacific Supply	$420.	920#							
Alta fescue	300#	R	2/23	"	75.								
Perennial Rye	300#	R	2/23	"	48.								
Merriam bluegrass	500#	R	6/6	"	450.								
Alsike clover	125#	R	6/6	"	25.								
White clover	125#	R	6/6	"	112.50								

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

Total acreage planted:
Marsh and aquatic
Hedgerows, cover patches
Food strips, food patches 50
Forest plantings

Remarks: *Mixture: 66 % Merriam bluegrass
17 % Alsike clover
17 % White clover

76148

Reported by: Annear

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

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Tule Lake (Cont.) Year 19 65

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
The following were on hand at the beginning of the year						end of year							
Crested wheatgrass	2,170#					2,170#							
Smooth Brome	1,050#					1,050							
Sweet Clover	2,880					2,880(S)							
Alta Fescue	400					150							
Perennial Rye						100							

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

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

Remarks: _____

76148

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING *

Refuge Tule Lake County Siskiyou State California

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Hannchen Barley			90	4,529	1,633		1,723		
Utah winter barley					201	11,280	201		
Pasture					50	10 ton	50	Kentucky bluegrass Dutch white clover Alsike clover	50
Kentucky bluegrass Dutch white clover Alsike clover									
								Fallow Ag. Land	None

No. of Permittees: Agricultural Operations None Haying Operations None Grazing Operations None

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				1,979
Hay - Wild				2. Acreage Cultivated as Service Operation				1,979

*None

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.

pd

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge **Tule Lake** County **Modoc** State **California**

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Hannchen Barley					**212**		**212**		
Gainas Wheat*					**114**	**114 ton**	**114**	**"Tall seeded for green browse 1965 - green browse and grain 1966**	**114**
								Fallow Ag. Land	**104**

No. of Permittees: Agricultural Operations **None** Haying Operations One Grazing Operations **None**

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				**430**
Hay - Wild Tall wheat & Smooth Brome	15	18	$45.00	2. Acreage Cultivated as Service Operation				**430**

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.

pd

3-1570
NR-8a
(4/54)

REFUGE GRAIN REPORT

Refuge Tule Lake Months of Jan. 1 through Dec. 31, 1965

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of: ~~Transferred~~	Seeded	Fed	Total	(6) On Hand End of Period	(7) Proposed or Suitable Use*: Seed	Feed	Surplus
Hannchen—cleaned and treated	6,917	5,035	11,952		3,822		3,822	8,130	8,130		
Hannchen - Cleaned		372	372			252*	252	120		120	
Hannchen - Uncleaned	5,609	4,800	10,409	cleaned & treated 5,035	cleaned 372	484**	5,771	4,638	4,638		
Utah winter - cleaned and treated	2,500		2,500		500		500	2,000	2,000		
Gaines - cleaned & treated	2,175	863	3,038		1,870		1,870	1,168	1,168		
Gaines-Uncleaned	663		663	Cleaned Treated 663			663				
Pirolina Barley Cleaned and treated	245		245		245		245				
Screenings-Hannchen		100	100			100*	100				

(8) Indicate shipping or collection points

(9) Grain is stored at

(10) Remarks *Bird banding **Pheasant feeding

Reported by: Henry Christensen

*See instructions on back.

NR-8a

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.

INT.-DUP. SEC., WASH., D.C. 17065

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: Tule Lake and Lower Klamath

Proposal Number: 1 thru 4

Reporting Year: 1965

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1. 5/29-6/27	Mustard (Brassica spp.)	Tule Lake buffer fields, dikes & berms	2,645	Alkanol amine salts of 2,4-D Dichlorophenoxy-acetic	1,323 lb. a.i.	.5 lb. a.i./A	Water 2gal/Ac.	Aircraft
2. 5/29-6/27	Mustard (Brassica spp.)	Lower Klamath refuge farmlands in Units 1, 4, 7, 8, 9, and 12	3,215	Alkanol amine salts of 2,4-D Dichlorophenoxy-acetic	105 lb. a.i.	.5 lb. a.i./A.	Water 2gal/Ac.	Aircraft
3. 5/29-7/3	Nettle (Urtica) Mustard (Brassica) Bassia (Euchinopsilon) Lambsquarter (Chenopodium)	Tule Lake and Lower Klamath dikes and berms	913	Alkanol amine salts of 2,4-D Dichlorophenoxy-acetic	527 lb. a.i.	.75 lb. a.i./A	Water 2 gal/Ac.	Aircraft
4. 7/30-8/7	Canada thistle (Cirsium arvense) Ball thistle (Cirsium vulgare) Whitetop (Cardaria pubescens)	Tule Lake - spots Lower Klamath - Unit 2 dikes & berms	12	Trysben (Trichlorobenzoic acid)	30 lb. a.i.	2.5 lb. a.i./A	Water 2 gal/Ac.	Ground rig Hand wand

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

Proposal numbers 1, 2, and 3 are of a continuing and more or less predictable character. The objective of these proposals has been to reduce and control the incidence of the target pests, thereby reducing competition with crop plants and grasses for moisture, nutrients, and sunlight. The objectives of proposals NO. 4 and 5 are similar, although Trysben is being used this year, for the first time. Proposal No. 3 is correlated with the seeding of grasses on Tule Lake and Lower Klamath dikes and berms each year. Proposals No. 1 and 3 are under contract which is let annually. Apparent kill in 1965, as in past years, was 95 percent. Cost: Equipment and labor - $803.34; material - $960.66; 3,558 acres treated for $1,764.00; cost/acre - $.50. Proposals No. 2 and 3 are the responsibility of permittees on Lower Klamath Refuge. Proposals No. 4 and 5 were spot treatments of target pests Canada thistle, ball thistle, and whitetop. Apparent kill was 90 percent. Cost: Equipment and labor - $282.75; material - $280.50; 33 acres treated for $563.25; cost/acre- $17.07. Proposal No. 6 was aimed at the target pest grasshoppers. At the end of seven days, a kill of 75 percent was noted. Technical assistance and funds for materials were furnished by the Plant Pest Control Division of the U.S. Department of Agriculture. The total cost was $2432.40 or $1.35 per acre. The cost to the Bureau was: Labor - $3.46; Equipment - $17.10.

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

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION - Continued

Refuge: Tule Lake and Lower Klamath

Proposal Number: 5 thru 8

Reporting Year: 1965

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
5. 7/20-9/7	Canada thistle (Cirsium arvense)	Lower Klamath (Laird's Landing)	21	Tryben (Trichlorobenzoic acid)	52.5 lb. a.i.	2.5 lb. a.i./A	Water 15 gal/A	Ground rig Hand wand
6. 7/14-15	Grasshoppers (Camnula pellveida) (Melanoplus devastator)	Lower Klamath Unit 5 & 12 Tule Lake B-2, 3, 4, 5, 6, and 7	1,800	Carbaryl (sevin)	1,125 lb.	8 oz/A	Water 1/2 gal/A	Aircraft
7.	NO TREATMENT REQUIRED							
8. Late July Aug. 16	Aphid (Macrosiphum pisi)	Lower Klamath - 4F-1 and 4F-2	700	Parathion	175 lb.	1/4 lb. ai/A	Water 2 gal/A	Aircraft

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

LOWER KLAMATH

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C O N T E N T S

*Not applicable this report period

I GENERAL

A. Weather Conditions

Refer to Tule Lake section for general weather conditions.

B. Habitat Conditions

1. Water*

Inflow and evacuation records on Lower Klamath were shattered in 1965. Storage was a problem even though water was evacuated at available capacity. By the end of January all farm units, excepting the north portion of Unit 7 which contained a winter wheat crop, were flooded. Operating levels of all water units were exceeded and maximum water surface elevations were exceeded on Units 4, 7, 8 and 12A.

Flood conditions peaked in March with levels approaching within 1.5' of dike crest on Units 6, 7, 8 and 12A. Maximum water surface elevations were exceeded on all other units by .74' to 1.10'.

Conditions were well on the way toward return to normal when 2.26 inches of precipitation was received in June. This was 1.27 inches above the norm of .99 inches. The problem was compounded further in August when 1.90 inches of precipitation was received. It was not until late October that the last of what was considered excess flood water was removed and this was accomplished through the use of a 30 cfs portable pump borrowed from the Kern-Pixley Refuge.

By the end of December, pre-irrigation of Lower Klamath farm units, excepting Unit 12, was completed and dewatering operations initiated.

Table I is a record of inflow (recorded from Plant "D", Ady Canal and estimated average local runoff) and evacuation. Precipitation has not been accounted for; local inflow is estimated for an average year.

Table II is a record of the use of water on agricultural land in 1965.

Table III is a record of deviation from approved objective levels in 1965.

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TABLE I

1965 Inflow and Evacuation

Lower Klamath Area

(Acre Feet)

	Inflow						Evacuated
Month	Plant "D"	Cottonwood Creek	Sheepy Creek	Willow Creek	Ady Canal	Totals	Stateline Hwy Structure to Straits Drain
Jan.	18,351	800	1,350	300	0	20,801	11,958
Feb.	17,127	800	1,250	300	0	19,477	7,138
March	15,464	500	2,000	300	0	18,264	11,612
April	10,641		1,500		0	12,141	16,150
May	8,475		800		0	9,275	14,172
June	6,729		1,000		0	7,729	7,102
July	13,399		1,000		250	14,649	11,112
Aug.	13,653		1,000		632	15,285	13,182
Sept.	3,707	150	900		0	4,757	6,862
Oct.	8,224	350	1,400		0	9,974	5,726
Nov.	14,763	600	1,400	200	0	16,963	12,766
Dec.	12,769	800	1,400	200	0	15,169	12,226
TOTALS	143,302 2/	4,000 1/	15,000 1/	1,300 1/	882	164,484	130,006

1/ Estimated annual flow. Forty percent is used for irrigation above Unit 2 - net inflow into Unit 2 is about 60 percent of annual flow.

2/ Estimated annual average 65,000 acre feet

Total Inflow: 164,484

Evacuated: 130,006

NOTE: 1965 precipitation 12.37 inches (Average 10.26 inches)

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TABLE II

Use of Water on Agricultural Land - 1965

Unit	Acreages	Date of Use 1/	Comments
1 (F-1, 2, 3, 4, 5, 6, 7, 8)	714	January-April	Irrigation
1 (F-9 & 10)	216	May-December	Flooded for control of quackgrass
3-F	700	January-June	Flooded for control of weeds and alkali. Dewatered for topog survey.
4F-1	1,200	December '64-April	Irrigation
4F-2	600	November '64-April	Irrigation
7F-2	774	November '64-July	Storage-irrigation
9F-1	525	December '64-April	Irrigation
12 (NE & NW Fields)	2,314	Dec. '64-October	Storage (not possible to remove water in time for farming)

1/ Dates are 1965 unless otherwise shown.

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TABLE III

Record of Deviations from Approved Objective Levels - 1965

Unit	2	3	4	5	6	8	9	12-A	White Lake
Op. Level	4078.0	4077.0	4077.0	4077.5	4074.5	4074.5	4077.0	4075.4	4081.2
Jan. Dev.	+ .32 - None	+ .58 - None	+ .58 - None	+ .72 - None	+ 1.22 - None	+ 1.60 - None	+ .66 - None	+ .60	Water turned in
Feb. Dev.	+ .86 - None	+ 1.09 - None	+ 1.04 - None	+ 1.65 - None	+ 1.72 - None	+ 2.16 - None	+ 1.10 - None	+ .42 - None	No Gage
March Dev.	+ .88 - None	+ 1.13 - None	+ 1.10 - None	+ 1.18 - None	+ 2.64 - None	+ 3.04 - None	+ 1.18 - None	+ 1.50 - None	+ .18 - None
April Dev.	+ .98 - None	+ 1.09 - None	+ 1.06 - None	Gage not Accurate	+ 2.80 - None	+ 2.88 - None	+ 1.16 - None	+ 1.50 - None	+ .04 - None
May Dev.	+ .86 - None	+ .91 - None	+ .12 - .22	" "	+ 2.60 - None	+ 2.52 - None	+ .32 - None	+ 1.42 - None	+ .12 - .04
June Dev.	+ .16 - .02	+ .71 - None	+ .36 - None	" "	+ 2.08 - None	+ .94 - .16	+ .22 - None	+ 1.00 - None	+ .20 - None
July Dev.	+ .16 - .14	+ .70 - None	+ .36 - None	Dry "	+ 1.00 - None	Dry botulism control	+ .16 - None	+ .68 - None	+ .04 - .56
Aug. Dev.	+ .30 - None	+ .42 - None	+ .50 - None	" "	Dry botulism control	" "	+ .50 - None	+ .12 - .18	+ None - 1.00
Sept. Dev.	+ .28 - None	+ .35 - None	+ .34 - None	" "	Started flooding for hunting season	Started flooding for hunting season	+ .42 - None	+ None - .44	+ None - 1.12
Oct. Dev.	+ .22 - None	+ .34 - None	+ .30 - None	" "	+ None - .16	+ .42 - None	+ .34 - .08	Draw down for storage	+ None - .20
Nov. Dev.	+ .32 - None	+ .46 - None	+ .48 - None	" "	+ None - .22	+ .36 - None	+ .56 - None	" "	+ None - .20
Dec. Dev.	+ .32 - None	+ .50 - .06	+ .48 - .04	" "	Draw down for storage	+ .50 - None	+ .52 - None	" "	+ .12 - None

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2. Food and Cover*

General conditions which prevailed in the Tulelake Basin existed in the Lower Klamath Basin. In January there was less snowfall and coverage than at Tule Lake. In the instance of upland bird habitat conditions the dikes and roads were more open and windswept of snow. Water areas were mostly frozen over the first part of the 1965 season. Only 40 acres open water, in form of water holes, was available for waterfowl using the Lower Klamath Refuge.

Some Brewer's blackbird control was necessary at the southwest edge of White Lake where winter cattle feeding attracted a flock of a few hundred birds. Serious outages occurred when the nearby Kingsley Field aviation homing device was used for a roost.

February 5-7 southerly warm winds moderated cold weather and all water units thawed but refroze the night of the 7th. After the 18th of February most water units were open to waterfowl.

Ring-necked pheasant feeding was initiated on units adjacent to Highway 161, the same as at Tule Lake Refuge, in January. Some eight miles of roads and dikes were graded bare through January 22 during which time 12,200 pounds of barley grain was spread to attract birds away from fast traffic. Successful?

Water problems accompanying winter floods brought considerable hardship to Lower Klamath also. All units south of the State Line except Unit 7 (green wheat) were inundated three to five months.

Share-crop barley left standing in Units 4, 9, and 12 all went under water resulting in considerable loss since Units 4 and 9 had received only 40 to 50 percent utilization prior to the previous fall migration. ?

Following good thaws in February and March, snow again blanketed all of the Lower Klamath April 6. The accompanying cold and wet conditions may have been tough on incubating Canada geese.

There was no serious depredation problem to neighboring crops during spring migration and migrants seemed to move on northward almost as rapidly as they arrived from the south.

Algae matting or floating coverage by filamentous material was worse than last year but winds and rain prevented a serious peak period. We estimated peak coverage as follows compared to other years.

*O'Neill

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UNITS AND PERCENTAGE COVERED AT PEAK ALGAE BLOOM

Year	2	3	4	6	9	12-A
1965	3%	8%	30%	--%	10%	25%
1964	1	10	50	65	10	25
1963	5	30	85	80	70	85
1962	2	5	75	30	25	60

Algae and floating pondweed debris fouled pumps, spillways and drains on both Tule Lake and Lower Klamath waterways.

The flooding of Unit I agricultural fields as practical last year was again helpful in reducing loss of young and molting Canada geese. Broods continued to make two to four highway crossings daily, but losses were low. The flooded agricultural fields offer escape and brood security which does not exist normally north of the highway. Most broods are killed in attempts to return to Unit 3.

Aquatic plant growth in water units was lower due primarily to greatly changed levels and floods. White Lake, after many years without summer water produced surprising growths of widgeon grass (Ruppia), sago pondweed (Potamogeton) and traces of Nevada sedge (Scirpus). Although the establishment of the area was late, seasonally (March) birds which hatched in the unit received considerable benefit from the aquatic plant production. What a remarkable change from former summer seasons when the unit was bone dry and grazed to the limit! This 1,154 acre tract when flooded contains 914 ideal islands. ?

Green wheat (Gaines) in Unit 7 was of major importance since all other tracts were under water during spring migration. In early March use was recorded. Over 15 days the following use days occurred on the green crop: Ross' goose, 17,500; snow goose, 34,200; white-fronted goose, 236,000; Canada goose, 13,150; coot, 33,500; American widgeon, 164,000; pintails, 5,850; and cacklers, 20,500. Spectacular!

Good fortune and water management combined to make field portions of Units 4 and 9 available in time to produce grain crops (share crops). Since Units 3, 7, and 12 could not be drained, we were almost 3,000 acres short of grain compared to the conditions of the previous year.

The wheat crop in Unit 7 received hard frosts before maturity; however, Canada geese used it heavily from mid-summer on.

pd

LK

Area agricultural grain harvest went smoothly with little loss to ducks. Yields on refuge tracts approximated those of one year ago. By November 15 harvest was complete in the basin. Refuge share grains were almost fully utilized by birds before the end of November.

At the beginning of hunting season, additional units were flooded including the south half of Unit 6 and all of Unit 8. In December, Units 6 and 8 were drained and the field portion of Unit 4 (barley stubble) flooded.

Two inches of snow blanketed the area November 21 and water units first froze over on November 25. The first days of December saw $2\frac{1}{2}$ to 3 inches of ice on all units. This condition made for considerable stress and forced more birds to leave the country.

Late in November irrigation spillage from Hot Creek was received in the new Miller Lake Unit and partial (75%) water coverage took place.

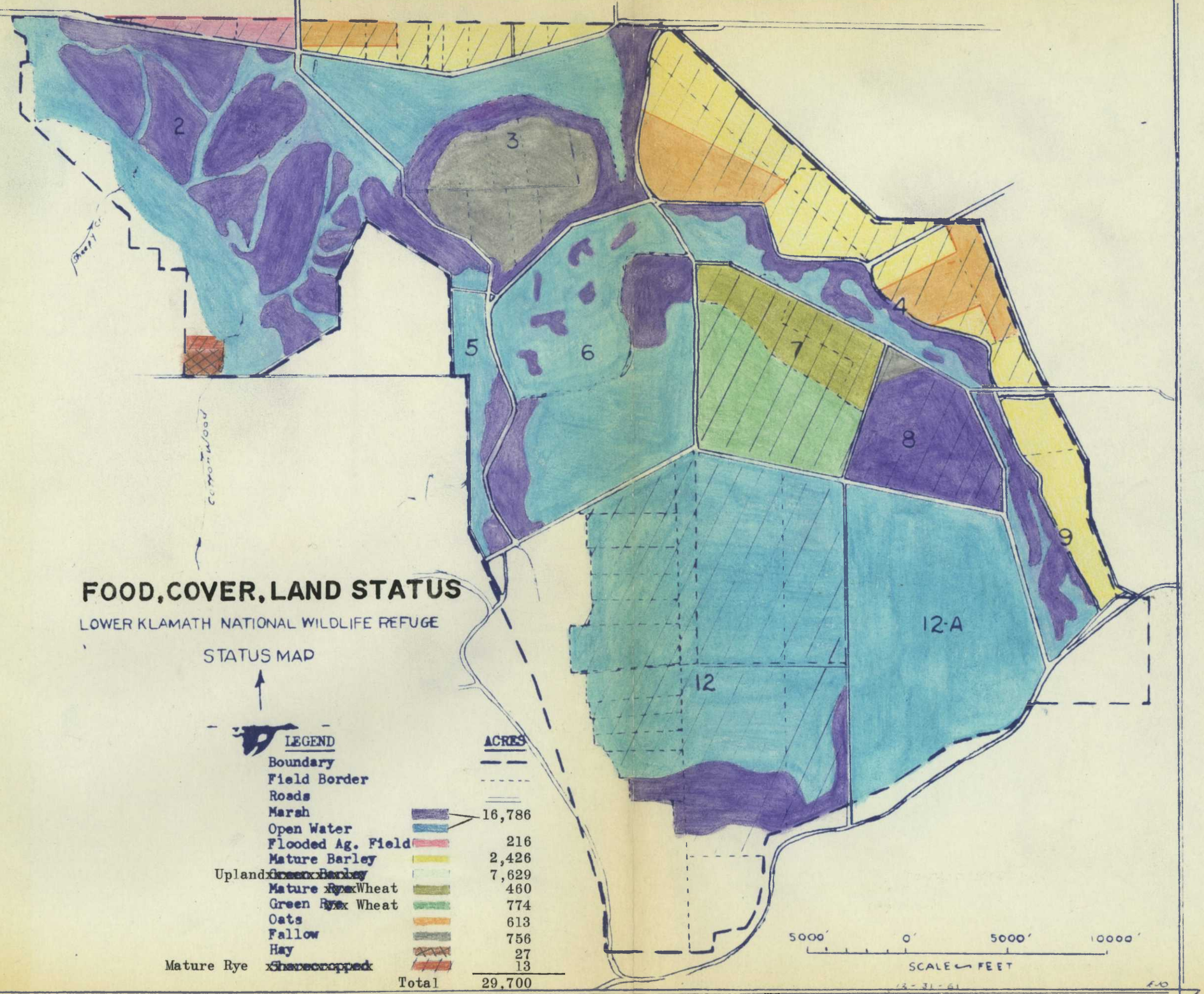
Cover and habitat conditions in the Sheepy East (farming), Sheepy West (pasture) and the new Straits Unit (farming) did not undergo any significant change following enactment of the Kuchel Bill.

To improve habitat, bulrush seedings were initiated (see: FIELD INVESTIGATION OR APPLIED RESEARCH) in Units 2, 6, 12, Miller Lake and White Lake.

Tall clover and sunflowers continue to come back and establish on levees surrounding the various units and should prove valuable to upland birds.

pd

C.O.



FOOD, COVER, LAND STATUS

LOWER KLAMATH NATIONAL WILDLIFE REFUGE

STATUS MAP

LEGEND	ACRES
Boundary	
Field Border	
Roads	
Marsh	16,786
Open Water	
Flooded Ag. Field	216
Mature Barley	2,426
Upland ~~Green Barley~~	7,629
Mature ~~Rye~~ Wheat	460
Green ~~Rye~~ Wheat	774
Oats	613
Fallow	756
Hay	27
Mature Rye ~~Shareccropped~~	13
Total	29,700

LK

II WILDLIFE

A. Migratory Waterfowl*

Early in January Canada geese paired as mentioned in the Tule Lake section.

Spring arrivals (snow geese) showed up February 8 and promptly moved to Lower Klamath Basin after a brief stop at Tule Lake. The vast acreage of inundated croplands provided resting, loafing, and feeding habitat in unprecedented amount. Units 4 and 9 share-crop grains left standing at the time of last winter's flood were estimated 30 percent lost. At Unit 3 ducks and geese swam contentedly about in unharvested rye grain during February and March.

Whistling swans congregated in the Straits unit as they habitually have done each February. Newly flooded grain fields prove a real attraction.

Forms NR-1 and NR-1A cover the general pattern of migration and peaks. On March 7 some 20 common egrets showed up at Unit 9. An Emperor goose accompanied 200 Ross' geese foraging on the Unit 7 green wheat during March.

By April 20 colonial nesters were active at Unit 2 with some 300 pelican nests containing 2-3 eggs; 60 cormorants with 2-4 eggs and 30 great-blue heron nests with young and eggs.

Gulls nested at Units 3 and 4 as in former years. Observations indicate the June 20 hailstorm may have killed a large (200) number of young in the colony at Unit 4. As early as March 31 we observed 1,300 on colony at Units 3 and 4.

Cormorants did not nest on Unit 9 this year.

Sandhill cranes were first noted by rancher Bill Heitman at Coyote Point this spring. The species remained in the basin all summer. It is possible nesting occurred in the Sheepy West unit; however, this was never confirmed. In mid-June a total of 12 cranes were present at Units 5 and 6.

The mid-February survey of Canada goose breeding pairs was up substantially as well as the number of non-breeders. Despite this, production was down (63%) to the lowest in four years. Units 2, 3, 4 and 9 and Sheepy West continue to produce the most broods. First brood of the season (7) was observed by Foreman Christensen at Unit 9. High waters did not hinder nesting according to observations. Wet, cold spells in April and May probably claimed a substantial number of goslings especially in the large, combined broods. Ring-billed and California gull depredations on geese were negligible compared to other years.

pd

*O'Neill

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Breeding pairs of ducks were down 60 percent from the 1964 season. Total ducklings as of July 1 was off 30 percent. Late nesting and renesting due to inclimate weather did not substantially increase the total production except in the case of redheads which improved over the 1964 hatch. A severe hailstorm, covering about 1,500 acres of Lower Klamath (Units 2 and 4) June 20 shredded leaves from willows and piled up three inches of hail in two minutes. The storm probably accounted for loss of some ducklings out on Sheepy Lake.

Eared grebes renested (second stage?) through August. Preferred colony sites were in Unit 3 and 12-A.

The first lesser yellowlegs of the season showed up March 3. Avocets arrived March 3 also. Caspian terns were first seen April 14.

B. Upland Game Birds*

Ring-necked pheasant winter feeding was again carried out in January (see: Food and Cover). The late winter-early spring population tally indicated the lowest population of breeding birds in years. Nesting results were poor due to wet, cold weather in June and renesting left much to be desired. As in the case of Tulelake Basin, hen-cock ratios looked good in the fall months, however, total population was comparatively low when the season opened in November.

Valley quail were observed along the south boundary and population status was little changed over the number present in 1964.

C. Big Game Animals*

Mule deer were somewhat restricted to the main levees due to the flood conditions which prevailed. Units 2 and 5 were favored areas and several new fawns were born in the marsh areas. Hunter harassment during pheasant season was not as severe as at Tule Lake; however, there was considerable confusion the first day of pheasant season.

Antelope watered regularly at Units 12 and 12-A and occasionally ranged out into the marsh area of Unit 12 as the floodwater was evacuated. A high population count of 40 was noted adjacent to the Lower Klamath Refuge in August.

D. Fur Animals, Predators, Rodents*

Coyote numbers were considered at a very low population stage. Flooding of much of the area certainly restricted range and habitat. The

*O'Neill

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jackrabbit population has become progressively lower each year and this species locally may have been strongly influenced by the rabbit population.

Raccoons continue low in total population numbers; however, tracks and signs indicate there has been a steady increase over the past few years. Trappers failed to capture any raccoons in traplines during the winter-spring trapping season. Favorite haunts were Units 2,3 and 9.

Skunks decreased in the area due presumably to winter flood conditions. In the plots established for nesting success surveys the amount of nest depredation by the species, compared to activity of other years was very low.

Feral cats were hard pressed for habitat and range because of the flood. The population underwent considerable decrease evidenced by an all-time low in numbers observed. State wardens, using refuge permits, continue to shoot and dog the two latter species, whenever encountered.

Weasels were observed a number of times at Units 2, 3, 4 and 5. There were three known road kills near Unit 2 and such instances in the past few years have been rare.

Bob cats are low in total numbers and are only incidental on this refuge. The Chalkbanks and Unit 12-A areas were frequented more than other parts of the refuge.

Marmots along the south boundary of Units 12 and 12-A showed slight population decline again during 1965. Every unit on the area has a few of these animals on the levees and ditchbanks. First spring note of the species following hibernation was February 13 when Assistant Refuge Manager Nuess observed one on the primary dike.

Muskrats continue to decrease. The population is at its lowest in 20 years. Winter water importations undoubtedly worked a hardship. Our over-all water management program and vegetative climax situation are the greatest controlling factors. Some 300 trap-days in Unit 9 by one of the permittees netted about 30 rats during February.

Cottontails and jackrabbits continue downward population trends. Jacks especially were at lowest numbers in years.

pd

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

There has always been a greater number of bald eagles on the area in the writer's experience; however, when use days were tallied, we found the golden eagle to be more prominent than believed. Bald eagles tallied 455 use days while goldens were here 294 days. Peak counts fail to show this fact.

Short-eared owls appear on the increase after three years of quite low numbers compared to the high population in 1961-62. In March one adult bald eagle found at Unit 2 was sent to Patuxent Researchers for pesticides monitoring. No report is available because of problems with the gas chromatograph.

A single Cooper's hawk frequented the Unit 2-3 levee area during December.

F. Other Birds

No significant change noted.

G. Fish*

There were mild losses of tui chubs at the inflow and outflow of Unit 3 corresponding to the time and losses at Tule Lake.

The Straits Drain each year carries a tremendous population of chub at the intake north of Highway 161. This year was no exception.

Gill net collections in the Unit 3 area by Health Education and Welfare researchers disclosed similar take and species as last year (chub, bass, perch).

Pelican and cormorant regurgitations examined at the Unit 2 nesting colonies indicated almost exclusive use of chubs with a few sunfish.

H. Reptiles*

Non-poisonous snakes have become rare on refuge units where historically they were abundant. The decline over the past four years would indicate some problems involving food chain or habitat.

Supposition? Or substantiated by data?

R

pd

*O'Neill

LK Rattlers were observed on two occasions along the south boundary.

Turtles, inhabiting only the Unit 2 area, seem to maintain a rather stable population. Three dead were found along the east edge of Sheepy Lake during duck sickness surveys in August. It is not known if this is an unusual loss or not.

I. Disease*

Fowl cholera was first noted in the area in February (see also Tule Lake section DISEASE). Five (5) dead snow geese were picked up February 25 (one on Unit 12-A; four on Unit 6). Laboratory tests confirmed Pasteurella m. was involved. March 7, a single snow goose was picked up on Unit 12-A. A single snow was noted in Unit 2 (Sheepy Lake). Incidence and recoveries were where the bird concentrations rafted at night supporting the contention it was perhaps contracted before migration into the basin. We estimate 30 snow and white-fronted geese and five whistling swans were lost to cholera during February and March. Inaccessibility of much of the area due to ice and mud plus the activity of predaceous species under stress conditions always make our late winter disease surveys and pick ups inadequate. Both Bear River and California Department of Fish and Game laboratories examined and confirmed cholera through flouriscopic and bacteriological tests.

Lead poisoning claimed an estimated ten snow and Canada geese, ten whistling swans and an undetermined number of ducks in late winter.

Botulism losses occurred in early August at Unit 12 following reintroduction of water which reflooded a portion of that unit. Some 4,000 ducks, geese and shorebirds were affected by the epizootic malady before the unit could be pumped back down. Had the water, imported from Tule Lake sumps at the time, been stored in other units with confining shorelines and dikes it is doubtful if botulism would have occurred.

Because of labor shortages in the "biological department", birds were not crated and transported to the Tule Lake headquarters hospital this year. Antitoxin was administered in the field on sickness-free units (12-A and 3) and either held in portable crates or released under the shelter of shoreline vegetation. The supply of antitoxin became depleted in mid-August. All sources were canvassed and it developed that supplies are no longer being manufactured. In the interim treatment reverted to the old method of fresh water flushing with syringe and releases into fresh water areas.

pd *O'Neill

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Of interest is the fact 300-500 ducks and shorebirds were lost in the Unit 2, Sheepy Lake area in late July and early August. Similar to the incidence at Tule Lake, birds did not respond to botulinus antitoxin injections. California Fish and Game laboratory Technician Brian Hunter visited the area on one occasion and collected several ducks and blood samples for analysis. Enroute to Sacramento refrigeration proved inadequate and tests were unsatisfactory. We then obtained 5cc blood samples from two pintails, one shoveler, one mallard, and one lesser scaup found sick on Sheepy Lake. Also, the following frozen specimens were shipped by air express: three pintails, one mallard duckling and one bufflehead duckling. Tests by the state showed negative for botulism in all instances. We are at a loss to explain the cause of death. In two weeks the sickness was over. Some of the specimens sent to Bear River showed trace amounts of clostridium in bacterial tests.

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III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development*

On March 12 a three-year program of agricultural land development was completed on Lower Klamath Refuge. On that date dikes and other facilities necessary to permit impoundment of water on all refuge farm units for quackgrass were finished.

The most economical and accepted method of controlling quackgrass in the Lower Klamath area is by flooding infested farm units for a growing season. In order to maintain agricultural units under water, fields must be levelled, enclosed within perimeter dikes and toe drains excavated to protect adjoining farmlands from seepage. Although improvements and refinements in field irrigation and drainage will continue on Lower Klamath National Wildlife Refuge, one phase of development has been completed and all refuge fields can now be flooded for quackgrass control if need be.

