

TULE LAKE - CLEAR LAKE - LOWER KLAMATH - UPPER KLAMATH

NARRATIVE REPORTS

JANUARY - DECEMBER, 1954

Branch of Wildlife Refuges

Narrative Report Routing Slip

Date 2/15, 1955

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Refuge

TULE LAKE, LOWER KLAMATH
UPPER KLAMATH & CLEAR LAKE

Period

SEPT. - DEC., 1954

Tule Lake

NARRATIVE REPORT

TULE LAKE September
 LOWER KLAMATH October
 UPPER KLAMATH November
 CLEAR LAKE December
 1954
NATIONAL WILDLIFE REFUGES

STAFF PERSONNEL

Thomas C. Horn * * * * * Refuge Manager
Paul E. Steel * * * * * Refuge Manager
Jean F. Branson * * * * * Refuge Enf. Agent
Henry Christensen * * * * * Constr. Supervisor
Ross M. Harrington * * * * * Maint. Supervisor
Blake F. Chapman * * * * * Auto. Mech-Inspector
Earl M. Irvine * * * * * Auto. Mechanic
Burton W. DeGraw * * * * * Clerk
Robert H. Wills * * * * * Clerk-Typist
Harry C. Hoshaw * * * * * Maint. Man
J. C. Tatum * * * * * Maint. Man
Johnnie A. Johnson * * * * * Maint. Man
Edward A. White * * * * * Maint. Man

CONSTRUCTION PERSONNEL

S. Virgil Cobb * * * * * Dragline Operator
Calvin J. Cook * * * * * Jackhammer Operator
Joe Fabianek * * * * * Dragline Operator
Robert H. Fox * * * * * *Truck Driver
Frank L. Gray * * * * * Dragline Operator
Raymond E. Hanson * * * * * *Operator, General
Fred H. McMahon * * * * * *Carpenter
Milligan, George H. * * * * * *Oiler
Walter Olchawa * * * * * Truck Driver
Alfred D. Sharp * * * * * Tractor Operator
Lloyd H. Smith * * * * * Oiler
Everett C. Sprout * * * * * Dragline Operator
Roy W. Sweet * * * * * Truck Driver
Edward A. Downing * * * * * Laborer
Alvin B. Keeter * * * * * *Laborer
Samuel D. Merriman * * * * * Laborer
Frank S. Pevytoe * * * * * Laborer
Elmer C. Prater * * * * * Tractor Operator
Clarence O. Rasdal * * * * * Truck Driver
Lester Rash * * * * * Truck Driver
Henry Steer * * * * * Auto. Mechanic
Ralph W. Swisher * * * * * Oiler

* * * * *

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COMPOSITION CREDIT AND SIGNATURE (Following Clear Lake Report)



I GENERAL

A. Weather Conditions

The dry, cool trend of the preceding months continued through this period. Temperatures ranged lower than last year, with a mean of 40.1, or 4.08 below 1953, and precipitation was but 2.28" compared to 4.57" in 1953, as recorded at the Tulalake weather station. There were no severe storms, and despite the low temperatures the weather was pleasant.

Stream year precipitation records of the Klamath Falls and Upper Klamath station reflect this same trend with 2.88" to date as compared to 4.69" normal, and 5.89" last year.

While frost did not penetrate the dry earth deeply, the water of Tule Lake sumps, Lower Klamath Units, and White Lake began to ice over during the last week of November. With 3° recorded November 30th at Tulalake this freezeup was completed, becoming more solid through December as temperatures down to -6° were recorded.

Weather Records of the Tulalake Station

	Precip.	*Wind Miles	Max. Temp.	Min. Temp.	Mean Temp.
Sept	.09	5080	87	19	51.7
Oct	.16	4974	77	12	43.1
Nov	.89	4004	70	3	38.25
Dec	1.14	4044	50	-6	27.5
	2.28	18102	87	-6	40.1

*Klamath Falls data.

B. Water Conditions

The water of the Tule Lake Sump was maintained at levels which aided materially in the prevention of botulism during the hazard period for this disease, then was elevated in October for better hunting conditions and access by boat on the public hunting areas.

The higher level was maintained through November, then lowered progressively during December as water was pumped by Plant "D" through the tunnel for irrigation of crop lands on Lower Klamath.

This is another very satisfactory year for water management on Tule Lake, and Lower Klamath made possible by the cooperation of the Bureau of Reclamation in their adherence to our water management plan and requirements.

Condensed gauge readings are as follows:

	<u>10th</u>	<u>20th</u>	<u>30th</u>		<u>Low</u>	<u>High</u>
Sept	4034.30	4034.31	4034.22	(30th)	4034.22 (1st)	4034.44
Oct	34.49	34.70	34.78	(1st)	34.23 (23rd)	34.86
Nov	34.78	34.83	34.80	(8th)	34.68 (29th)	34.87
Dec	34.70	34.14	33.65	(31st)	33.62 (1st)	34.79

C. Fires

N one on the refuge.

The U. S. Forest Service requested and were furnished equipment and operating personnel for their "Twin Sister Fire" on November 6th, reimbursement for which was made by that agency.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

The observations and comments of the author of these particular sections of these reports are, for the most part, limited to the time between October 15 and December 20 of this year, the period which he "filled in" for Mr. Paul Steel.

Whistling Swan were first observed on the refuge during the last week of October. Following this first observation the numbers increased gradually as the period progressed. Three swan were known to have been killed on the area by hunters, one cripple was picked up and as the period closes two cripples remain in one of the open water areas.

Apparently our goose population reached its peak during the third and fourth weeks of October. Actual census figures are lacking for this period but evidence would seem to show that this period saw the greatest number of geese in the area. Our migrant waterfowl populations are very solidly tied to the food supply on the refuge and immediately following the exhaustion of the readily available grain the birds begin to move south. A check of fields on the 18th of October indicated that approximately 90% plus of the standing grain had been consumed. In the days immediately following, many of our White-fronted Geese moved out, some on south, others to surrounding lakes and fields.

Cackling Geese were present in somewhat reduced numbers this fall. These diminutive Canada Geese were a comparatively minor

item of the hunter bag during the open season.

Snow Geese reached their peak near the end of October. Those birds were very common in the stubble and later in the burned fields. Ross's Geese were also present in these flocks. More detailed information on this species will be forwarded to Dr. Erickson for inclusion in a report on the current status of these small birds.

Common Canada Geese were present in very limited numbers throughout the period. They become more conspicuous though only moderately more numerous as the fall progressed.

Mallards were somewhat more common this fall and they stayed on, as is usual, after some of the other species had drifted south. As the drains and shallow areas froze, these birds, concentrated near the emergent vegetation around the south and east edges of the Lower Sump.

Gadwall were present in very limited numbers but Baldpate at one time late in October were a significant part of the total waterfowl population. These latter birds were usually observed in a parasitic relationship with the divers, swans, or coot. The seem very adept at stealing whatever food these birds bring to the surface. Swans, however, are apparently equal to the situation. The will tip up and grasp the food, regain their normal horizontal position and then proceed to eat the vegetation while holding the anterior end of the bill under the water. This procedure apparently foils the Baldpate who can do nothing but swim back and forth in frustration.

As usual, the Pintails were our most abundant birds during our period of peak numbers. These birds were present in literal clouds and the numbers that could be observed along the dikes and on the water units must be seen to be believed. As is customary, the numbers of these birds fell off rapidly as the refuge food supply dwindled.

Shovelers were very common during the latter part of the period and some of them apparently intend to stay on the area as long as any open water remains.

Canvasbacks were very common this fall, in fact, much more numerous than for a number of years. These fine Birds were not uncommon in the hunter's bag during the open season.

Ruddys were also common throughout the latter part of the report period. They are one of the few species remaining in the limited areas of open water now to be found on the refuge.

Coots may be destined to eventually take over the world and they seem to have an excellent start on this area. These consumers of prodigious amounts of waterfowl food were present throughout the period in considerable numbers.

2. Food and Cover

The utilization of the Refuge grain crops, planted for depredations control and waterfowl food supply, occurred approximately as follows:

<u>Date</u>	<u>Tule Lake</u>	<u>Lower Klamath</u>
Aug. 20th	2 %	10 %
Sept 1st	5 %	15 %
" 10th	10 %	20 %
" 20th	25 %	35 %
" 30th	60 %	50 %
Oct. 10th	80 %	70 %
" 20th	95 %	80 %
" 25th	99 %	95 %
" 30th	100 %	100 %

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As is normal, the field feeding ducks such as mallards and Pintails usually move into a grain field first. After some of the grain has been knocked down, geese will then move in, if anything is left. This year, drags were used in some of the refuge fields to open areas into which the geese could move at an earlier date. Geese seem to prefer stubble to standing grain if it is available. Later when the fields are burned the geese will thoroughly glean every last kernel and then pull up all the remaining grain roots that they can grasp. A field that is burned in the morning will often be completely devoid of ashes by evening, the birds, simply trample the ashes into the soil.

The potatoes that remain after harvest in some of the refuge fields are also an important item of food. On numerous occasions geese were observed with tubers much too large to be swallowed. A bird with such a problem immediately attracts a host of other birds who try to snatch the morsel away.

By the time the fall farming operations are initiated in November, an observer is hard pressed to find any food whatsoever in the refuge fields.

There is food in abundance in the fields throughout the basin and the birds will utilize it whenever they are permitted to do so. However, during the hunting season no stock of birds is allowed to remain in a field for long except perhaps at night.

The submerged vegetation of the two main water areas on the

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refuge provided an adequate food supply for the divers, coot, swan and Baldpate. This source of food held up well and seemed to be ample enough to carry the migrant population up to the time the lakes froze.

3. Botulism

N one observed or suspected during this period.

There was no further occurrence of botulism after the very minor outbreak of August 15-28th on the NE corner and E side of the upper sump (see Tule Lake Narrative Report, May-Aug. for full report), which followed a rise of the Tule Lake sump level above 4034.40 accompanied by southerly winds. This flare-up was abated immediately with the lowering of the sump water level from the peak of 4034.51 reached August 21-24 to 4034.48 by August 28th.

4. Lead Poisoning

None observed or suspected.

5. Banding

The California Fish and Game crew banded waterfowl on the refuge again this period. In addition to trapping ducks (and coots), geese were cannon netted, all as follows:

Species	Males		Females	
	A	I	A	I
Mallard	168	71	39	36
Pintail	284	44	10	14
Redhead	3	118	11	88
Green-winged Teal	1	3		1
Cinnamon Teal		5		5
Ruddy Duck		1		
Total Ducks 902				
American Coot 312				
Cackling Geese	12		5	*18
Lesser Snow Goose	505		436	*624
Ross' Goose	2		2	
White-fronted Goose	10		3	*23
Total Geese 1640				

*Immature, and not classified as to sex.

B. Upland Game Birds

1. Population and behavior

A sex ratio check of pheasants made before the general pheasant hunting season revealed a sex ratio of one cock to 2.68 hens. No pheasant hunting was permitted on this area this year but there appears to be a definitely shootable population.

Valley Quail were observed throughout the period, usually in the area near Sheepy Ridge. They commonly spent the days on the ridge and descended to the refuge in the evenings.

Chuckars were also observed near the road that runs along the base of Sheepy Ridge. Their daily movement patterns were much the same as those of the quail.

A very few sage grouse were observed in the area where the refuge joins the Lava Beds National Monument. These birds apparently spend the greater part of their time on the Monument, and only occasionally venture on the refuge.

2. Food and cover

These two items were both in excellent supply during this period. The Pheasants abound in the grain field-drain ditch type of habitat and the other species are found on portions of the refuge that offer natural cover and food supplies.

3. Disease

None observed.

C. Big Game Animals

1. Population and Behavior

Mule Deer were commonly observed on the refuge in the evenings and early mornings during this report period. They normally retired to higher, more secluded ground during the day and returned to the refuge at night.

2. Food and Cover

The limited amount of browse to be found on the refuge was in good condition and seemed to be adequate to carry the small population of animals using it for food.

3. Disease

None observed.

D. Fur Animals, Predators, Rodents and Others

Aerial observations combined with ground checks disclosed that our muskrat population on the Upper Lake is rapidly riddling our marsh area. Trapping permits, with increased quotas, were issued on December 1 in an attempt to cut the "rat" population back to a figure more consistent with sound waterfowl management, (see section IV.) The population of muskrats now present on the area could seriously damage our extremely productive waterfowl nesting habitat if steps were not taken to reduce its ranks. Photos attached to this report show some of the areas of the more intensive muskrat activity.

Coyotes were observed on the refuge on several occasions during this period. These animals thrive on the cripples that are easily picked up along the sump edges and drains.

Feral cats were as abundant as ever and attempts were made to reduce the population whenever possible.

Evidence of small rodent activity could be seen in the fields throughout the period. Meadow mice ate their share of grain and in turn furnished food for the short-eared owls and some of the hawks.

E. Predaceous Birds

Short-eared Owls, Bald and Golden Eagles, and Red-tailed, Rough-legged, Marsh, and Sparrow Hawks were present on the area during the period. All of these birds, except possibly the owls and the Sparrow Hawk had an easy time picking up cripples. Normally 99 % of these birds would die and be wasted anyway so these birds do us a service by picking the bones clean.

F. Fish

No observed change in status.

III REFUGE DEVELOPMENT & MAINTENANCE

A. Physical Development.

1. Construction.

Walkways were built to each of two pairs of 36" pipe gates, one pair at the northwest corner of field B-2, and one pair at the east side of B-3.

Excavation made, piling and cribbing installed, and stand completed for installation of electric powered dewatering pump (TL #2), located south of the English Channel to dewater fields B-2 and B-3.

2. Building and General Maintenance & Repair.

Road paving job in front of Headquarters was finished early in the quarter, aided by use of the Lava Beds oil heating and spraying machine.

New equipment building floor was excavated down to sub-grade in preparation for cement.

Cleaned septic tanks at the "C" camp, and Headquarters.

All hot water heaters were cleaned (10) of from one to three gallons of alkali deposit.

Set up (3) Hunter Camps, including toilets, tables with attached seats, and garbage cans. Two of these camps on Lower Klamath, and one on Tule Lake.

Six (6) more 50 gallon garbage cans (made from oil drums fitted with handles) were added to our camp grounds, a total of 20. 10 cans per day to empty and return.

An incinerator was made for use at office to burn papers.

Drinking water storage tanks at the "C" camp and Headquarters were cleaned, scrubbed, and sweetened with soda. A yearly must.

All water turnout boxes were winterized with straw, and by draining the first part of the quarter.

Headquarters area was cleaned up, trees trimmed, rocks removed, and dead trees grubbed out.

Additional eaves trough was installed on new office addition.

Built and painted stand, painted and plumbed stove oil reservoir (100 gal.) at quarters # 12.

Two clothes line posts of 2 $\frac{1}{2}$ " pipe were welded and anstalled at Peninsula Sub Headquarters. This complete the installation at all quarters of attractive posts set in cement.

A great deal of clean-up, building cleanup, and repair, such as new 2 x 4 fasteners on large, double doors, and foundation shore-up was completed at "C" camp location during the past quarter.

The IHC Combine was reconditioned, and operated by Ed White in the harvest of Tule Lake seed grain.

The "closed" and "open" areas of the entire refuge were posted for the waterfowl season.

Received the 1954 crop seed grain at Headquarters grain buildings. Cleaned, treated and piled 7000 bushels (2921sx) in main building, and stored remainder in bulk tanks.

Hung light fixtures, and doors in new office addition. Hung light fixture in dining room and one bedroom and repaired the wiring of quarters #1.

Erected frame and installed new entrance sign at Headquarters.

Constructed panels for booth at Merrill Potato Festival. (See photos).

Marked two aluminum boats "FWS" with rivets (See photos). Made shipping crate for boat marking kit.

Made carrying boxes for chain saw, and electric screw driver.

Made "Long Load", and "High Load" signs, and pipe racks for the transport truck.

Dismantled old, unusable garage at Headquarters.

Rehabilitated 400 of the "Open" and "Closed" hunting area signs for posting.

Made an additional 85 "General Hunter Information" signs for pheasant hunting season.

Designed, constructed and painted 28, life size silhouettes of Whistling Swan, and three of Snow Geese for posting on Lower Klamath and Tule Lake to inform hunters and prevent loss of swan. (See photo).

Designed and painted panels, painted landscape, and wildlife scenes for FWS booth at Merrill Potato Festival. (See photos).

3. Equipment Maintenance and Repair.

Safety inspections and 5000 mile preventative maintenance inspections were performed as per forms 3-1749, and 3-1778 on all vehicles due. Minor repairs were made in accordance with the findings of these inspections.

Overhauled the motor on a D-7 Caterpillar Tractor. Completely overhauled one Dodge Power Wagon, motor, body, and running gear. Also painted same.

B. Plantings.

1. Aquatic and Marsh. None.
2. Trees and Shrubs. None.
3. Upland Herbaceous Plants.

Dike slopes and berms were planted (as indicated in red on map) as follows:

<u>Date</u>	<u>Location</u>	<u>#Seed mix</u>	<u>Acres</u>
11/8	North side of N. boundary "Main Dike" from W. end to Drainage Pumping Plant # 3.	107	5
11/15-17	North & East Dikes & berms ("C" Dike) of field B-2, from NW corner on Upper Sump to English Channel Bridge.	602	25
11/24	West Dike and berm ("A" Dike) of field C-1.	301	12
12/1	South Dike and berm ("B" Dike) of fields C-1, and C-2.	<u>301</u>	<u>12</u>
Totals		1311#	54 Acres

The seed mixture used was as follows:

<u>Seed</u>	<u>Parts</u>
Perennial Ryegrass (Lolium Perenne)	1
Tall Wheatgrass (Agropyron Elongatum)	10
Smooth Brome (Bromus Inermis)	20
Tall Fescue (Festuca Elatior, Var. Arundinacea)	30

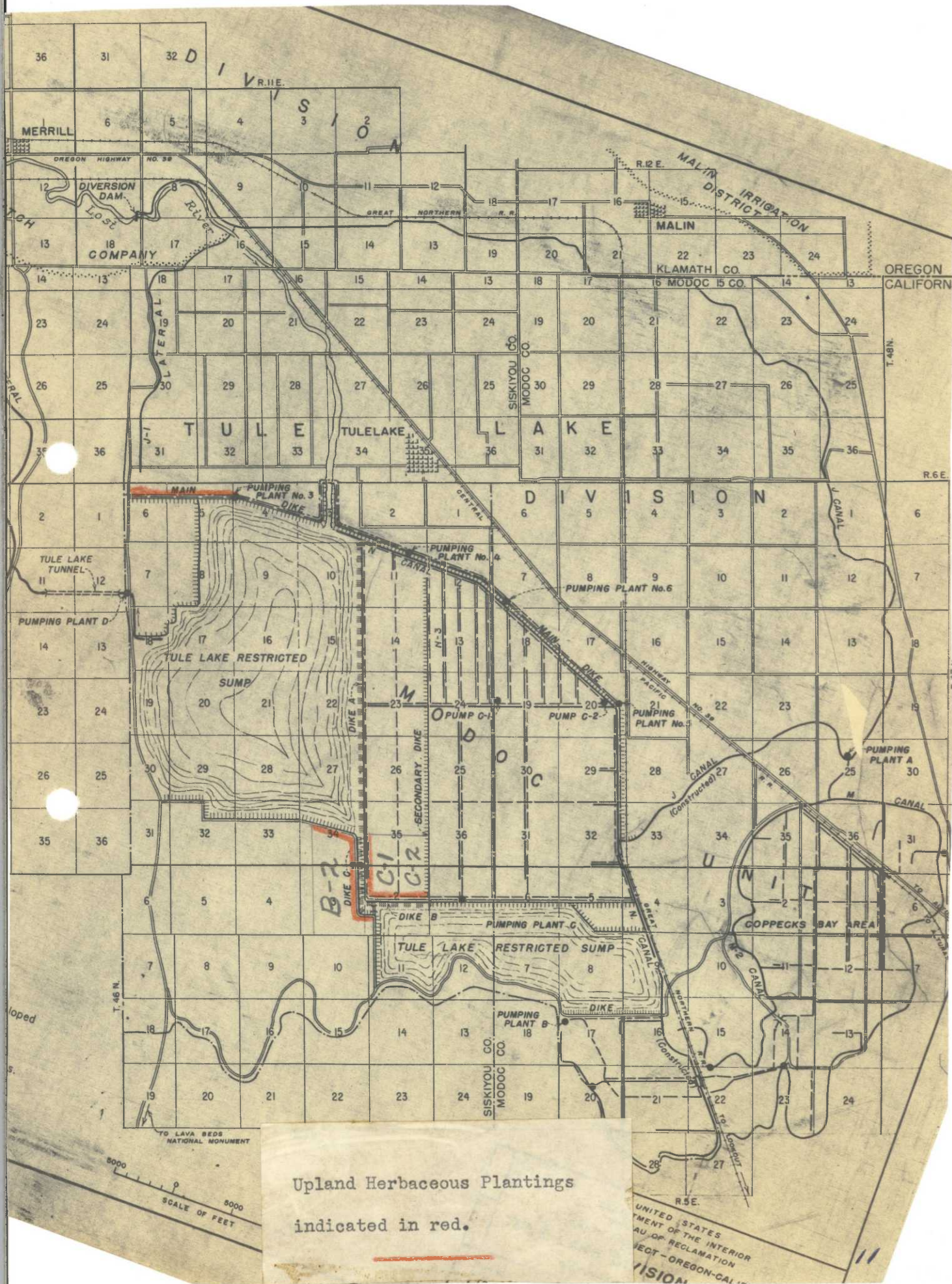
The slopes, resulting from levelling the area south from quarters #6 for the grain building, and storage bins, were planted to Western Wheatgrass (Agropyron Smithii) on 12/17 (area approx. 1 acre, seed used 10#).