Two miles of fence along the south half of the west boundary of Lower Klamath Unit 2 was completed.

Weeds were burned, dike slopes shaped and the road crowned on the south side of Units 6, 7, and 8. The slopes were then seeded to grass.

Considerable development and maintenance work was done during the year directed toward improving irrigation and the better handling of flood and drainage water.

A major activity was the raising of low spots, approximately one foot, in the 6-12 and 7-12 dikes to prevent their being topped by rising water during extreme flood conditions such as occurred during the winter of 1964 and 1965.

Fifteen inch CMP's with gates were placed in fields 1F-2, 3 and 5 and a 24" CMP with gates was placed in fields 1F-1 to provide better and faster drainage of these fields.

A 24" CMP with gate was placed in the Ady Canal to provide water for the operation of the 1F-9 and 10 pump. This pump is being used to flood 1F-9 and 10 for quackgrass control.

A 36" CMP with gate was placed in the southwest corner of 4F-1. This pipe empties into the Central Canal between Units 3 & 4. The water control structures from Units 3 and 4 into the Central Canal can be closed thus providing deep drainage for fields 4F-1 and 2.

*Christensen

pd

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The 22-B dragline was used to dig 11,600 lineal feet of drain for the Bureau of Reclamation in the Sheepy East section of Lower Klamath. A portion of Sheepy East is being flooded for quackgrass control causing a seepage problem on the lessee to the east. The drain was dug to control the seepage from this area.

Rebuilt the Unit 6 contour dike (2.6 miles) damaged during the 1964-65 flood. This dike was rebuilt to elevation 4081' and resloped (5-1) on the south side and 3-1 on the north side. It is now ready for resurfacing and riprapping.

Completed puddle trenching of Unit 5 east boundary dike (approximately 15,500 lineal feet) and built 15,000 lineal feet bringing the dike to elevation 4083' with a 16' top and 5-1 slope on the west side.

Rebuilt the 4-9 bridge. A steel frame work was designed for this bridge using I beams from a surplus hanger building. This steel frame work was then decked with 3" x 12" planks.

If there was any question in anybody's mind whether it would withstand the load it was designed for, it was dispelled when the Lima shovel, on a lowboy trailer, (117,000 lbs.) was moved across it.

Well stated.

B. Plantings

1. Aquatics and Marsh Plants -Refer to V. FIELD INVESTIGATION or APPLIED RESEARCH

3. Upland Herbaceous Plants*

The first planting of the season got underway on the 3rd of February when the north, south, and west dikes of Unit 1, F-9 and F-10 were seeded utilizing a mixture of 55 percent tall wheatgrass, 35 percent alta fesque, and 10 percent perennial rye. Twenty-five (25) acres were drilled at the rate of ten pounds per acre.

During the early part of March, twenty-eight (28) acres of dike along the south side of Units 6, 7, and 8 were seeded at the rate of 17 pounds per acre, using a mixture of 62 percent tall wheatgrass, 19 percent alta fesque, and 19 percent perennial rye. Application was by means of a drill.

On the 15th of March, the lateral along the south side of Unit I, F-6, F-7, and F-8, and the east bank of the F-6, F-7 drain were seeded. Four and nine tenths (4.9) acres were drilled at the rate of 24 pounds per acre. The mixture was comprised of 55 percent tall wheatgrass, 35 percent alta fesque, and 10 percent perennial rye. Refer to following map for location of plantings.

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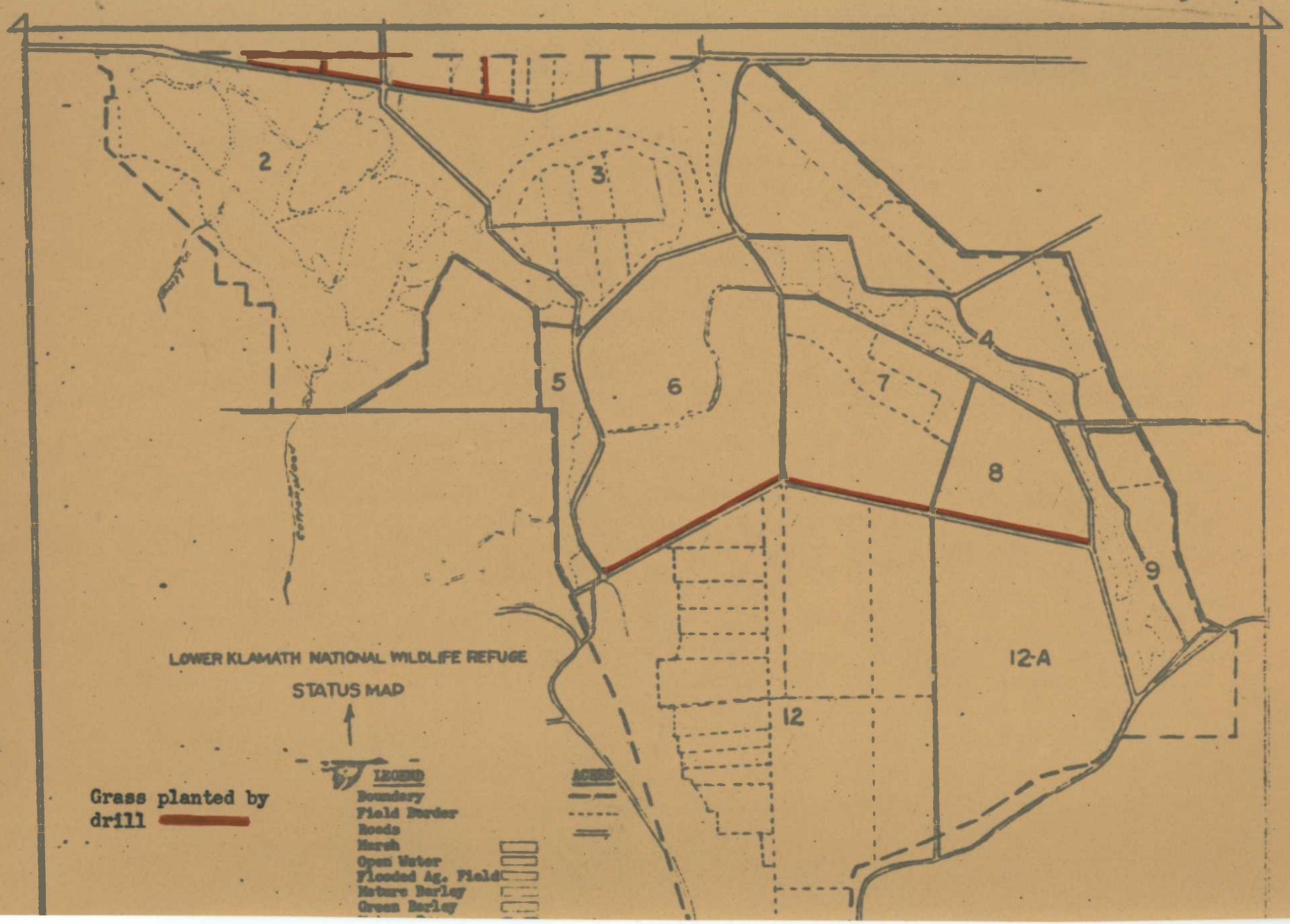
2
3
4
5
6
7
8
9
12
12-A
LOWER KLAMATH NATIONAL WILDLIFE REFUGE
STATUS MAP
Grass planted by drill
LEGEND
Boundary
Field Border
Roads
Marsh
Open Water
Flooded Ag. Field
Mature Barley
Green Barley

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4. Cultivated Crops*

Production records on sharecropped and refuge farmed lands for 1961 through 1965 are tabulated below. Only barley and oats are included since these were the principal crops grown.

Year	Acres	Crop	Bushels Produced	Bu. Per Acre
1961	6,145	Barley	269,165	43.8
	4,135	Oats	374,584	90.6
	10,279		643,749	62.6
1962	4,614	Barley	255,537	55.3
	3,090	Oats	261,577	84.6
	7,704		517,114	69.9
1963	3,440	Barley	238,916	69.4
	2,373	Oats	191,853	80.9
	5,813		430,769	74.1
1964	3,785	Barley	282,257	74.5
	2,228	Oats	176,628	79.2
	6,013		458,885	76.3
1965	2,426	Barley	191,370	78.9
	613	Oats	33,636	54.9
	3,039		224,961	66.9

Total refuge acreage under cultivation in 1965 was reduced by approximately 40 percent because of flood conditions. It was not possible to remove water in time for farming on Unit 12 containing 2,347 acres and Unit 3, F-1 containing 700 acres.

The oat crop of permittee Cecil Carland on Unit 4, F-1 and the refuge farmed Gaines wheat crop on the north portion of Unit 7 were badly damaged by frost and hail.

A 30 cfs portable pump, borrowed from the Kern-Pixley Refuge, was employed to remove excess flood water from the south portion of Unit 7 so that it could be farmed. Gaines winter wheat was planted by refuge personnel by September 14. The 774 acres of green browse produced on this unit was heavily utilized by both ducks and geese and provided some excellent hunting.

The following charts give a complete breakdown of the production status for 1965 of lands on Lower Klamath. Production totalled 236,856 bushels, 157,121 bushels of which were the cooperator's share and 79,735 bushels the Government's share. The Government's share was left unharvested for waterfowl use.

pd

*Nuess

SUMMARY OF PRODUCTION
ON
SHARECROPPED LAND - LOWER KLAMATH REFUGE - 1965

Code	Crop	Cooperator's Share Harvested		Government's Share Unharvested	
		Acres	Bushels	Acres	Bushels
1/	Hannchen Barley			671	40,683
2/	Wocus Barley	1,289	113,791	312	25,702
3/	Bonneville Barley	60	3,229	30	1,500
4/	Trebi Barley	64	6,465		
5/	Park Oats	613	33,636		
6/	Forax Rye			13	350
	TOTALS	2,026	157,121	1,026	68,235
	HAY	27	40 tons		
	TOTAL ACRES 3,079				

REFUGE FARMED LAND - LOWER KLAMATH REFUGE - 1965

Crop	Unit	Acres	Bu./Tons	Average Bu./Ton Per Acre
Gaines winter wheat	7-N. Field	460	11,500	25
Gaines winter wheat (Green Browse)	7-S. Field	774	387 Tons	.5 ton

Total refuge acreage under cultivation - 1965 - 4,529 1/

1/ Includes quackgrass control on sharecropped land

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SHARECROPPED LAND - LOWER KLAMATH REFUGE - 1965

Cooperator	UNIT	FIELD	BARLEY Cooperator's Share Acres	BARLEY Cooperator's Share Bushels	BARLEY Government's Share Acres	BARLEY Government's Share Bushels	OATS Cooperator's Share Acres	OATS Cooperator's Share Bushels	OATS Government's Share Acres	OATS Government's Share Bushels	HAY Cooperator's Share Acres	HAY Cooperator's Share Tons	RYE Gov't Share Ac.	RYE Gov't Share Bu.	Quack grass control acres	Ave. bu/tons per acre
Long	1	2&3	120	6,810 2/												56.7
	1	2&3			60	3,350 1/										55.8
Robinette	1	4	64	6,465 4/												101.0
	1	4			32	2,333 1/										72.9
	1	9&10													216	
Liskey	1	5&6	124	10,396 2/	62	5,032 2/										82.9
Moore	1	1	60	3,229 3/	30	1,500 3/										52.5
Suty	9		350	34,300 2/	50	4,870 2/										97.9
	9				125	11,800 1/										94.4
V. Huff	4	2	120	9,466 2/	200	15,800 2/										78.9
	4	2					280	12,243 5/								43.7
Tulana	1	7&8					108	12,768 5/								118.2
	1	7&8			54	3,200 1/										59.2
Carland	4	1	575	52,819 2/												91.8
	4	1			400	20,000 1/										50.0
	4	1					225	8,625 5/								38.3
McKay	2	2									27	40				1.4T
	2	2											13	350		26.9
TOTALS			1,413	123,485	1,013	67,885	613	33,636			27	40	13	350	216	

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A comparison of grain crops provided waterfowl including grain grown on refuge farmed lands as well as sharecropped lands from 1961 through 1965 is tabulated below.

Year	Acres	Bushels	Bushels Per Acre
1961	4,350	210,519	48.3
1962	2,781	156,349	56.2
1963	1,681	124,506	74.0
1964	2,147	150,075	69.9
1965	1,486	79,735	53.6

C. Collections and Receipts

1. Seed or other Propagules*

Harvest of alkali bulrush seed for development of marsh areas was undertaken in October similar to the collection by combine harvester in 1964. An estimated 40 acres in Unit 5 yielded 220 pounds per acre (8,890 lbs.) of cleaned seed. (Last year 30 acres yielded about 11,000 pounds cleaned seed).

Some 200 pounds of bulrush seed was treated, germinated and shipped to Malheur Refuge. About 70 pounds of the same seed was sent to Del Norte County Extention Agent for trials.

2. Specimens*

As indicated elsewhere in this report (Disease) a number of laboratory and research specimens were collected and submitted to various cooperators.

Part of the 39 live geese donated to the Portland Zoo in December were retrieved as cripples on Lower Klamath. Also, part of the live goose donation to the Canadian Wildlife Service came from Lower Klamath Refuge.

Whole duck specimens have been salvaged throughout the hunting season in cooperation with research for the wing analysis studies at Patuxent.

Cooperation with Health, Education and Welfare laboratories at Klamath Falls for water quality studies included collection of two each redhead, mallard and gadwall ducklings on the study areas for pesticides monitoring.

An albinistic horned lark collected in the Indian Pits area by Manager Trainee Pierce was deposited in the refuge collection in May.

Several shovelers, night herons, etc. were sent to the National Museum Bird and Mammal laboratory in May for alcohol specimens.

*O'Neill

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D. Control of Vegetation*

A total of 327 acres were sprayed for noxious weed control at a cost of $2,013.78, or $6.16 per acre. Principle herbicide used was the amine salt of 2,4-D.

For the third consecutive year Laird's Landing was given spray treatment for the control of Canada thistle. The past two years 2,4-D was used, and this year trysben, a more effective weed killer, was applied. As was expected the concentrations of this weed were much less this year than in past years. To illustrate:

1963	90 acres	heavily infested
1964	80 acres	moderate infestation
1965	21 acres	scattered spots

With the use of trysben, we look forward to an even greater reduction in both acreage and vigor of this pest plant during 1966 and ensuing years, and hope that only a token effort will be needed to eliminate Canada thistle from this area.

For a complete breakdown of refuge vegetation control activities see Table I; permittee activities Table II.

IV RESOURCE MANAGEMENT

A. Grazing**

Three permits were in effect in 1965. Grazing fee was $1.00 per AUM.

Permittee	AUM's	Cash Revenue
Heitman	743.44	$ 743.44
McKay	779.02	779.02
Laird	686.77	686.77
TOTALS	2,209.23	$ 2,209.23

C. Fur Harvest***

(See also: Tule Lake section). Trapping was poor generally on the area due to high water and ice conditions. The overall population of muskrats decreased drastically in Units 3, 4 and 9. Two trappers working the area obtained only 744 rats from December to March.

*Annear
**Nuess
***O'Neill

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TABLE I

LOWER KLAMATH PEST PLANT CONTROL 1965

Species	Mixed Weeds*	Mixed Weeds*	Whitetop (Cardaria pubrscens)	Mixed Weeds*
Control dates	7/29-9/7	7/20-9/7	6/22-7/1, 8/19-20	5/28, 5/29, 7/3
Growth stage	Various	Various	Full bloom	seedling
Acreage	30	6	51	240
Location	Laird's Landing Unit 2	Unit 3	Unit 1, Strait's Drain, Huff lease	Unit 1, 6, 7, & 8
Chemical	Trysben	Trysben	Trysben	2,4-D Amine
Diluent	Water-15 gal/Ac.	Water-15 gal/Ac.	Water-15 gal/Ac.	Water-2 gal/Ac.
Rate (lbs/Ac.)	2.0	2.0	2.0	.50
Method	Ground rig Hand wand	Ground rig Hand wand	Ground rig Hand wand	Aircraft
COST:				
Material	$ 255.00	$ 51.00	$ 433.50	$ 64.80
Labor & Equip.	255.90	51.18	362.20	40.20
TOTAL	$ 510.90	$ 102.18	$1,295.70	$105.00
Cost/Acre	$ 17.03	$ 17.03	$ 24.70	.43
Apparent Kill	95 %	95 %	95 %	95 %
Actual Kill in Past Years	90 %	90 %	90 %	95 %
Remarks:	Canada thistle (Carsium arvense) primarily	Perennial sow thistle (Sonchus arvensis) primarily		Nettle(Urtica) Mustard (Brassica) Bassia(Echniopsilon) Lambsquarter (Chenopodium)

TABLE II

Permittee	Farm Unit	Acres Treated	Insect or Weed Controlled	Material used per acre	Date of Application	Method
Long	1F-1, 2	120	Mustard, etc.	3/8# 2,4-D	Late June	Aircraft
Robinette	1F-4	None				
Liskey	1F-5, 6	180	Mustard, etc.	1/2# 2,4-D	Late June	Aircraft
Moore Bros.	1F-1	90	Mustard, etc.	1/4# 2,4-D	June 22	Aircraft
V. Huff	4F-2	200	Aphids	1/4# parathion	Late July	Aircraft
		400	Mustard, etc.	1/2# 2,4-D	Late June	"
Tulana	1F-7, 8	None				
Carland	4F-1	1,200	Mustard, etc.	1/2# 2,4-D	Late June	Aircraft
		500	Aphids	1/4# parathion	August 16	"
McKay	2F-2	None				
Suty	9	525	Mustard, etc.	1/8# 2,4-D	June 4	Aircraft
TOTAL		3,215				

LK

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Progress Report*

Marsh Development

The program of re-establishing agricultural units as interim productive marsh areas during soil leaching periods and developing additional marsh habitat through bulrush seedings evolved to a full-scale operation this year. Through the techniques developed, we were able to aerial seed into flooded units 11,000 pounds of alkali bulrush (Scirpus p.) which had been pre-germinated. Parts of Units 2, 6, 12, White Lake and Miller Lake (approximately 5,000 acres total) were covered. Response in the Miller Lake, White Lake and Unit 6 has been good with some of the new seedlings even producing seed heads by early September.

Unit 8, planted to bulrush three years ago as an interim marsh-agricultural area, has progressed to the extent it was necessary to 'doze channels and 600-odd small mounds to open up and enhance the area for waterfowl use. This area of 800 acres "pure" stand of alkali bulrush is possibly the greatest single growth in the western states--surely the most outstanding seeded production.

Dike Planting Evaluation

The cooperative worker (Martin Shea) did not submit a progress report for the year 1965.

Pesticides Investigations

Cooperative work with James O.Keith of Research was continued with specimen collections, pelican nesting-survival studies and banding similar to the 1964 program. (See lab report on following page).

Banding

California Fish and Game personnel operating on Pittman-Robertson funds and under the refuge permit accomplished fall pre-season duck banding quotas as indicated in the Tule Lake section. No goose banding was undertaken on the area this year.

Gulls (605) and great-blue herons (10) were again banded at Units 2, 3 and 4 by refuge personnel. Some 325 pelicans were banded as indicated under Pesticides Investigations.

Grasshopper Control Program

See Tule Lake section.

pd

*O'Neill

Chlorinated hydrocarbon residues in white pelican tissues and eggs from Lower Klamath National Wildlife Refuge Nesting Colony - 1964

COLLECTIONS	Tissues a/	Residues in ppm: DDT and Metabolites	Dieldrin	Heptachlor Epoxide
Birds shot on nests - 5/3/64				
1 ♀	Fat	14.73	0.45	-
	MLKM	1.58	0.27	T b/
	Brain	0.13	-	T
	Ovaries	2.44	-	T
	Eggs (2-addle)	1.03	0.03	T
2 ♂	Fat	11.72	1.35	-
	MLKM	9.28	1.09	-
	Brain	0.96	T	T
	Egg (1)	0.39	0.08	-
3 ♂	Fat	6.75	0.75	-
	MLKM	2.35	T	T
	Brain	1.51	-	T
	Egg (1-w/embryo)	2.83	1.90	T
Abandoned Eggs collected - 6/23/64				
	(10-addle or infertile)	1.95	0.13	T

Birds found dead - 4/3/64

1 ♀	Fat	46.40	3.50	-
	HLKM	1.18	0.25	-
	Brain	0.30	T	-
	Ovaries	29.40	7.60	-
	Egg yolk in oviduct	1.15	0.29	T
2 ♀	Fat	13.85	1.02	-
	HLKM	0.80	0.02	T
	Brain	0.37	-	-
	Ovaries	0.72	0.02	-
	Egg yolk in oviduct	1.43	0.19	-

a/ HLKM indicates a composite sample of 5 g each of heart, liver, kidney and breast muscle.

b/ T indccates a small but undetermined amount of heptachlor epoxide and less than 0.02 ppm dieldrin.

LK

VI PUBLIC RELATIONS

A. Recreational Uses

Refer to NR-6 (3-1755) Public Use.

B. Refuge Visitors - Refer to Tule Lake Section.

C. Refuge Participation - Refer to Tule Lake Section.

D. Hunting*

Waterfowl: During the straight 90-day waterfowl season, October 9 to January 6, an estimated 11,200 hunters harvested approximately 14,000 birds for an average of 1.26 birds per hunter per day. Ducks harvested averaged .87 per hunter and geese .45 per hunter per day. Crippling loss was an estimated 2,200 birds.

Total kill and hunter use increased over 1964, although waterfowl use days for the September-December period was substantially down from the same period last year. It is thought that this might be due to Unit 12 and Fairchild Island, approximately 3,000 acres and both in the closed area, not being farmed because of dewatering problems. The necessity of the birds having to move out of the closed areas for food made them more vulnerable to the gun. This movement was evident from the season's start with the heavy early morning and late evening flights to and from areas east and north of the refuge. This need for movement for food out of the closed area was intensified by the frequent, fast-moving sotrms of November which by mid-November had pushed the majority of birds south and covered much of the remaining feed.

Although hunting pressure was light through December and early January, it was concentrated in Unit 7 where the green (Gaines) wheat was a major attraction for Canada geese and widgeon.

It should be noted that waterfowl use of this refuge during the September-December period has steadily declined the past seven years while hunting pressure and harvest has remained relatively stable.

Never have been closed!

The Kuchel Bill lands (Public Law 88-567, enacted September 4, 1964) were posted and opened to public hunting. These areas are presently unclassified and are open to the taking of all legally huntable species. This includes White Lake, 1,189 acres, which was flooded and did present the nimrod with excellent hunt periodically.

Hunter success data for the past five years is shown in the following table.

pd

*Sekora

WATERFOWL HUNTER-SUCCESS DATA - LOWER KLAMATH REFUGE

Year	Total Hunters (Hunter Days)	Goose Bag	Duck Bag	Total Bag	Geese/Hunter	Ducks/Hunter	Total Birds/Hunter
1961	9,223	3,966	9,776	13,742	.43	1.06	1.48
1962	11,292	4,968	7,340	12,308	.44	.65	1.09
1963	12,150	6,683	13,244	19,927	.55	1.09	1.64
1964	11,122	4,226	8,119	12,345	.38	.73	1.11
1965	11,164	4,801	9,266	14,067	.43	.83	1.26
5-year Average	10,990	4,929	9,549	14,478	.45	.87	1.32

LK

PERCENT SPECIES IN BAG*

Species	1965	1964	1963	1962	1961
Geese					
Canada goose	7	6	4	2	3
Cackling goose	11	12	12	18	17
White-fronted goose	15	16	18	19	8
Snow goose	1	1	0	1	1
Ducks					
Mallard	18	13	9	7	12
Widgeon	9	12	9	13	13
Pintail	21	24	33	19	32
Green-winged Teal	5	5	3	3	2
Shoveler	4	5	6	7	8
Redhead	1	2	1	1	0
Other	8	4	5	10	4

Pheasants: During the sixteen day pheasant season, November 20 to D December 5, 3,131 hunters bagged approximately 1,660 rooster pheasants for an average of .53 birds per hunter day. The opening weekend received 84 percent of total pheasant hunter use and 86 percent of the birds were killed during this period. The bag limit was two roosters per hunter per day with a season limit of ten. Hunter success data for the last five years is shown in the following table.

*Sekora

pd

LK

Year	No. of Hunters	Estimated Birds Killed	Hunter Success
1961	2,983	2,015	.67
1962	2,472	1,510	.61
1963	3,085	1,635	.53
1964	2,910	1,730	.59
1965	3,131	1,660	.53
AVERAGE	2,916	1,710	.59

E. Violations

All violations are listed in Tule Lake section.

F. Safety

Refer to Tule Lake section.

VII OTHER ITEMS

A. Items of Interest

All items of interest listed in Tule Lake section.

B. Photographs

Photographs follow.

pd

Fifty wood duck nesting boxes were constructed in 1965 for distribution on Klamath Basin Refuges. Four of these, three at Klamath Forest and one at Upper Klamath, were occupied by nesting wood ducks. LK

Exposure 498 3/65 Sekora

A typical wood duck box installation, Lower Klamath Refuge

Exposure 499 4/65 Sekora

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LK

Aerial view of reflooded 1,189 acre White Lake Unit. One of more important nesting areas ceded to Lower Klamath Refuge under recent Kuchel bill legislation. Contains 914 nesting islands of varying size.

7/65 E. J. O'Neill

Typical floating mats of filamentous algae (Cladophora) on Unit 4 during warm summer months.

8/65 E. J. O'Neill

r


SHEEP'S RIDGE
E
N
S
W
HIGHWAY 161
P-1 CANAL

LK

National Park Service historical recognition marker dedication at Lower Klamath Refuge entrance. Manager Watson, Mayor Thomas, rancher Laird and Lava Beds Superintendent Kennedy viewing completed monument.

7/65 E. J. O'Neill

Close-up of completed monument

7/65 E. J. O'Neill

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LOWER KLAMATH
NATIONAL WILDLIFE REFUGE
HAS BEEN DESIGNATED A
REGISTERED NATIONAL
HISTORIC LANDMARK
UNDER THE PROVISIONS OF THE
HISTORIC SITES ACT OF AUGUST 21, 1935
THIS SITE POSSESSES EXCEPTIONAL VALUE
IN COMMEMORATING AND ILLUSTRATING
THE HISTORY OF THE UNITED STATES
U.S. DEPARTMENT OF THE INTERIOR
NATIONAL PARK SERVICE
1965

Alkali Bulrush (*S. paludosus*) crop at Unit 8 three years after aerial seeding. Believed most extensive (800 acres) stand in the Pacific Northwest.

9/65 E. J. O'Neill

Operator Charles Walker with D-8 cat constructing small loafing-nesting islands in Unit 8 alkali bulrush crop.

9/65 E. J. O'Neill

LK

Alkali Bulrush (S. paludosus) crop at Unit 8 three years after aerial seeding. Believed most extensive (800 acres) stand in the Pacific Northwest.

9/65 E. J. O'Neill

Operator Charles Walker with D-8 cat constructing small loafing-nesting islands in Unit 8 alkali bulrush crop.

9/65 E. J. O'Neill

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LK

Operator Charles Walker with D-8 cat constrcting small nesting-resting islands in newly acquired (Kuchel Bill) Miller Lake unit.

9/65 E. J. O'Neill

Klamath Falls Herald and News reported daily waterfowl shooting hours with this illustration.

r

Shooting Hours

OREGON
January 4

Open	Close
7:05 a.m.	4:50 p.m.

CALIFORNIA
January 4

Open	Close
7:04 a.m.	4:48 p.m.

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

BC

WATERFOWL

REFUGE LOWER KLAMATH MONTHS OF JANUARY TO APRIL, 1965

(A)-Aerial Survey

(1) Species	(2) Weeks of reporting period: 1/3-9 (1)	1/10-16 (2)	1/17-23 (3)	1/24-30 (4)	1/31-2/6 (5)	2/7-13 (6)	2/14-20 (7)	2/21-27 (8)	2/28-3/6 (9)	3/7-13 (10)
Swans:	(A) 1/3					(A) 2/5				
Whistling	1,000	2,000	2,200	2,000	2,000	2,270	2,000	2,500	2,320	2,000
Trumpeter										
Geese:										
Canada	7,470	8,000	8,000	2,000	2,200	1,040	2,200	2,000	1,500	1,000
Cackling	10	10	10	10	10	200	10	200	200	1,000
Brant										
White-fronted	10	10	50	100	200	250	30	10,000	10,500	10,000
Snow	10	10	10	10	10	600	6,000	4,000	460	8,000
~~Blue~~ Ross'								200	2,200	600
~~Other~~ TOTAL GEESE:	7,500	8,000	8,070	2,150	2,420	3,070	8,240	16,400	16,010	21,400
Ducks:										
Mallard	10,700				10,000	11,600	2,700	5,000	5,400	4,000
~~Black~~ Unident.	150	20,000	40,000	40,000		200	1,150	3,500	3,500	8,000
Gadwall	80	200	600	3,000	5,000	6,100	50	1,000	5,000	2,000
Baldpate	8,000	5,000	5,000	5,000	2,000	2,500	8,700	9,500	9,500	10,000
Pintail	2,250	4,000	8,000	8,000	10,000	16,010	49,450	150,000	210,250	100,000
Green-winged teal	400	200	100	150	100	150	200	500	650	2,000
Blue-winged teal										
Cinnamon teal									10	200
Shoveler	10,000	12,000	20,000	5,000	2,000	2,150	7,250	12,000	10,250	8,000
Wood										20
Redhead	80	80	40	50	20	150	200	300	400	600
Ring-necked										40
Canvasback	40	20	100	100	200	200	10	200	200	300
Scaup	600	500	700	1,000	1,000	1,500	1,200	1,000	1,000	2,100
Goldeneye	10	10	10	100	200	100	100	50	20	20
Bufflehead	60	100	100	150	300	100	500	500	200	600
Ruddy	450	500	800	500	300	600	4,700	5,000	5,120	5,000
Other Com. Merganser	20	100	150	200	250	320	100	300	1,210	500
TOTAL DUCKS:	46,720	61,210	73,300	64,500	52,500	45,000	77,710	188,000	267,500	190,310
Coot:	800	200	200	200	200	250	700	8,000	11,300	15,000
GRAND TOTALS:	50,000	69,970	77,070	66,170	57,220	51,620	85,000	214,650	287,100	176,710

3 -1750a
Cont. [illegible]1
(Rev. March 1953)

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WATERFOWL
(Continuation Sheet)

REFUGE Lower Klamath MONTHS OF January TO April, 1965

(A)=Aerial Survey

(1) Species	(2) Weeks of reporting period 3/14-20 11	3/21-27 12	3/28-4/3 13	4/4-10 14	4/11-17 15	4/18-24 16	4/25-5/1 17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling			3/31 (A)		6				177,490		
Trumpeter											
Geese:											
Canada	1,000	1,000	900	900	1,100	1,200	1,300		248,470		
Cackling	2,000	2,600	3,400	3,000	3,000	3,000	2,100		146,720		
Brant											
White-fronted	4,300	3,000	2,950	3,000	1,500	500	200		326,060		
Snow	300	5,000	500	200	100	50	10		176,820		
Blue Rosss'									21,000		
Other											
TOTAL GEESE:	7,600	11,600	7,750	7,100	5,700	4,750	3,610		910,140		
Ducks:											
Mallard	1,000	1,000	1,310	2,000	4,500	3,000	4,700		511,420		
Black Unident.			2,000		10,000	8,000	5,000		1,074,500		
Gadwall	1,000	3,000	5,730	4,000	3,000	2,500	2,000		324,520		
Baldpate	15,000	20,000	23,170	20,000	10,000	10,000	4,000		1,181,740		
Pintail	200,000	50,000	6,420	9,000	10,000	12,000	6,000		6,042,960		
Green-winged teal	1,500	5,000	5,140	3,000	4,500	4,000	3,200		286,930		
Blue-winged teal											
Cinnamon teal	150	200	220	400	1,200	1,000	2,000		38,360		
Shoveler	50,000	50,000	41,340	25,000	36,000	15,000	20,000		2,278,670		
Wood					20	20	20		400		
Redhead	500	600	720	600	1,000	800	800		47,950		
Ring-necked				20	20	20	20		840		
Canvasback	150	200	240	300	150	200	100		21,140		
Scaup	600	1,000	1,760	2,000	2,000	1,000	1,500		152,740		
Goldeneye	200	200	230	150	300	50	150		13,370		
Bufflehead	500	800	900	500	350	250	150		49,980		
Ruddy	8,000	22,000	13,150	10,000	15,000	10,000	6,000		749,840		
Other Com. Merganser			1,170	1,000	400	200	100		45,150		
TOTAL DUCKS:	278,600	154,000	103,640	77,970	84,730	68,040	55,820		12,750,600		
Coot:	15,000	40,000	40,000	30,000	35,000	26,000	20,000		2,698,970		
GRAND TOTALS:	301,200	205,600	151,470	115,070	125,436	98,790	79,430		15,546,200		

(over)

	(5) Total Days Use	(6) *Peak Number	(7) Total Production
Swans	177,490	3,520	
Geese	919,140	21,400	
Ducks	12,750,600	278,600	
Coots	1,698,970	40,080	
Total	15,546,200	*Not simultaneously	

SUMMARY

Principal feeding areas Dikes, water areas of Units 2,3,4,5,9 and 12A

Principal nesting areas Units 2,3,4 and 9

Reported by Edward J. O'Neill

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).