4. Cultivated Crops. (No sharecropping on Tule Lake Refuge)

(A) Refuge plantings.

Harvesting of H. Barley for refuge seed requirements had started August 23rd, and was completed on September 15th. Fields from which this seed was harvested, the order in which harvested, acreages and amounts are as follows:

	<u>Field</u>	<u>Acres</u>	<u>Bushels</u>
E-1	E-1	36	1980
	C-1	135	8775
	A-1	15	1106
	Totals	<u>186</u>	<u>11861</u> (593050#)



Production averaged about 15 bushels per acre less than last year on the A, B, D, and E fields, and more than 30 bushels per acre less on the C fields where C-4, the north field of the Henzel Tract, was in the area that experienced the severest frost damage.

In preparation for refuge farming in 1955 the straw on Tule Lake fields was burned after full utilization by waterfowl in the following order:

Date	10/21	10/27	11/1-3	11/8	12/1
Field	B-2, B-3	E-1	D-1, D-6, D-2, C-1, E-2	C-2	A-1

Additional preparation was accomplished as follows:

On November 10th Field B-3 was disced and landplaned. On December 3rd on field B-2 previous road and drain, between this field and B-2 was levelled and eliminated by dozing, and 160 acres of south end land planed. On December 19th Field B-1 was plowed with Davis Discs. On December 30th Field E-2 was landplaned.

(B) Experimental Plantings.

For the second consecutive year a 37 acre tract (test plot) in the central portion of Field A-1 has been operated in cooperation with the Farm Advisor to test Hanchen Barley seeding rates, tillage practices, and fertilizers with relation to yield.

Fresh ground for the fertilizer tests is assured by shifting the plot 350' east on the 1953 location. It is proposed to continue these tests through a 3 to 5 year period, and the fertilizer test areas will be checked for possible further results of these applications.

The layout of the plot, showing cultivation used, fertilizer applications, and seeding rates is detailed on the attached sheet.

Yield data in all instances was an average of the packed and unpacked cultivation, and checks were not made on each this year.

Seeding rates established for these tests are as follows:

Fertilizer test rows 1 to 8	Lot 9	Lot 10	Lot 11	Lot 12
75# per acre	75#	50#	100#	25#

This years variation was unintentional, and future rates will follow the established rates as closely as possible.

Cultivation and seeding of the test plot was 5/15-17. The entire growing season was one of high frost damage and this later seeding date was advantageous in suffering less damage than some of the earlier seedings this year.

The data on the test plot is as follows:

Yield in pounds per acre
(From cultivation strips D,E,&F)

Seeding Rates lbs. per acre	Cultivation practices			Avg. yield
	Plow	Disc	Chisel	
32	3579	3620	3440	3546.33
52	4040	4080	3920	4013.33
127	4080	4280	3720	4026.66
Average	3899.66	3993.33	3693.33	

Cultivation: Discing (comparing spring cultivation methods) has given highest yields both this year and last year.

Seeding rates: The 127# rate is best with discing only. 52# is the best average, including 66# on fertilizer tests. 75# rate best last year. 75#, and 100# rates should have been included to obtain more conclusive information.

Result of fertilization

Plow strip A - Fertilizer rows 1 to 8 - Seeding rate 66# per acre

Row No.	Application rate and fertilizer used.							Yield per acre.
1	200#	Ammonium	sulfate					4060#
2	300#	"	"					4200
3	400#	"	"					4540
4	Check row							3980
5	200#	Am.	sulfate	plus	100#	treble	super phos-	4120
							phate.	
6	200#	Am.	"	"	200#	"	"	4300
7	200#	"	"	"	300#	"	"	4220
8	400#	treble	super	phosphate.				4000

(The fertilizers used in these tests were provided by Mr. K. G. Baghott, Farm Advisor, University of California, College of Agriculture Extension Service.)

Indications: Phosphate not required. 400# Am. sulphate gave best yield, economy doubtful.

In addition to the tests with Hanchen Barley various varieties of Durum Wheat were tested for yield on row 9W of the test plot. Locally there is need of a cash grain crop to diversify from nearly straight Hanchen Barley production. Should Durum Wheat be an answer it is desirable for the refuge to be informed on its culture and yield.

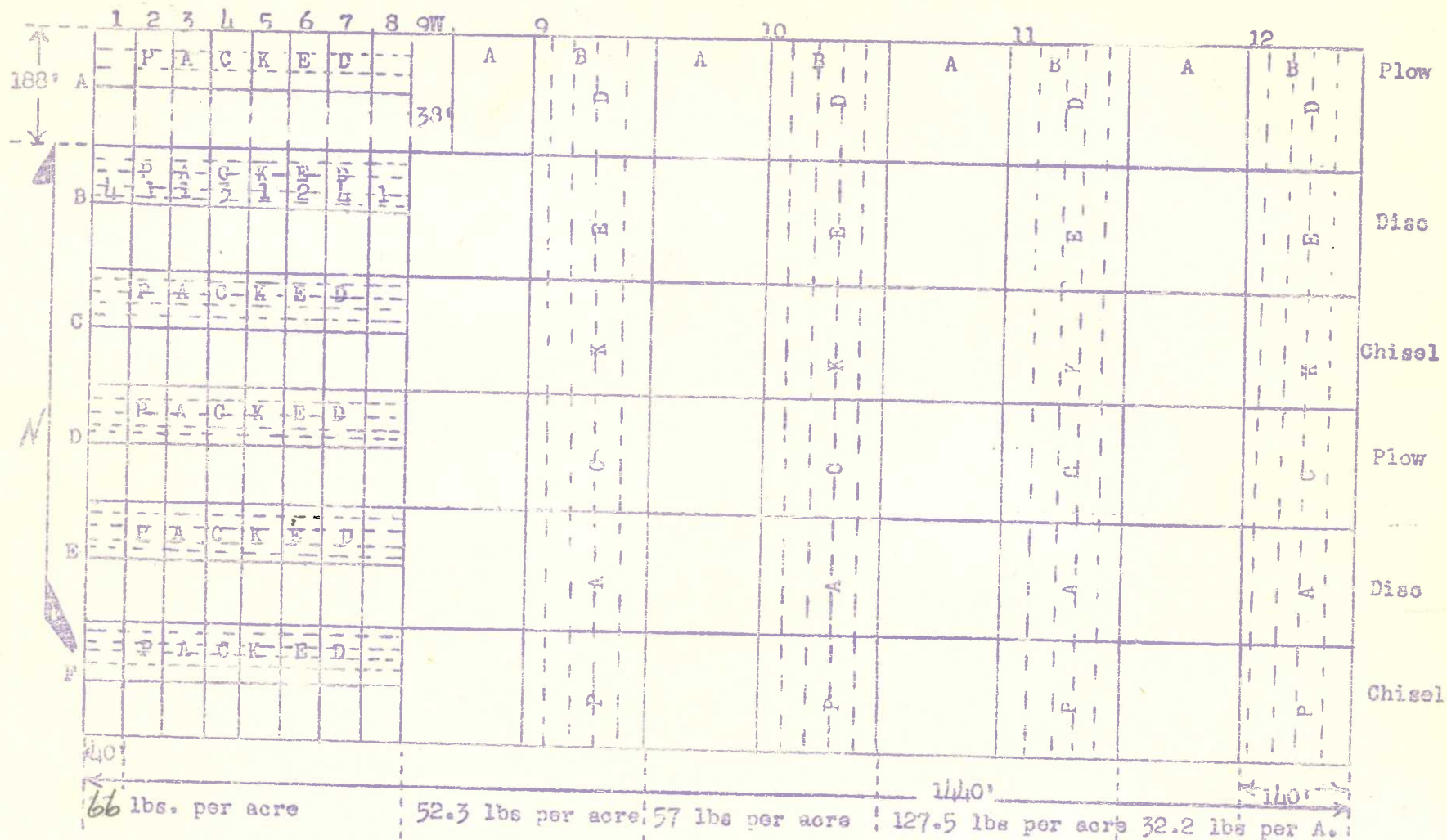
The test seeding of varieties of Durum Wheat gave the following results:

Variety	Vernum	Kubanka	Pentad	Sentry	Mindim	Stewart
Yield per A.	3000#	1800#	1800#	2700#	2500#	2700#

All are amber strains except Pentad which is red. Vernum is frost resistant in addition to making the highest yield.

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1954 Experimental Plantings
Fish and Wildlife Service Cooperating With Farm Advisor



Fertilizer Application Rate

1. 200# Ammonium Sulfate per acre.
2. 300# Ammonium Sulfate per acre.
3. 400# Ammonium Sulfate per acre.
4. Check Plot
5. 200# Am. Sulfate plus 100# Treble Superphosphate per acre.
6. 200# Am. Sulfate plus 200# Treble Superphosphate per acre.
7. 200# Am. Sulfate plus 300# Treble Superphosphate per acre.
8. 400# Treble Superphosphate per acre.