Interior Duplicating Section, Washington, D. C.
1953

Pd 3-1750
Form NR-1
(Rev. March 1953)
A = Aerial Census

WATERFOWL

REFUGE **Lower Klamath** MONTHS OF **May** TO **August**, 1965

(1) Species	(2) Weeks of reporting period: 5/2-8 (1)	5/9-15 (2)	5/16-22 (3)	5/23-29 (4)	5/30-6/5 (5)	6/5-12 (6)	6/13-19 (7)	6/20-26 (8)	6/27-7/3 (9)	7/4-10 (10)
						(A) 6/8				
Swans:										
Whistling	5	5	5	5	5	3	3	2	3	3
Trumpeter										
Geese:										
Canada	1,800	2,000	2,000	2,000	2,500	2,500	2,500	2,500	2,500	2,500
Cackling	1,500	1,000	500	500	100	40				20
Brant										
White-fronted	200	200	200	60					10	10
Snow	20	200		10	10	10	10		10	10
~~Blue~~ Ross"		10	10							
~~Other~~ Total Geese	3,570	3,610	2,710	2,570	2,610	2,550	2,510	2,500	2,520	2,540
Ducks:										
Mallard	6,000	2,500	2,100	2,000	2,000	2,000	2,200	2,000	2,000	2,000
~~Black~~ Unidentified	10,000	1,000	1,000			200	500		200	6,000
Gadwall	8,000	3,000	3,000	2,500	2,500	2,200	3,000	3,000	4,000	3,000
Baldpate	5,000	2,000	100	50	50	50	50	50	50	20
Pintail	8,000	2,000	2,600	1,500	1,500	1,500	2,000	2,000	3,500	5,200
Green-winged teal	4,000	3,000	1,100	200	50	150	100	50	300	1,000
Blue-winged teal				10	20	20	20	10	10	10
Cinnamon teal	2,000	2,000	2,000	2,000	2,500	2,500	2,500	2,500	2,500	1,000
Shoveler	1,200	6,000	2,000	2,000	500	500	200	1,100	2,500	3,000
Wood	50	50	50					10	10	10
Redhead	1,200	2,000	2,000	2,000	3,000	3,000	3,500	4,000	4,000	4,100
Ring-necked	120	50	10	5			20	10	5	50
Canvasback	200	200	50	50	100	50	50	50	50	20
Scaup	2,000	2,000	1,000	500	500	300	200	150	100	100
Goldeneye	20		10							
Bufflehead	100	150	200	60	50	30	30	100	50	30
Ruddy	5,500	4,000	2,200	1,000	1,000	3,000	3,000	3,000	3,500	4,000
~~Other~~ Com. Merganser	60	20	10		60		10	10	10	10
Total Ducks	59,200	30,270	20,420	14,175	13,830	16,200	17,420	16,840	23,785	20,850
	26,000	30,000	25,000	25,000	26,000	27,000	27,000	10,000	9,000	8,500
Grand Totals	88,[illegible]	44,[illegible]	48,145	41,750	42,440	45,750	47,[illegible]	31,[illegible]	35,308	41,[illegible]

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Cont. [illegible] 1
(Rev. March 1953)

PD

WATERFOWL
(Continuation Sheet)

REFUGE Lower Klamath MONTHS OF May TO August, 19 65

(1) Species	(2) Weeks of reporting period: 7/11-17 (11)	7/18-24 (12)	7/25-31 (13)	8/1-7 (14)	8/8-14 (15)	8/15-21 (16)	8/22-28 (17)	8/29-9/4 (18)	(3) * Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:			(A)7/27				(A) 8/22				
Whistling	3	3		1	1				320		
Trumpeter											
Geese:											
Canada	2,100	2,500	3,230	3,300	3,300	4,000	5,000	5,000	262,810	345	2,850
Cackling	20	20		20	20	50	10	10	28,480		
Brant											
White-fronted	10	10		10	10	10	30	100	6,370		
Snow	10	10		10	10	10	10	10	5,250		
Ross'									140		
TOTAL GEESE	2,140	2,540	3,230	3,340	3,340	4,040	5,050	5,120	401,030		3,250
Ducks:											
Mallard	2,000	9,000	12,300	13,000	15,000	10,000	16,000	20,000	858,730	66	3,800
Unidentified	500	5,000		3,000	1,000	5,000	3,000	5,000	310,100	415	850
Gadwall	2,500	4,850	850	5,000	5,500	5,000	3,200	7,000	484,850	410	11,760
Baldpate	50	150		400	400	1,000	6,000	10,000	177,940		
Pintail	4,000	2,000	3,520	10,000	15,000	200,000	201,100	100,000	4,310,040	21	620
Green-winged teal	1,200	1,100		1,000	1,000	2,000	2,000	5,000	6,488,750		
Blue-winged teal	20	20		20	20	20	20	20	2,020	3	30
Cinnamon teal	1,200	1,500	1,200	1,500	2,000	3,000	4,000	4,000	284,200	21	700
Shoveler	4,000	2,000	1,050	1,200	1,900	2,000	4,200	6,000	380,950	58	2,080
Wood	10							20	1,470		
Redhead	4,000	5,000	7,220	8,000	2,500	7,000	6,000	8,000	567,840	105	4,130
Ring-necked	150	200		200	200	100	100	100	9,200		
Canvasback	20	100	100	200	200	200	200		13,300	6	250
Scaup	150	100	70	200	250	300	300	500	61,040	6	410
Goldeneye				10					220		
Bufflehead	50	50		50	50	50	50	50	8,050		
Ruddy	4,200	2,000	2,150	2,500	3,000	3,000	3,000	2,500	374,550	25	1,850
Other C Merganser	10	10		20	20	20	20	10	2,100	1	150
TOTAL DUCKS	24,400	37,730	35,170	47,010	54,050	278,500	284,100	170,210	8,023,120	773	29,540
Coot:	4,200	9,000	15,770	15,000	16,000	15,000	15,000	20,000	2,264,900	80	6,150
GRAND TOTALS	30,000	49,270	54,170	65,350	73,390	298,140	274,150	196,330	10,689,470	1174	34,070

(over)

* Includes five newly acquired habitat units

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans	330	5	
Geese	401,630	5,050	2,280
Ducks	9,983,120	278,500	26,540
Coots	2,204,000	30,000	6,120
TOTAL	10,689,469		34,970

*Not simultaneously

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by Edward J. O'Neill, Wildlife 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).

Interior Duplicating Section, Washington, D. C.
1953

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

pd

WATERFOWL

(A) Aerial Census

REFUGE **Lower Klamath** MONTHS OF **September** TO **December**, 19**65**

(1) Species	(2) Weeks of reporting period: 9/5-11 (1)	9/12-18 (2)	9/19-25 (3)	9/26-10/2 (4)	10/3-9 (5)	10/10-16 (6)	10/17-23 (7)	10/24-30 (8)	10/31-11/6 (9)	11/7-13 (10)
Swans:	(A)9/10			(A) 9/28			(A) 10/19	(A) 10/25		(A)11/8
Whistling									4	40
Trumpeter										
Geese:										
Canada	8,260	5,000	5,500	6,520	8,000	5,500	5,450	5,750	3,500	2,730
Cackling						25,000	28,500	20,200	16,000	18,000
Brant										
White-fronted	80	200	3,500	5,000	8,000	10,000	11,720	3,250	3,200	2,700
Snow				150	200	2,000	1,500	1,000	1,000	3,000
~~Blue~~ Ross'										80
~~Other~~ Total Geese	5,420	5,200	9,000	12,790	14,200	42,500	45,170	40,200	23,700	33,450
Ducks:										
Mallard	12,490	20,000	16,500	16,770	28,000	22,000	41,020	14,000	20,000	15,400
~~Black~~ Unidentified	4,220	10,000	8,000	22,000	5,000	20,000	81,000	12,000	40,000	22,000
Gadwall	10,000	15,000	22,000	14,000	10,000	20,000	22,500	14,000	14,000	8,750
Baldpate	24,000	25,000	55,000	96,000	72,000	10,000	2,760	20,250	100,000	54,000
Pintail	81,000	122,000	122,000	132,000	170,000	200,000	220,000	220,000	222,000	161,000
Green-winged teal	18,850	15,000	10,000	12,140	19,000	20,000	23,750	22,700	5,000	26,400
Blue-winged teal	10									
Cinnamon teal	4,050	3,000	2,000	50	100	200	200	1,200	1,500	200
Shoveler	11,550	15,000	25,000	36,920	40,000	55,000	1,000	71,000	80,000	23,600
Wood	20	10								
Redhead	5,450	2,500	1,000	400	600	500	800	700	2,000	250
Ring-necked	60	50	20		10	10	10	10	10	
Canvasback	300	600	850	1,000	400	250	220	600	600	
Scaup	700	1,000	1,500	1,000	2,000	2,000	1,570		2,500	
Goldeneye									10	
Bufflehead	50	50	50		200	250	400	900	1,000	1,200
Ruddy	1,250	2,000	3,000	2,550	2,000	2,000	1,500	4,000	10,000	3,250
~~Other~~ C. Merganser									200	550
Total Ducks	100,920	230,010	272,000	312,480	360,310	373,410	404,340	448,380	506,920	312,730
Coot:	34,100	35,000	40,000	37,000	45,000	70,000	94,300	71,170	120,000	47,000
Grand Totals	230,440	270,210	321,900	364,670	418,610	485,010	543,810	559,730	730,020	388,230

3 -1750a

Cont. I 1
(Rev. March 1953)
(A) Aerial Census

WATERFOWL
(Continuation Sheet)

REFUGE Lower Klamath MONTHS OF September TO December, 19 65

(1) Species	(2) Weeks of reporting period: 11/14-20 (11)	11/21-27 (12)	11/28-12/4 (13)	12/5-12 (14)	12/13-19 (15)	12/19-25 (16)	12/26-1/1 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:			(A)		(A)12/17						
Whistling	44	10	80	100	270	700	200		10,810		
Trumpeter											
Geese:											
Canada	1,000	800	1,850	1,500	2,550	2,000	700		422,290		
Cackling	50,100	7,000	50	200		100			1,212,000		
Ross'	10			10		10			210		
White-fronted	4,200	250	220	800	2,000	1,100			450,520		
Snow	7,550		20	50	30	50			116,550		
Blue									140		
Total Geese	62,860	8,050	2,240	2,500	4,550	3,260	700		2,211,000		
Ducks:											
Mallard	26,000	28,000	28,000	15,000	19,850	10,000	9,000		2,571,200		
Unidentified	25,300	8,200	1,500	3,000	10,000	8,000	1,500		2,013,410		
Gadwall	4,450			800		100	150		1,145,550		
Baldpate	55,300	16,400	6,710	10,000	4,000	3,000	4,000		3,778,040		
Pintail	68,200	50,200	54,700	40,000	40,250	5,000	5,200		14,648,520		
Green-winged teal	6,400	2,360	200	1,500		150	400		1,377,200		
Blue-winged teal									70		
Cinnamon teal	150								87,850		
Shoveler	40,500	12,800	21,900	25,000		7,000	5,000		2,418,730		
Wood									210		
Redhead	500	200	250	200	50	150			100,270		
Ring-necked	10			20	10	10	10		1,750		
Canvasback	300	300		250	150	50			43,100		
Scaup	2,350	3,000	1,000	2,000	1,600	1,000	400		175,040		
Goldeneye	130			50	100	50	200		3,770		
Bufflehead	420	240	170	200		300	100		38,230		
Ruddy	5,005	2,500		800	5,000	1,000			230,750		
C. Merganser	50			150		150			8,400		
Total Ducks	259,000	128,000	126,130	88,670	80,710	32,960	26,000		29,748,400		
Coot:	22,500	12,000	2,500	3,000	3,000	1,000	60		4,472,210		
Grand Totals	355,360	142,910	130,850	104,320	88,560	37,920	27,120		36,444,340		

(over)

	(5) Total Days Use	(6) Peak Number *	(7) Total Production
Swans	10,800	700	
Geese	2,210,000	63,000	
Ducks	29,750,000	587,000	
Coots	4,470,000	120,000	
	36,440,800		

*Not simultaneously

SUMMARY

Principal feeding areas: Share-crop and refuge farmed agriculture grain tracts, adjacent agri. stubble fields, all water-marsh units

Principal nesting areas: N/A

Reported by: Edward J. O'Neill & Gaylord L. Inman (October census by Palmer Sekora and Ray Gahm)

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).

Interior Duplicating Section, Washington, D. C.
1953

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Lower Klamath Months of January to April 196~~6~~5

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	10	2/14-20	1500	April	Still	Present				2000
Western Grebe	40	3/31	500	"	"	"				500
Pied-billed Grebe	1	2/14-20	300	"	"	"				400
White Pelican	200	3/31	450	"	"	"	1			450
D-Crested Cormorant	50	2/28-3/6	350	"	"	"	1			400
G. Blue Heron	31	2/14-20	60	"	"	"	1	32		70
Common Egret	20	2/28-3/6	300	"	"	"				50
Black Cr. Night Heron	5	2/28-3/6	160	"	"	"				250
Am. Bittern	3	"	3	"	"	"				10
Sandhill Crane	3	2/14-20	5	March	"	"				10
II. Shorebirds, Gulls and Terns:										
Killdeer	18	2/21-27	300	April	"	"				300
Long-billed curlew	10	4/4-10	150	"	"	"				150
Willet	2	4/11-17	20	"	"	"				30
Greater Yellow Legs	5	4/4-10	50	"	"	"				50
Lesser Yellow Legs	2	"	(SAME)		"	"				5
Least Sandpiper	200	4/18-24	1500	April	"	"				5000
Am. Avocet	1	3/4	30	"	"	"				100
Black-necked Stilt	10	April	10	"	"	"				20
Calif. Gull	100	1/20	300	"	"	"	2	400		1000
Ring-billed Gull	50	2/14-20	1000	3/31	"	"	2	600		2000
Bonaparte's Gull	4	4/18-24	(SAME)							10
Forester's Tern	10	4/25-31	(SAME)							10

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	Prev.	Period	40	April	Still	Present				100
White-winged dove										
IV. Predaceous Birds:										
Golden eagle	Prev.	Period	4	2/14-20	Still	Present				10
Duck hawk	RESIDENTS									
Horned owl										
Magpie										
Raven										
Crow										
Red Shouldered Hawk	1	3/1		(SAME)						1
Bald Eagle	Prev.	Period	54	2/28-3/6	Still	Present				70

Reported by Edward J. O'Neill

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 Gruiiformes)
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.

pd

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Lower Klamath Months of May to August 195~~5~~ 6

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared grebe	Previous period		2,000	7/25-31	Still Present		8	300	500	8,000
Western grebe	"	"	200	"	"	"	8	100	200	1,500
Pied-billed grebe	"	"	150	"	"	"		50	100	300
White pelican	"	"	680	"	"	"	2	350	200	2,000
Double-crested Cormorant	"	"	260	8/8-14	"	"	2	200	200	1,500
Great-blue heron	"	"	60	5/2-8	"	"	1	22	100	400
Common egret	"	"	20	8/8-14	"	"				50
Snowy egret	10	8/11	10	"	"	"				30
Black-crowned Nt. heron	Previous period		180	"	"	"	1	50	100	250
White-faced ibis	2	8/8			"	"				10
Sandhill crane	Previous period		21	8/22-28	"	"				40
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous period				"	"				400
Long-billed curlew	"	"	100	8/8-14	"	"				700
Willet	"	"	No Data		"	"				120
Greater yellowlegs	"	"	"	"	"	"				10
Lesser yellowlegs	"	"	"	"	"	"				50
Least sandpiper	"	"	2,000	7/25-31	"	"				18,000
Western sandpiper	"	"	500	"	"	"				10,000
Dowitcher	"	"	2,500	8/8/14	"	"				8,000
American Avocet	"	"	2,100	7/25-31	"	"	5	300		5,000
California gull	"	"	1,400	"	"	"	2		500	1,500
Ring-billed gull	"	"	1,500	5/2-8	"	"	2	1,514	1,800	4,000
Bonaparte's gull	"	"			"	"				100
Forester's tern	"	"	100	5/16-22	"	"		50	100	300
Caspian tern	"	"	100	7/11-17	"	"				150
Black tern			50	5/2-8						100

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	Previous	Period	200	7/11-17	Still	Present				250
White-winged dove										
IV. Predaceous Birds:										
Golden eagle			1	"	"	"				3
Duck hawk	Residents									
Horned owl										
Magpie										
Raven										
Crow										

Reported by Edward J. O'Neill, 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 Gruiiformes)
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(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.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Lower Klamath Months of September to December 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous	Period	3,000	9/27	Still	Present	2	100	100	4,000
Western Grebe	"	"	1,300	"	10	12/19-31				2,000
Pied-billed Grebe	"	"	500	"	Still	Present				800
White pelican	"	"	600	"	1	12/5-18				1,000
Double-crested Cormorant	"	"	300	"	Still	Present				400
Great-blue Heron	"	"	50	"	"	"				100
Common Egret	"	"	125	"	No	Record				200
Snowy Egret	"	"	20	"	"	"				50
Black-cr. Night Heron	"	"	200	"	"	"				250
White-faced Ibis	"	"	4	9/19-10/2	Same					10
Sandhill Crane	"	"	35	11/7-29	16	11/21-12/4				40
II. Shorebirds, Gulls and Terns:										
Wilson's Snipe	"	"	100	9/27	2	12/5-18				100
Killdeer	"	"	300	"	Still	Present				300
Long-billed Curlew	"	"	20	"	No	Record				200
Willet	"	"	50	"	"	"				50
Greater Yellowlegs	"	"	50	"	"	"				50
Lesser Yellowlegs	"	"	300	"	"	"				300
Least Sandpiper	"	"	9,000	"	"	"				10,000
Dowitcher	"	"	4,500	"	Still	Present				5,000
Western Sandpiper	"	"	7,000	"	No	Record				8,000
American Avocet	"	"	2,300	"	1	11/21-12/4				4,000
Bl-Necked Stilt	"	"	140	"	No	Record				200
Ring-billed Gull	"	"	4,000	"	Still	Present				10,000
California Gull	"	"	2,000	"	"	"				5,000
Bonaparte's Gull	"	"	80	"	No	Record				80
Forester's Tern	"	"	No	Record	"	"				200
Caspian Tern	"	"	20	"	"	"				100
Black Tern	"	"	No	Record	"	"				300

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous	Period	200	9/27	Still	Present		300
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	"	"	10	12/19-31	"	"		10
Duck hawk	"	"	2	11/21-12/4	Same			2
Horned owl	Resident							
Magpie								
Raven								
Crow								
Turkey Vulture	Previous	Period	50	9/27	8	11/7-20		20
Red-tailed Hawk	"	"	9	"	Still	Present		15
Rough-legged Hawk	2	9/27	19	11/21-12/4	"	"		50
Bald Eagle	Previous	Period	28	12/19-31	"	"		30
Marsh Hawk	"	"	11	9/27	"	"		40
Prairie Falcon	1	9/19-10/2	Same		No	Record		2
Sparrow Hawk	Previous	Period	10	11/7-20	Still	Present		20

Reported by Edward J. O'Neill

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 Gruiiformes)
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(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

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

CORRECTED COPY

WATERFOWL UTILIZATION OF REFUGE HABITAT

CORRECTED COPY

Refuge Lower Klamath For 12-month period ending August 31, 1965

Reported by Edward J. O'Neill Title Wildlife Biologist

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
I	Crops	400	Ducks	210,400	143	200
	Upland	250	Geese	315,060	74	465
	Marsh		Swans	8,050		
	Water	400	Coots	300,000		
	Total	1,050	Total	833,510	217	665
II	Crops	200	Ducks	6,236,130	1,255	10,850
	Upland	2,800	Geese	740,500	234	10
	Marsh	1,360	Swans	5,460		
	Water	910	Coots	260,090	230	3,380
	Total	4,860	Total	7,241,880	1,749	14,040
III	Crops	680	Ducks	4,299,800	1,642	3,120
	Upland	200	Geese	892,000	114	840
	Marsh	580	Swans	8,200		
	Water	1,180	Coots	520,000	42	935
	Total	2,640	Total	5,720,000	1,998	4,395
IV	Crops	650	Ducks	5,980,290	646	505
	Upland	300	Geese	380,020	96	120
	Marsh	260	Swans	5,090		
	Water	2,060	Coots	950,000		65
	Total	3,270	Total	7,315,310	742	690
V	Crops		Ducks	820,000	408	455
	Upland	590	Geese	27,400	10	
	Marsh	70	Swans	4,280		
	Water	200	Coots	25,000	24	
	Total	860	Total	876,680	442	455
VI	Crops		Ducks	4,860,300	2,550	1,325
	Upland		Geese	580,940	16	600
	Marsh	80	Swans	3,200		
	Water	3,120	Coots	985,050	316	80
	Total	3,200	Total	6,429,490	2,882	2,005
VII	Crops	900(900)#	Ducks	7,020,120	680	325
	Upland	160	Geese	650,300	2	475
	Marsh		Swans	1,040		
	Water	590	Coots	520,350		
	Total	1,650	Total	8,191,810	[illegible]	800

()# Refuge farmed 900 acres

(over)

CORRECTED COPY

INSTRUCTIONS

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

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

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

CORRECTED COPY

WATERFOWL UTILIZATION OF REFUGE HABITAT

CORRECTED COPY

Refuge **Lower Klamath (Cont.)** For 12-month period ending August 31, 19**65**

Reported by **Edward J. O'Neill** Title **Wildlife Biologist**

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
	Crops		Ducks	1,580,000	306	
	Upland	80	Geese	3,100	2	10
VIII	Marsh	820	Swans	920		
	Water		Coots	300,200	82	
	Total	900	Total	1,884,220	390	10
	Crops	550	Ducks	2,990,610	706	660
	Upland	100	Geese	720,300	100	
IX	Marsh	380	Swans	2,060		
	Water	340	Coots	380,000	60	550
	Total	1,370	Total	4,092,970	866	1,210
	Crops		Ducks	1,200,090	707	1,185
	Upland	30	Geese	3,760	44	150
XIII	Marsh	70	Swans	2,280		
	Water	7,100	Coots	382,000	34	780
	Total	7,200	Total	1,588,130	785	2,115
	Crops		Ducks	23,430,070	709	390
	Upland	95	Geese	931,980	14	
XII-A	Marsh	5	Swans	148,000		
	Water	2,600	Coots	2,540,000	160	390
	Total	2,700	Total	27,050,050	883	780
	Crops	1,833	Ducks	630,000	10	
	Upland		Geese	4,340	48	
XIII	Marsh		Swans	400		
	Water	10	Coots	66,360		
(Sheepy East (2))	Total	1,843(1)	Total	701,100	58	
	Crops		Ducks	3,600,000	148	2,880
	Upland	3,940	Geese	400,090	100	45
XIV	Marsh		Swans	1,600		
	Water	20	Coots	1,500,400	52	
(Sheepy West (2))	Total	3,960(1)	Total	5,502,090	294	2,925
	Crops	7,270	Ducks	800,060	10	1,035
	Upland		Geese	8,630	70	
XV	Marsh		Swans	2,900		
	Water	40	Coots	600,000		
(Straits Drain (2))	Total	7,310(1)	Total	1,411,590	80	1,035

(1) Estimated figure
(2) Newly acquired

(over)

CORRECTED COPY

INSTRUCTIONS

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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. 27580

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

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

CORRECTED COPY

WATERFOWL UTILIZATION OF REFUGE HABITAT

CORRECTED COPY

Refuge Lower Klamath (Cont.) For 12-month period ending August 31, 1955

Reported by Edward J. O'Neill Title Wildlife Biologist

(1) Area or Unit Designation	(2) Habitat Type	Acreage	(3)	Use-days	(4) Breeding Population	(5) Production
	Crops		Ducks	890,020	394	650
	Upland	470	Geese	500		
XVI	Marsh	930	Swans			
	Water		Coots	4,600		
(Miller Lake(2)	Total	1,400	Total	895,120	394	650
	Crops		Ducks	1,680,400	20	3,190
	Upland	239	Geese	5,400	15	35
XVII	Marsh	150	Swans			
	Water	800	Coots	1,095,000		
(White Lake(2))	Total	1,189(1)	Total	2,780,800	35	3,195
	Crops	12,483	Ducks	66,228,200	10,560	26,540
	Upland	2,844	Geese	5,564,120	930	2,250
TOTALS	Marsh	4,705	Swans	193,480		
	Water	19,370	Coots	10,428,960	1,000	6,180
	Total	45,402	Total	82,514,760	12,490	34,970
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(1) Estimated figure
(2) Newly acquired

(over)

CORRECTED COPY

INSTRUCTIONS

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

Interior Duplicating Section, Washington, D. C. 27580

3-1750c
Form NR-[illegible]
(Sept. 1960)

WATERFOWL HUNTER KILL SURV[illegible]

Refuge Lower Klamath

Year 196 5

(Based on 12-1/2 percent sample)

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/9-15	724	1,788	White-fronted goose(261), Pintail(297), Mallard(259), Cackler(171), G-W Teal(84), Gadwall(84), Widgeon(63), Canada Geese(63), Shoveler(23), Redhead(19), Cinn. Teal(17), Snow goose(8), L. Scaup(5), Canvasback(3), Ruddy(2), Bufflehead(1), Common Merganser (1)	1,461	142	1,603	3,443	7,059
10/16-22	368	1,565	Cackler(109), Pintail(61), White-fronted goose(42), Gadwall(24), Mallard(22), G-W Teal(21), Widgeon(20), Shoveler(26), Canada Goose(20), Cinn. Teal(12), Redhead(4), Canvasback(1), Common merganser(1)	404	44	448	1,159	1,389
10/23-29	188	566	Pintail(29), Cackler(15), Mallard(14), Canada goose(14), Widgeon(13), White-fronted goose(11), Gadwall(6), G-W Teal(5), Cinn. Teal(1), Redhead(1)	100	29	129	1,052	722
10/30-11/5	359	1,289	Pintail(94), Mallard(70), G-W Teal(45), Cackler(42), White-fronted geese(41), Canada goose(31), Widgeon(18), Shoveler(15), Bufflehead(9), Gadwall(5), Snow geese(3), Redhead(3), Cinn. Teal(2), Ruddy(1)	381	105	486	868	1,166
11/6-12	256	1,635	Pintail(108), Mallard(108), Cackler(31), Widgeon(28), White-fronted geese(24), G-W Teal(14), Canada goose(8), Bufflehead(8), Shoveler(7), Redhead(2), Snow geese(1), Ruddy(1).	335	75	410	1,096	1,763
11/13-19	306	1,123	Mallard(77), Pintail(64), White-fronted geese(36), Widgeon(27), Cackler(21), Bufflehead(17), Canada geese(8), G-W Teal (6), Gadwall(6), Shoveler(6), Goldeneye(5), Snow geese(4), Redhead(4), Canvasback(2), Cinn. Teal(1), C. Merganser(1).	289	86	375	1,258	1,538

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

3-1750c
Form NR-1[illegible]
(Sept. 19[illegible])

WATERFOWL HUNTER KILL SURV[illegible]

Refuge **Lower Klamath - Cont.** Year 196[illegible]

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
11/20-26	428	1,687	White-fronted goose(68), Pintail(67), Mallard(38), Widgeon(52), Cackler(50), Bufflehead(20), GW-Teal(19), Snow goose (17), Canada Goose(14), Shoveler(11), Gadwall(2), Ruddy(2), Cinn. Teal(1), Redhead(1), Canvasback(1), L. Scaup(1), C. Merganser(1).	385	59	444	680	666
11/27-12/3	200	755	Pintail(99), Mallard(89), Widgeon(56), White-fronted goose(15), Cackler(12), GW-Teal(11), Shoveler(8), Canada goose(6), Snow goose(4), Ross' goose(3), Cinn. Teal (1)	284	42	326	461	717
12/4-10	152	793	Pintail(49), Mallard(42), Widgeon(37), Canada goose(34), White-fronted goose(17), Cackler(6), Shoveler(6), G-W Teal(2), Bufflehead(2), L. Scaup(1), C. Merganser (1), Coot(1)	199	35	234	370	581
12/11-17	111	482	Widgeon(25), Canada goose(22), Shoveler(13) Pintail(8), Mallard(7), Cackler(5), White-fronted(3), Cinn. Teal(3), Snow(2), Redhead(2), GW-Teal(1), Gadwall(1)	95	23	118	343	366
12/18-24	79	335	Shoveler(51), Mallard(14), Pintail(11), Canada goose(11), White-fronted(4), Widgeon(4), Snow(3), Ruddy(3), Cinn. Teal(2), Gadwall(1)	104	20	124	167	280
12/25-31	52	250	Canada goose(57), Widgeon(37), Pintail(25) Mallard(14), Shoveler(8), Cackler(3), Gadwall(1)	145	12	157	183	559
1/1-6	44	200	Canada goose(15), Widgeon(6), Shoveler(6), Pintail(5), Cackler(3).	35	3	38	114	99

(over)

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(9) Kill sample projected to 100 percent. $\text{Column 9} = \frac{\text{Column 8}}{\text{Column 2}} \times \text{Column 7}$.