Plot 9 W

Hardy	Vernon	Kubanka	Pentad	Sentry	Clindin	Stewart
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PLANT (WEED) CONTROL

Tule Lake Refuge Grain Fields, Berms, and Dikes

1. Plants involved and relative percentage density.

Hanchen Barley	97 %
Brossica Arvensis (Wild Mustard)	2 %
Brossical Juncea (Indian Mustard)	.5 %
Descurvainia Sophia (Flixweed)	.5 %
Bassia Hyssopifolia (Shook Bassia)	.5 %
Atriplex Hastata (Fat Hen)	.5 %
Salsola Kali Tennifolia (Russian Thistle)S	.5 %
Sisymbrium Altissium (Tumbling Mustard)	.5 %
	<hr/>
	100 %

2. Stage of growth.

Hanchen Barley	2 to 6 inches
Weeds	1 to 8 inches mainly, (but
flowering in spots.	

3. Acreage of plants involved:

Tule Lake Grain Fields 2700 acres

Relative percentage density as per #1.

4, 5, and 6. Herbicide, strength, dilution, and method of application.

2, 4-D Amine, 1/2 pound (1 pt.) a.e. to 2 gallons of water per acre (16:1) by aircraft on 2670 acres; 1/2 pound a.e. to 10 gallons of water per acre (80:1) by ground spray rig on 30 acres.

7. Dates of application: 6/7, and 6/22-29.

Adverse weather and variation in plant growth were problems in this years spraying schedule.

8. Results: 99.9 %

The results were essentially complete control, achieved by retreating or double coverage of 460 acres of the 2700 acres involved, making a total of 3160 acres sprayed. The double coverage was necessitated by the variation in stage of plant growth (1" to flowering) on this large acreage, and by the adverse weather and air conditions during spraying.

9. Costs: Tule Lake and Lower Klamath are combined in the following:

(on next page)

COSTS

Tule Lake - 2, 4-D Amine, 395 gal. @ \$2.56	\$1011.20	
Lower Klamath - 2, 4-D Amine, 161 gal. "	<u>412.16</u>	\$1423.36
Tule Lake & Lower Klamath - Aircraft, 15 3/4 days, gas, 376 gals. Oil, 32 qts.,	<u>154.68</u> <u>9.12</u>	163.80
Tule Lake & Lower Klamath, Pilot, salary	336.42	
" "per diem	<u>141.75</u>	478.17
Tule Lake & Lower Klamath, Labor, Flagman, Supplyman, etc.		301.60
Tule Lake & Lower Klamath, Equipment, Trucks, Pickups, Pumper		75.00
Tule Lake - Ground Spray Rig, Tractor & Sprayer (30 acres), Operators included in above labor.		<u>10.80</u>
Tule Lake and Lower Klamath, Total Costs		\$ 2452.73

Acreage, and Costs Per Acre

	TL	LK	Total	Cost per A.
Acres	2700	*1000	3700	\$ 0.662
" retreated	<u>460</u>	<u>288</u>	<u>748</u>	
Totals	3160	1288	4448	0.551

*Includes 900 acres comprising only the principal areas of weed growth in Lower Klamath Refuge fields, and 100 acres of berms and dikes seeded to grain or to be planted to permanent grass cover.

PLANT CONTROL
HQRS. AND "C" CAMP AREAS
FIRE HAZARD ELIMINATION AND CLEANUP

1. Plants involved:

Brossica Arvensis (Wild Mustard)
Bossia Hysopifolia (5 Hook Bossia)
Salsola Kali Tennifolia (Russian Thistle)
Sisymbrium Altissuim (Tumbling Mustard)

2. Stage of Growth: 1" to 2' and seeding.

3. Acreage Involved: 60.

4, 5, and 6. Herbicide, strength, dilution, and method of application:

2, 4-D Amine, 1 pt. (1/2# a.e.) to 8 gal. of water (64:1).
Applied by ground spray rig and by hand wand from portable pumper.

7. Date of applications: 6/7-7/23/54.

8. Results: 95 % Russian Thistle very resistant, results near 100 % on most other plants.

9. Costs:	2, 4-D Amine	12 gal. at \$2.56	\$ 30.72
	Labor		23.36
	Equipment		<u>4.60</u>
	Total		\$ 58.68

NOXIOUS WEED CONTROL

1. Plant involved: Iva Axillaris (Pursh) Poverty or Death Weed
2. Stage of growth: 1" to 10" in height
3. Acreage and location: 1/20 acre. West end of Field A-1, midway, and near edge of kield. (See map.)

4, 5, and 6. Herbicide, strength, dilution, & method of application:

2, 4-D Amine, 1pt. (1/2# a.e.) to 8 gallons of water (64:1).
Applied by hand wand from portable pumper. Completely soaked colony and all plants.

7. Date of application: 7/15/54.

8. Results: 99 %. Present growth stopped and flattened.
Next years regrowth cannot be determined until that time.

9. Costs:	2, 4-D Amine	1 gallon	\$ 2.56
	Labor		2.62
	Equipment		<u>.35</u>
	Total		\$ 5.53

Note: Complete eradication will be attempted.

NOXIOUS WEED CONTROL

1. Plant involved: *Cirsium Arvense* (Canada Thistle)

2. Stage of growth: Flowering

3. Acreage and location: .4 acre. North of Hotel Rock .7 mile, between Hill Road and water (infestation: 4 or 5 main colonies on area 30' x 530'). (See map).

4, 5, and 6. Herbicide, strength, dilution, and method of application:

2, 4-D Amine. 1 gallon (4# a.e.) to 200 gallons of water (200:1). Applied by hand spray from pickup-mounted, portable pumper. All colonies, plants, and immediate area thoroughly soaked with this weak mixture to allow plant to carry material to root system.

7. Date of application: 7/23/54.

8. Results: 99 %. No further growth or maturing of this years plant growth. Next years regrowth to be checked at that time.

9. Costs:	2, 4-D Amine	1 gallon	\$ 2.56
	labor		6.04
	Equipment		.90
		Totals	\$ 9.50

NOXIOUS WEED CONTROL

1. Plant involved: Xanthium Canactense Mill (Cockle Burr)
2. Stage of growth: Fully mature and seeded.
3. Acreage and location: 2 acres. Field B-1, Northeastern part. (See map).
- 4, 5, and 6. Herbicide, strength, dilution, and method of application:

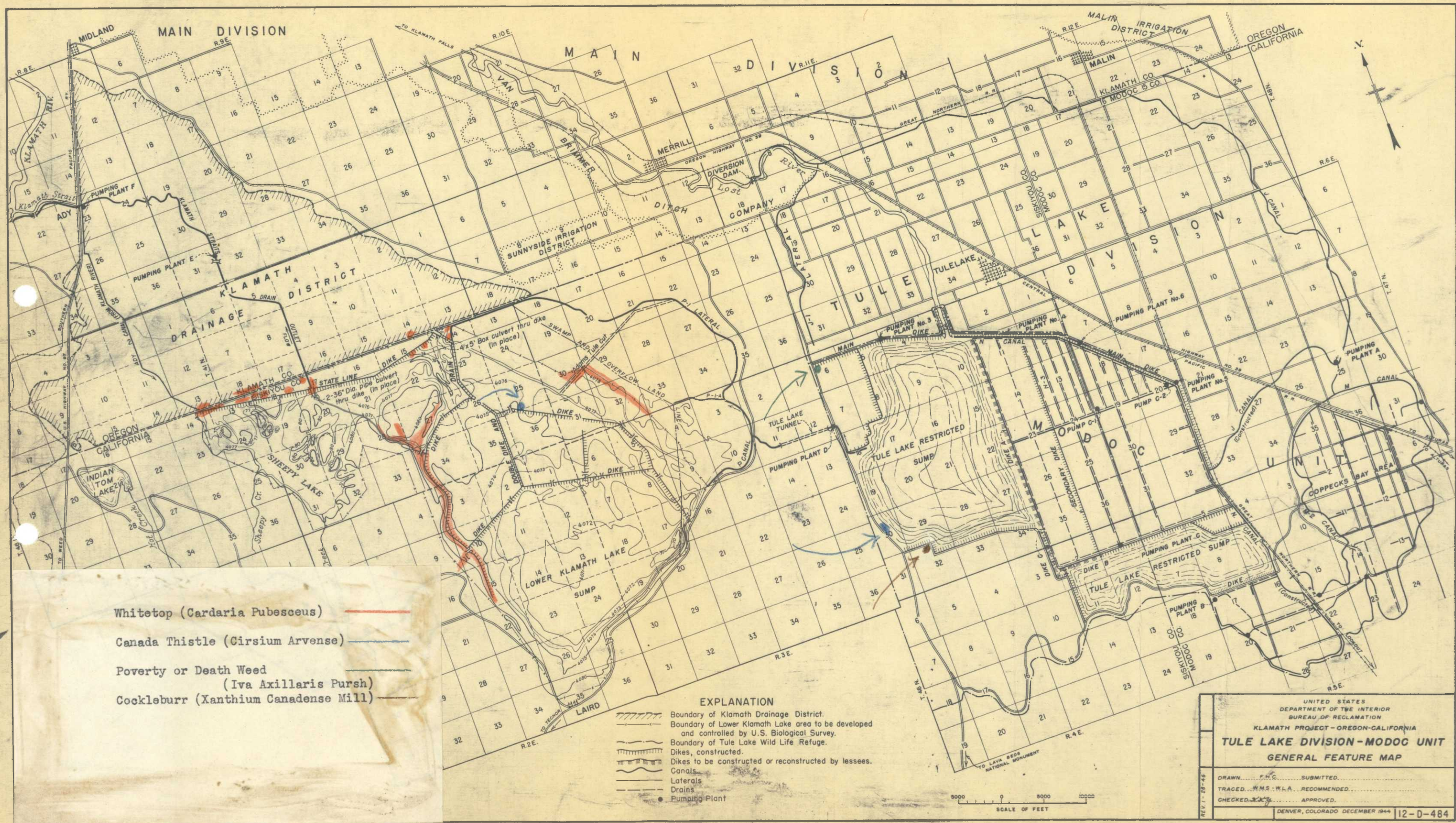
Sinox, 3 pts. plus 25 gallons oil and 75 gallons of water, 200 gallons per acre, applied by portable pumper and hand wand-completely soaked entire colony to facilitate burning later.

7. Date of application: 9/18/54
8. Results: 90 %. Impossible to determine effectiveness of treatment because of maturity of plants. Much of growth and seeds burned at a later date.