80348-60

3-1750c
Form NR-1
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Lower Klamath - Cont. Year 1965

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
TOTAL	3,348	12,468	Pintail(906), Mallard(763), White-fronted goose(626), Cackling goose(489), Widgeon (396), Canada goose(308), GW-Teal(218), Shoveler(189), Goldeall(143), Bufflehead(54), Snow goose(44), Cinn. Teal(40), Redhead (36), Ruddy(9), Canvasback(7), L. Scaup (7), Goldeneye(6), C. Merganser(5).	4,217	675	4,892	11,160	16,850
Average Per Hunter		3.72	.42 geese .83 Ducks	1.26	.20	1.46		

(Field data by enforcement personnel)

Reported by: Robert Abney, Edward O'Neill and Palmer Nehers

(over)

INSTRUCTIONS

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(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

3-1752
Form N[illegible]2
(April 1946)

Re

UPLAND GAME BIRDS

Refuge LOWER KLAMATH Months of JANUARY to APRIL, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifioally requested. List introductions here.
Ring-Necked Pheasant	Greasewood-Croplands Marsh, Etc. 13,800 Acres		N O	N E		N	O		2500	
Valley Quail	Greasewood, Sage, Grasslands 5,600 Acres						N E		150	

O'Neill

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

3-1752
Form N[illegible]2
(April 1946)

R

UPLAND GAME BIRDS

Refuge Lower Klamath Months of May to August, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked Pheasant	Greasewood-Grass lands, Marsh and Agric. 17,000 acres		27	1000	24M:100F	N	O		2,000	Wet, cold June weather very hard on upland birds resulting in smaller, later (renesting) broods than in 1964
Valley Quail	Greasewood-Grass lands, Marsh and Agric. 5,000 acres		2	80	-		N	E	150	

E.J. O'Neill

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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3-1752
Form NP-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Lower Klamath** Months of **September** to **December**, 19 **65**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant	**17,000 acres agri., marsh and greasewood-grass**				**60:100**	**1660***			**3,000**	**Wet, stormy weather first 2 days of hunting during which all but Units 2 & 3 were opened to hunting**
Valley Quail	**5,000 acres juniper, greasewood-grass, fringe marsh and agriculture**					**N**	**O**	**N E**	**150**	

(Field data by all refuge enforcement personnel)

Reported by: Edward J. O'Neill and Robert M. Abney

INSTRUCTIONS

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(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.

pd 3-1753
Form N 3
(June 1945)

BIG GAME

Refuge Lower Klamath Calendar Year 1965

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Male Deer	Fringe agricultural and marsh; adjacent juniper-sage	Est. 10	N	O	N	E	2*		1			80	30	
Pronghorn antelope	" " "	Est. 2	N	O	N	E						30	20	

Remarks: *Dogs during pheasant season

Reported by Edward J. O'Neill

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 <u>each</u> <u>species</u> 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.

rc 3-1754
Form NR-
(June 1945)

SMALL MAMMALS

Refuge LOWER KLAMATH Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	Cattail-Hardstem bulrush marsh types 2670 acres							T-8827 T-8828	501 101	125 17	142			6,000
Coyote	Marsh-Upland types 9620 acres				30									30
Jackrabbit	Upland, Grasslands, Agric. fringe, etc. 6,950 acres		N	O	N	E								300
Cottontail	" " " "		"	"	"	"								200
Bobcat	" " " "		"	"	"	"								20
Skunk	" " " "		"	"	"	"								200
Raccoon	Marsh-upland 9620 ac.		"	"	"	"								15
Marmot	Grasskabds-fringe agric. 6950 acres		"	"	"	"								200
Weasel	Marsh-upland 20,000 ac.		"	"	"	"								50
Porcupine	Juniper-sage 6950 ac.		"	"	"	"								20

* List removals by Predator Animal Hunter

REMARKS:

Reported by Edward J. O'Neill

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32715

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3-1755
Form NR-

DISEASE

Refuge Lower Klamath Year 19 65

Botulism

Period of outbreak 9/5 to 10/2/65

Period of heaviest losses 9/5-11

Losses:

	Actual Count	Estimated
(a) Waterfowl	3,618	3,000
(b) Shorebirds	5	20
(c) Other	8	20

Number Hospitalized		No. Recovered	% Recovered
(a) Waterfowl	770	624	81
(b) Shorebirds	5	0	0
(c) Other	8	1	-

Areas affected (location and approximate acreage)

Unit 12 (2,000 acres)

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

Stagnant water 0-8"; area contained some 1,000 acre feet of water remaining from 1964 Christmas floods

Condition of vegetation and invertebrate life Area est. 10 percent covered by filamentous algae

Remarks Disease confirmed by Bear River Research Sta.
(1) Hospital not in operation; birds injected with anti-toxin and released at fresh water (Unit 12A) thru 9/18 after which birds were released without treatment.

Lead Poisoning or other Disease

Kind of disease (1) Fowl Cholera (2) Lead Poisoning

Species affected (1) snow & white-fronted geese (2) Canada geese, swans, diving ducks

Number Affected	(1) Actual Count	(2) Actual Count	(1) Estimated	(2) Estimated
Species				
Snow goose	18	-	20	10
White-fronted	2	-	10	-
Whistling swans	3	6	5	10
Ducks	-	11	-	100
Number Recovered	None	None	None	None
Number lost			35	120

Source of infection (1) Probably San Joaquin Co. Delta area (2) Shallow places in hunting areas (Units 4, 8, and 9)

Water conditions Above normal amounts and levels due to winter flood conditions

Food conditions Lower than average due to floods

Remarks (1) Incidence occurred in March and April.
(2) Incidence occurred in January to March

Disease (1) and (2) confirmed by Bear River Research Station and Calif. Fish & Game Dept. labs.

Reported by: Edward J. O'Neill, Wildlife Biologist

DF-DWP D.C.- 53818-59

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge **Lower Klamath** Calendar Year **1965**

1. Visits

a. Hunting **13750** b. Fishing **0** c. Miscellaneous **17562** d. TOTAL VISITS **31312**

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	10898	14927	FWS
Upland Game	2852	20457*	FWS
Big Game	NONE		
Other	NONE		

*** reverts to 14927 after the first two days of pheasant season**

Number of permanent blinds **0**

Man-days of bow hunting included above **0**

Estimated man-days of hunting on lands adjacent to refuge **3020**

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

NONE

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

1c. Miscellaneous Visits

Recreation **11450**** Official **1082**

Economic Use **5030** Industrial **0**

**** approximately 9350 visitors stopping briefly while traveling State-line highway**

2. Refuge Participation (groups)

Refer to Tule Lake section

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

Reported by: J.T. Annear

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

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

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Lower Klamath Year 19 65

	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
Species	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
SEE TULE LAKE SECTION							Dike slopes south side Units 6,7,8	17#/A**	25 A		March	Good	
							Dikes & slopes 1F-9, 1F-10	10#/A*	25 A		Feb.	Good	
							Lateral on south side 1F-6, 7, 8	24#/A*	4.9 A		March	Good	
							White Lake	***	1,102				
							Unit 12		500			Fair-excellent	
							Unit 6	10#/A	1,500		July		
							Unit 2		80				
							Miller Lake		300				

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

Remarks: *Mixture: 55% tall wheatgrass, 35% alta fescue, 10% perennial rye. **Mixture: 82% tall wheatgrass, 10% alta fescue, 10% perennial rye. ***Bulrush

Total acreage planted:

Marsh and aquatic	3,572
Hedgerows, cover patches	
Food strips, food patches	57.9
Forest plantings	

76148

Reported by: Annear

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Lower Klamath County Siskiyou State California

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Refuge farming									
Guinea wheat *					774	387 T.	774	*Fall seeded for green browse-1965	774
Guinea wheat					400	11,500	400	Green browse and grain-1966	
Sharecrop									
Hannchen Barley					671	40,663	671		
Weeus Barley	1,289	113,791			312	25,782	1,601		
Ramsville Barley	60	3,229			90	1,609	90		
Trebi Barley	64	6,465					64		
Park Oats	613	23,636					613		
Perez Rye					13	350	13		
								Fallow Ag. Land Quackgrass control flooded	216

No. of Permittees: Agricultural Operations 9 Haying Operations 1 Grazing Operations 3

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
Rye	40	27		1. Cattle	688	2,209.23	$2,209.23	5,822
Government's share left standing				2. Other				
				1. Total Refuge Acreage Under Cultivation				4,539
Hay - Wild				2. Acreage Cultivated as Service Operation				1,234

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.

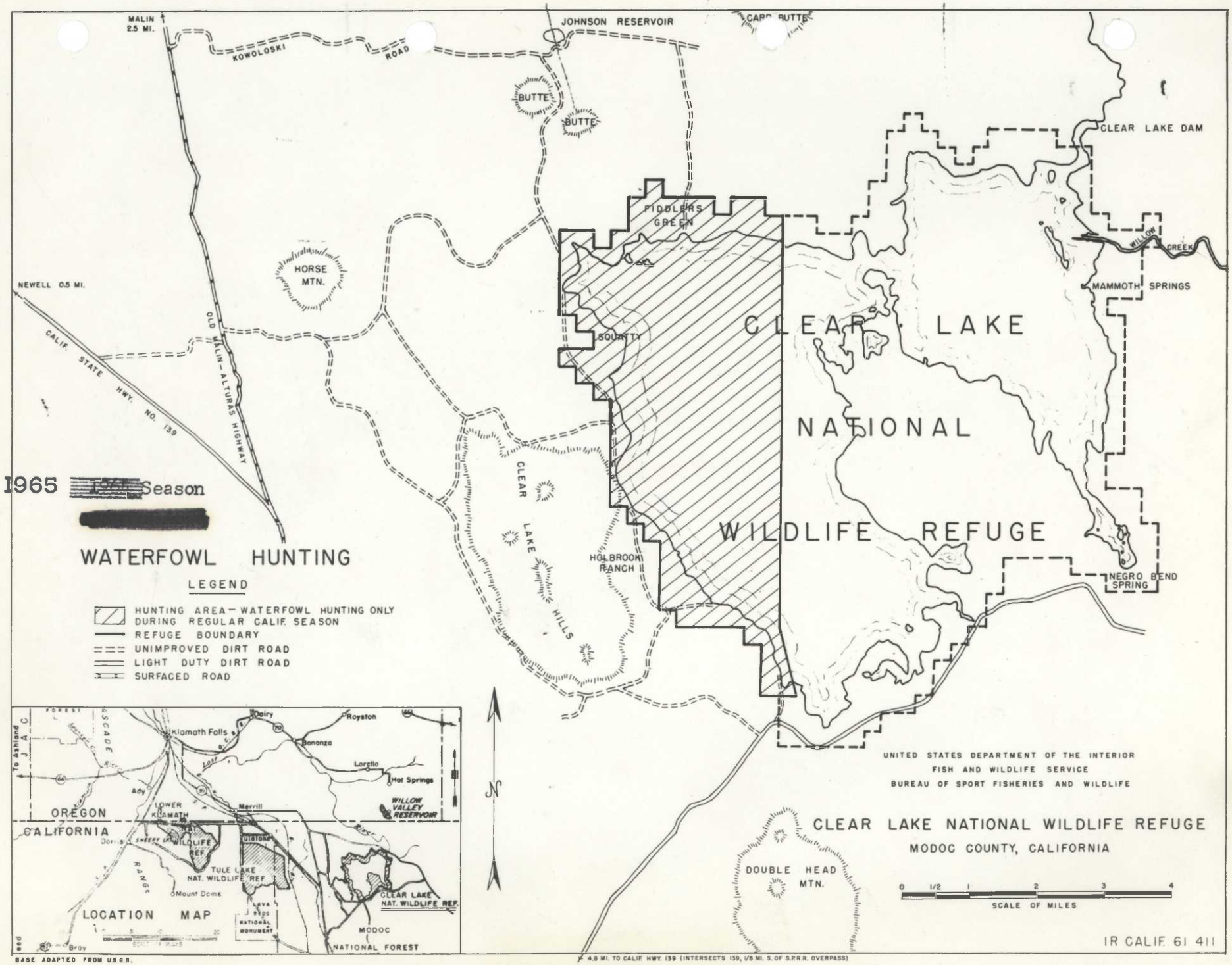
Total Acreage Planted - Report all acreage planted, including crop failures.

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.

CLEAR LAKE


MALIN 2.5 MI.
KOWOLOSKI ROAD
JOHNSON RESERVOIR
CARO BUTTE
BUTTE
BUTTE
CLEAR LAKE DAM
FIDDLERS GREEN
WILLOW CREEK
HORSE MTN.
NEWELL 0.5 MI.
MAMMOTH SPRINGS
OLD MALIN-ALTURAS HIGHWAY
SOURATY
CALIF. STATE HWY. NO. 139
CLEAR LAKE NATIONAL WILDLIFE REFUGE
CLEAR LAKE HILLS
HOLBROOK RANCH
NEGRO BEND SPRING
1965 Season
WATERFOWL HUNTING
LEGEND
HUNTING AREA—WATERFOWL HUNTING ONLY DURING REGULAR CALIF. SEASON
REFUGE BOUNDARY
UNIMPROVED DIRT ROAD
LIGHT DUTY DIRT ROAD
SURFACED ROAD
N
UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
CLEAR LAKE NATIONAL WILDLIFE REFUGE
MODOC COUNTY, CALIFORNIA
DOUBLE HEAD MTN.
0 1/2 1 2 3 4
SCALE OF MILES
IR CALIF. 61 411
To Ashland
FOREST
CASCADE
Klamath Falls
Dairy
Royston
Bonanza
Lorello
Hot Springs
WILLOW VALLEY RESERVOIR
Merrill
Ady
LOWER KLAMATH
OREGON
CALIFORNIA
Dorris
SHEEPY LAKE WILDLIFE REF.
UTSTOMB
TULE LAKE NAT. WILDLIFE REF.
RANGE
Mount Dome
LAVA BEDS NATIONAL MONUMENT
CLEAR LAKE NAT. WILDLIFE REF.
MODOC NATIONAL FOREST
Bray
LOCATION MAP
BASE ADAPTED FROM U.S.G.S.
4.8 MI. TO CALIF. HWY. 139 (INTERSECTS 139, 1/8 MI. S. OF S.P.R.R. OVERPASS)

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C O N T E N T S

*Not applicable this report period

I GENERAL

A. Weather Conditions

Refer to Tule Lake Section.

B. Habitat Conditions

1. Water*

The Bureau of Sport Fisheries and Wildlife has no control of water on Clear Lake National Wildlife Refuge. Clear Lake is managed as a reservoir for irrigation water by the Bureau of Reclamation.

The only recorded elevation in December 1964 was 4464.90' on December 15. Following the December storm and above normal precipitation in January and April, a gage reading on April 30, 1965 showed elevation 4474.78' reflecting storage of 302,900 acre feet and a rise in water surface elevation of 9.88' from the December 15 reading. Storage of 302,000 acre feet is 119 percent of average.

The first release for irrigation was made on April 28. This and subsequent releases combined with evaporation, transpiration and seepage drew the reservoir down gradually to an elevation of 4470.90' on December 31, 1965.

There was no botulism on Clear Lake Refuge in 1965.

2. Food and Cover**

January found Clear Lake Refuge almost totally under ice and well covered with several inches of snow. Bird use was restricted to small openings at Mammoth and Negro Bend Springs along the course of Willow Creek. Snow conditions forced the antelope herds to move out and into the south portion of Tulelake Basin (Copic Bay).

February 4 through 10 the 3 to 6-inch ice cap on Clear Lake started to break up along the southwest shoreline. This break-up of winter's icy grip brought immediate response from swans and ducks feeding and loafing in and around Mammoth and Negro Bend Springs.

*Nuess
**O'Neill

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Spring thaws added considerably to the storage in Clear Lake which had already received a good supply during the previous December floods. Mammoth Springs was completely inundated in early March. The rocky islands of the east portion were much reduced in size by high water and virtually all the rocky islands in the west portion of the area went under. These high waters eliminated favorite nesting, resting and feeding space for ducks, geese, great-blue herons, and various raptors.

April 5 and 6 wet snows blanketed the general area again but did not force any of the bird or mammal species out of the basin.

High water and shoreline changes altered the habitat and cover conditions considerably. The sage grouse strutting area along the southwest edge of the U-Peninsula was unavailable (flooded) in the spring. On the rocky islands there is always a scarcity of nesting material and cover but this year it was less as high waters and wave action drifted most debris away. Many favorite goose and duck nesting sites up Willow Creek were under water.

Range conditions on the U-Peninsula were good with ample moisture and favorable springtime temperatures. A variety of forbs important to antelope and sage grouse flourished.

Pelicans, great-blue herons, cormorants, night herons, California and ring-billed gulls and Caspian terns nested as in previous years. Earliest activity was noted March 23 when 50 adult pelicans were at the rock islands in the eastern part of Clear Lake. At this date, three pelican nests, containing six eggs were noted. Cormorants (20 each) were present as well as great-blue herons (30 each). Great-blues had 15 nests - four with four eggs and eleven with one to three eggs.

Nesting efforts in two separate colonies resulted in an eight percent increase in young pelicans hatched compared to 1964; cormorants increased by 50 percent more young produced over the rangelands. Intermittent periods of moisture kept water basins, tiny playas and lava catchments replenished for good distribution by wildlife forms.

The Fiddler's Green area north of Unit I replaced part of the lost shoreline grazing for Canada geese. Spring flocks also ranged into Steel Swamp meadows until spring range grasses emerged on the U-Peninsula.

Fish eating species apparently found more than ample supplies in Clear Lake according to our findings (see: Fish).

Medusa head grass (Elymus medusse) continues to spread over every acre of Clear Lake Refuge. This year we found successful invasion of all rocky islands and peripheral shoreline. With favorable moisture it grew to heights of $1\frac{1}{2}$ feet obscuring short grass like Muhlenbergii and, in the late summer, posing a potential range fire hazard. It's

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too late to prevent invasion of this noxious grass and impractical to attempt complete eradication with knowledge and tools at hand. Wet conditions during the August antelope hunt saw many pounds of the medusa seed scattered with mud as hunters drove to every accessible point.

Fall-winter use of the refuge by waterfowl was at times higher than in 1964; however, total use days by some species were off considerably. Shallows which formerly produced aquatic plant production proved too deep in the constantly turbid water; however, newly created shallows in part replaced these losses before summer was over.

II WILDLIFE*

A. Migratory Birds

Most exciting item under the subject heading is the nesting by Canada geese. Loss of former haunts through floodwaters may have caused the species to seek out the Clear Lake Refuge. March 23 the writer found geese paired and nesting in what appeared to be every suitable site available. The rocky islands in Negro Bend Bay, the east edge of Clear Lake and the island in the vicinity of the dam were preferred sites. Two islands of approximately three acres supported 26 goose nests with a total of 104 eggs. One island of one acre size supported 15 goose nests. Several nests were so close together the incubating birds could reach one another. Close scrutiny revealed these were on former pelican nests remaining as mounds of twigs, etc. from the previous year. Another circular island, less 100 feet across the center had 32 active and eight abandoned goose nests April 2. If there have been previous comparable nesting efforts on the area, we are not aware of them.

Goose nesting and total goslings noted went up 300 percent over last year's tally. Total duckling went down slightly.

Great-blue herons produced 20 percent less young; and black-crowned night herons brought off the same number of young as last year. The greatest pelican nesting effort was at the tip of the U-Peninsula which colony has progressively grown over the past three years.

The presence of five pelicans (immatures) on the area as late as November 30 was unusual. In mid-December aerial surveys turned up a lone immature at the tip of the U-Peninsula (we wonder if possibly the pelican which chose to winter at Modoc Refuge, Alturas, among Canada geese could have been one of the late migrants from Clear Lake).

Shorebird use of the area was not unusual compared to other years.

*O'Neill

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B. Upland Game Birds

Nesting sage grouse were again plagued by cold, wet storms in June. No broods were seen on the area. Regular census-survey transects were not accomplished due to numerous details of higher priority. Encounter of summer flocks confirmed the belief reproduction was low judging from number of immatures seen.

Both cattle and sheep again used the nesting areas south and southwest of the refuge. Red Lake became literally pulverized as a concentration area. The Mowitz Creek flow held up well and signs indicated good bird use. Winter aerial observations indicated only a few birds used that area in December. The more inaccessible country east of Mammoth Springs was visited and very few young grouse noted in June.

Quail were seen rarely in the Clear Lake area.

C. Big Game Animals

On January 8 and again January 15, winter conditions caused antelope to move out of the Clear Lake hills country and down into Copic Bay of the Tulelake Basin. Ranchers estimated 300 to 400 animals were in the January 15 herd--possibly a union of both the Clear Lake and Mount Dome herds. Three were seen on the Hirschback ranch east of Newell on one occasion where dogs were harassing them.

In February the herd was observed to move back toward summer ranges. March 30 we observed 30 north of Fiddler's Green. At this time an additional 80 were on the refuge northwest of Squatty Butte.

April 2 two antelope (one female yearling, one adult female) were found floating in Clear Lake off the tip of the U-Peninsula. Condition of both was good. Field autopsy by Bill Johnson of Health, Education and Welfare and the writer concluded they may have been unduly harassed and took to the 42° water. (The incidence coincided closely to aerial motion pictures of the herd "in action" seen two weeks later on a local TV program.) In July two more antelope were found afloat south of the dam. Autopsy again indicated extreme over-exertion before drowning.

D. Fur Animals, Predators, Rodents and Other Mammals

Cottontails and jackrabbits continue at a low population--the lowest in several years.

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Coyotes have been seen less this year than at any time in three years. They seemed to follow the sheep herds more than native prey species and sheepmen were active with control work in the general area. Low numbers seem to be confirmed by the fact numerous lambs lost from the O'Connor herd, under new lambing-herding techniques, lay on the range untouched except for raptors. Along one-half mile of Mowitz Creek, south of Negro Bend, we counted 19 dead lambs under junipers, sage, etc. which were never eaten.

Bobcats and mountain lions are still considered very low in number. High prices last year brought renewed interests by trappers; however, the take was negligible.

Badgers increased slightly according to signs on the U-Peninsula range.

Porcupines are at the lowest population in four years. They were observed mostly on an on-off basis during the year.

Ground squirrels were literally flooded out of much of the Negro Bend, Mammoth Springs and U-Peninsula areas. The population was comparatively low in 1965.

F. Other Birds

Mourning doves enjoyed very good nesting conditions. There appeared to be a good hatch and migration in September brought the population to highest numbers in years.

G. Fish

(See: V FIELD INVESTIGATION OR APPLIED RESEARCH)

The question of eagle lake trout and crappie, introduced several years ago, came up again. Surveys were made during the year to bring our knowledge up to date and substantiate conclusions against a fisheries under existing conditions.

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IV RESOURCE MANAGEMENT

A. Grazing*

The grazing lease on the Clear Lake Peninsula or "U", administered by the Bureau of Reclamation, expired in late December of 1964. Invitations to bid on the new lease were circulated and the high bid was submitted by Mr. James Henry.

Mr. Henry's lease was cancelled when it was discovered his partner was a lessee on Tule Lake Refuge. Reclamation regulations do not permit awarding more than one lease to an individual or company.

Invitations to bid were circulated again. Mr. Robert Byrne of the Dalton Land and Cattle Company, holder of the expired lease, submitted the highest bid and was awarded the new lease. This lease is on a yearly basis with a four-year option to renew.

V FIELD INVESTIGATION OR APPLIED RESEARCH**

A. Progress Report

Water Quality Study

Cooperative work with Health, Education and Welfare-Federal Water Pollution Control-on water quality studies of the Lost River and drainage continued through the year. Since Clear Lake Refuge is a part of said drainage our cooperative work consisted of joint surveys, water, plant, fish, etc. collections for pesticide residue analysis. Work started April 2 with zooplankton, benthos, and water samples. It had always been assumed Clear Lake was a pesticide-free basin; however, trace residues of DDD and toxaphene showed in initial gas chromatograph tests. It is presumed livestock sprays used on or adjacent to refuge lands were the source. The study will continue for at least another year.

Radiation Studies

Collection of antelope and deer hocks, from the local herds, for Atomic Energy Commission and Health, Education and Welfare studies were continued in conjunction with regular hunting activities. This is the second year specimens have been sent to the Las Vegas, Nevada lab.

*O'Neill & Nuess
**O'Neill

pd

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Fish Investigations (Spring Survey)

In order to satisfy inquiries by sportsmen, enthusiasts, wildlife workers, etc. it was decided more current information was desirable.

May 12 the writer and Biologist Bill Johnson of Health, Education, and Welfare, Federal Water Pollution Control, set out two 10' x 200' gill nets at the mouth of Negro Bend Bay and two at the mouth of Willow Creek. The following morning the nets were lifted with the following results:

A. Negro Bend Bay: Three Tui chubs from 5" to 10".

B. Mouth of Willow Creek: Thirty-five Tui chubs from 5" to 7"; four Tui chubs from 7" to 10"; one short-nosed sucker 14".

About two miles upstream a sample area 300 feet long was retenone-treated with the following noted:

(a) Abundant Tui chub 3" to 8" (estimated 10-15 lbs.);

(b) Two brook lamprey (one captured);

(c) Lost River suckers, several 6" to 12";

(d) Sculpins (*Cottus sp.*), numerous.

C. Dam narrows near head of Lost River: Two gill nets (10' x 200') set along base of the dam with the following noted: (Area (one-half acre) also rotenone-treated).

(a) Abundant dace;

(b) Sculpins - numerous;

(c) Tui chub - abundant - 3" to 7", estimated 15-20 lbs.

The purpose was to seek out any Eagle Lake trout which might be in active spawning. No trout found.

Fish Investigations (Summer Survey)

July 18-22 a cooperative fisheries investigation was conducted with California Fish and Game Department personnel. Purpose of the work was to assess present populations and determine success of former introductions (Eagle Lake trout and white crappie).

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Methods included use of 21 gill nets at designated points for 20-hour periods. Shore seining and rotenone were also employed. Six sections of Willow Creek were rotenone-treated.

Over the five-day period gill nets produced only rough fish species. No game fish were recovered during the operation. Over half of the fishes collected in nets bore lamprey lesions--in some instances they were attached to fish.

Aquatic vegetation (Potomogeton sp) was noted mainly northwest of Squatty Butte, west shoreline of the "U", mouth of Willow Creek, and Clear Lake dam narrows. At no location was there a dense, significant production.

The report hinted that a public fisheries was impractical, undesirable, and unnecessary at the present time.

Banding

In June 375 white pelicans were banded in cooperation with Mr. James O. Keith of Research.

Pesticides Investigation

Cooperative research work with James O, Keith of the Denver Research Center again included work on the Clear Lake pelicans. The above noted pelican banding, close population tabulations, and nesting success-survival all were continued. Results of collections made last year follow this section.

Range Improvement

The test plots set out last fall to experiment with improved grasses and legumes on the low, floodplain range, where medusa-head grass has taken over, were partly flooded. Partial germination was received on tall wheatgrass, intermediate wheatgrass and ranger alfalfa. (By the grapevine we learned U.S. Bureau of Reclamation and University Extension men followed suit and set out similar test plots in the floodplain areas.)

Bureau of Reclamation field men were approached to cooperatively set up a medusa-head grass control trial (burning in late June or early July while sufficient moisture remains in seeds to cause bursting or popping). Equipment, manpower and enthusiasm for the venture never quite materialized during 1965.

Chlorinated Hydrocarbon residues in white pelican tissues and eggs from Clear Lake National Wildlife Refuge Nesting Colony - 1964

Number and sex of pelicans a/	Tissues b/	Residues in ppm c/		
		DDT and Metabolites	Dieldrin	Others d/
1 ♂	Fat	34.32	T	-
	HLKM	3.02	.81	-
	Brain	0.62	T	-
	Egg (1)	2.08	.08	ME
	Young (7 days old)	3.00	.33	ME
2 ♀	Fat	56.00	3.10	-
	HLKM	3.72	0.46	ME
	Brain	0.92	T	ME
	Egg (1)	0.75	0.12	-
	Young (7 days old)	3.00	0.33	ME
3 ♀	Fat	9.36	1.56	ME
	HLKM	5.90	.91	-
	Brain	0.27	-	-
	Egg (1-w/embryo)	3.87	.27	ME

4 ♂	Fat	25.62	.88	-
	HLKM	1.10	.07	HE-END
	Brain	0.52	.03	-
5 ♀	Fat	79.10	T	-
	HLKM	1.13	.03	HE-END
	Brain	0.32	.06	-
6 ♂	Fat	9.51	.96	HE
	HLKM	0.67	.11	HE
	Brain	0.15	.02	-
1,466 ♂	Testes (composited)	0.35	T	-

a/ Birds shot on nests; eggs and young of birds collected where possible.

b/ HLKM indicates a composite sample of 5 g each of heart, liver, kidney and breast muscle; eggs include entire contents except shells.

c/ T indicates less than 0.02 ppm of endrin; dash indicates no residues detected.

d/ Small but undetermined amounts of heptachlor epoxide (HE) and endrin (END).

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VI PUBLIC RELATIONS*

A. Recreational Uses

Refer to NR-6 (3-1755) Public Use.

B. Refuge Visitors - Listed in Tule Lake Section.

C. Refuge Participation - Listed in Tule Lake Section.

D. Hunting*

Waterfowl: Waterfowl hunting on this refuge was nearly negligible this year. Competition from Tule Lake and Lower Klamath reduced hunting pressure on this area. An estimated 46 hunters bagged approximately 23 birds for an average success of .50 bird per hunter per day.

Canada geese moved into the area on opening day but remained in the closed area or in those open areas that offered little hunter concealment. Other waterfowl use followed this pattern throughout the season.

WATERFOWL HUNTER-SUCCESS DATA - CLEAR LAKE REFUGE

Year	Total Hunters (Hunter Days)	Goose Bag	Duck Bag	Total Bag	Geese Per Hunter	Ducks Per Hunter	Total Birds Per Hunter
1963	88	84	19	103	.95	.22	1.17
1964	34	23	0	23	.70	0	.70
1965	46	23	0	23	.50	0	.50
3-year Average	56	43	6	49	.72	.7	.79

Clear Lake Refuge was opened to waterfowl hunting in 1963 and the above summary indicates it has drawn little hunter use each season.

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*Sekora

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Antelope: For the second consecutive year the Clear Lake Refuge was open to antelope hunting, August 21 - September 5. The entire land area of the refuge, approximately 7,500 acres of rocky, upland surrounding the reservoir, was open to hunting.

Unlike 1964 when no control on hunter numbers inside the refuge was exercised, special permits, along with the regular California permit, were required for hunting on the refuge "U". A maximum of six special permit holders were allowed within the "U" or peninsula at any time. These hunters were checked, by state and federal personnel, in and out of the Peninsula entrance gate on a first-come first-served basis. Armbands identified special permit hunters, the band being relinquished to the next waiting hunter when through hunting on the Peninsula. No special permits were required for the west, north, or east refuge areas that were open to hunting.

speculation

1964

Normally the antelope will concentrate on the Peninsula and with an unrestricted number of hunters, are harassed to the point of loss of does and kids by drowning or exhaustion. This special permit system satisfactorily eliminated this harassment by spreading the hunter use and kill more evenly over the area.

As in 1964 the Peninsula was the favored hunting spot in the Modoc unit. A total of 100 permits were issued for this unit with 52 antelope bagged. Of this 52, 21 were taken off the Peninsula, seven off the west, north, and east refuge areas, and ten within one-fourth mile of the refuge boundary for a total of 38. This compares with forty-six bucks taken on or near the refuge last year. Only one unretrieved buck was observed on the refuge.

Sage Grouse: No sage grouse hunting is permitted on the refuge, although considerable hunting use occurred on those lands adjacent to the refuge. The average kill per hunter averaged approximately .47 grouse compared to 1964's average of approximately one bird per hunter. Hunting pressure was concentrated on the refuge's southern boundary.

E. Violations - Covered in Tule Lake Section.

F. Safety - Covered in Tule Lake Section.

CL

VII OTHER ITEMS

A. Items of Interest*

During the year the U. S. Forest Service, Modoc National Forest, decided that part of the important antelope-grouse range south of the Negro Bend area will go back to cattle grazing rather than the current concept of sheep "pasture" management.

Overlooked under the appropriate section the first Forester's terns nested on Clear Lake Refuge this year. Past records fail to note this species nesting on the area.

Reclamation made a number of test hole excavations near the old CCC-Rock Dam near Double Head Mountain. There has been speculation regarding use of Clear Lake waters via a canal or channel from this point to Dry Lake near Highway 139.

California Fish and Game managers are urging the Commission to consider an annual antelope hunt for the Clear Lake herd.

B. Photographs

Photographs follow.

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*O'Neill

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Clear Lake high water levels completely inundated Negro Bend Springs outlet during the winter for the first time in years. (Note shoreline water level mark.) Manager-trainee Pierce here inspects spring during March visit.

3/65 E. J. O'Neill

Southwest shoreline of Clear Lake showing dense growth and successful invasion of noxious medusa head (Elymus medusae) which now covers 95% of range. In 1962 only two small patches, less than one acre total, existed.