9. Costs:	Sinox, $1\frac{1}{2}$ gallons at \$10.25	\$ 15.38
	Diesel oil, 100 gallons at \$.136	13.60
	Labor	12.00
	Equipment	2.60
	Total	\$ 43.58

Cost per acre (2 acres) \$ 21.79

Note: Control to be carried out diligently to eradicate if possible.



Whitetop (*Cardaria Pubesceus*)
Canada Thistle (*Cirsium Arvense*)
Poverty or Death Weed
(*Iva Axillaris Pursh*)
Cockleburr (*Xanthium Canadense Mill*)

EXPLANATION
Boundary of Klamath Drainage District.
Boundary of Lower Klamath Lake area to be developed and controlled by U.S. Biological Survey.
Boundary of Tule Lake Wild Life Refuge.
Dikes, constructed.
Dikes to be constructed or reconstructed by lessees.
Canals.
Laterals.
Drains.
Pumping Plant

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION
KLAMATH PROJECT - OREGON-CALIFORNIA
TULE LAKE DIVISION-MODOC UNIT
GENERAL FEATURE MAP
DRAWN... F.H.C. SUBMITTED...
TRACED... W.M.S.-W.L.A. RECOMMENDED...
CHECKED... J.J.S. APPROVED...
DENVER, COLORADO DECEMBER 1944 12-D-484

C. Collections.

1. Seed and other propagules: None.

2. Specimens

Fifteen Ross' Geese were recovered from hunters bags and other sources during the hunting season (53 were recovered in 1953, and 17 in 1952). These birds will be utilized as specimens.

IV ECONOMIC USE OF REFUGE

A. Grazing

None

B. Haying

None

C. Fur Harvest

Trapping permits were issued to seven trappers on December 1 for the removal of 15,020 muskrats from the various units of the refuge. Trapping was slow during this early period because the lakes were alternately freezing and thawing. Most of the skins brought to the skinning shed were in good condition although some were small.

A revised pelt division of 70% - 30% on water units and 80% - 20% on agricultural units was approved for the first time this year. This division was greeted with enthusiasm by the trappers and we were able to secure a better quality of trapper than might have been otherwise possible.

D. Timber Removal

None

E. Other Uses

None

V FIELD INVESTIGATION AND RESEARCH

A. Progress Report

Information was again collected for Dr. Erickson's study of the Ross Goose. The information supplied by this station consisted primarily of checks on the ratio of Snow Geese to Ross's Geese at certain given times.

TL
V & VI
A,
Measurements were taken from 15 dead Whistling Swans. These measurements were supplied to Mr. Winston E. Banko, Refuge Manager at Red Rock Lakes. The measurements are to be used for comparison between measurements of Whistling and Trumpeter Swan.

Weights of freshly killed waterfowl from hunter's bags were taken and the data supplied to Mr. David Marshall for his weight study.

Several fecal samples were obtained from Cackling Geese. These samples were collected for Mr. Harold C. Hanson of the Illinois Natural History Survey. Mr. Hanson is conducting a study of the incidence of coccidia in various species of geese.

VI PUBLIC RELATIONS

A. Recreational Uses

Hunting Use	17,359
Fishing "	none
*Misc. "	<u>53,000</u>
Total Visitor Days	70,359

* Farming, other economic and official use, sightseeing, birdwatching, photography, etc.

TL
VI
B

B. Refuge Visitors

- 9/3 Dallas A. Carlson, Refuge Clerk at Turnbull Refuge and former Asst. Clerk at Tule Lake Refuge. Visiting.
- 9/8 Dr. Ralph W. Stearns, owner of rock pit on Lower Klamath Refuge from which we remove, under contract, material for riprapping of dikes and road surfacing. Conferred with Refuge Manager
- 9/9 Walter S. Ranes, Service Representative from Roberts Motors, Portland, Ore. Conferred with Ref. Mgr. and Mechanics.
- 9/10 J. Pitts Elmore, USBR Project Manager, Klamath Falls, Ore. conferred with Refuge Manager.
- 9/15 Richard L. Hubbard and Henry Burtini (Sp?), US Forest Service. Cleaned bitter brush seed with our grain cleaning facilities.
- 9/15 Ben Pearson, USFS Range Cons (Res). Cleaning bitter brush seed.
- 9/16 Bill Huse, Siskiyou County Dept. of Agriculture, Tulelake, Cal.
D. Zoller, Agriculture Commission, Yreka, Calif.
Don Hill, Agriculture Inspector, Siskiyou Cty Dept. Agriculture.
- Frank B. Jacox, Refuge Manager, Willapa Refuge. Transfer of Equipment.
- Vernon Acker, R.O. Engrg. Section, to inspect completed equipment storage bldg. at headquarters which was done on contract.
- 9/22 C.R. Gutermuth, V.P. of Wildlife Mgt. Institute, 709 Wire Bldg., Washington, D. C. Conferred with Refuge Manager Horn and Asst. Mgr. Branson. Accompanied by Arther S. Einersen, FWS, Oregon Coop. Unit, Corvallis, Oregon, and Ed Hansen, Graduate Research Asst., Oregon State College.
- 9/28 Bert Knowles, Cal. State F&G, Yreka. Inspected duck area on Tule Lake.
- 10/4 Ray Glahn, Pilot-Biologist on aerial photography with David B. Marshall, Biologist, both from Sacramento Refuge.
- 10/5 Ned Dollahite, State Warden, Cal. State F&G. Routine Visit.
- Sam S. Smith, Agriculturist, USDA, Whittier, Cal.
- 10/6 Ray C. Erickson, Biologist, Malheur Refuge on waterfowl observations.
- 10/7 Bert Collins, Biologist, Cal. State F&G, on banding operations.
- 10/6 Oregon State Fish & Game officials: Phil Schneider, Director, Mr. Welch, Asst. Director, A. V. Meyers, P.R. Coordinator.
- Frank M. Kozlik, Biologist, Cal. State F&G

- 10/8 Harry Welker, Editor, California Sportsman, Sacramento, Cal.
Joe Dearing, Fish & Game Writer, San Francisco CALL-BULLETIN
- 10/9 Don Chysin, Cal. State F&G, Dunsmuir, Patrol Captain.
- 10/8 John Chattin, Flyway Representative, Regional Office, with John McKean, Ore. State F&G
- 10/9 H.R. Leach, Biol., Cal. Dept. of F&G, Food Habits, with W. E. Schafer, Seasonal Aide.
- 10/13 E. L. Stephens, Pacific Grove, Calif., Former Project Manager, USBR, Klamath Falls. (Retired)
- 10/14 J. D. Birch, Game Mgt. Agent, Fallon, Nev.
- 10/14 Richard S. Rogers, Refuge Manager, Monida Montana, here for temporary duty replacing Paul E. Steel who is on temporary duty in Washington D. C. Mr. Rogers was here until shortly before Christmas.
- 10/16 Robert Copernoll, Representative, 11th Regional Office of Civil Service Commission, Seattle, with Wilbure W. Womer, District Mgr. of local Social Security Office in Klamath Falls, Ore.
- 10/17 Al Hoffmeister, Ore. State F&G, Route 1, Box 116-C, Portland, Ore.
- 10/19 A. W. Miller, Asst. Game Biologist, Yuba City, Calif.
- 10/18 W. Hagenstein, Postmaster, Medina, Washington. Bird Observations.
- 10/21 W. L. Gray, F&G Patrol Captain, Tureka, Cal.
A. A. Jordan, Asst. Chief Patrol, Redding, Calif. State F&G.
- 10/22 Dana Burghuis, FWS Biologist, Regional Office.
- 10/23 Ned Dollahite, F&G Warden, Tullake, Cal.
- 10/27 C. H. Spencer, Reg. Director, USBR, Sacramento, Calif.
A. V. Murray, Reg. Planning Engr. USBR, "
D. A. Gray, Planning Engr., Klamath Falls, Ore., USBR
Mr. and Mrs. Fred G. Aandahl, Asst. Secretary of Interior
L. McAnulty, USBR Watermaster
J. Pitts Elmore, USBR Project Manager
Harry R. Shott, F&G Warden, McCloud, Cal.
- 10/27 N. C. Bowles, member Calif-Klamath River Comm'n.,
- 10/29 Don Chipman, F&G Patrol Captain, Dunsmuir, Calif.
R. L. Frasca (sp?) F&G Warden, Calif.

- 10/30 Kenneth F. MacDonald, Regional Refuge Supervisor, Region 1
J. Clark Salyer II, Washington D. C.
- 10/31 Ray C. Erickson, Biol., Malheur Refuge
- 11/2 J. C. Savage, Game Mgt. Agent, Klamath Falls, Ore.
A. E. Naylor Asst. Game Mgr., Gridley, Cal. F&G Dept.
Merton N. Rosen, Parasitologist with Cal. State F&G on Coot
blood samples
- 11/5 Kenneth F. MacDonald, Reg. Refuge Supervisor, Region 1.

Dick Henzel, Mgr. Tulana Farms, Worden, Ore. on U.K. Development.
- 11/8 John Chattin, Flyway Representative (Biologist), FWS Reg. 1 on
waterfowl conditions.
- 11/9 John Chattin, (as above)
- 11/13 W.M.B. Morse, Wildlife Mgt. Institute, Portland, Oregon on water-
fowl conditions.
- 11/16 J. L. O'Donahue, Route 2, Box 462, Klamath Falls, Oregon. Wildlife
Observations.

Jack L. Marcks, 400 SW Kingston, Portland, Ore. Director of Portland,
Ore. Zoo. Collection of specimens.
- 11/19 R. H. Cron, USFS, Alturas, Cal.

Harry R. Shott, Calif. State F&G Warden, Mt. Shasta, Cal.
R. A. Lucas, " Dorris, Calif.
Ned Dollahite " Tulalake, Cal.
James L. Wolford " Westwood, Cal.
Don Chipman, Capt. of Patrol, Cal. F&G, Yreka, Cal.
(The above 5 here on pheasant patrol)
- 11/25 Russ Bushey, Cal. state F&G Mgr., Redding, Calif.
- 12/5 Ernest Swift, Asst. FWS Director, Washington D. C.
Paul Quick, Asst. Regional Director, Reg. 1, Portland, Ore.
John Biggs, Washington State Game Director
Phil Snyder, Ore. State F&G Director

J. Pitts Elmore, Project Mgr. USBR, Klamath Falls, Oregon
- 12/7 Glen M. Koblas (sp?) US Public Health Service, Hamilton, Montana
Wm. L. Jellison, with above on tuleremia survey

Ray M. Glahn, Pilot-Biol. FWS, Willows, Cal. on waterfowl and
muskrat census.