6/65 E. J. O'Neill

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

WATERFOWL

REFUGE CLEAR LAKE MONTHS OF JANUARY TO APRIL, 19 65

(A) Aerial Survey

(1) Species	(2) Weeks of reporting period: 1/3-9 (1)	1/10-16 (2)	1/17-23 (3)	1/24-30 (4)	1/31-2/6 (5)	2/7-13 (6)	2/14-20 (7)	2/21-27 (8)	2/28-3/6 (9)	3/7-13 (10)
Swans:	(A) 1/3				(A) 2/4				(A) 3/4	
Whistling				20	[illegible]	420	120	[illegible]	250	[illegible]
Trumpeter										
Geese:										
Canada	20	20	20	10	20	50	100	200	400	300
Cackling										
Brant										
White-fronted										
Snow										
Blue										
TOTAL GEESE	20	20	20	10	20	50	100	200	400	300
Ducks:										
Mallard	50	50	50	50	50	100	200	400	510	2,000
Black Unident.										
Gadwall										
Baldpate							50	100	100	500
Pintail	50	50	50	50	50	200	2,000	15,000	16,000	10,000
Green-winged teal				20	20	20	25	50	120	100
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye	20	20	20	20	20	20	20	10		
Bufflehead										
Ruddy										
Other Com. Merganser					20	20	20	40	40	150
TOTAL DUCKS	120	120	120	100	100	400	2,270	15,600	17,300	12,750
Coot:								50	100	100
GRAND TOTALS	140	140	140	120	220	470	2,670	15,150	15,900	13,450

3 -1750a

Cont. [illegible]-1

(Rev. March 1953)

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WATERFOWL
(Continuation Sheet)

REFUGE Clear Lake MONTHS OF January TO April, 19 65

(A)-Aerial Survey

(1) Species	(2) Weeks of reporting period 3/14-20 11	3/21-27 12	3/28-4/3 13	4/6-10 14	4/11-17 15	4/18-24 16	4/25-5/1 17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:			3/31 (A)	4/8 (A)							
Whistling	50								6,000		
Trumpeter											
Geese:											
Canada	350	350	340	300	350	360	400		26,000		
Cackling											
Brant											
White-fronted				20	10				220		
Snow											
Blue											
GRAND TOTAL GEESE	350	350	340	320	360	360	400		27,000		
Ducks:											
Mallard	2,000	1,500	290	500	500	300	200		61,290		
Black Unident.			300		10,000	6,000	5,000		149,310		
Gadwall											
Baldpate	1,000	2,000	3,330	3,000					70,420		
Pintail	10,000	8,000	6,590	5,000					516,200		
Green-winged teal	150	200	150	1,000					13,580		
Blue-winged teal											
Cinnamon teal				30					220		
Shoveler				500					3,500		
Wood											
Redhead				10					70		
Ring-necked			10						70		
Canvasback											
Scaup			2,250	2,000					29,750		
Goldeneye	20	20							1,330		
Bufflehead	80	100		40					1,540		
Ruddy											
Other Com. Merganser	200	100	60	50	10	10	20		5,570		
TOTAL DUCKS	13,450	11,920	12,960	12,130	15,010	9,010	7,020		851,590		
Coot:		100	150	200	200	200	200		9,100		
GRAND TOTALS:	13,850	12,370	13,450	12,650	15,570	9,570	7,620		893,800		

(over)

	(5) Total Days Use*	(6) Peak Number	(7) Total Production
Swans	6,020	250	
Geese	27,090	490	
Ducks	851,590	17,360	
Coots	9,100	200	
Total	893,800		

*Not simultaneously

SUMMARY

Principal feeding areas Northwest sector, east shoreline, springs and "U" rangeland

Principal nesting areas geese - islands

Reported by Edward J. O'Neill

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).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-
(Rev. March 1953)
(A) - Aerial Census

WATERFOWL

REFUGE Clear Lake MONTHS OF May TO August, 1965

(1) Species	(2) Weeks of reporting period: 5/2-8 (1)	5/9-15 (2)	5/16-22 (3)	5/23-29 (4)	5/30-6/5 (5)	6/6-12 (6)	6/13-19 (7)	6/20-26 (8)	6/27-7/3 (9)	7/4-10 (10)
Swans:				(A) 6/27		(A) 6/5				
Whistling										
Trumpeter										
Geese:										
Canada	450	500	200	300	1,000	1,000	1,080	1,100	800	800
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Total Geese	450	500	200	200	1,000	1,000	1,080	1,100	800	800
Ducks:										
Mallard	400	400	300	800	350	1,250	1,000	800	800	500
Black Unidentified	1,000	600	300	100	400	300	300	100		
Gadwall	100	200	200	220	200	130	150	200	200	200
Baldpate										
Pintail	30	50	30	200	300	150	150	150	150	150
Green-winged teal	50	50	10							
Blue-winged teal										
Cinnamon teal	50	50	50	30	30	30	30	30	30	30
Shoveler	150									
Wood	10	10	10	10			10	10	10	10
Redhead	30	50	50	50	50				20	60
Ring-necked						100	50	50		
Canvasback										
Scaup						500	200			
Goldeneye										
Bufflehead										
Ruddy	20	20	20	10				50		
Other Com.Merganser	40	40	40	40	120	160	20	10	10	10
Total Ducks	1,880	1,370	1,010	970	1,250	2,560	1,980	1,400	980	960
Coot	20	30	30	200	200	360	200	250	250	300
Grand Totals	2,300	1,900	1,240	1,470	2,420	3,520	3,180	2,750	1,670	1,500

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Cont. [illegible]-1
(Rev. March 1953)

(A) Aerial Census

WATERFOWL
(Continuation Sheet)

REFUGE Clear Lake MONTHS OF May TO August, 1965

(1) Species	(2) Weeks of reporting period: 7/11-17 11	7/18-24 12	7/25-31 13	8/1-7 14	8/8-14 15	8/15-21 16	8/22-28 17	8/29-9/4 18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:			(A) 7/21								
Whistling											
Trumpeter											
Geese:											
Canada	250	200	150	200	200	400	400	400	62,870	61	240
Cackling											
Brant											
White-fronted								40	200		
Snow											
Blue											
Other											
Total Geese	250	200	150	200	200	400	400	440	62,650	61	240
Ducks:											
Mallard	500	800	510	500	400	1,500	2,000	2,500	100,170		
Black											
Unidentified	150	300	40	200	100	1,000	2,000	3,000	67,220	20	440
Gadwall	200	100	100	200	250	200	250	1,000	30,800		
Baldpate							100	1,200	2,000		
Pintail	100	100	100	100	100	1,500	2,000	4,000	84,750		
Green-winged teal							500	2,500	21,040		
Blue-winged teal											
Cinnamon teal											
Shoveler	30	100	100	100	150	200	1,000	500	17,700		
Wood									1,050		
Redhead									500		
Ring-necked	100	250	370	370	370	400	400	400	20,700		
Canvasback			10	10	10	10			1,000		
Scaup			25	20	20	100	20	10	1,575		
Goldeneye									5,000		
Bufflehead											
Ruddy											
Other							80	400	4,120		
C. Merganser	20	20	20	20	20	20	20	20	4,060		
Total Ducks	1,100	1,370	1,265	1,530	1,630	5,020	5,460	15,620	352,415	20	440
Coot:	350	350	375	400	400	400	1,000	1,500	49,025	5	45
Grand Totals	1,800	1,820	1,800	2,230	2,230	5,830	9,860	17,570	401,090	86	730

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans			
Geese	83,650	1,000	240
Ducks	362,420	15,000	440
Coots	40,030	1,500	45
TOTAL	461,100		720

*Not simultaneously

SUMMARY

Principal feeding areas Delta of willow Creek, Mammoth Springs and Negro Bend Springs

Principal nesting areas Same

Reported by Edward J. O'Neill, Wildlife 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).

Interior Duplicating Section, Washington, D. C.
1953

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(Rev. March 1953)

WATERFOWL

REFUGE Clear Lake MONTHS OF September TO December, 1965

(1) Species	(A) Aerial Census (2) Weeks of reporting period 9/5-11 1	9/12-18 2	9/19-25 3	9/26-10/2 4	10/3-9 5	10/10-16 6	10/17-23 7	10/24-30 8	10/31-11/6 9	11/7-13 10
Swans:				(A)9/28	(A)10/6	(A)10/13	(A)10/19	(A)10/25		
Whistling									20	20
Trumpeter										
Geese:										
Canada	810	350	380	300	570	1,810	1,010	1,370	1,000	900
Cackling										
Brant										
White-fronted							230	2,500	3,000	1,500
Snow	40	40	40					10	50	200
Blue										
~~Other~~ Total Geese	350	390	420	300	570	1,810	1,240	3,780	4,050	2,600
Ducks:										
Mallard	2,000	2,000	1,800	1,810	150	20	40	410	500	1,000
~~Black~~ Unidentified	1,000	1,000	500						1,000	500
Gadwall	1,000	2,000	2,000	2,530				20	300	1,000
Baldpate	1,000	3,000	5,000	6,530	100			20	100	100
Pintail	5,000	5,000	8,000	8,000	650			300	5,000	2,000
Green-winged teal	4,000	3,000	3,000	3,650		60			50	100
Blue-winged teal										
Cinnamon teal	400	300	200						10	
Shoveler						20			1,500	500
Wood										
Redhead	40	150	200	300					40	150
Ring-necked										
Canvasback										
Scaup			500	680					200	500
Goldeneye										
Bufflehead										20
Ruddy	1,000	500	500						500	1,000
~~Other~~ C. Merganser	20	10							30	30
Total Ducks	18,460	17,760	21,700	25,140	950	90	40	770	9,130	7,260
Coot:	500	500	300		250	50	50	250	500	250
Grand Totals	19,310	18,650	22,400	25,590	1,770	1,950	1,330	4,800	13,700	10,130

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Cont. 1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Clear Lake MONTHS OF September TO December, 19 65

(1) Species	(A) Aerial Census (2) Weeks of reporting period 11/14-20	11/21-27	11/28-12/4	12/5-11	12/12-18	12/19-25	12/26-1/1		(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
	11	12	13	14	15 (A)12/17	16	17	18			
Swans:											
Whistling	15	20	20	20	10	10			1,085		
Trumpeter											
Geese:											
Canada	800	400	230	500	640	400	200		77,960		
Cackling				10	20				290		
Brant											
White-fronted	1,000	150		100	20				59,570		
Snow	100	50		20	20				4,060		
Blue											
Other Total Geese	1,900	600	230	640	220	400	200		141,800		
Ducks:											
Mallard	800	500	80	100	150	100	100		82,220		
Black Unidentified	400	200	250						28,150		
Gadwall	500	100							63,880		
Baldpate	200	200	250		10	10	20		121,100		
Pintail	1,000	200	50		80	50	50		267,690		
Green-winged teal	100	100	60		10	10	10		102,830		
Blue-winged teal											
Cinnamon teal									6,270		
Shoveler	500	500	500		100	20	50		26,250		
Wood											
Redhead	100	50			10				7,260		
Ring-necked											
Canvasback		20	40						420		
Scaup	500	300	120		120				22,610		
Goldeneye					50				350		
Bufflehead	20	20	10		100				1,260		
Ruddy	200	100							29,400		
Other C. Merganser	20	20	20		40	20	20		1,820		
Total Ducks	4,250	2,510	1,400	100	660	230	260		778,720		
Coot:	300	300	250		50	40	30		55,240		
Grand Total	6,500	3,440	1,990	760	1,480	700	490		945,040		

(over)

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans	1,080	30	N
Geese	141,890	4,050	0
Ducks	776,720	25,140	N
Coots	25,240	500	E
TOTAL	945,040		

*Not simultaneously

SUMMARY

Principal feeding areas Shorelines, Willow Creek, estuary, Negro Bend Springs, Mammoth Springs

Principal nesting areas None

Reported by Edward J. O'Neill
(Oct. census by Sehara and Gibbs)

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).

Interior Duplicating Section, Washington, D. C.
1953

FC

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge CLEAR LAKE Months of JANUARY to APRIL 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	6	3/28-4/3	100	April	Still	Present				250
Western Grebe	20	"	80	"	"	"				200
Pied-billed Grebe	5	"	20	"	"	"				50
White Pelican	50	3/21-27	1000	"	"	"	2	1200		1500
D-Crested Cormorant					"	"				
G. Blue Heron	12	2/28-3/6	80	3/28-4/3	"	"	1	20	80	80
Common Egret	5	3/28-4/3	(SAME)		"	"				50
Black-Cr. Night Heron	4	3/21-27	20	3/28-4/3	"	"	1	8		50
II. Shorebirds, Gulls and Terns:										
Killdeer										400
Long-billed Curlew										500
Willet										10
Greater Yellowlegs										40
Lesser Yellow Legs										10
Least Sandpiper										1000
Am. Avocet										50
Calif. Gull	200	3/28-4/3	1000	April	Still	Present				1000
Ring-billed Gull	350	3/28-4/3	2000	"	"	"				2000

NOBSERVATION

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	No Info.		300							300
White-winged dove										
IV. Predaceous Birds:										
Golden eagle	Prev.	Period	8	3/28-4/3						10
Duck hawk										
Horned owl										
Magpie										
Raven										
Crow										
Bald Eagle	3	2/28-3/6	3	March	1	3/28-4/3				10

Reported by Edward J. O'Neill

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 Gruiiformes)
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.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Clear Lake Months of May to August 19~~6~~65

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared grebe	Previous Period				Still Present					250
Western grebe	"	"	30	5/30-6/5	"	"		10	20	300
Pied-billed grebe	"	"			"	"				50
White Pelican	"	"	2300	5/16-22	"	"	2	1200	1000	3,000
Double crested Cormorant	"	"			"	"	1	20	60	150
Great-blue heron	"	"			"	"	1	40	80	250
Common egret	"	"			"	"				40
Black-crowned Nt. heron	"	"	50				1	8	20	50
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous Period				Still Present					400
Long-billed curlew	"	"			"	"				500
Least sandpiper	"	"			"	"				2,000
Western sandpiper	1,500	5/6-22			"	"				4,000
American Avoset	Previous Period		1,050	5/2-8	"	"				2,500
California gull	"	"	300	"	"	"	3	100	300	2,000
Ring-billed gull	"	"	480	"	"	"	3	470	1,500	3,000
Bonaparte's gull	"	"			"	"				50
Caspian tern	50	5/16-22	80	5/30-6/5	"	"	1	40	50	300
Forester's tern	Previous Period		50	June	"	"	1	30	60	150

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	Previous	Period	800	7/11-17	Still	Present	No	Data		1,080
White-winged dove										
IV. Predaceous Birds:										
Golden eagle	"	"	2	6/18-19	"	"				2
Duck hawk	Residents									
Horned owl										
Magpie										
Raven										
Crow										

Reported by Edward J. O'Neill, 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 Gruiiformes)
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.

pd

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Clear Lake Months of September to December 19~~5~~ 65

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous	Period	200	9/19-10/2	No	Record				300
Western Grebe	"	"	100	9/5-18	4	12/5-18				250
Pied-billed Grebe	"	"	10	"	No	Record				20
White pelican	"	"	5	12/5-18	1	12/19-31				5
Double-crested Cormorant	"	"	20	9/5-18	Same					100
Great-blue Heron	"	"	18	"	Still	Present				50
Common Egret	"	"	No	Record	No	Record				10
Black-crowned Night Heron	"	"	"	"	"	"				20
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	No	Record						400
Long-billed Curlew	"	"	"	"						100
Least Sandpiper	"	"	"	"						3,000
Western Sandpiper	"	"	"	"						4,000
American Avocet	"	"	"	"						100
California Gull	"	"	1,000	9/5-18	Still	Present				5,000
Ring-billed Gull	"	"	300	"	"	"				10,000
Bonaparte's Gull	"	"	No	Record						50
Caspian Tern	"	"	"	"						200
Forester's Tern	"	"	"	"						100

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous	Period	1,000	9/5-18	No	Record		1,000
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	"	"	1	9/19-10/1	Still	Present		2
Duck hawk	Residents							
Horned owl								
Magpie								
Raven								
Crow								
Turkey Vulture	Previous	Period	10	" "	No	Record		20
Red-tailed Hawk	"	"	20	" "	Still	Present		30
Bald Eagle	5	12/19-31	Same	12/19-31	"	"		5

Reported by Edward J. O'Neill

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 Gruiiformes)
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.

INTERIOR--PORTLAND, OREGON

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Clear Lake For 12-month period ending August 31, 19 65

Reported by E.J. O'Neill Title Wildlife Mgt. Biologist

(1) Area or Unit Designation	(2) Habitat Type	Acreage	(3)	Use-days	(4) Breeding Population	(5) Production
I West of Peninsula	Crops		Ducks	340,000	150	100
	Upland	3,937	Geese	9,200	20	20
	Marsh		Swans	500		
	Water	13,600	Coots	12,010	20	5
	Total	17,537	Total	361,710	190	125
II East of Peninsula	Crops		Ducks	820,380	65	300
	Upland	2,283	Geese	201,040	88	185
	Marsh	60	Swans	4,080		
	Water	6,620	Coots	16,880	10	30
	Total	8,963	Total	1,042,380	163	515
III Peninsula	Crops		Ducks	318,770	65	40
	Upland	6,240	Geese	73,510	14	35
	Marsh		Swans	3,920		
	Water		Coots	27,990	10	10
	Total	6,240	Total	424,190	89	85
TOTALS	Crops		Ducks	1,479,150	280	440
	Upland	12,460	Geese	283,750	122	240
	Marsh	60	Swans	8,500		
	Water	20,220	Coots	56,880	40	45
	Total	32,740	Total	1,828,280	442	730
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

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

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

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

pd 3-1750c
Form NR-1[illegible]
(Sept. 19[illegible])

WATERFOWL HUNTER KILL SURV[illegible]

Refuge Clear Lake

Year 196 5

(Based on spot checks)

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/9-15	0	0					6	
10/16-22			No bag check				6	
10/23-29			" " "				6	
10/30-11/5			" " "				6	
11/6-12	2	8	White-fronted goose(1)	1	0	1	6	
11/13-19			No bag check				4	
11/20-26			" " "				4	
11/27-12/3			" " "				4	
12/4-10			" " "				4	
12/11-17			" " "					
12/18-24			" " "					
12/25-31			" " "					
1/1-6			" " "					
TOTAL	2	8	White-fronted goose(1)	1	0	1	40	20
Average per Hunter		4.0	0.50 geese 0 ducks	.50	None	.50		

Reported by: Palmer C. Sakura
Field data by Edward Boening

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

RC 3-1752
Form N[illegible]2
(April 1946)

UPLAND GAME BIRDS

Refuge CLEAR LAKE Months of JANUARY to APRIL, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse	Sage-Juniper Grasslands 7000 Ac.		X			X			300	
Valley Quail	Sage-Juniper Grasslands 7000 Ac.		0			0			100	No observations
Chukar Partridge	Sage-Juniper Grasslands 7000 Ac.		X	X			X	X		No observations
O'Neill										

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.

R

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge CLEAR LAKE Months of May to August, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse	Sage-Juniper-Grasslands 7,000 Acres		1	50		N	0		250	Wet, cold June weather very hard on nesting birds as in 1964.
Valley Quail	Sage-Juniper-Grasslands 7,000 Acres	NONE					N	E	100	

E.J.O'Neill

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

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

3-1752
pd Form NR 2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Clear Lake** Months of **September** to **December**, 19**65**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse	**7,000 acres sage-juniper-grasslands**					**N**			**300**	**Two-day general season (limit 2) in Modoc County outside of refuge, 9/4 & 5.**
Valley Quail	" "					**0**	**N**		**100**	
							E			

Reported by: Edward J. O'Neill

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.

pd

3-1753
Form [illegible]-3
(June 1945)

BIG GAME

Refuge **Clear Lake** Calendar Year **1965**

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Male Deer	**Sage - juniper**	**Est. 15**	**N**	**O**	**N**	**E**	**1**		**2**			**1,000**	**100**	
Pronghorn Antelope	**"** **"**	**10**	**12**				**3***					**128**	**193**	

Remarks:

***Due to airplane hazing (drowned crossing Clear Lake)**

Reported by **Edward J. O'Neill**

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 <u>each species</u> 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.

17060

3-1754
re Form NR-
(June 1945)

SMALL MAMMALS

Refuge CLEAR LAKE Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator* Control	For Re-stocking	For Re-search	Permit Number	Trappers' Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	Shoreline, springs, marsh - 60 acres				8									50
Coyote	Sage-Juniper grasslands 12,420 acres													20
Jackrabbit	" " " "		"	"	"	"								No Data
Cottontail	" " " "		"	"	"	"								" "
Bobcat	" " " "		"	"	"	"								" "
Mink	Shoreline, springs, marsh areas 200 acres		"	"	"	"								" "
Raccoon	" " " "		"	"	"	"								" "
Mt. Lion	Sage-Juniper Grasslands 12,420 acres		"	"	"	"								" "
Porcupine	" " " "		"	"	"	"								" "

* List removals by Predator Animal Hunter

REMARKS:

Reported by Edward J. O'Neill

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32/15

pd 3-1755
Form NR-

DISEASE

Refuge Clear Lake Year 19 65

Botulism

Period of outbreak None

Period of heaviest losses _____

Losses:

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease None

Species affected _____

Number Affected

Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

Reported by: Edward J. O'Neill, Wildlife Biologist

INT.-DUP., D.C.- 53819-59

NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge **Clear Lake** Calendar Year **1965**

1. Visits

a. Hunting **253** b. Fishing **0** c. Miscellaneous **2950** d. TOTAL VISITS **3203**

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	38	10600	FWS
Upland Game	N O N E		
Big Game	215	7679	FWS
Other			

Number of permanent blinds **0**

Man-days of bow hunting included above **0**

Estimated man-days of hunting on lands adjacent to refuge **950**

1b. Fishing (area open to fishing on refuge lands) **NONE**

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		

1c. Miscellaneous Visits

Recreation **2150*** Official **500**

Economic Use **300** Industrial **0**

*** predominantly artifact hunters**

2. Refuge Participation (groups)

Refer to Tule Lake section

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

Reported by: J.T. Anneer

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

UPPER KLAMATH

UK

C O N T E N T S

*Not applicable this report period

UK

Upper Klamath National Wildlife Refuge
1965

I GENERAL

A. Weather Conditions*

Tabulated below is the weather data for the year 1965. It was furnished by the Klamath Falls Station, U. S. Department of Commerce, Weather Bureau, Klamath Falls, Oregon. This station, located two miles southwest of Klamath Falls, is the closest official weather station.

	Precipitation			Temperature	
Month		Normal 1/		Maximum	Minimum
January	2.23	2.07		54	5
February	.08	1.48		60	17
March	.08	1.17		66	18
April	1.62	.93		77	25
May	.36	1.05		82	24
June	1.12	.86		85	29
July	T	.28		91	38
August	2.49	.27		89	40
September	T	.52		82	28
October	.05	1.15		86	19
November	2.45	1.64		67	8
December	.80	2.27		54	-3
Total	11.28	13.69	Extremes	91	-3

1/ Precipitation average for the period 1927-1956.

B. Habitat Conditions*

1. Water*

The Bureau of Sport Fisheries and Wildlife has no control of water on this refuge. Refuge water levels are dependent upon the elevation of Upper Klamath Lake which is managed as a reservoir for irrigation and the production of hydroelectric power.

*Annear

pd

UK

Inflow into Upper Klamath Lake in December 1964 was an amazingly high 462,000 acre feet. On December 1 the elevation was 4140.78'; it crested at 4143.70' on December 31, reflecting a rise of 2.98'. Storage at this level of 621,000 acre feet is 190 percent of average. This elevation, unequal in recorded history, presented problems.

About ten miles downstream the river narrows into a restriction known as the Keno Reef. The rushing waters were bottlenecked here and backed up, flooding 10,000 acres of pasture and grainlands.

Between February 17 and March 20, Pacific Power and Light Company constructed a bypass canal around the Reef. Future plans call for: construction of a diversion dam 1.1 miles below the Keno Regulating Dam; diverting all water through the bypass canal; removal of the reef; removal of the Keno Regulating Dam; and widening and deepening of the river channel.

The elevation of Upper Klamath Lake was 4139.58' on December 31, 1965.

There was no botulism on the refuge in 1965.

2. Food and Cover*

Water conditions were adequate again in 1965. After winter floods, copious amounts stored in Upper Klamath Lake provided a good cover of refuge lands.

Food production was similar to the 1964 season but at best it leaves much to be desired for most species of waterfowl - especially puddle ducks.

The Unit 1 area and the lake front edge of Units II and III usually attract greatest numbers of waterfowl in the fall. Grain feeders prefer to raid the rich fields of the Tulana Farms to the east and loaf in the shelter and protection of refuge units II and III.

II WILDLIFE*

A. Migratory Birds

NR Forms appended to the section clearly illustrate the waterfowl seasonal use.

January saw all refuge units frozen over solid except for a very few springs or air holes in Units II and III, part of Pelican Bay

*O'Neill

pd

UK

and sections of Recreation Creek. As late as April 6 snow again blanketed the entire area with about two inches of new snow.

Waterfowl production was good. Canada geese showed a 116 percent increase over 1964; ducks made a 71 percent gain; coots were up 70 percent. Total waterfowl production improved about 73 percent.

Waterfowl use-days (4,229,860) were down 1,377,960 compared to the year 1964.

V FIELD INVESTIGATION OR APPLIED RESEARCH*

A. Progress Report

The algae problems study by Health, Education and Welfare on Upper Klamath Lake continues in effect. The refuge is currently cooperating by obtaining an estimate of waterfowl use on the entire lake for computation of algae nutrients originating from animal matter.

VI PUBLIC RELATIONS*

A. Recreational Uses

Fishing

Upper Klamath Lake's 120 square miles provides some excellent year-around fishing. Much of the activity occurs on the refuge area opened to fishing (In 1965 Oregon estimated 11,000 angler-days on the lake). In the summer the lake water temperature generally rises to the 70's and the fishing shifts to cooler, west shore areas including the refuge. Proposals to re-establish Upper Klamath Lake as part of the former anadromous fisheries continues under study by state, Federal and power company officials.

B. Refuge Visitors - Refer to Tule Lake section.

C. Refuge Participation - All participation listed in Tule Lake section.

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*O'Neill

UK

D. Hunting*

Hunting use increased 17 percent over 1964 and was down 7 percent from 1963, the only two years hunting use has been measured. Hunting success was excellent with ducks (2.27/hunter) and poor with geese (.17/hunter) for a total of 2.44 birds per hunter. Mallards and widgeon comprised 50 percent of the kill and shoveler 10 percent.

Moderate temperatures through October, November, and early December were sufficient to keep the hunting area open. The fast moving, frequent storms in November provided excellent hunting conditions.

Hunter use was low relative to bird numbers and hunting conditions. Bag checks indicated that a minimum of 50 percent of the hunter use was from Medford, Ashland, Roseburg, Eugene, and Coos Bay areas. It appears the majority of Klamath Basin hunters prefer other than this area although this is by far a higher quality hunting area than the Oregon-California firing line--not so many birds but a better chance of getting one.

WATERFOWL HUNTER-SUCCESS DATA - UPPER KLAMATH

Year	Total Hunters (Hunter Days)	Goose Bag	Duck Bag	Total Bag	Geese Per Hunter	Ducks Per Hunter	Total Birds Per Hunter
1963	800	No Data		1,280	No Data		1.6
1964	640	90	1,280	1,370	.14	2.0	2.14
1965	748	127	1,698	1,825	.17	2.27	2.44
3-year Average	729	109	1,489	1,492	.16	2.14	2.06

E. Violations - All violations listed in Tule Lake Section.

VII OTHER ITEMS

A. Items of Interest**

During the summer and fall Bureau engineers were involved in location of the boundary along the north line of Unit III.

*Sekora
**O'Neill

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Cadastral findings required shifting the refuge boundary several yards southward.

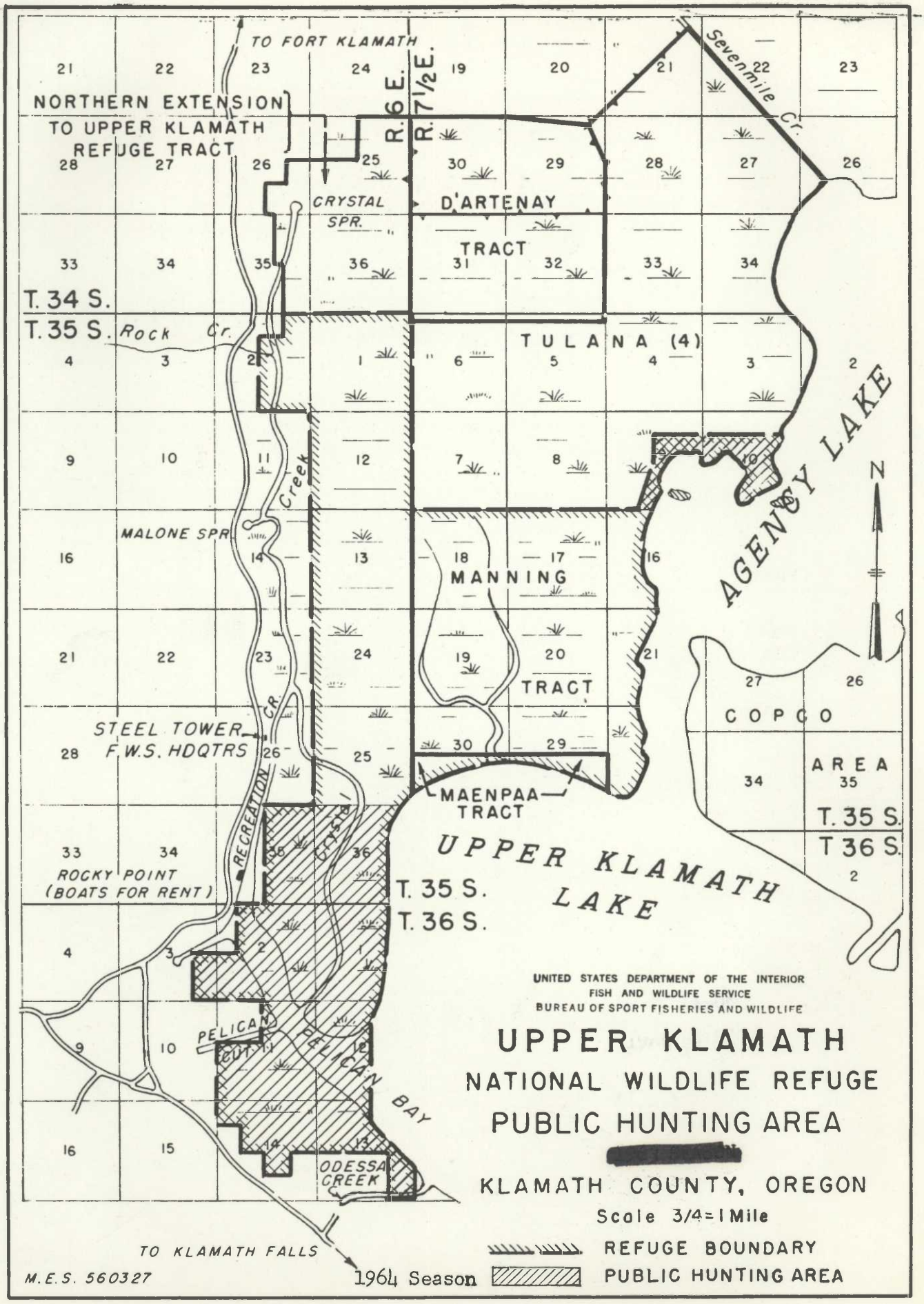
It is proposed by Tulana Farms to dike off and reclaim, by drainage, some eleven and one-half sections of marsh land north of the refuge for agricultural use.

Tulana has requested consideration for a land exchange in Sections 9 and 10 for the east edge of Hank's Marsh. From a habitat standpoint this negotiation, if in favor of Tulana Farms, would involve a slight loss to wildlife and hunters.

With acquisition of Eagle Ridge property by Klamath County for recreational development, there has been renewed recreational outlook for the Upper Klamath Lake country. Rocky Point Lodge exchanged ownership and the former owner plans developments northwest of the refuge. The Forest Service has a number of requests for more summer home sites and developments.