Robert Budlong, Lava Beds Nat'l Monument Supt., National Park Service

- 12/17 Rae Sjostrom, FWS, Portland, Oregon
Bruce A. Yeager, FWS, USGMA, Marysville, Calif.
- 12/20 Don Graves, (contractor) Rock for road job east side of refuge.
- 1/5 Norman E. Sylor, Engineer, US Coast and Geodetic Survey, Portland, Ore.
- 1/10 Newell B. Morgan, Camas Refuge Manager, to take delivery of new pickup truck.
- 1/11 Bill Huse, County Dept. of Agriculture, Tulalake, Calif. in connection with state crop report.
- 1/17 Gerald Salinas, Waterfowl Biol. with Montana State F&G
V. J. Kiesling, Engineer "
Wynn Freeman, Asst. Coordinator "
J. F. Ashley, Asst. Reg. Super., Federal Aid, FWS, Region 1
- 1/18 Fadhil Salman, Civil Engineer, Irrigation Directorate, IRAQ
David E. Bungler, Agriculturist, USBR, Klamath Falls
Frank S. Stennett, Agriculturist, "
L. McAnulty, Irrigation Manager, USBR, "
- 1/24 Mr. and Mrs. W. M. Leonard, Hart Mountain Refuge with
O. V. Deming, Biol., Hart Mountain took delivery of Dodge Power Wagon which our shop had completely overhauled.

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VI
C
C. Refuge Participation

- 9/8-9 Refuge Manager Horn attended meeting in Klamath Falls, Oregon of Pacific Southwest Interagency Technical Committee. Paper presented on waterfowl management in Klamath Basin.
- 9/9 Asst. Refuge Manager Branson conducted the above committee on a tour of Lower Klamath Refuge.
- 10/12 Refuge Manager Horn gave talk on wildlife and showed film "Behind The Flyway" to P.T.A. at Dorris, California
- 10/14 Refuge Manager Horn attended Sportsmen's meeting in evening at McCloud, California. Two outdoor wildlife film showed and talk given.
- 10/25 Refuge Manager Horn attended meeting in Klamath Falls, Oregon of the California Klamath Basin Committee on waterfowl needs.
- 11/26- Refuge Manager Horn attended meeting of Isaac Walton League
27 at Portland, Oregon. (State meeting of I. Walton League)
- 12/8 Refuge Manager Horn attended meeting of Modoc County Natural Resources Council at Tulelake, Calif.
- 12/17 Refuge Manager Horn attended weekly meeting of Isaac Walton League in Portland. 53 slides were shown and a talk of 25 minutes was given by Mr. Horn.

During the period, Mr. Horn attended Rotary Club each Wednesday at Tulelake, California

At the meeting of the Pacific Southwest Federal Inter-Agency Technical Committee, held at Klamath Falls, Oregon, the paper presented by the Refuge Manager was entitled "Waterfowl Management on Refuges". The paper dealt with the non-controversial aspects of waterfowl management on the refuges of Klamath and Tule Lake Basins principally. Questions and discussion from the floor showed a lively interest in this subject. The paper is identified in the agenda of the meeting as Attachment No. 11. The Klamath River Basin was but recently included in the PSWIATC area, and this was their first meeting here. Visits to Tule Lake and Lower Klamath Refuges were included in their program.

The U. S. Public Health Service through the services of their staff members, Mr. William L. Jellison, Parasitologist, and Mr. Glen M. Kohls, Sanitarian Director, of the National Microbiological Institute, Rocky Mountain Laboratory, Hamilton, Montana, conducted a survey of the incidence of tularemia amongst muskrat trappers, skimmers and handlers in the Tule Lake, Lower Klamath, and Upper Klamath Basins. They were assisted by the Assistant Refuge Manager in obtaining 34 blood samples, 32 of which were from this occupational group, and 2 were from wives of trappers, who themselves had never handled muskrats, but whose husbands had contracted the disease. Sixteen, or 50 %, of the 32 of this occupational group tested positive, which is believed to be a very high percentage. The 16 included 10 who were known or suspected to have had tularemia, one of whom tested negative, and 7 with no known history of tularemia who tested positive.

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VI
D. Hunting

Waterfowl Hunting:

California again had a split waterfowl season this year. The first part of the season extended from October 9th to November 13th, and the second part ran from December 6th to January 10th.

As has been the case for the last several years, a system of roving checks was used to determine bag composition and average number of hunters per car. As is to be expected, the bag of the field hunters had a much different composition than that of the marsh hunter. Therefore, records were kept for each type of hunter and tabulated separately. The figures obtained from these checks were used to tabulate the tables on the following pages.

The weather this fall was generally very mild, with a great number of bright sunny days. This, needless to say, did not please all of the duck hunters. Numerous complaints of it being the worst hunting season in memory were heard. A few of the hunters took the situation philosophically and assured the checkers, usually with a knowing nod, that things would look up when the "northern birds" arrived. The fact that birds could be seen moving in and out every day did not seem to change their minds. Right up until freeze up in early December some hardy souls were still waiting for the mythical hordes.

During the first ten days of the first season Mr. J. C. Tatum and Mr. Ross Harrington of the refuge staff carried the checking load. For the remainder of the season Mr. Tatum made the majority of the checks by himself, occasionally assisted by the Acting Biologist. The appreciation of the latter is expressed for the fine work turned in by these men and for the numerous weekends, early mornings and late evenings that were "donated".

The statistics of this season compared to those of other years are as shown in the following tables. Also see comparative data of waterfowl populations and use, hunter kill and success ratio, for both Tule Lake and Lower Klamath Refuges.

E. Fishing

F. Violations

In preparation for patrol and hunter bag checking two meetings were held to inform the Refuge staff on regulations and procedures.

Game Management Agents Savage and Garratt, California State Game Wardens, Dollahite and Lucas, and Judge Thaler were in attendance and assisted with the patrol and enforcement meeting.

The Refuge staff was briefed by the Acting Biologist, and the Assistant Refuge Manager at another meeting on the procedures to be

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VI
F.
Contd.
followed, and data to be obtained in making hunter bag checks. Patrol and bag check areas were assigned.

With a decrease in hunting pressure there was a decline in the number of apprehended violations.

Maintenance Man Johnnie A. Johnson was assigned to full time patrol and bag checking. He apprehended and successfully prosecuted 21 of the 28 cases in the Oregon and California courts. (14 cases were tried in each of the two courts).

Again the shooting of Whistling Swan was a violation problem, although not as serious as last year. On Lower Klamath where this violation most frequently occurs there was a marked reduction in the number of attempts to shoot swan. This improvement is attributed largely to the posting of swan and Snow Goose silhouettes at hunter contact points. This visual information project was devised and carried out by Mr. Johnson.

A summary of the cases is as follows:

<u>Violation</u>	<u>No. Cases</u>	<u>Paid</u>	<u>No. Cases</u>	<u>Paid</u>	<u>Total</u>	<u>Paid</u>
					<u>No.</u>	
	Oregon		California			
Swan	6	\$ 600.00	1	\$ 100.00	7	\$ 700.00
Late Shooting	4	130.00	2	50.00	6	180.00
Closed Season	2	35.00	2	100.00	4	135.00
" Area			1	25.00	1	25.00
Over Limit on						
Dark Geese	1	25.00	4	105.00	5	130.00
Late Shooting &						
Improper Plug			1	50.00	1	50.00
Non-game Bird	1	75.00	2	50.00	3	125.00
Hen Pheasant			1	25.00	1	25.00
Totals	14	\$ 865.00	14	\$ 505.00	28	\$ 1370.00

VII OTHER ITEMS

A. Items of Interest

TV
The earth shocks which did considerable damage in Nevada and northern California localities were felt on the refuge mostly by the muskrat trappers on the Upper Sump. They reported an east-west wave or rolling motion that heaved and ridged the ice and muck and swayed the tule slumps 8 or 10 inches. No real damage resulted.

Safety meetings were held on a monthly schedule beginning with May 28th, except that an extra meeting was held September 10th to bring important matters to the attention of the entire staff and crews, and no meeting was held during December while construction was shut down and many of the regular staff were away.

The airstrip at the "C" Camp was improved materially by leveling to grade and lengthening. The heavy work on this was done by the Siskiyou County Road Department. They removed the material above grade and used it in rebuilding the adjacent Hill Road. We did the finishing on the strip and improvement of the adjoining "C" Camp Area. Grass will be seeded later.

The following personnel changes took place during this period: Eldon L. Bates, Refuge Maintenance Man (General) was transferred to Bowdoin Refuge in Montana on October 20, 1954. Andrew C. Anderson, Refuge Maintenance Man (Equipment) was transferred to Sheldon Antelope Refuge in Nevada on September 13, 1954. Both men received a raise in grade on their transfer. Wayne M. (Monte) Bannon, Assistant Clerk (formerly clerk of Little Pend Oreille Refuge for several years) entered on duty October 11, 1954, and was transferred to Merced Refuge as Refuge Clerk on January 3, 1955. Robert H. Wills replaced Mr. Bannon as Assistant Clerk on January 3, 1955. Gaylon R. Prince Sr. resigned as Assistant Clerk on September 10, 1954.

Paul E. Steel, Wildlife Management Biologist at Tule Lake Refuge, was selected for the Departmental Management Training Program in Washington D. C. Paul left Tule Lake September 3rd, and we are looking forward to his return at the end of the six months training period.

Richard S. Rodgers, Assistant Refuge Manager at Red Rock Lakes Refuge, was assigned to carry on the Biologist's duties on a temporary basis here at Tule Lake. Dick arrived on October 14th, at a time when waterfowl populations were peaking, and millions was the actual term by which counts were made. Add to this the California hunting season which had opened the 9th, and the Oregon season opening the 16th, with the attendant bag checking and problems. Then set a man down in an area with many peculiar problems, all of it new and strange to him. That's what Dick stepped into. He got his feet right on the Tule Lake and Lower Klamath muck, and we are happy to say that he very ably carried his part of the load. Thank's Dick! And we hope you were not completely snowed out of Red Rock.

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VII
under
"A"

Depredations:

While the migration population was slow to start building up, the low production of grain on Lower Klamath did cause a heavy concentration on Tule Lake later. To the acreage of Refuge grain fields this year was added the nearly 900 acres formerly sharecropped by Tulana Farms, and while production was lowered by adverse conditions there was sufficient Refuge grain to hold the waterfowl. The SW Sump was all harvested very early in September to supply additional areas of stubble for the migrants.

Depredations were low over the Refuge and adjacent areas. The frosted, later grain fields on the northwestern part of the Refuge, and the late maturing potato fields in the Frog Pond, were areas of concern. Much of this late grain made no crop, and the potatoes were finally harvested with but minor damage.

Herding permits were issued for Tule Lake, Lower Klamath, and adjacent areas as follows:

"Off Refuge"

<u>No. of Permits</u>	<u>No. of Herders</u>	<u>Acreage</u>
10	36	* 15,872

* 11,448 acres of the above is in one permit to Tulana Farms for their Lower Klamath grain fields.

"On Refuge"

<u>No. of Permits</u>	<u>No. of Herders</u>	<u>Acreage</u>
20	55	* 2,052

* 139 acres of this was late spud crops on the Frog Pond area of Tule Lake Refuge. These late maturing crops in the "closed to hunting" area of the Refuge constitute a problem, and some loss of sanctuary value when the crop is not harvested until after the opening of the hunting season, as is the case on Tule Lake.

BAG RECORD OF MARSH HUNTERS (1954) BASED ON 6.5 PER CENT SAMPLE

	Oct. 9	Oct. 10	Oct. 11-15	Oct. 16-17	Oct. 18-22	Oct. 23-24	Oct. 25-29	Oct. 30-31	Nov. 1-5	Nov. 6-7	Nov. 8-13	Dec. 6-7	Dec. 8-12	1954 Total
Hunters	866	653	1256	440	825	399	870	363	774	354	903	273	281	8257
Geese/Hunter	.6	1.0	.5	.3	.7	.9	.3	.2	.8	.7	.5	.7	.2	.59
Ducks/Hunter	6.0	3.3	2.6	3.8	3.3	1.5	1.6	1.6	1.6	2.0	2.1	5.2	2.5	2.84
Canada Geese												6		92
Canada Geese					14	72						6		92
Cackling "			120		99	72	72	33	62	24	51	53		586
White-fronted"	487	675	538	130	455	100	127		186	47	77	82	34	2938
Snow Geese						133	87	33	402	142	284	59	23	1163
Ross' "										24	51			75
Total Geese	487	675	658	130	568	377	286	66	650	237	463	200	57	4854
Mallard	1696	675	618	350	611	92	236	58	310	130	284	556	169	5785
Gadwall	180	22	80	30		72		25		24	51			484
Widgeon	180	158	220	140	114	10	36	25		47	103	195		1259
Pintail	2093	900	1694	900	1678	235	924	91	650	378	1109	362	153	11167
G. W. Teal	271	90	220	20	28		36				77			758
Cin. Teal	343	68	20		14			8						453
Shoveller	253	113	120	60	57	61	72	16		35	77	230	222	1316
Redhead	37	90	100	10	43	20	18			12	26			356
Ringnecked						10								10
Canvasback	18		179	110	71	82	36	74	155	59	103	47	10	944
L. Scaup	108	45			28			16					10	219
Bufflehead					28			140	93	24	51	12	23	371
Ruddy				10	14			90				6	10	130
Com. Merganser										12	26			38
Coot			20	40				49					54	163
Total Ducks	5179	2161	3271	1670	2686	582	1358	592	1208	721	1907	1426	692	23453

BAG RECORD, TL FIELD - FIRST SEASON & SUMMARY

SECOND SEASON

	Oct. 9	Oct. 10	Oct. 11-15	Oct. 16-17	Oct. 18-22	Oct. 23-24	Oct. 25-29	Oct. 30-31	Nov. 1-5	Nov. 6-7	Nov. 8-13	Total First Season	Total Second Season	Grand Total	Dec. 6	Dec. 7	Dec. 8-10	Dec. 11-12	Total
Hunters	317	299	656	276	991	555	964	438	1100	642	1816	8054	1048	9102	235	139	383	291	1048
Geese/Hunter	1.9	.5	.9	.7	1.1	1.3	1.2	.7	.5	1.7	15.1	4.2	1.5	3.9	.7	1.0	3.2	.2	1.5
Ducks/Hunter	1.8	1.5	1.0	1.2	1.0	1.3	.9	.9	.7	.3	8.1	3.8	1.3	3.5	2.9	1.5	4.8	.9	1.3
Canada Goose	14																		
Cackling "			24	23	67	145	237	110	73	141	133	220	32	252	7	14	11		32
White-fronted "	590	138	555	174	952	370	490	85	37	282	4767	5551	455	6006	33	39	383		455
Snow Goose	7				67	184	457	97	257	595	7945	11838	414	12252	91	32	284	7	414
Ross' "				3	10				147		14187	15741	603	16344	36	53	514		603
											397	410	44	454			44		44
Total Geese	611	138	579	200	1096	699	1184	292	514	1018	27429	33760	1548	35308	167	138	1236	7	1548
Mallard	158	199	158	90	173	225	220	49	73		3008	4353	536	4889	293	78	66	99	536
Gadwall	7											7	7	14	7				7
Widgeon	36	9	36	29	48	24			37	16	908	1143	161	1304	111	39	11		161
Pintail	259	178	441	194	712	482	625	304	587	204	18500	22486	406	22892	238	64	32	72	406
G. W. Teal	79	14	24	6	10			12			567	712	10	722	3			7	10
B. W. Teal																			
Cin. Teal		14	4	3								21		21					
Shoveler	7	24	12			8					851	902	177	1079	20	21	77	59	177
Wood Duck																			
Redhead	29		4	6	19							58	6	64	3	3			6
Ringnecked																			
Canvasback		5							37		794	836	7	843	7				7
L. Scaup	7			3							113	123	16	139		3		13	16
Ruddy								12				12		12					
Coot																			
Total Ducks	582	443	679	331	962	739	845	377	734	220	14741	30653	1326	31979	682	208	186	250	1326

MARSH

1954
HUNTING RECORD FOR TULE LAKE REFUGE

	MARSH			FIELD			Total, Marsh & Field	1953 Total	1952 Total
	10/9-11/13	12/6/54 1/10/55	Total	10/9-11/13	12/6/54 1/10/55	Total			
Hunters	7703	554	8257	8054	1048	9102	17359	18999	15901
Geese/Hunter	.6	.5	.59	4.19	1.48	3.22	1.90	1.15	.9
Ducks/Hunter	2.7	3.9	2.84	3.81	1.26	3.51	3.18	2.2	2.95
Canada Goose	86	6	92	220	32	252	344	203	55
Cackling "	533	53	586	5551	455	6006	6592	2641	4531
White-fronted Goose	2822	116	2938	11831	414	12252	15190	12439	6467
Snow Goose	1081	82	1163	15741	603	16344	17507	6103	3691
Blue Goose								7	
Ross' "	75		75	410	44	454	529	151	36
Total Geese	4597	257	4854	33760	1548	35308	40162	21545	14780
Mallard	5060	725	5785	4353	536	4889	10674	6037	4737
Gadwall	484		484	7	7	14	498	474	889
Widgeon	1033	226	1259	1143	161	1304	2563	1857	1445
Pintail	10652	515	11167	22486	406	22892	34059	26834	26048
Green Wing Teal	742	16	758	712	10	722	1480	1324	649
Cinnamon Teal	453		453	21		21	474	228	201
Shoveller	864	452	1316	902	177	1079	2395	1954	2289
Wood Duck								20	
Redhead	356		356	58	6	64	420	409	222
Ringnecked	10		10				10	61	9
Canvasback	887	57	944	836	7	843	1787	1273	472
Lesser Scaup	197	22	219	123	16	139	358	162	37
Goldeneye								47	5
Bufflehead	336	35	371				371	640	336
Ruddy	114	16	130	12		12	142	223	318
Hooded Merganser								6	
Common Merganser	38		38						11
Coot	109	54	163					86	
Total Ducks	21335	2118	23453	30653	1326	31979	55432	41635	37668

1954

COMPARATIVE WATERFOWL HUNTING AND USE DATA, TULE LAKE AND LOWER KLAMATH REFUGES

	Tule Lake	%	Lower Klamath	%	Total	%
Hunter Kill:						
Geese	40,162	86	6,604	14	46,766	100
Ducks	55,432	79	14,228	21	69,660	100
Total	95,594	82	20,832	18	116,426	100
Peak Population:						
	4,031,306	85	689,120	15	4,720,426	100
Waterfowl Use Days:						
Geese	11,795,583	81	2,796,814	19	14,592,397	100
Ducks	112,523,565	86	18,901,820	14	131,425,385	100
Total	124,319,148	85	21,698,634	15	146,017,782	100
Swan	47,383	50	47,110	50	94,493	100
Coots	31,424,750	78	8,843,625	22	40,268,375	100
Grand Total	155,791,281	83	30,549,369	17	186,380,650	100
Hunter Days:						
	17,359	56	13,494	44	30,853	100
Hunter Success:						
Geese	2.31		.49		2.80	
Ducks	3.19		1.05		4.24	
Coots	.009		.00		.009	
Overall	5.509		1.54			
Hunter Success On Both Refuges: 3.77						

W A T E R F O W L

REFUGE Tule Lake

MONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period									
	9/1-4	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
Swans:										
Whistling						6	15	25	50	150
Trumpeter										
Geese:										
Canada	500	1,165	1,000	9,000	8,000	700	500	300	200	300
Cackling							5000	10000	20000	10000
Brant										
White-fronted	20000	41150	65000	90000	120000	160000	200000	200000	65000	48000
Snow						3000	25000	75000	98000	92000
Blue										
Other										
Ducks:										
Mallard	40000	4700	100000	150000	200000	250000	200000	100000	77000	23000
Black										
Gadwall	3000	2550	5000	10000	15000	20000	10000	5000	500	
Baldpate	5000	17800	25000	30000	40000	50000	75000	100000	172800	18000
Pintail	300000	536040	1000000	1500000	2000000	2700000	2000000	1500000	652000	100000
Green-winged teal	300		600	500	250	100	500	700	800	
Blue-winged teal	100 XXXX									
Cinnamon teal	6000		3000	2000	1000		500	100		
Shoveler	2500	4500	5000	10000	20000	25000	35000	50000	68800	19000
Wood										
Redhead	15000	3125	2500	1500	500	200	500	1000	1600	1500
Ring-necked							500	1000	1500	2000
Canvasback	500	1750	3000	5000	10000	15000	30000	60000	95000	88000
Scaup	50		200	500	1000	1300	5000	10000	17800	10000
Goldeneye										
Bufflehead							100	2500	6000	5000
Ruddy	10000	3000	4000	5000	5000	6000	25000	50000	105000	45000
Other										
Coot:	75000	133000	250000	500000	700000	800000	600000	500000	408500	196000
Total Waterfowl	474450	749080	1464300	2313500	3120750	4031306	3212615	2665625	1791050	657950

16.