Approximately 2,000 acres of land north of Unit III was acquired under Public Law 88-567 (Kuchel Bill) for addition to the Upper Klamath Refuge. This area embraces the head waters of Recreation Creek, Crystal Springs, and is west of D'Artenay tract.

pd


TO FORT KLAMATH
NORTHERN EXTENSION
TO UPPER KLAMATH
REFUGE TRACT
R. 6 E.
R. 7½ E.
Sevenmile Cr.
CRYSTAL
SPR.
D'ARTENAY
TRACT
T. 34 S.
T. 35 S.
Rock Cr.
TULANA (4)
AGENCY LAKE
N
Creek
MALONE SPR.
MANNING
TRACT
COPCO
AREA
T. 35 S.
T 36 S.
STEEL TOWER
F.W.S. HDQTRS
CR.
MAENPAA
TRACT
RECREATION
CRYSTAL
UPPER KLAMATH
LAKE
ROCKY POINT
(BOATS FOR RENT)
T. 35 S.
T. 36 S.
PELICAN
CUT
PELICAN BAY
ODESSA
CREEK
TO KLAMATH FALLS
M.E.S. 560327
1964 Season
UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
UPPER KLAMATH
NATIONAL WILDLIFE REFUGE
PUBLIC HUNTING AREA
[redacted]
KLAMATH COUNTY, OREGON
Scale 3/4=1 Mile
REFUGE BOUNDARY
PUBLIC HUNTING AREA

3-1750
Form NR
(Rev. March 1953)

WATERFOWL

REFUGE UPPER KLAMATH MONTHS OF JANUARY TO APRIL, 19 53

(A) Aerial Survey

(1) Species	1/3-9 (1)	1/10-16 (2)	1/17-23 (3)	1/24-30 (4)	1/31-2/6 (5)	2/7-13 (6)	2/14-20 (7)	2/21-27 (8)	2/28-3/6 (9)	3/7-13 (10)
	Weeks of reporting period									
Swans:					(A) 2/2					
Whistling	10	10				20	30	20	20	50
Trumpeter										
Geese:										
Canada	100	100	100	100	100	100	100	100	100	100
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other TOTAL GEESE	100	100	100	100	100	100	100	100	100	100
Ducks:										
Mallard	200	200			50					
~~Black~~ Unident.						1,000	2,000	2,000	2,000	2,000
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead	20	20			60					
Ruddy										
Other Com. Merganser	10	10								
TOTAL DUCKS:	210	220			110	1,500	2,000	2,000	2,000	2,000
Coot:							200	1,000	1,500	2,000
GRAND TOTALS:	310	320	100	100	210	1,620	2,330	3,120	3,600	4,100

3 -1750a
Cont. [illegible]-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Upper Klamath MONTHS OF January TO April, 19 65

(A)=Aerial Census

(1) Species	(2) Weeks of reporting period 3/14-20 11	3/21-27 12	3/28-4/3 13	4/4-10 14	4/11-17 15	4/18-24 16	4/25-5/1 17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:			3/31 (A)	3/8 (A)							
Whistling	100	100	10	10	10				2,660		
Trumpeter											
Geese:											
Canada	200	200	140	150	200	250	250		16,790		
Cackling											
Brant											
White-fronted		10	10						140		
Snow				1,000					7,000		
Blue											
~~Other~~ TOTAL GEESE	200	220	160	1,150	200	250	250		23,870		
Ducks:											
Mallard	1,500	1,000	660	1,000	2,000	2,000	2,000		72,470		
~~Black~~ Unident.					15,000				171,500		
Gadwall	400	400	550	500	550	600	600		25,200		
Baldpate	1,000	500	2,750	5,000	2,000	50	50		68,450		
Pintail	4,000	3,000	1,830	7,000	2,500	500	100		132,510		
Green-winged teal	10	10	500	300	200	200	150		8,580		
Blue-winged teal											
Cinnamon teal		20	80	50	100	300	500		7,350		
Shoveler	1,000	1,000	730	500	500	500	500		33,110		
Wood			40			50	100		1,330		
Redhead	10	10	170	100	200	300	300		7,630		
Ring-necked											
Canvasback	50	50	270	20	20	20	20		3,150		
Scaup	500	500	1,500	2,000	1,500	1,000	500		52,500		
Goldeneye	30	30	30	10					700		
Bufflehead	300	200	200	400	400	350	300		15,750		
Ruddy	400	400	120	1,000	1,000	800	800		31,640		
Other Com. Merganser	20	20	270	100	50				3,360		
TOTAL DUCKS	9,220	7,140	9,570	17,980	26,020	6,670	5,920		635,230		
Coot:	2,000	2,000	2,030	1,500	1,500	1,500	1,500		117,120		
GRAND TOTALS:	11,520	9,450	11,770	20,640	27,730	8,420	7,670		778,870		

(over)

	(5) Total Days Use	(6) Peak Number*	(7) Total Production
Swans	2,660	100	
Geese	23,870	1,150	
Ducks	635,230	26,020	
Coots	117,110	2,030	
TOTALS:	778,870		

*Not simultaneously

SUMMARY

Principal feeding areas West edge of marsh, shallow estuarian, adjacent agricultural fields

Principal nesting areas N.A.

Reported by Edward J. O'Neill

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).

Interior Duplicating Section, Washington, D. C.
1953

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

WATERFOWL

REFUGE Upper Klamath MONTHS OF May TO August, 19 65

(1) Species	(2) Weeks of reporting period 5/2-8 1	5/9-15 2	5/16-22 3	5/23-29 4	5/30-6/5 5	6/6-12 6	6/13-19 7	6/20-26 8	6/27-7/3 9	7/4-10 10
Swans:										
Whistling		15								
Trumpeter										
Geese:										
Canada	800	500	500	200	250	100	50	50	50	50
Cackling	1,500	1,000								
Brant										
White-fronted	5,000	5,000	1,500	50						
Snow	350									
Blue										
Other Total Geese	7,650	6,500	2,000	250	250	100	50	50	50	50
Ducks:										
Mallard	1,000	1,000	1,000	1 500	1,000	1,000	1,000	1,000	1,000	1,500
Black										
Gadwall	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Baldpate	1,000	50								
Pintail	2,500	2,000	300	300	300	200	200	200	200	200
Green-winged teal	2,000	2,000	150	100	50	20	20	20	20	20
Blue-winged teal										
Cinnamon teal	200	200	300	500	500	500	500	500	500	1,000
Shoveler	12,000	600	60	20	20	20	20	20	20	20
Wood										
Redhead	500	100	200	200	200	250	250	250	200	200
Ring-necked	10	10								
Canvasback	150	20	20	10	10	10	10	10	10	10
Scaup	1,000	1,000	1,000	1,000	1,000	300	300	300	300	200
Goldeneye	40	20								
Bufflehead	150	20	20	10	10	10	10	10		
Ruddy	6,000	3,000	1,000	1,000	200	300	300	200	200	200
Other										
Total Ducks	28,600	11,040	5,030	5,640	4,190	3,630	3,610	3,610	3,650	4,450
Coot:	4,000	2,500	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000
Grand Total	40,200	20,055	8,030	6,570	5,440	4,730	4,660	4,660	4,700	5,500

pd 3 -1750a
Cont. -1
(Rev. March 1953)
(A) Aerial Census

WATERFOWL
(Continuation Sheet)

REFUGE Upper Klamath MONTHS OF May TO August, 1965

(1) Species	(2) Weeks of reporting period: 7/11-17 (11)	7/18-24 (12)	7/25-31 (13)	8/1-7 (14)	8/8-14 (15)	8/15-21 (16)	8/22-28 (17)	8/29-9/4 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling									105		
Trumpeter											
Geese:											
Canada	50	50	60	60	60	60	60	60	21,840	15	60
Cackling									17,500		
Brant											
White-fronted									80,710		
Snow									2,450		
Blue											
~~Other~~ TOTAL GEESE	50	60	60	60	60	60	60	60	122,500	15	60
Ducks:											
Mallard	2,200	280	3,000	2,000	1,000	1,000	1,000	1,000	149,060	3	200
~~Other~~ Unidentified										2	80
Gadwall	1,000	2,000	2,000	2,000	2,000	2,500	2,500	2,5000	185,500	4	250
Baldpate									7,350		
Pintail	300	250	250	200	200	300	300	1,000	68,700		
Green-winged teal	10						100	100	22,240		
Blue-winged teal											
Cinnamon teal	1,200	300	300	500	1,100	1,000	1,000	150	78,150	1	30
Shoveler	150	300	300	250	250	300	300	1,000	113,540	1	10
Wood										2	100
Redhead	200	200	300	250	300	300	300	400	32,900	) 3	) 400
Ring-necked										)	)
Canvasback	10	10	10	10	10	20	30	30	2,800	1	20
Scaup		250	250	300	300	300	300	500	60,900	1	10
Goldeneye									420		
Bufflehead			40						2,100		
Ruddy	300	250	200					500	98,000	2	130
Other											
TOTAL DUCKS	4,870	3,740	6,500	5,510	5,160	5,620	5,530	7,160	822,500	21	1,300
Coot:	1,600	1,100	1,500	2,000	2,000	3,000	4,000	5,000	238,700	5	50
GRAND TOTALS	6,620	4,900	8,000	7,500	7,240	8,700	9,010	12,200	1,183,805	41	1,370

(over)

	(5) Total Days Use	(6) Peak Number *	(7) Total Production
Swans	105	15	
Geese	122,500	7,050	80
Ducks	822,500	23,550	1,200
Coots	238,700	5,000	90
TOTALS	1,183,800		1,370

* Not simultaneously

SUMMARY

Principal feeding areas Stream channels, marsh, neighboring agricultural fields.

Principal nesting areas Along channels, small islands (principally in vicinity of Straits in Unit III

Reported by Edward J. O'Neill, Wildlife 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).

Interior Duplicating Section, Washington, D. C.
1953

pd

3-1750
Form NR
(Rev. March 1953)

WATERFOWL

REFUGE Upper Klamath MONTHS OF September TO December, 1965

(1) Species	(A) Aerial Census (2) Weeks of reporting period 9/5-11 (1)	9/12-18 (2)	9/19-25 (3)	9/26-10/2 (4)	10/3-9 (5)	10/10-16 (6)	10/17-23 (7)	10/24-30 (8)	10/31-11/6 (9)	11/7-13 (10)
Swans:				(A) 9/27	(A)10/8	(A)10/13	(A) 10/19	(A)10/26		
Whistling										
Trumpeter										
Geese:										
Canada	100	150	300	770	850	130	670	330	280	240
Cackling										
Brant										
White-fronted				200					60	30
Snow										
Blue										
~~Other~~ Total Geese	100	150	300	970	850	130	670	330	340	270
Ducks:										
Mallard	2,000	2,500	2,000	3,600	70		600	100	1,600	1,030
~~Black~~ Unidentified	1,500	4,000	10,000	12,560		1,200	1,700	1,300	800	24,000
Gadwall	2,000	2,000	1,500	1,100		2,500		750	1,200	9,250
Baldpate		500	1,500	1,400	1,250	500	600	2,800	2,000	2,050
Pintail	1,500	2,000	5,000	9,310	1,350	2,250	2,450	1,100	4,000	9,500
Green-winged teal	300	1,000	2,000	2,130	470			2,370	4,300	8,340
Blue-winged teal										
Cinnamon teal	200	150	100	100					10	10
Shoveler	2,500	2,000	1,000	300	2,380	2,150	800	1,600	4,300	4,650
Wood	300	250	200	700	60					30
Redhead	350	400	400	420	90	500	80	30	150	
Ring-necked									400	
Canvasback	50	50	50			1,000			300	
Scaup	1,200	3,000	2,000	10,300	1,550	1,550		250	50	
Goldeneye									30	
Bufflehead	50	500	500			1,200		680	280	130
Ruddy	1,800	2,000	2,000	600	1,200	3,050	3,150		3,100	1,200
~~Hooded~~ C. Merganser									30	
Total Ducks	13,950	20,050	35,250	43,870	9,340	15,910	9,380	10,980	23,110	78,140
Coot:	3,000	6,000	10,000	75,200	44,750	5,000	5,750	5,750	1,750	18,530
Grand Total	17,050	26,200	45,550	120,070	54,940	21,040	15,800	17,060	25,200	96,940

3 -1750a
Cont. -1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Upper Klamath MONTHS OF September TO December, 19 65

(1) Species	(2) Weeks of reporting period 11 (11/14-20)	12 (11/21-27)	13 (11/28-12/4)	14 (12/5-11)	15 (12/12-18)	16 (12/19-25)	17 (12/26-1/1)	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:			(A)11/30		(A)12/17						
Whistling		30	50	20	30	60	50		1,610		
Trumpeter											
Geese:											
Canada	200	150	100	50	60	100	100		32,000		
Cackling											
Brant											
White-fronted	20	20							2,250		
Snow											
Blue											
~~Other~~ Total Geese	220	170	100	50	60	100	100		34,440		
Ducks:											
Mallard	1,000	500	110	150	150	100	150		122,010		
~~Black~~ Unidentified	40,000	20,000							500,000		
Gadwall	10,000	5,000	500	200	100	100	50		202,640		
Baldpate	9,000	3,000							218,500		
Pintail	8,000	4,000	20	50	50	50	50		261,190		
Green-winged teal		100	200	100					149,870		
Blue-winged teal	10								70		
Cinnamon teal	5,000	3,000							50,000		
Shoveler	100	100	100	50					100,720		
Wood									11,760		
Redhead		150	70	100	150	100	150		21,000		
Ring-necked									2,800		
Canvasback									9,450		
Scaup				200	700	400	200		102,500		
Goldeneye									210		
Bufflehead	100	100	120	150	200	200	100		27,050		
Ruddy	1,000	500	150	200	300	300	400		141,050		
~~Other~~ C. Merganser									210		
Total Ducks	74,210	38,450	1,420	1,300	1,800	1,330	1,100		2,011,000		
Coot:	20,000	10,000	600	500	200				1,450,000		
Grand Total	94,440	48,650	2,400	1,870	1,900	1,430	1,250		4,122,010		

(over)

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans	1,610	50	N
Geese	34,440	970	0
Ducks	2,641,800	78,140	N
Coots	1,450,860	75,230	N
TOTAL	4,128,810		

* Not simultaneously

SUMMARY

Principal feeding areas [redacted]
East edge of Unit 2, Stewite, adjacent private agriculture grain fields.

Principal nesting areas N/A

Reported by Edward J. O'Neill
(Oct. census by Sekora and [redacted])

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).

Interior Duplicating Section, Washington, D. C.
1953

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge UPPER KLAMATH Months of JANUARY to APRIL 195/65

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	NO	INFORMATION			Still	Present				800
Western Grebe	"	"			"	"				200
Pied-billed Grebe	"	"			"	"				150
Red-necked Grebe	"	"			"	"				10
White Pelican	120	3/28-4/3	430	4/25-5/1	"	"	1			430
Db.-crested Cormorant	10	2/28-3/6	300	4/4-10	"	"	2			300
Gr. Blue Heron	12	"	150	"	"	"	1			200
Common Egret	6	4/4-10	50	"	"	"				50
Bl.-Cr. Nt. Heron			200	"	"	"	1			250
American Bittern			20	"	"	"				20
Sandhill Crane			8	"	"	"				8
II. Shorebirds, Gulls and Terns:										
Killdeer	No	Information			Still	Present				50
Spotted Sandpiper	"	"			"	"				20
Avocet	"	"			"	"				100
Wilson's Phalarope	"	"			"	"				350
Ring-billed Gull	310	2/28-3/6			"	"				350

(over)

(1)	(2)		(3)		(4)	(5)	(6)
III. Doves and Pigeons:							
Mourning dove	NONE						
White-winged dove							
IV. Predaceous Birds:							
Golden eagle	Previous	Period	8				10
Duck hawk							
Horned owl							
Magpie							
Raven							
Crow							
Bald Eagle	"	"	8	Feb.			10
M Marsh Hawk	"	"	12	April			20

Reported by Edward J. O'Neill

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Upper Klamath Months of May to August 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous Period		180	5/16-22	Still	Present		Est. 100		400
Western Grebe	"	"	330	5/16-22	"	"		" 70		400
Pied-billed Grebe	"	"	130	5/30-6/5	"	"		" 50		200
Red-necked Grebe	"	"						" 5		10
White Pelican	"	"	510	8/22-28	"	"	1	140	260	600
Double-Crested Cormorant	"	"	780	8/22-28	"	"	2	620	700	800
Great Blue Heron	"	"	220	5/30-6/5	"	"	1	239	232	250
Common Egret	"	"	10	7/25-31	"	"				50
Blk-Cr. Night Heron	"	"	200	7/25-31	"	"	1	100	200	300
American Bittern	"	"			"	"				20
GREEN HERON			2	AUG.						2
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous Period				Still	Present				100
Avocet	"	"			"	"	N			250
Spotted Sandpiper	"	"			"	"	O			50
Wilson's Phalarope	"	"			"	"	D			1,000
Calif. Gull	100	5/16-22	300	7/25-31	"	"	A			2,000
Ring-billed Gull	1,290	"	1,290	5/16-22	"	"	T			2,000
							A			
Forster's Tern	320	"	320	"	"	"		Est. 100		1,200
Black Tern	1,350	"	1,350	"	"	"		Est. 300		3,000

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove	NONE OBSERVED					
White-winged dove						
IV. Predaceous Birds:						
Golden eagle	RESIDENT	1	3/22-28	Still Present		5
Duck hawk	"					
Horned owl	"					
Magpie	"					
Raven	"					
Crow	"					

Reported by E.J. O'Neill

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 Gruiiformes)
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.

pd

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Upper Klamath Months of September to December 19~~5~~55

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous	Period	300	9/5-18	No	Record				2,000
Western Grebe	"	"	4,770	"	"	"				800
Pied-billed Grebe	"	"	100	"	Still	Present				300
Red-Necked Grebe	"	"	10	"	No	Record				10
White pelican	"	"	50	11/7-20	Same					100
Double-Cr. Cormorant	"	"	200	9/5-18	10	12/19-31				300
Great-blue Heron	"	"	81	"	Still	Present				150
Common Egret	"	"	5	"	No	Record				100
Black-crowned Nt. Heron	"	"	10	"	10	10/5-18				200
American Bittern	"	"	No	Record	No	Record				20
Sandhill Crane	2	11/7-20	"	"	"	"				10
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	No	Record	No	Record				50
American Avocet	"	"	"	"	"	"				200
Spotted Sandpiper	"	"	"	"	"	"				30
Wilson's Phalarope	"	"	"	"	"	"				100
California gull	"	"	300	9/5-18	Same					2,000
Ring-billed Gull	"	"	700	"	"					3,000
Forester's Tern	"	"	No	Record	No	Record				500
Black Tern	"	"	"	"	"	"				1,000
Caspian Tern	"	"	"	"	"	"				50

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	No Observations		No	Record				50
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Previous Period		1	12/19-31				5
Duck hawk	Residents							
Horned owl	"							
Magpie	"							
Raven	"							
Crow	"							
Turkey Vulture	20	9/5-18	Same		No	Record		30
Ferruginous Hawk	3	12/19-31	"		"	"		10
Rough-legged Hawk	15	"	"		"	"		30
Bald Eagle	2	"	"		"	"		2
Marsh Hawk	14	11/7-20	"		"	"		20

Reported by Edward J. O'Neill

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 Gruiiformes)
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.

INTERIOR--PORTLAND, OREGON

c.8.

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

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

CORRECTED COPY

WATERFOWL UTILIZATION OF REFUGE HABITAT

CORRECTED COPY

Refuge **Upper Klamath** For 12-month period ending August 31, 19 **65**

Reported by **Edward J. O'Neill** Title **Wildlife Biologist**

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage		(3) Use-days	(4) Breeding Population	(5) Production
I	Crops		Ducks	1,098,050	122	360
	Upland		Geese	120,000	42	50
	Marsh	2,455	Swans	2,600		
(So. of Pel. Bay)	Water	550	Coots	484,300	48	150
	Total	3,005	Total	1,704,950	212	590
II	Crops		Ducks	480,000	128	300
	Upland		Geese	10,030	16	
	Marsh	5,088	Swans	3,040		
(No. of Pel. Bay)	Water	23	Coots	264,500	14	30
	Total	5,106	Total	757,570	158	330
III	Crops		Ducks	1,611,530	136	400
	Upland		Geese	50,200	72	
(No. of Straits)	Marsh	4,422	Swans	2,310		
	Water		Coots	103,000	22	50
	Total	4,422	Total	1,767,340	230	450
TOTALS	Crops		Ducks	3,189,880	386	1,060
	Upland		Geese	180,230	130	80
	Marsh	11,960	Swans	7,950		
	Water	573	Coots	851,800	84	230
	Total	12,533	Total	4,229,860	600	1,370
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

CORRECTED COPY (over) CORRECTED COPY

INSTRUCTIONS

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

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

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

pg 3-1750c
Form NR-[illegible]
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Upper Klamath

Year 1965

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/9-15	11	49	Coot(9), Mallard(7), GW-Teal(6), C. Goose goose(3), Widgeon(2), Pintail(2), Shoveler (1), Canvasback(1), Wood duck(1), Cinn. Teal(1)	33	7	40	92	334
10/16-22	12	62	Widgeon(11), Mallard(6), Ruddy(4), Shoveler(3), C. Goose(3), Pintail(1)	28	10	38	33	104
10/23-29			No bag check				75	
10/30-11/5			" " "				75	
11/6-12			" " "				75	
11/13--19	13	69	Widgeon(14), Mallard(4), Shoveler(4), Ruddy(2), Bufflehead(2), Pintail(1)	27	4	31	48	114
11/20-26			No bag check				90	
11/27-12/3			" " "				60	
12/4-10			" " "				40	
12/11-17			" " "				60	
12/18-24			" " "				60	
12/25-31			" " "				20	
1/1-6			" " "				20	
TOTALS	38	180	Widgeon(27), Mallard(17), Coot(9), Shoveler(8), Ruddy(6), GW-Teal(6), Canada geese(6), Pintail(4), Bufflehead(2), Canvasback(1), Wood duck(1), Cinn. Teal(1)	88	21	109	748	2,260
Average Per Hunter		5.0	0.17 geese 2.27 Ducks	2.44	0.58	3.02		

Reported by: Palmer Sekora
Field data by Sekora

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

3-1752
Form N[illegible]2
(April 1946)

UPLAND GAME BIRDS

Refuge UPPER KLAMATH Months of JANUARY to APRIL, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifioally requested. List introductions here.
Blue Grouse	Pine Forest 30 acres		NO OBSERVATION						50	
Ruffed Grouse	*		*	*					50	
Mt. Quail	*		*	*					10	
Porcupine	*		*	*					10	
O'Neill										

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.

r 3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Upper Klamath Months of May to August, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Blue Grouse	Pine Forests	30 Ac.	NO OBSERVATION			N	O	N	E 50	
Ruffed Grouse	" "	" "	"	"		"	"		30	
Mt. Quail	" "	" "	"	"		"	"		10	

E.J. O'Neill

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.

pd 3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Upper Klamath** Months of **September** to **December**, 19**65**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Blue Grouse	**Pine forest 30 ac.**					**N**			**25**	
Ruffed Grouse	**" " "**					**0**			**10**	
Mountain Quail	**" " "**						**N**	**E**	**10**	

Reported by: Edward J. O'Neill

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.

pd 3-1753
Form N. 3
(June 1945)

BIG GAME

Refuge Upper Klamath Calendar Year 1965

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Black-tailed deer	Pine-Aspin-20 acres	Est. 5	N	0	N	E						Est. 20	10	
Black Bear	" " "											1 reported		

Remarks:

Reported by Edward J. O'Neill

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 <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1754
Form NR-
(June 1945)

SMALL MAMMALS

Refuge UPPER KLAMATH Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	Hardstem bulrush marsh 11,960 acres		N											1000
Beaver	Willows, Quaken Aspen, etc. along 5 mi. boundary			O										10
River Otter	10,000 acres marsh													10
Mink	" " "				N									50
Coyote	" " " (in winter)													10
Bobcat	" " " and pine forest					E								5
Raccoon	" " "													50
Porcupine	30 acres pine forest													occasional
Snowshoe Rabbit	" " " "													10

* List removals by Predator Animal Hunter

REMARKS: Muskrats suffered losses due to winter floods and freeze-outs.

Reported by Edward J. O'Neill

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unpriness 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.

32715

pd

3-1755
Form NR-

DISEASE

Refuge Upper Klamath Year 1965

Botulism

Period of outbreak None

Period of heaviest losses

Losses:

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

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

Areas affected (location and approximate acreage)

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

Condition of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease Lead Poisoning

Species affected Ducks

Number Affected

Species	Actual Count	Estimated
Mallard	3	100

Number Recovered No information

Number lost " "

Source of infection Shallow estuaries as straits, Agency Lake, etc.

Water conditions Good

Food conditions ~~XXXX~~ Average

Remarks Probably a comparable annual loss is involved but area too vast for detailed coverage

Reported by: Edward J. O'Neill, Wildlife Biologist

INT.-DUP., D.C.- 53818-59

NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge **Upper Klamath** Calendar Year **1965**

1. Visits

a. Hunting **710** b. Fishing **7000** c. Miscellaneous **4850** d. TOTAL VISITS **12560**

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	710	3364	FWS
Upland Game	NONE		
Big Game	NONE		
Other	NONE		

Number of permanent blinds **0**

Man-days of bow hunting included above **0**

Estimated man-days of hunting on lands adjacent to refuge **2020**

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		10

1c. Miscellaneous Visits

Recreation **4750** Official **100**

Economic Use **0** Industrial **0**

2. Refuge Participation (groups)

Refer to Tule Lake section

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. Of GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

3-1756
(Rev. 4/63)

Reported by: J.T. Annear

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

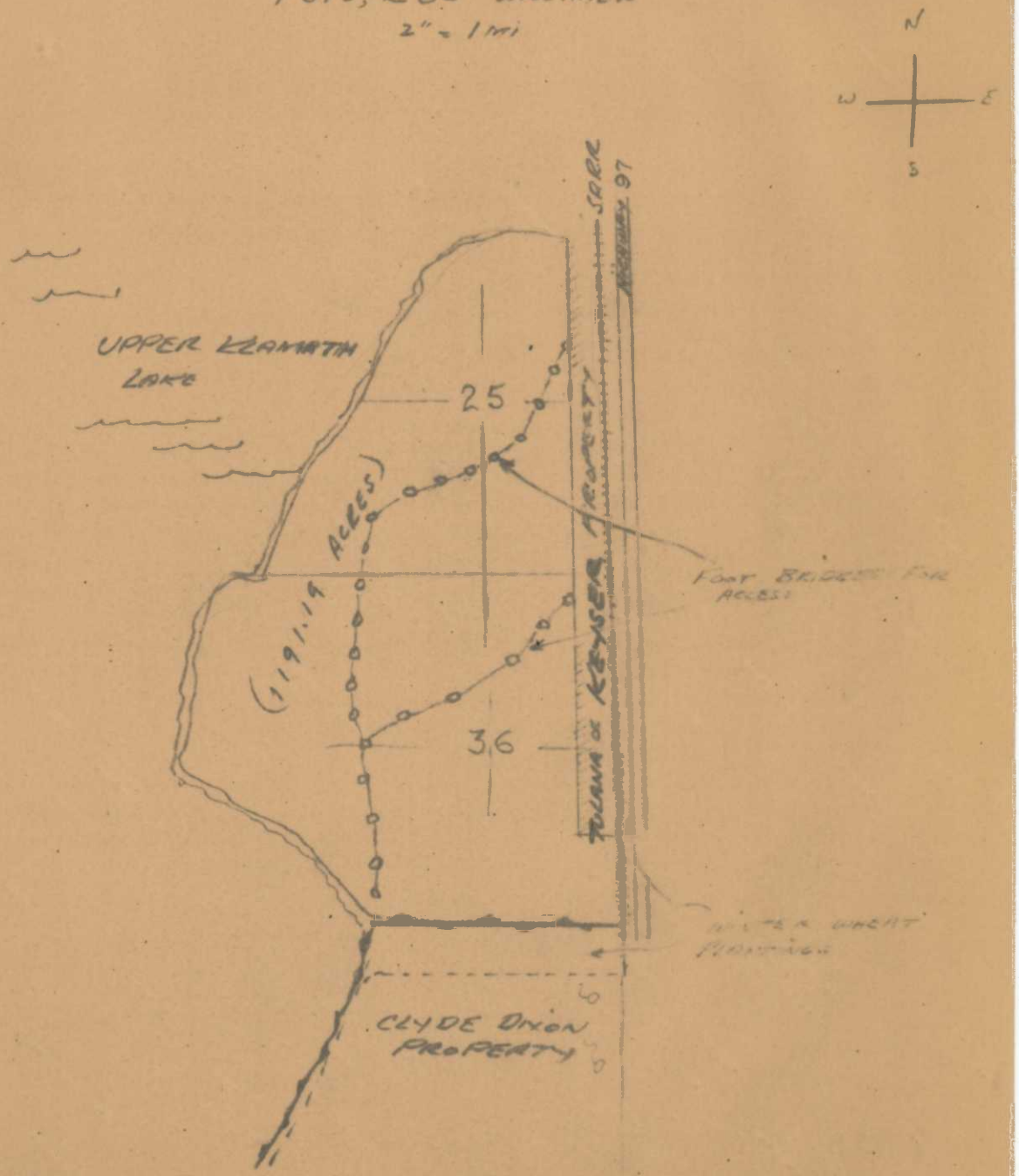
Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

INTERIOR--PORTLAND, OREGON

HANK'S MARSH

HANK'S MARSH

T 37 S, R 8 E Will. Mer
2" = 1 mi



E.J.O.
4/27/66

HM

I GENERAL*

Hank's Marsh, acquired under Public Law 88-567 (Kuchel Bill) was under Bureau jurisdiction this summer for the first time.

In past years, hunting has been available to the public and muskrat trapping permits have been issued by Bureau of Reclamation, the holding agency.

II WILDLIFE*

NR Forms attached illustrate the waterfowl use involved during the year at hand. Very little field investigation has been possible due to innumerable other biological activities this year. A total of 151,480 waterfowl use days was estimated for the year. Peak numbers was 25,000 ducks in November.

Of interest is the note that a Klamath Falls hunter shot one of two Egyptian geese which were flying with white-fronted geese over the marsh in November. The specimen was mounted for display and has been identified by U. S. Game Management Agent William Rush.

The black-crowned night heron colony, which formerly nested north of Upper Klamath Refuge, apparently shifted sites and we found some 200 nests on Hank's Marsh in June and July.

*O'Neill

pd

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

BC

WATERFOWL

REFUGE HANK'S MARSH MONTHS OF JANUARY TO APRIL, 1965

(A) Aerial Survey

(1) Species	(2) Weeks of reporting period: 1/3-9 (1)	1/10-16 (2)	1/17-23 (3)	1/24-30 (4)	1/31-2/6 (5)	2/7-13 (6)	2/14-20 (7)	2/21-27 (8)	2/28-3/6 (9)	3/7-13 (10)
Swans:	(A) 1/3					(A) 2/3				
Whistling										
Trumpeter										
Geese:										
Canada								50	50	50
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other TOTAL GEESE								50	50	50
Ducks:										
Mallard										
Unident.		200	500	500	500		200	500	500	500
Black										
Gadwall										
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
TOTAL DUCKS:		200	500	500	500		200	500	500	500
TOTAL, GRAND		200	500	500	500		200	550	550	550

NOT FROZEN OVER

NOT FROZEN OVER

3 -1750a
Cont. [illegible]1
(Rev. March 1953)

RC

WATERFOWL
(Continuation Sheet)

REFUGE HANGS MARSH MONTHS OF JANUARY TO APRIL, 19[illegible]

(A) Aerial Census

(1) Species	(2) Weeks of reporting period: 3/14-20 (11)	3/21-27 (12)	3/28-4/3 (13)	4/4-10 (14)	4/11-17 (15)	4/18-24 (16)	4/25-5/1 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
			(A) 3/21	(A) 4/8							
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	100	100	70	60	100	100	150		[illegible]		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
TOTAL GEESE:	100	100	70	[illegible]	100	[illegible]	[illegible]		5,810		
Ducks:											
Mallard	500	300	160	200					8,120		
Black					3,000	3,000	[illegible]		70,800		
Unident.											
Gadwall			[illegible]	50					[illegible]		
Baldpate				30					210		
Pintail				[illegible]					[illegible]		
Green-winged teal	10	[illegible]	10	[illegible]					[illegible]		
Blue-winged teal											
Cinnamon teal				10					70		
Shoveler	[illegible]	[illegible]	60	[illegible]					17,020		
Wood				10					70		
Redhead	10	10	10	30					420		
Ring-necked											
Canvasback	50	[illegible]	160	50					[illegible]		
Scaup	[illegible]	[illegible]	[illegible]	500					[illegible]		
Goldeneye		[illegible]							350		
Bufflehead	300	[illegible]	260	100					[illegible]		
Ruddy	200	300	520	200					[illegible]		
Other Com. Merganser	50	50	40	10					[illegible]		
TOTAL DUCKS:	2,620	2,020	1,540	2,300	3,000	[illegible]	2,000		130,790		
Coot:	150	200	290	200					[illegible]		
GRAND TOTALS:	[illegible]	[illegible]	1,900	[illegible] (over)	[illegible]	[illegible]	[illegible]		[illegible]		

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	
Geese	5,810	180	
Ducks	120,700	3,000	
Coots	5,880	290	
TOTAL	151,480		

SUMMARY

Principal feeding areas adjacent agricultural fields.

Principal nesting areas channels, small islands

Reported by Edward J. O'Neill

*not simultaneous

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).

Interior Duplicating Section, Washington, D. C.
1953

3-1750
Form NR-
(Rev. March 1953)
(A) - Aerial Survey

WATERFOWL

REFUGE Hank's Marsh MONTHS OF May TO August, 1965

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	100	200	200	200	100	50	50	50	50	50
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Total Geese	100	200	200	200	100	50	50	50	50	50
Ducks:										
Mallard	200	250	400	500	600	600	250	250	250	400
Unidentified	2,000	2,000	2,000	4,000	3,000	3,000	3,000			
Gadwall	250							200	200	200
Baldpate										
Pintail										
Green-winged teal										
Blue-winged teal										
Cinnamon teal								50	50	50
Shoveler										
Wood										
Redhead	100									
Ring-necked										
Canvasback										
Scaup	30	30	30	30	30	30	30	30	30	30
Goldeneye										
Bufflehead	100	100	100	50	50					
Ruddy	500	500	400	400	300	300	200	200	150	50
Other										
Total Ducks	3,280	2,900	2,900	4,980	3,980	3,930	3,580	900	860	710
Coot:	2,000	2,000	1,000	1,000	1,500	1,000	500	500	500	500
Grand Totals	5,280	5,100	4,130	6,180	5,580	4,980	4,080	1,450	1,410	1,260

3 -1750a
Cont. NR-1
(Rev. March 1953)
(A) = Aerial Census

WATERFOWL
(Continuation Sheet)

REFUGE Hank's Marsh MONTHS OF May TO August, 19 65

(1) Species	(2) Weeks of reporting period 7/11-17 11	7/18-24 12	7/25-31 13	8/1-7 14	8/8-14 15	8/15-21 16	8/22-28 17	8/29-9/4 18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:			(A) 7/27								
Whistling											
Trumpeter											
Geese:											
Canada	50	50	40	50	10	20	20	40	9,210	5	20
Cackling											
Brant											
White-fronted											
Snow											
Blue											
~~Other~~ Total Geese	50	50	40	50	10	20	20	40	9,210	5	20
Ducks:											
Mallard	200	200	200	250	300	500	1,500	4,000	79,100	4	20
~~Black~~ Unidentified									133,000		
Gadwall	50	50	25	25	200	200	200	200	14,700	2	20
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal	20	20	50	50	50	100	100	150	4,450		
Shoveler						50	150	200	2,600		
Wood											
Redhead									700	3	50
Ring-necked											
Canvasback											
Scaup	20	20	25	25	20	40	50	50	4,000	1	10
Goldeneye											
Bufflehead									2,500		
Ruddy	50	50	50	100	100	200	200	200	29,050	2	20
Other											
Total Ducks	350	360	350	450	680	1,090	2,200	5,000	270,600	17	120
Coot:	400	300	100	250	300	500	1,000	2,500	110,950	3	30
Grand Totals	810	710	490	750	990	1,610	3,320	7,540	390,950	25	180

(over)

	(5) Total Days Use	(6) * Peak Number	(7) Total Production
Swans			
Geese	9,210	40	20
Ducks	250,000	8,000	130
Coots	110,950	8,500	30
TOTAL	360,960		180

*Not simultaneously

SUMMARY

Principal feeding areas Throughout channels, lake front and adjacent agricultural grain fields.1

Principal nesting areas Islands and berms adjacent to marsh.

Reported by Edward J. O'Neill, Wildlife 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).

Interior Duplicating Section, Washington, D. C.
1953

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

WATERFOWL

REFUGE Hank's Marsh MONTHS OF September TO December, 1955

(1) Species	(A) Aerial Census (2) Weeks of reporting period 9/5-11 1	9/12-18 2	9/19-25 3	9/26-10/2 4	10/3-9 5	10/10-16 6	10/17-23 7	10/24-30 8	10/31-11/6 9	11/7-13 10
Swans:				(A) 9/27	(A) 10/6	(A) 10/12	(A) 10/19			
Whistling										
Trumpeter										
Geese:										
Canada	50	50	100	150	100	110			80	100
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other Total Geese	50	50	100	150	100	110			80	100
Ducks:										
Mallard	4,000	500	400	200	40	50	1,500	50	200	500
Black Unidentified							2,100		5,000	5,000
Gadwall	350	300	300	250	70	20			100	100
Baldpate	50	50	50	100	90					
Pintail	500	200	2,000	1,500	210	120	7,000	120	500	500
Green-winged teal	120	200	100	50	70		450	50	20	10
Blue-winged teal										
Cinnamon teal	200	50	50							
Shoveler	150	100	150	250	450	70		200	500	500
Wood										
Redhead	50	60	40	20	50		700	20	20	20
Ring-necked										
Canvasback										
Scaup	50	50	100	100		120	200	20	50	100
Goldeneye										
Bufflehead								100	100	100
Ruddy	400	500	250	200	120		3,000	400	1,200	2,000
Other C. Merganser										
Total Ducks	5,900	2,130	3,510	2,780	1,110	300	15,050	1,060	7,750	8,830
Coot:	2,500	2,000	1,500	1,000	650	10	1,200	200	500	500
Grand Totals	8,450	4,180	5,110	3,930	1,940	810	16,250	1,260	8,250	9,420

pd 3 -1750a
Cont. 1 1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Hank's Marsh MONTHS OF September TO December, 19 65

(1) Species	(A) Aerial Census (2) Weeks of reporting period 11/14-20	11/21-27	11/28-12/4	12/5-11	12/12-18	12/19-25	12/26-1/1		(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
	11	12	13	14	15	16	17	18			
			(A)11/30		(A)12/17						
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	100	80		20					7,140		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other Total Geese	100	80		20					7,140		
Ducks:											
Mallard	500	600	700	200					86,420		
Black Unidentified	4,000	3,000							132,700		
Gadwall	100	50							11,550		
Baldpate		20	50	50					2,200		
Pintail	500	200	250	200					22,000		
Green-winged teal	10	100	200	50					10,200		
Blue-winged teal											
Cinnamon teal									1,800		
Shoveler	500	450	400	200					27,440		
Wood											
Redhead	20	10							7,350		
Ring-necked											
Canvasback											
Scaup	100	50							7,350		
Goldeneye					10				70		
Bufflehead	100	50							3,150		
Ruddy	3,000	3,500	4,000	1,000	20				139,160		
Other											
Total Ducks	9,020	8,140	5,600	1,700	30				502,670		
Coot:	500	400							78,120		
Grand Totals	9,420	8,620	5,600	1,720	30				594,930		

Page 4 of 4 Pages

(over)

	(5) Total Days Use	(6) Peak Number *	(7) Total Production
Swans			N
Geese	7,140	180	0
Ducks	509,870	8,830	N
Coots	78,120	2,500	E
TOTALS	594,930		

* Not simultaneously

SUMMARY

Principal feeding areas Adjacent harvested private agri. croplands and marsh proper

Principal nesting areas Entire marsh

Reported by Edward J. O'Neill
(Oct. census by Sekora and Glahn)

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).

Interior Duplicating Section, Washington, D. C.
1953

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge [redacted] Months of January to April 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Western Grebe	2	3/28-4/3	50	4/25-30	Still	Present				100
Pied-billed Grebe	15	"	70	"	"	"				100
White Pelican	30	4/4-10	80	"	"	"				100
Cormorant	20	"	10	"	"	"				150
Gr. B. Heron	6	"	15	"	"	"				30
II. Shorebirds, Gulls and Terns:										
Ring-billed Gull	No Info.		200	4/4-10						1500

(over)

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

NOBERVATION

Reported by [redacted]

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 Gruiiformes)
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.

pd

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Hank's Marsh Months of May to August 1945

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared grebe	60	5/20			Still	Present		Est. 50		200
Western grebe	Previous	period	80	5/20	"	"		20	50	200
Pied-billed grebe	"	"	10	"	"	"		Est. 30		100
White pelican	"	"	100	7/25	"	"				150
Double-crested cormorant	10	5/20	100	"						150
Great-blue heron	Previous	period	6	5/20						20
Black-crowned Night heron	240	5/20	240	"			1	220	200	600
American bittern	2	"	2	"						20
II. Shorebirds, Gulls and Terns:										
Ring-billed gull	Previous	period	100	5/20	Still	Present	X			1,000
California gull	150	5/20	50	"	"	"	o			500
Forester's tern	10	"	10	"	"	"	D			100
Caspian tern	2	"	2	"	"	"	a			20
Black tern	20	"	20	"	"	"	t	a		200

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	No				
White-winged dove	Observations				
IV. Predaceous Birds:					
Golden eagle	Residents				5
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow					

Reported by Edward J. O'Neill, 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 Gruiiformes)
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.

pd

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Hank's Marsh Months of September to December 19~~6~~65

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared grebe	Previous	Period	No	Record	No Record					300
Western grebe	"	"	"	"	"	"				500
Pied-billed grebe	"	"	"	"	"	"				100
White pelican	"	"	20	Sept.	"	"				100
Double-crested Cormorant	"	"	No	Record	"	"				50
Great-blue Heron	"	"	"	"	5	12/5-18				30
Black-crowned Nt. Heron	"	"	"	"	No Record					100
American Bittern	"	"	"	"	"	"				10
II. Shorebirds, Gulls and Terns:										
Common snipe	"	"	"	"	No Rec.	December				20
Ring-billed gull	"	"	"	"	"	"				1,000
California gull	"	"	"	"	"	"				400
Forester's Tern	"	"	"	"	"	October				200
Caspian Tern	"	"	"	"	"	"				50
Black Tern	"	"	"	"	"	"				200

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	No Observations				10
White-winged dove					
IV. Predaceous Birds:					
Golden eagle	No Observations				1
Duck hawk					
Horned owl					
Magpie					
Raven					
Crow					
Bald Eagle	No Observations				3

Reported by Edward J. O'Neill

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge **HANK'S'S MARSH** For 12-month period ending August 31, 19 65 *

Reported by **E.J. O'Neill** Title **Wildlife Mgt. Biologist**

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
	Crops		Ducks	410,480	200	130
	Upland		Geese	15,120	10	20
I	Marsh	900	Swans			
	Water	150	Coots	116,830	50	30
	Total	1,050	Total	542,430	260	180
	Crops		Ducks	410,480	200	130
	Upland		Geese	15,120	10	20
	Marsh	900	Swans			
TOTALS:	Water	150	Coots	116,830	50	30
	Total	1,050	Total	542,430	260	180
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

r *** January-August only (First Report)**

INSTRUCTIONS

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

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

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

pd 3-1750c
Form NR-1[illegible]
(Sept. 1[illegible])

WATERFOWL HUNTER KILL SUR[illegible]

Refuge **Hank's Marsh** Year 196 **5**

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
			Estimated					
			Predominately Green-winged Teal Shoveler				**250**	**500**

Reported by: Palmer C. Sakers
Field observations by USCG William Rush

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

pd 3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Hank's Marsh** Months of **September** to **December**, 19 **65**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifioally requested. List introductions here.
Ring-necked Pheasant	**1,000 acres marsh & weed (levee)**					**N O**	**N**	**E**	**50**	

Reported by: Edward J. O'Neill

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.

pd 3-1753
Form N 3
(June 1945)

BIG GAME

Refuge Hank's Marsh Calendar Year 1965

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
NONE	OBSERVED													

Remarks:

Reported by Edward J. O'Neill

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 <u>each</u> <u>species</u> 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.

17060

3-1754
Form NR-
(June 1945)

(UPPER KLAMATH)
SMALL MAMMALS

Refuge HANK'S MARSH UNIT Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	1191 acres cattail and hardstem bulrush							No information #			None#			Est. 1000
Weasel	" " " "													20
Raccoon	" " " "													10
Otter	" " " "													10

* List removals by Predator Animal Hunter

REMARKS:

Trapping permit under U.S. Bureau of Reclamation

Reported by Edward J. O'Neill

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32/15

3-1755
Form NR-

DISEASE

Refuge Hank's Marsh Year 1965

Botulism

Period of outbreak NONE

Period of heaviest losses

Losses:

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

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

Areas affected (location and approximate acreage)

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

Condition of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease None noted

Species affected

Number Affected

Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

Reported by: Edward J. O'Neill, Wildlife Biologist

INT.-DUP., D.C.- 53818-59

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Hank's Marsh Calendar Year 1965

1. Visits

a. Hunting 250 b. Fishing 50 c. Miscellaneous 50 d. TOTAL VISITS 350

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	250	1,050	USFWS
Upland Game	X		
Big Game	0	X	
Other		X	

Number of permanent blinds 0

Man-days of bow hunting included above 0

Estimated man-days of hunting on lands adjacent to refuge 200

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Streams and Shores		10

1c. Miscellaneous Visits

Recreation 40 Official 10

Economic Use _____ Industrial _____

2. Refuge Participation (groups)

Refer to Tule Lake Section

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. Of GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific				
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

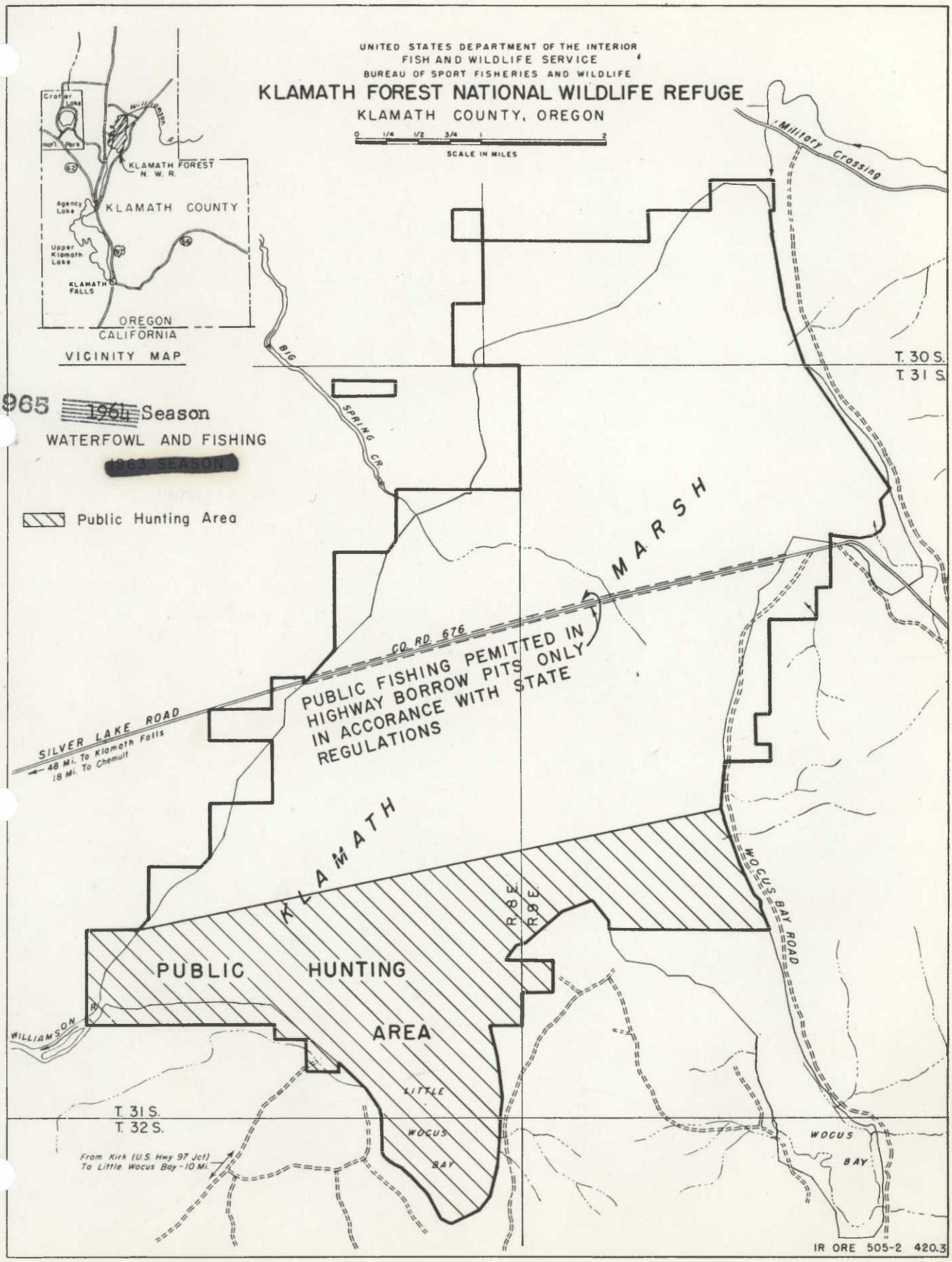
Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

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

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

INT--PORTLAND, OREGON

KLAMATH FOREST


UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE
KLAMATH FOREST NATIONAL WILDLIFE REFUGE
KLAMATH COUNTY, OREGON
0 1/4 1/2 3/4 1 2
SCALE IN MILES
Crater Lake
Nat'l Park
Williamson R.
KLAMATH FOREST N. W. R.
Agency Lake
KLAMATH COUNTY
Upper Klamath Lake
KLAMATH FALLS
OREGON
CALIFORNIA
VICINITY MAP
1965 ~~1964~~ Season
WATERFOWL AND FISHING
~~1963 SEASON~~
Public Hunting Area
Military Crossing
T. 30 S.
T. 31 S.
BIG SPRING CR.
MARSH
CO. RD. 676
PUBLIC FISHING PEMITTED IN HIGHWAY BORROW PITS ONLY IN ACCORANCE WITH STATE REGULATIONS
SILVER LAKE ROAD
48 Mi. To Klamath Falls
18 Mi. To Chemult
KLAMATH
R. 8 E.
R. 9 E.
WOCUS BAY ROAD
PUBLIC HUNTING AREA
WILLIAMSON R.
LITTLE WOCUS BAY
T. 31 S.
T. 32 S.
From Kirk (U.S. Hwy 97 Jct) To Little Wocus Bay - 10 Mi.
WOCUS BAY
IR ORE 505-2 420.3

C O N T E N T S

*Not applicable this report period.

r

I GENERAL *

A. Weather Conditions

Weather records were obtained from the U. S. Weather Bureau Station located at Chemult, 20 miles north of the refuge.

		Precipitation		Temperature	
	Snowfall	Month	Normal 1/	Maximum	Minimum
January	49	6.06	3.69	50	2
February	6	.64	3.88	56	7
March	Trace	.10	2.46	61	14
April	"	2.58	1.35	72	19
May	1	.21	1.54	78	15
June	0	.93	1.56	83	23
July	0	.36	.61	93	27
August	0	1.50	.49	90	25
September	0	.00	.65	82	14
October	1	.71	2.14	82	14
November	21	4.70	3.81	65	2
December	44	3.40	5.20	51	-7
TOTALS	122	21.19	27.38	Extremes 93	-7

1/ Sixteen year average, "Climatic Summary of the United States - Supplement for 1931 through 1952"

Monthly precipitation averages during 1965 varied greatly from the normal. Total precipitation was far below normal; however, above-average periods were sufficiently spaced for maintaining high water levels throughout the year.

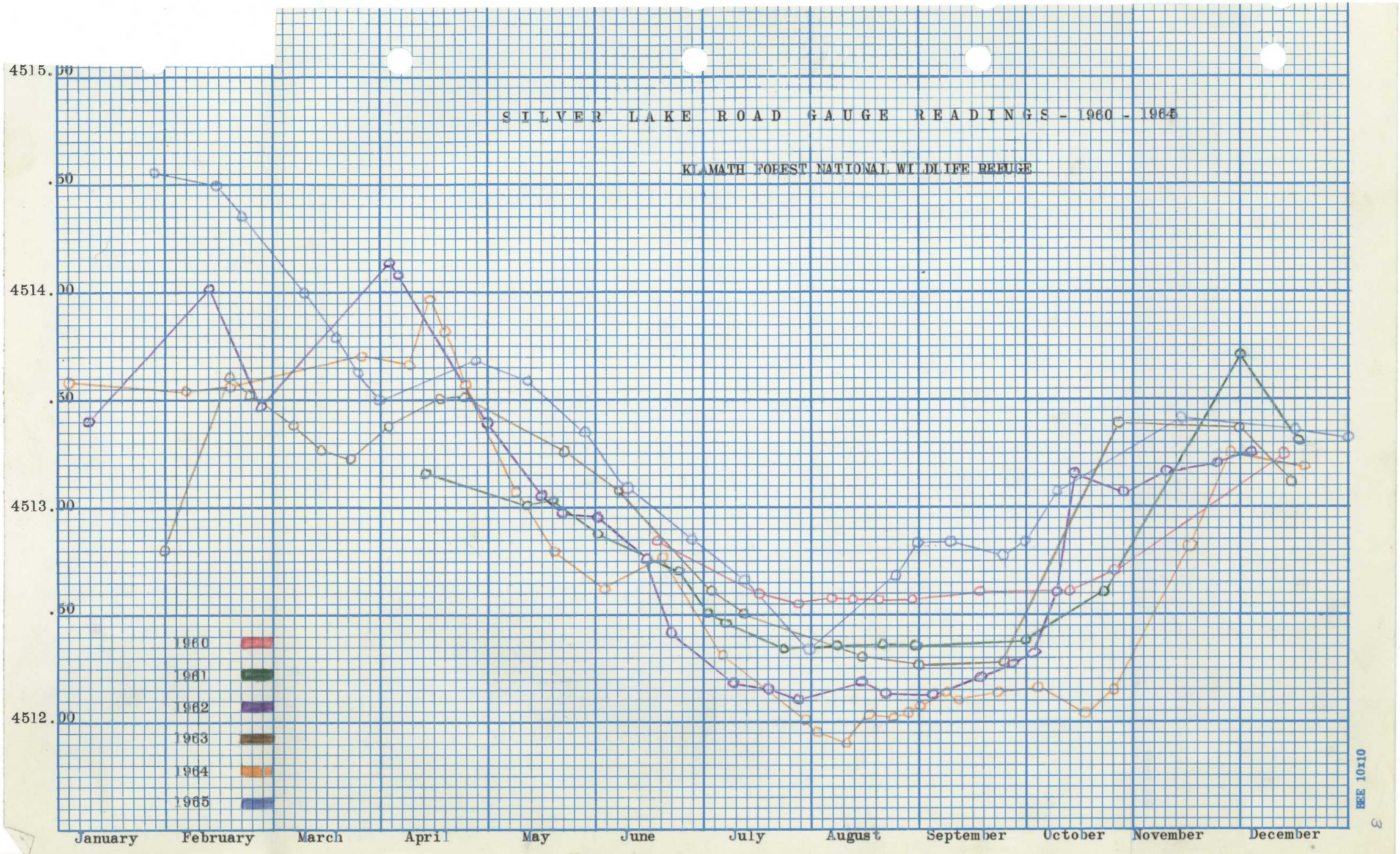
*Sekora

TEN YEAR PRECIPITATION SUMMARY 1956 - 1965 1/

Year/Month	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Total
Normal 2/	3.69	3.88	2.46	1.35	1.54	1.56	.61	.49	.65	2.14	3.81	5.20	27.38
1965	6.06	.64	.10	2.58	.21	.93	.36	1.50	.00	.71	4.70	3.40	21.19
1964	6.27	.33	1.64	.33	.14	1.59	.58	.13	.11	.48	3.99	14.71	30.30
1963	1.60	3.52	2.13	2.92	2.11	.79	.36	.35	.67	1.75	3.42	2.05	22.67
1962	1.09	3.27	2.91	.84	.74	.06	.07	1.43	1.16	4.96	2.88	2.81	22.22
1961	1.51	4.88	3.91	.57	1.19	1.36	.00	1.00	.34	2.02	4.58	3.32	24.38
1960	3.30	4.27	4.67	.81	2.56	Trace	.95	.12	.44	1.15	4.98	2.52	25.77
1959	4.50	2.73	1.39	.24	.40	.62	.45	.86	.86	1.10	.56	1.22	14.93
1958	6.01	5.93	1.53	1.49	.76	4.41	.51	.60	.70	.76	2.37	2.64	27.71
1957	3.61	3.09	4.01	.83	1.30	.26	.23	.06	3.93	1.45	2.11	5.34	26.22
1956	8.18	3.77	1.33	.77	1.87	1.35	2.26	.31	.57	3.90	.90	2.68	27.89

1/ All data is from the United States Weather Bureau in Chemult, Oregon, 20 miles north of the refuge.

2/ Sixteen-year average, "Climatic Summary of the United States - Supplement for 1931 through 1952".


SILVER LAKE ROAD GAUGE READINGS - 1960 - 1965
KLAMATH FOREST NATIONAL WILDLIFE REFUGE
4515.00
.50
4514.00
.50
4513.00
.50
4512.00
1960
1961
1962
1963
1964
1965
January
February
March
April
May
June
July
August
September
October
November
December
EEE 10x10

B. Habitat Conditions

1. Water

There is no control of water entering, within, or leaving the refuge confines. This results in either a feast or famine, or more appropriately, a flood or drought. The past two years are prime examples of this (see graph). The year 1964 experienced the lowest water levels since refuge establishment with all but 110 acres completely dry at one time. Due to the storms of December 1964 and January 1965, record high water levels were experienced throughout much of 1965. These same storms resulted in substantial damage to the Silver Lake, Military, and Kirk Roads. These same high levels, combined with wind and ice, removed nearly six miles of refuge boundary fence and damaged another four and one-half and substantially reduced the muskrat population by either drowning or eliminating their shelter.

These record high water levels continued throughout 1965 except for two short periods, latter March and early April, latter July and early August. Above-average precipitation during January, April, August and November helped to maintain the record highs.

With an abundant water supply throughout the Williamson River watershed there was minimum upstream diversions. In 1964 this river, the refuge's main water source, was completely diverted for pasture irrigation.

2. Food and Cover

Widespread waterfowl use was made of the marsh throughout the year due to high water levels. This use extended off the refuge particularly in the remnant marsh north of the Military Crossing.

By March 17 the marsh was free of ice. The abundant moisture and warm early spring temperatures stimulated an unusual early growth of Nebraska sedge (*Carex nebraskensis*). By March 24 this sedge averaged four inches in height and provided much forage for Canada geese on the refuge's eastern and western edges. Much of the wocus (*Nuphar polysepalum*) had leafed out by April 27. By May 27 a blue-green algae (*microcystis sp.*) was present in the northern section and off Wilson Point. Because of the constant fresh water inflow and the resultant circulation, algae growth was at a minimum throughout the summer. By mid-July buttercup (*Ranunculus aquatilis*) encouraged by the high water levels, was abundant in the southwest corner (Wildlife Unit 4) and was greatly utilized by duck broods. Duckweed (*Lemna minor*) experienced a good production year in the northwest corner.

The fluctuation of water in early spring and mid-summer stimulated heavy, dense growths of emergents, particularly cattail. The amount of vegetative matter grown on the refuge was the greatest for the past three summers.

The high water levels held grazing to a minimum in the sedge community. This resulted in the overgrazing of some of the uplands. To get desired grazing use in the sedge meadows, it appears that we have to sacrifice our few upland areas. Fencing these areas is not presently feasible. Most of this year's sedge growth remains.

II WILDLIFE *

A. Migratory Birds

Waterfowl use reflected improved marsh conditions with total use up 61 percent from 1964, but down 6 percent from the five-year average.

Canada goose, duck and coot production increased over 1964 figures by 50 percent, 30 percent, and 200 percent respectively, and differed from a five-year average by +20 percent, -14 percent, and +30 percent respectively. Most notable among the ducks was redhead, up 125 percent from 1964, up 79 percent from the five-year average.

Production on adjacent lands (Big Wocus Bay and the northwest refuge boundary) is estimated to be 150 Canada geese, 650 ducks (mostly redhead, ruddy ducks and cinnamon teal), and 350 coots.

Waterfowl Production**

	Geese	Ducks	Coots	Total
1961	200	1,670	300	2,170
1962	250	1,870	600	2,720
1963	300	2,490	600	3,390
1964	200	1,150	200	1,550
1965	300	1,485	600	2,385
Five-year Average	250	1,733	460	2,443

**These figures do not include production on the Big Wocus Bay and lands adjacent to the northwest boundary.

The red-necked grebe again nested on the marsh but in greater numbers. Production is estimated to be six young from three nests. It is hoped this is the start of a permanent nesting population.

*Sekora

The long-billed curlew was notably absent this year. Normally, curlew observations are quite common in the pastures and hay meadows.

Waterfowl use extended well into November until colder temperatures covered the area with ice. Canada geese, toughing the weather, remained through the year's end staying mostly near the Silver Lake Road bridge and Skellock Draw.

C. Big Game Animals

Mule deer use of the refuge was substantially down from last year because of abundant water throughout the watershed, and reduction of marsh habitat by high water levels. First observations were of fifteen on the east boundary March 18, unusually early. Sightings were common by mid-April.

A tagging program by the Oregon State Game Commission has established that the greater percentage of the population summering in the marsh area are from the Silver Lake winter range. Other herds using the area are from the Fort Rock herd and the interstate deer herd. A significant 1964-65 winter loss was experienced in the Silver Lake winter range and was reflected in a reduced yearling kill in 1965. Hunter numbers were slightly down this year even with the first antlerless season since 1960. Fawn production was down this past spring. Even with a normal carry over of adults, a low carry over of yearlings and young of the year forecast a poor year for 1966.

D. Fur Animals, Predators, Rodents and other Mammals

The muskrat population has suffered greatly from the water fluctuations of the past two years. Most of their nests were inundated by the December 1964 and January 1965 water levels resulting in their drowning or having to move from this area. Recovery was slow on the north half and non-existent on the south half of the marsh.

Beaver activity was noted in the northwest corner of Big Wocus Bay where several aspens had been cut down.

Mink sign was evident in February and March.

Raccoon appeared to be more abundant this year. Three were seen while making muskrat transects. All three were suspiciously close to Canada goose nests.

William Nuess, Assistant Refuge Manager, reports a long-tailed weasel observation on the east boundary of the refuge. This is a first report.

Coyote use was substantially down because of high water levels. The period of greatest use was January-February when an ice cover was present and muskrat lodges were accessible. During the summer months, most observations were made on Lenz Creek, the hay unit, and the northwest corner. Their harmonizing was heard frequently this year on the ridge behind headquarter's cabin.

Very little use is made of the marsh by bobcat, although one was seen in the Little Wocus Bay area May 27.

John Annear, Refuge Manager Trainee, observed a mountain lion at the junction of the Kirk Road and the Williamson River August 30.

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

Bald and golden eagle observations were common through March reaching peak numbers of 33 and 10 respectively the week of March 1 - 6. This concentration is probably due to the abundance of muskrats (dead and alive) on the ice surface.

Bald eagles were present throughout the spring and summer months, notably absent in the fall months. A summer peak of four was noted July 14. Golden eagle were unusually absent in the spring and summer months.

No unusual hawk concentrations were noted this period. Swainson's hawk, frequently observed in the spring and fall months, was notably absent with only one observation recorded.

Horned owls, magpies, ravens were present throughout the year.

F. Other Birds

New additions to the refuge birdlist include: one Townsend warbler, observed April 27-29; and a white-headed woodpecker, June 6.

G. Fish

Fishing use increased 50 percent over last year with the improved water levels. Success was high with the bullhead averaging five to nine inches in length.

H. Reptiles

Rana pipens were quite common through the spring, summer, and fall months. Garter snakes were also common this period.

I. Disease

No loss from disease noted.

III REFUGE DEVELOPMENT AND MAINTENANCE *

A. Physical Development

Continuation of fence damage from 1964 resulted in removal of nearly six miles of fence and damage to four and one-half miles. This damage is concentrated on the south and north boundaries, and on the hay unit. Invitations to Bid on replacing and repairing of fence were circulated in August but received no response.

Two new fishing regulation signs were constructed, and installed on the western boundary and at the Silver Lake Road bridge.

IV RESOURCE MANAGEMENT *

A. Grazing

Forage conditions were again excellent as in 1964. Sufficient moisture plus warm spring and summer temperatures produced abundant vegetative growth.

Four permittees grazed cattle for a total of 1,093 AUM's on approximately 5,500 acres. This is a reduction of 31 percent from 1964 and is due to reduced grazing programs by the permittees. It is hoped to increase this program next year. Grazing is a valuable management tool in an entrophic area such as this.

Difficulty was experienced in the control of cattle due to fence damage by the winter's storms. This paucity of control existed mostly on the refuge's southern boundary, specifically in the Little Wocus Bay area. Trespass was almost entirely by refuge permittees' cattle grazing on adjacent lands.

*Sekora

B. Haying

Four permittees harvested a total of 490 tons of hay during 1965. High water levels, equipment breakdowns, and problems on their home areas combined to prevent harvest by the remaining three permittees.

	1961	1962	1963	1964	1965
Tons of Hay	544	503	385	769	490
Tons per Acre	1.07	0.84	1.18	1.10	0.96
Acres Hayed	510	600	325	700	510

Fence damage included the hay unit fence that separates it from Grazing Unit 6. Cattle managed to get into the hay unit only after harvest.

C. Fur Harvest

The combined effects of 1964's drought and the high water levels in early 1965 have seriously depleted the muskrat population. The high water levels inundated the greater percentage of muskrat houses resulting in high mortality. This high mortality caused closure of the refuge to further spring trapping but only after 148 pelts were taken in February under two permits.

Transects were run through both Units I and II in February, May, and October. The only existing population is in Unit I or north of the Silver Lake Road. Recovery from last winter's mortality has been slow in Unit I and non-existent in Unit II. The estimated population is 1,500 to 2,500.

No removals are recommended for the 1965-66 trapping season because of the low breeding population and possible further population reduction due to even higher water levels than present with anticipated fall and winter moisture. With 100 percent survival of the present population the brood stock would not be excessive. The present low population for such a large area is not efficient in thinning and opening the marsh for the benefit of waterfowl. The forementioned transects also indicated that over 95 percent of observed Canada goose nests (45) were located on muskrat houses. Stimulation of a higher muskrat population might also stimulate increased goose nesting, especially in Unit II where there is a lack of nesting platforms.

One of the arguments for trapping is to alleviate denning pressure on the Silver Lake Road. It appears this is a static pressure at the maximum denning density. The removal of road denning rats only induces this space to be filled by marsh rats. The only accomplishment is that this lowers the marsh population and does not necessarily

alleviate road damage. To eliminate this damage to any degree, the marsh rat population would have to be eliminated. This would be contrary to refuge objectives and needless to say, would be virtually impossible. Trapping effects on the present population would be only a reduction in badly needed brood stock and little if any damage reduction on the Silver Lake Road.

V FIELD INVESTIGATION OR APPLIED RESEARCH *

A. Progress Report

Twenty wood duck boxes were constructed and installed on the marsh. Results were as follows: Three used by wood ducks; eight by blackbirds; three not checked due to high water; and the remainder were unused. Those used by wood ducks were in the Big Wocus Bay area.

No Canada goose banding was conducted this year.

VI PUBLIC RELATIONS *

A. Recreational Use

Improved water conditions account for most of the public use increase on the refuge. Overall use was up 86 percent over 1964 and down two percent from 1963 (peak use year). Waterfowl hunting was up 555 percent over last year, the poorest year on record due to low water levels. Fence and road inspections, increased visits by haying and grazing permittees account for the increase in official and economic uses respectively.

Year	Hunting	Fishing	Other Recreation	Economic	Official	Total	Hunting on Adjacent lands
1965	950	300	400	650	180	2,480	2,250
1964	145	200	400	530	60	1,335	1,900
1963	1,437	400	400	200	100	2,537	2,100
1962	1,220	300	300	200	200	2,220	2,000
1961	660	300	100	250	200	1,510	500

*Sekora

B. Refuge Visitors

May 12, Biologist Edward J. O'Neill talked to the Society of American Foresters concerning the history and present management of the Klamath Forest Refuge.

October 20, Refuge Manager Watson and Assistant Refuge Manager Sekora met with Mr. Warren Drake, District Ranger, Winema National Forest, concerning proposed logging road crossing the refuge's east boundary.

December 16, Assistant Refuge Manager Sekora met with Mr. Drake concerning subject of October 20 meeting.

C. Refuge Participation - See Tule Lake section.

D. Hunting

Ideal water levels and hunting weather combined and resulted in an increase of 555 percent in waterfowl hunting use over 1964. These ideal hunting conditions lasted through the latter part of November to provide the nimrods with an excellent season. The only lack this year was of hunters rather than of waterfowl. Birds remained throughout the open hunting area even with moderate to heavy hunting pressure at times.

Latter November, December, and early January provided little or no hunting due to low temperatures and much snow. The only remaining birds, mostly Canada geese, remained in the closed area.

Year	Total Hunter Days	Goose Bag	Duck Bag	Total Bag	Geese Per Hunter	Ducks Per Hunter	Total Birds per Hunter
1965	950	124	1,758	1,882	.13	1.85	1.98
1964	145	25	96	121	.17	.66	.83
1963	1,437	215	2,684	2,899	.14	1.74	1.88
1962	657	59	1,038	1,097	.09	1.58	1.67

PERCENTAGE SPECIES IN BAG

Species	1961	1962	1963	1964	1965
Mallard	15	7	30	45	25
Pintail	22	40	14	15	15
Baldpate	16	15	15	--	16
Gadwall	6	4	9	--	13
Green-winged Teal	34	21	14	20	9

E. Violations

No violations found during the hunting season. During February and March, eagles and hawks concentrated along the Silver Lake Road. These made inviting targets for various great white hunters. One golden eagle, having been shot, was found swimming in the barrow pit paralleling the Silver Lake Road. It died upon being retrieved. Mr. Negus, muskrat trapping permittee, reported finding two bald eagles that had been shot.

F. Safety - Refer to Tule Lake section.

VII OTHER ITEMS *

A. Items of Interest

The Klamath Forest cabin was broken into twice this year. The first was between July 14 and August 2, 1965. Taken were 10-15 Army wool blankets, one defective gas lantern, and six hand tools. Other tools, lantern, extinguishers were passed by. The only damage was a broken window. The Klamath County Sheriff and FBI were notified but did not respond. The second time was on or about December 25. This forced entry was for the purpose of gaining food and shelter. A note of apology was left by hunters whose car had been stuck in the Big Wocus Bay area for three days. Damage amounted to two broken windows.

As noted in the following newspaper article, the Silver Lake Road bisecting the refuge has been suffering from muskrat damage, probably since the road's establishment. The engineering consultant firm of Cornell, Howland, Hayes and Merryfield of Corvallis, Oregon, were employed to study the feasibility of road relocation. The firm's recommendations were to retain and pave the present road without any muskrat control. Possible controls considered were: riprap, the most promising method as to cost; asbestos-cement sheeting, the best but the most costly; and wire mesh, not expected to last long due to the acidic marsh waters. They considered the paving would eliminate most damage by reducing road vibrations, better distribution of weight, and acting as a vapor barrier to capillary water action and thereby keeping muskrats at a low level in the road bed.

Muskrats Score Victory Over Highway Builders

In a century where wildlife has been forced to retreat from the advance of civilization, a colony of muskrats has chalked up at least one score for its side against the onrushing encroachment of man and his machines.

That was the situation today as County Engineer Winston Kurth was seeking a firm to conduct a study relating to the possible relocation of a portion of Silver Lake Road in the vicinity of Klamath Marsh.

The county engineer's office has waged a perennial battle against the muskrats each spring, with the result that the county has been the continual loser. Earl Kessler, county road department, remarked that each spring muskrats tunnel under a section of Silver Lake Road, near the marsh, undermining it.

As a result, parts of the road fall into the tunneling, causing deep potholes which make driving hazardous and highway maintenance expensive. In the past, trappers have experienced occasional success in reducing the muskrat population, but despite their degree of success the problem still persists, Kessler stated.

The engineer's department was unable to speculate on an alternate route through the marshland if the feasibility study established that the current strip was too expensive to maintain.

Annual restoration costs are not available, but the county commissioners reported that costs for maintaining the entire road from Silver Lake to Highway 97 last year amounted to $43,288.97. Of that figure, more than $35,000 was expended to repair damage caused by the Christmas holiday rainstorms and ensuing floods, they enlarged. Nearly 100 logging trucks use the road daily, it was said.

KF

Looking south (Exp. 497 above) and north (Exp. 496 below) along the east boundary at Little Wocus Bay. This is typical of fence damage sustained from the combined effects of wind, ice, and high water levels occurring during January-March 1965.

Exposures 496 and 497 4/65 O'Neill

r

Harvesting hay during the 1965 season. Harvested were 490 tons off of 510 acres for 0.96 ton/acre. Due to high water levels and equipment breakdowns the remaining 190 acres of the hay unit were not hayed.

Exposures 492-494 8/65 O'Neill

Harvesting hay during the 1965 season. Harvested were 490 tons off of 510 acres for 0.96 ton/acre. Due to high water levels and equipment breakdowns the remaining 190 acres of the hay unit were not hayed.

Exposures 492-494 8/65 O'Neill

r

KF

KF

The fluctuation of water in early spring and mid-summer stimulated heavy, dense growths of emergents, particularly cattail. Typical cattail invasion of a previous open-water area is illustrated in this photo.

Exposure 491 8/65 O'Neill

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3-1750
Form NR
(Rev. March 1953)

BC

WATERFOWL

REFUGE KLAMATH FOREST MONTHS OF JANUARY TO APRIL, 19 65

(A)-Aerial Survey

(1) Species	(2) Weeks of reporting period: 1/3-9 (1)	1/10-16 (2)	1/17-23 (3)	1/24-30 (4)	1/31-2/6 (5)	2/7-13 (6)	2/14-20 (7)	2/21-27 (8)	2/28-3/6 (9)	3/7-13 (10)
Swans:	(A) 1/7		(A) 1/21	(A) 1/27	(A) 2/3				(A) 2/3	
Whistling					6				4	
Trumpeter										
Geese:										
Canada			45	100	304	400	404	430	500	400
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other TOTAL GEESE:			45	100	304	400	404	430	500	400
Ducks:										
Mallard				10		320	600	1,200	2,170	2,200
Black Unident.			10						500	
Gadwall									20	
Baldpate										
Pintail							400	2,000	6,400	6,200
Green-winged teal					20					
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup										100
Goldeneye				10	20		6		120	100
Bufflehead				10					120	120
Ruddy										
Other Barrows Goldeneye									8	
TOTAL DUCKS:			10	20	70	320	1,000	3,200	9,200	8,740
Coot:								80	110	180
GRAND TOTALS:			55	100	400	720	1,410	3,600	10,000	9,800

3 -1750a
Cont. [illegible]1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE KLAMATH FOREST MONTHS OF January TO April, 1965

(A)=Aerial Survey

(1) Species	(2) Weeks of reporting period 3/14-20 11	3/21-27 12	3/28-4/3 13	4/4-10 14	4/11-17 15	4/18-24 16	4/25-5/1 17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling			(A) 3/31						60		
Trumpeter											
Geese:											
Canada	550	850	220	200	200	300	250		37,100		
Cackling											
Brant											
White-fronted	550	1,670	600	500	300	250	200		28,490		
Snow											
Blue											
TOTAL GEESE	1,100	2,520	820	700	500	550	450		65,590		
Ducks:											
Mallard	3,150	3,010	2,290	2,000	2,000	3,000	3,000		174,790		
Black Unident.			150						4,620		
Gadwall		100	150	200	200	100	100		6,090		
Baldpate	50	220	150	300	300	200	200		9,940		
Pintail	5,740	5,550	4,980	5,000	3,000	2,500	1,500		303,650		
Green-winged teal	70	100	180	200	500	1,000	400		17,500		
Blue-winged teal				50	100	200	300		4,550		
Cinnamon teal						20	10		210		
Shoveler		70	90	200	200	200	100		6,020		
Wood		10	20	20	20	20	20		770		
Redhead		100	300	300	300	300	300		11,200		
Ring-necked											
Canvasback				10	10	10	10		280		
Scaup	200	560	2,160	2,000	1,000	1,000	1,000		56,140		
Goldeneye	60	60	90	50	50	10			4,060		
Bufflehead	120	250	470	200	200	100	100		11,830		
Barrow's Goldeneye									20		
Other Com. Merganser			30	20	10				420		
TOTAL DUCKS	9,390	10,030	11,060	10,550	7,890	8,660	7,040		612,090		
Coot:	100	400	480	500	1,000	2,000	2,000		47,530		
GRAND TOTALS:	10,590	12,950	12,360	11,750	9,390	11,220	9,490		725,270		

(over)

	(5) Total Days Use	(6) Peak Number*	(7) Total Production
Swans	60	4	
Geese	65,590	2,520	
Ducks	612,090	11,060	
Coots	47,530	2,000	
Totals	725,270	*Not simultaneously	

SUMMARY

Principal feeding areas Upland areas, grazing units, hay units.

Principal nesting areas Geese - muskrat houses and tule clumps throughout marsh.

Reported by Palmer C. Scharre & Edward J. O'Neill

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).

Interior Duplicating Section, Washington, D. C.
1953

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

WATERFOWL

REFUGE Klamath Forest MONTHS OF May TO August, 1965

(1) Species	(2) Weeks of reporting period: 5/2-8 (1)	5/9-15 (2)	5/16-22 (3)	5/23-29 (4)	5/30-6/5 (5)	6/6-12 (6)	6/13-19 (7)	6/20-26 (8)	6/27-7/3 (9)	7/4-10 (10)
Swans:						(A) 6/8				
Whistling										
Trumpeter										
Geese:										
Canada	500	550	500	500	660	660	660	600	550	500
Cackling										
Brant										
White-fronted	470	300								
Snow										
Blue										
~~Other~~ Total Geese	970	850	500	500	660	660	660	600	550	500
Ducks:										
Mallard	200	300	300	220	450	400	450	450	500	500
~~Black~~ Unidentified						140				
Gadwall	450	400	250	400	250	160	150	150	150	150
Baldpate	2,500	1,275	72							
Pintail	275	200	150	60	70	70	50	55	55	50
Green-winged teal	575	2,380	1,500	2,000	2,120	1,280	550			
Blue-winged teal										
Cinnamon teal	25	400	450	450	300	250	250	250	250	250
Shoveler	55	40	40	40	40	40	40	40	40	40
Wood						10	10	10	10	10
Redhead		600	600	600	600	220	550	550	550	550
Ring-necked						10				
Canvasback							10	10	10	10
Scaup	120	90	70	20	10	10				
Goldeneye										
Bufflehead	80	45								
Ruddy	50	45	20	70	90	120	150	180	250	250
~~Other~~ Total Ducks	4,470	5,775	3,572	3,980	3,940	2,910	2,210	1,695	1,815	1,880
Coots:	10	10	75	125	125	150	200	250	350	350
Grand Totals	5,450	6,635	4,147	4,605	4,725	3,720	3,070	2,545	2,715	2,710

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(Rev. March 1953)

(A) Aerial Census

WATERFOWL
(Continuation Sheet)

REFUGE Klamath Forest MONTHS OF May TO August, 19 65

(1) Species	(2) Weeks of reporting period 7/11-17 11	7/18-24 12	7/25-31 13	8/1-7 14	8/8-14 15	8/15-21 16	8/22-28 17	8/29-9/4 18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:											
Whistling			(A) 7/27								
Trumpeter											
Geese:											
Canada	450	400	300	250	250	200	280	300	55,710	30	300
Cackling											
Brant											
White-fronted									5,220		
Snow											
Blue											
Other											
Total Geese	450	400	300	250	250	200	280	300	55,100	30	300
Ducks:											
Mallard	550	550	500	600	750	800	920	1,150	60,370	12	320
Black									900		
Unidentified											
Gadwall	150	100					1,040	1,300	30,470	0	50
Baldpate									28,000		
Pintail	40	40	100	200	200	700	1,640	1,700	40,435	1	20
Green-winged teal									73,005		
Blue-winged teal											
Cinnamon teal	250	500	300	200	600	600	200	300	49,285	10	350
Shoveler	40	40							3,400		
Wood	10	10		10	10	10	8	10	520	2	20
Redhead	550	450	250	425	400	400	480	550	50,325	20	400
Ring-necked									70	2	25
Canvasback	15		20	15	20	25	25	35	1,365		
Scaup									2,240		
Goldeneye											
Bufflehead									875		
Ruddy	250	200	150	150	200	200	250	200	10,045	12	250
Other											
Total Ducks	1,855	1,940	2,050	2,300	2,220	2,735	4,493	5,245	355,175	60	1,435
Coot:	350	350	325	470	700	1,000	1,200	1,300	51,380	50	800
Grand Totals	2,655	2,690	2,745	3,020	3,220	4,035	5,893	6,905	501,655		

Over

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	0
Geese	65,100	970	300
Ducks	205,175	5,775	1,495
Coots	51,200	1,200	600

SUMMARY

Principal feeding areas: Upland areas, grazing units, hay units, stream channels

Principal nesting areas: Geese: Stream banks, hardtem bulrush. Diving ducks: Stream channels, Silver Lake Road borrow ditch, Little Wocus Bay. Dabblers & Coots: Throughout marsh

Reported by: Palmer C. Sekora - Refuge Manager

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

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

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

WATERFOWL

REFUGE Klamath Forest MONTHS OF September TO December, 1955

(A) Aerial Census

(2) Weeks of reporting period

(1) Species	9/5-11 (1)	9/12-18 (2)	9/19-25 (3)	9/26-10/2 (4)	10/3-9 (5)	10/10-16 (6)	10/17-23 (7)	10/24-30 (8)	10/31-11/5 (9)	11/7-13 (10)
Swans:				(A)9/27	(A)10/8	(A)10/13	(A)10/19	(A)10/25		(A)11/8
Whistling										
Trumpeter										
Geese:										
Canada	350	375	375	305	240	330	300	495	400	385
Cackling										
Brant										
White-fronted					310	205	95	400	250	270
Snow								50	100	100
Blue										
~~Other~~ Total Geese	350	375	375	305	550	535	395	945	750	725
Ducks:										
Mallard	1,100	980	850	755	85	200	280	370	250	175
~~xxxx~~ Unidentified				35		350	400	200	200	200
Gadwall	850	275	200	170	130	180	160	200	150	
Baldpate						310	50	500	1,000	1,750
Pintail	1,700	1,700	1,500	1,900	250	310	120	350	400	600
Green-winged teal		225	300	620	100	530	260	2,700	1,700	1,000
Blue-winged teal										
Cinnamon teal	125			30						
Shoveler					160		50	50	150	200
Wood	10	50	50			20				
Redhead	600	350	200		150	180	130	150	100	50
Ring-necked										
Canvasback	30	20				10				
Scaup					50					50
Goldeneye										
Bufflehead						45				
Ruddy	150	150						200	200	50
Other										
Total Ducks	4,665	3,350	3,370	3,510	955	2,095	1,010	4,080	4,150	4,075
Coot:	1,000	950	900	10	450	770	650	770	500	900
Grand Total	6,015	4,975	4,645	3,915	1,955	3,400	2,055	6,635	5,700	5,710

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Cont. N 1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Klamath Forest MONTHS OF September TO December, 19 65

(1) Species	(A) Aerial Census (2) Weeks of reporting period: ~~11/14-20~~ 11	~~11/21-27~~ 12	~~11/28-12/4~~ 13 (A)11/20	~~12/5-11~~ 14	~~12/12-18~~ 15	~~12/19-25~~ 16	~~12/26-1/1~~ 17	18	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	350	350	280	450	680	350	275		44,240		
Cackling											
Brant											
White-fronted	50	50							11,690		
Snow									1,750		
Blue											
~~Other~~ Total geese	400	400	280	450	680	350	275		57,680		
Ducks:											
Mallard	200	200	210	150	20	20	20		40,085		
~~Black~~ Unidentified			50	100					16,745		
Gadwall									17,535		
Baldpate	1,100	250							24,720		
Pintail	450	200	75	75	50				70,770		
Green-winged teal	500	250							57,025		
Blue-winged teal											
Cinnamon teal									1,085		
Shoveler	100	50							5,620		
Wood									400		
Redhead									13,370		
Ring-necked											
Canvasback									420		
Scaup			30						810		
Goldeneye			10						70		
Bufflehead			20						455		
Ruddy	50	25	20						6,615		
Other											
Total Ducks	2,400	1,075	415	325	80	20	20		261,485		
Coot:	750	250	50	50	50	25	15		52,720		
Grand Total	3,550	1,725	745	825	750	405	310		377,885		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	0	0	
Geese	57,000	945	
Ducks	261,405	4,020	
Coots	58,730	1,000	
TOTAL	377,805		

SUMMARY

Principal feeding areas Stream channels, marsh edges, grazed shorelines, hayed and heavily grazed fields.

Principal nesting areas

Reported by Palmer C. Sakera

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).

Interior Duplicating Section, Washington, D. C.
1953

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

FC

MIGRATORY BIRDS
(other than waterfowl)

Refuge KLAMATH FOREST Months of January to April 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed Grebe	1	4/27								50
Red-necked Grebe	1	4/27								4
Eared Grebe	2	4/29								120
Great Blue Heron	4	1/21								40
American Bittern	1	4/29								10
Sandhill Crane	3	3/1								60
II. Shorebirds, Gulls and Terns:										
Killdeer	30	3/24								500
Common Snipe	2	3/24								150
Long-billed Curlew	2	4/27								20
Willet	10	4/27								100
Greater & Lesser Yellowlegs	1	4/27								50
Ring-billed Gull	240	3/2								250
Caspian Tern	20	4/27								50
Black Tern	1	4/27								10

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	1	4/27							10
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	Resident		10	March					12
Duck hawk									
Horned owl	Resident		4	March					20
Magpie	"		15	"					50
Raven	"		15	"					75
Crow									
Bald Eagle	Resident		33	March					45
Rough-legged Hawk	4	1/27							20
Red-tailed Hawk	1	2/22							10
Marsh Hawk	8	3/31							15
Turkey Vulture	7	4/27							10

Reported by Palmer C. Sekora

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 Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Klamath Forest Refuge Months of May to August 195~~7~~65

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared grebe	Previous	Report	400	7/12	Summer Resident			40	100	800
Western grebe	8	5/11	150	7/13	"	"				
Pied-billed grebe	Previous	Report	180	6/8	"	"		85	50	300
Red-necked grebe	"	"	8	July	"	"		3	5	10
White pelican	8	5/27	45	8/23	"	"				150
Double-crested Cormorant	1	7/12	10	July	"	"				25
Great blue Heron	Previous	Report	18	7/27	"	"	2	6	16	35
Black-crowned night heron	10	6/29	15	"	"	"		5	10	15
American bittern	Previous	Report	5	August	"	"				
Sandhill crane	"	"	15	5/27	"	"		5	2	30
Virginia rail	1	July	5	July	"	"				35
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Report	200	6/7	"	"		100	380	600
Common snipe	"	"	20	7/12	"	"		40	120	180
Long-billed curlew	"	"	6	July	"	"				15
Willet	"	"	20	7/12	"	"		40	80	200
Lesser & Greater Yellowlegs	?	"	5	5/11	"	"				100
Dowitcher	5	5/11	15	May	"	"				25
American Avocet	10	5/15	50	August	"	"				75
Wilson's phalarope	80	5/11	800	6/7	"	"		65	180	1,100
California gull	10	6/7	30	August	"	"				100
Ring-billed gull	Previous	Report	55	"	"	"				150
Forester's tern	10	5/11	50	5/27	"	"		75	150	400
Caspian tern	Previous	Report	30	5/11	"	"				50
Black tern	"	"	700	7/27	"	"		180	800	1,800

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	Previous	Period	40	August	Summer	Resident				150
White-winged dove										
IV. Predaceous Birds:										
Golden eagle	Resident		7	7/12	"	"				10
Duck hawk										
Horned owl	"		5	"	"	"		6	12	30
Magpie	"		15	June	"	"		8	25	100
Raven	"		20	"	"	"		4	10	50
Crow	"		2	8/22	"	"				20
Bald Eagle	"		4	7/12	"	"				4
Sparrow Hawk	2	7/12	2	"	"	"				5
Rough-legged hawk	Previous	Period	10	June	"	"				30
Red-tailed hawk	"	"	2	"	"	"		1	3	8
Turkey vulture	"	"	15	8/22	"	"				40
Marsh hawk	"	"	10	7/12	"	"		10	20	50

Reported by Palmer C. Sekora - Refuge Manager

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Klamath Forest Months of September to December 1965

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous	Period	8	9/27	8	9/23				75
Pied-billed Grebe	"	"	150	Sept	3	10/2				200
Red-necked Grebe	"	"	5	"	1	10/16				10
White Pelican	"	"	No	Data	5	10/2				50
Double-crested Cormorant	"	"	"	"						15
Great-blue Heron	"	"	9	9/27	4	12/17				25
Black-crowned Nt. Heron	"	"	4	10/2	4	10/2				10
American Bittern	"	"	No	Data	2	"				6
Sandhill Crane	"	"	6	9/27	2	"				25
II. Shorebirds, Gulls and Terns:										
Killdeer	"	"	75	Sept.	16	10/16				100
Common Snipe	"	"	2	9/23	2	9/23				15
Willet	"	"	50	Sept.	No	Data				75
Lesser & Greater Yellowlegs	"	"	10	"	"	"				15
American Avocet	"	"	125	"	"	"				
Wilson's Phalarope	"	"	8	9/23	8	9/23				25
California Gull	"	"	75	Sept.	No	Data				100
Ring-billed Gull	"	"	150	"	6	12/17				250
Forester's Tern	"	"	10	9/23	No	Data				15
Caspian Tern	"	"	25	Sept	"	"				30
Black Tern	"	"	25	"	"	"				30

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	Previous	Period	44	9/23	44	9/23			80
White-winged dove									
IV. Predaceous Birds:									
Golden eagle	Resident		1	12/17	Year around				4
Duck hawk									
Horned owl	"		No	Data	"	"			30
Magpie	"		"	"	"	"			50
Raven	"		"	"	"	"			25
Crow			15	10/20	Still	Present			25
Bald Eagle	Resident		3	"	Year	Around			6
Sparrow Hawk	Previous	Period	2	12/17	"	"			20
Rough-legged Hawk	"	"	15	10/17	"	"			40
Swainson's Hawk			1	10/20	Still	Present			8
Red-tailed Hawk	"	"	2	10/2	"	"			10
Turkey Vulture	"	"							50
Marsh Hawk	"	"	5	10/2					40

Reported by Palmer C. Sahore

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 Gruiiformes)
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.

INTERIOR--PORTLAND, OREGON

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Klamath Forest For 12-month period ending August 31, 1965

Reported by Palmer C. Sekora Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	Acreage		(3) Use-days	(4) Breeding Population	(5) Production
I	Crops		Ducks	527,030	320	735
	Upland	150	Geese	37,723	90	250
	Marsh	5,528	Swans	0		
	Water	310	Coots	42,595	80	180
	Total	8,018	Total	677,418	490	1,165
II	Crops		Ducks	514,125	30	100
	Upland		Geese	90,517		
	Marsh	700	Swans	60		
	Water		Coots	63,910		
	Total	700	Total	668,612	30	100
III	Crops		Ducks	51,730	300	650
	Upland	1,120	Geese	15,680	40	50
	Marsh	6,798	Swans			
	Water	610	Coots	665	200	420
	Total	8,528	Total	68,075	540	1,120
TOTALS	Crops		Ducks	1,102,885	650	1,485
	Upland	1,270	Geese	142,920	130	300
	Marsh	13,036	Swans	60		
	Water	920	Coots	107,170	280	600
	Total	15,226	Total	1,414,105	1,060	2,385
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

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

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

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

Pd 3-1750c
Form NR-1
(Sept. 1960)

WATERFOWL HUNTER KILL SURVEY

Refuge Klamath Forest

Year 1965

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/8/15	45	186	Mallard(29), Pintail(18), Gadwall(16), GW-Teal(14), Baldpate(11), Canada goose(7), Redhead(4), Cinn. Teal(4), Shoveler(2), Ruddy(2), White-fronted goose(2)	109	40	149	220	
10/16-22	11	57	Mallard(6), Gadwall(6), Pintail(6), Baldpate(5), GW-Teal(1), Ring-necked duck(1), Canada goose(1), White-fronted goose(1)	27	20	47	200	
10/23-29							100	
10/30-11/5							100	
11/6-12	4	12	Bufflehead(4), Mallard(3)	7	1	8	50	
11/13-19	25	91	Baldpate(11), Bufflehead(5), Mallard(4), Shoveler(3), Pintail(1), Redhead(1)	25	10	35	75	
11/20-26	None	None	None	None	None	None	20	
11/27-12/3	"	"	"	"	"	"	20	
12/4-10	"	"	"	"	"	"	20	
12/11-17	"	"	"	"	"	"	20	
12/18-24	"	"	"	"	"	"	5	
12/25-31	"	"	"	"	"	"	5	
1/1-1/6	"	"	"	"	"	"	5	
TOTALS	85	346	Mallard(42), Baldpate(27), Pintail(25), Gadwall(22), GW-Teal(15), Bufflehead(9), Canada goose(8), Redhead(5), Shoveler(5), Cinn. Teal(4), White-fronted(3), Ruddy(2), Ring-necked duck(1)	168	71	239	950	
Average Per Hunter		4.07	Geese .13 Ducks 1.85	1.98	.84	2.81		2,670

Reported by: Palmer C. Sakora

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

80348-60

3-1752
Form NI
(April 1946)

UPLAND GAME BIRDS

1613

Refuge KLAMATH FOREST Months of January to April, 19 65

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
NO UPLAND GAME BIRDS NOTED DURING THE 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.

3-1752
Form N[illegible]
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Klamath Forest Months of May to August, 1965

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
NO UPLAND GAME BIRDS NOTED DURING THE 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.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge **Klamath Forest** Months of **September** to **December**, 19 **55**

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
NO UPLAND GAME BIRDS NOTED DURING THE PERIOD										

Reported by: Palmer C. Sekora

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1754
Form NR-
(June 1945)

SMALL MAMMALS

Refuge KLAMATH FOREST Year ending April 30, 1965

(1) Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5) Total Population
								Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control*	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Muskrat	Cattail-bulrush-sedge marsh 13,036 acres			735				T-8831 T-8830	28 560	7 140	147			Pre-season 6,000 Post-season 3,500
Beaver	Channels and marsh areas near aspen groves-approx. 1000 acres													10
Cotton Tail	Bitter brush, buck brush, ponderosa, lodgepole pine edges, Approx. 360 acres													
Mink	Cattail-bulrush-sedge marsh 13,036 acres													20
Coyote	On and off													15
Bobcat	on and off													occasional
Raccoon														20

*List removals by Predator Animal Hunter

REMARKS:

High water levels in December, 1964 and January, 1965 substantially reduced population.

Reported by Palmer C. Sekora

INSTRUCTIONS

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

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32715

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3-1755
Form NR-

DISEASE

Refuge Klamath Forest Year 195

Botulism

Period of outbreak No loss noted on refuge due to high water levels and continuous fresh water inflow during summer and fall months

Period of heaviest losses

Losses:

	Actual Count	Estimated
(a) Waterfowl		0
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		0
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) 0

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

Condition of vegetation and invertebrate life

Remarks

Lead Poisoning or other Disease

Kind of disease None

Species affected

Number Affected

Species	Actual Count	Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

Reported by: Palmer C. Sakora

INT.-DUP., D.C.- 53818-59

pd NR-6

Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge **Klamath Forest** Calendar Year **1965**

1. Visits

a. Hunting **950** b. Fishing **300** c. Miscellaneous **1,230** d. TOTAL VISITS **2,480**

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	**950**	**3,700**	**FWS**
Upland Game	**X**		
Big Game		**X**	**X**
Other			

Number of permanent blinds **0**

Man-days of bow hunting included above **0**

Estimated man-days of hunting on lands adjacent to refuge **2,250**

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

TYPE OF AREA	ACRES	MILES
Ponds or Lakes		
Barrow ditch along Silver Lake Road Streams and Shores		**4**

1c. Miscellaneous Visits

Recreation **400** Official **180**

Economic Use **650** Industrial **0**

2. Refuge Participation (groups)

SEE TULE LAKE SECTION

TYPE OF ORGANIZATION	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs				
Bird and Garden Clubs				
Schools				
Service Clubs				
Youth Groups				
Professional-Scientific	**2**	**110**		
Religious Groups				
State or Federal Govt.				
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases		Radio Presentations	
Newspapers (P.R.'s sent to)		Exhibits	
TV Presentations		Est. Exhibit Viewers	

Reported by: Palmer C. Sakers

3-1756
(Rev. 4/63)

INSTRUCTIONS

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

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

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

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

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

Other - INCLUDE crow, fox, and similar hunting.

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

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

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

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

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

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

INTL ---PORTLAND, OREGON

pa

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Klamath Forest County Klamath 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
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
[redacted]									
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	*	1,083	$1630.96	5,580
				2. Other				
				1. Total Refuge Acreage Under Cultivation				None
Hay - Wild	490.1	510	$1470.30	2. Acreage Cultivated as Service Operation				None

*Due to fence damage, cattle moved between refuge and private lands at will throughout the grazing period

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.

SIGNATURE PAGE

Submitted by:

William Nuess
(Signature)

William Nuess
Acting Refuge Manager

(Title)

Date: February 11, 1966

Approved, Regional Office: RFR

Date: March 2, 1966

John D. Findlay
(Signature)

JOHN D. FINDLAY
Associate Regional Director

(Title)