WATERFOWL
 (Continuation Sheet)

REFUGE Tule Lake

MONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period									(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11/7-13 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	12/26-31 18				
Swans:												
Whistling	300	275	250	650	698	E 700	E 1500	E 2150		47383		
Trumpeter												
Geese:												
Canada	1100	900	300	300	310	300	300	300		172025		
Cackling	23500	16400	4000	3000	1100	200		3		652421		
Brant												
White-fronted	23200	22000	26000	22000	21000	7000	4000	150		7943600		
Snow	50000	43000	18000	15000	13000	500		1		3027507		
Blue												
Other												
Ducks:												
Mallard	32000	30000	20600	43400	47500	35000	20000	1000		9619400		
Black												
Gadwall	4700	4500	700	1000	500	50				577500		
Baldpate	61000	41000	3100	2400	1600	500	500	450		4504920		
Pintail	115900	86600	27000	22000	9550	1000	1000	1100		87868830		
Green-winged teal				700	1500	200				46550		
Blue-winged teal										700		
Cinnamon teal										88200		
Shoveler	63600	54000	10000	9200	8500	5000	3000	1000		2759400		
Wood												
Redhead	1000	600	200	100			250	550		210875		
Ring-necked	1000	800						300		49700		
Canvasback	65200	32000	6900	8000	14700	5000	2500	700		3172750		
Scaup	7800	7500	8200	7600	3100	100	300	600		567350		
Goldeneye			100	100	200	200	100	20		5040		
Bufflehead	7700	6200	1500	1500	1000	250	300	400		227150		
Ruddy	62000	44000	17900	10200	3800	2000	2500	3200		2825200		
Other												
Coot:	182300	95000	22000	16000	3500	1000	1000	950		31421750		
	702300	484775	171850	163150	131558	59000	37250	12874				

	(5)	(6)	(7)
	Total Days Use	Peak Number	Total Production
Swans	17,983	2,170	
Geese	11,735,503	225,300	
Ducks	112,521,566	5,067,600	
Coots	31,124,750	134,000	

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by

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

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

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Tule LakeMonths of Septto Dec194 ~~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. <u>Water and Marsh Birds:</u>										
Eared Grebe			4500							12,000
Western Grebe			400							8,000
Pied-billed Grebe			3800							10,000
White Pelican			1000							2,500
Farallon Comorant			200							800
Treganza's Heron			20		4	12/31				30
American Egret			50							250
Black Crowned N.H.			100							500
Brewester's Egret			10							60
American Bittern			10		1	12/31				20
Virginia Rail										
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer			350							900
Western Sandpiper			15							100
Greater Yellowlegs			4							8
Dowitcher			20							100
Avocet			20							60
California Gull			35		1	12/31				50
Ring-billed Gull			250							4000
Forester's Tern			300							900
Caspian Tern			2							9

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove					
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow W. Red-tailed Hawk A. Rough-legged Hawk E. Bald Eagle Marsh Hawk Sparrow Hawk Short Eared Owl					

INSTRUCTIONS

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

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Tule Lake

Months of Sept to Dec, 1945

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge Pertinent information not specifically requested. List introductions here.
Pheasant					9,000	
Valley Quail					1,200	
Chucker Part.					400	
Sage Hen					10	

40

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses	(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio	
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		10							60			20	

Remarks:

Reported by _____

INSTRUCTIONS

Form NR-3 - BIG GAME

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

116000

DISEASE

Refuge Tule Lake

Year 19 54

Botulism

Lead Poisoning or other Disease

Period of outbreak August 15-28

Period of heaviest losses August 15-28

Losses:

	Actual Count	Estimated
(a) Waterfowl	<u>352</u>	<u> </u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	<u>36</u>	<u>81</u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Areas affected (location and approximate acreage) 2000

NE corner and E shore of Upper Sump

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

Heavy inflow of irrigation water beginning Aug. 13th raised Tule Lake Sump level above 4034.40' for short period until removal by pumping lowered water below this critical level, upon which the outbreak abated.

Condition of vegetation and invertebrate life

Remarks See Tule Lake May-Aug NR for full information.
No outbreaks after minor ones in 2 August.

Kind of disease None

Species affected

Number Affected
Species

Actual Count

Estimated

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Tule LakeYear 1945

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Seed Mixture Parts				Seed Mixture				
Perennial Ryegrass 1 (Lolium Perenne)	Main Dike	21# per A.	5 acres	107# of mixture	11/8			
Tall Wheatgrass 10 (Agropyron Elongatum)	"C" Dike of Field B-2	21# per A.	25 acres	602# " "	11/15-17			
Smooth Brome (Bromus Inermis) 20	"A" Dike of Field C-1	25# " "	12 "	301# " "	11/24			
Tall Fescue 30 (Festuca Elatior) Var. Arcendinacea (See detail & map)	"B" Dike, Fields C-1, and 2	25# " "	12 "	301# 1311 " "	12/1			
Western Wheatgrass (Agropyron Smithie)	Hqrs.	10# " "	1 "	10# " "	12/17			

TOTAL ACREAGE PLANTED:

Marsh and aquatic
Hedgerows, cover patches 55
Food strips, food patches
Forest plantings

CULTIVATED CROPS

Refuge Tule Lake Year 195 4

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
					Acres	Bu. Har- vested	Harvested		Unharvested		
							Acres	Bu.	Acres	Bu.	
Refuge Farming		Field 1A-1	H. Bly.	75			15	1106	119	8944	
		" A-2	" "	10					20	200	
		" B-1	" "	35					84	2940	
		" B-2	" "	50					660	33000	
		" B-3	" "	50					83	4150	
		" C-1	" "	65			135	8775	195	12675	
		" C-2	" "	65					320	20800	
		" C-3	" "	50					60	3000	
		" C-4	" "	10					150	1500	
		" D-1	" "	65					80	5200	
		" D-2	" "	50					75	3750	
		" D-3	" "	65					78	5070	
		" D-4	" "	55					38	2090	
		" D-5	" "	55					71	3905	
		" D-6	" "	60					240	14400	
		" E-1	" "	55			36	1980	6	330	
		" E-2	" "	55					154	8470	
" E-3-6	Rye	6					80	480			

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share				Total Revenue
			Acres	Bushels	Harvested		Unharvested		
					Acres	Bu.	Acres	Bu.	
	H. Bly	2619			186	11861	2433	130424	
	Rye	80					80	480	
Interior Duplicating									
Section, Wash.D.C.									

Interior Duplicating
Section, Wash.D.C.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or 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. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, bromegrass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

REFUGE GRAIN REPORT

Refuge Tule Lake

Months of Sept thru Dec 1945

(1) VARIETY	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED USE		
				TRANS- FERRED	SEEDED	FED	TOTAL		SEED	FEED	SURP.
H. Bly	417	11861	12278	219		282	501	11777	11000	777	
U. W. Bly	209		209		59		59	150	150		
Rye	1072	600	1672					1672	1690	72	
Oats	1018	1803	2821			130	130	2691	2600	91	
Peas	160							160	160		

- (8) Indicate shipping or collection points.....
- (9) Grain is stored at Tule Lake Headquarters Grain Bldg. and Bulk Bins # 1, 2 & 3.
- (10) Remarks.....

11/5

REFUGEE GRAIN REPORT

NR-8a REFUGEE 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 lbs., Corn (ear)--70 lbs., Wheat--60 lbs., Barley--50 lbs., Rye--55 lbs., Oats--30 lbs., Soy Beans--60 lbs., Millet--50 lbs., Cowpeas--60 lbs., and Mixed--50 lbs. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. 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 breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

(8) Indicate shipping or collection points

(9) Grain is stored at Tule Lake Headquarters Grain Bldg. and Bulk Bins # 1, 2 & 3.

(10) Remarks

Desirable marsh stand edge with
bays and open pools. Better bal-
ance of muskrat use. Only parts
of marsh are having over use.
(11/15/54) (121-TL)



Muskrat activity, Upper Sump,
Tule Lake Refuge. Another area
of overheavy cutdown. Marked in-
crease in muskrat work during this
year, despite normal harvesting
during preceeding seasons.
(11/15/54) (123-TL)

Eat-out by muskrats has progressed
to detriment of waterfowl marsh on
areas such as this. Increased har-
vesting of this rodent is now under-
way.
(11/15/54) (125-TL)





Muskrat activity and its effect on emergent marsh stand, Upper Sump, Tule Lake Refuge. Heavy cutdown shown here is occurring on extensive areas.

(11/15/54)

(119-TL)

Sparse stand of bullrush which continued eatout could destroy. Control by harvesting now underway will be stepped up and continued as required to stop and repair overuse.

(11/15/54)

(126-TL)





Upper. Conservation Education Workshop group from Southern Oregon College of Education, Ashland, Oregon. Groups from SOCE refresher courses include a conducted "tour" of Tule Lake as a part of their Conservation Workshop each year.

Lower. Event: Going-away party for Andrew Anderson and Eldon Bates, who were transferring to Sheldon and Bowdoin Refuges. Tule Lake Refuge personnel families gathered on the Headquarters lawn, enjoying a popular pastime.



OPPOSITE PAGE

Photo by Don Ketler, Herald and News photographer, Klamath Falls, Oregon, November 30th, 1954.

Increased efforts in program to stop hunters from killing and crippling swan has been instrumental in reducing loss from about 125 birds in 1953, to 53 birds in 1954.

Refuge Maintenance Man, Johnnie Johnson (photo), fathered the idea of silhouettes of Whistling Swan and Snow Geese, mounted at strategic points on Lower Klamath Refuge, especially where swan violations occurred, for hunters to compare the legal goose and illegal swan, and to warn them not to shoot the latter.

Johnson constructed (largely on his own time) 28 swan, and 3 Snow Goose silhouettes which were posted on Lower Klamath and Tule Lake Refuges.

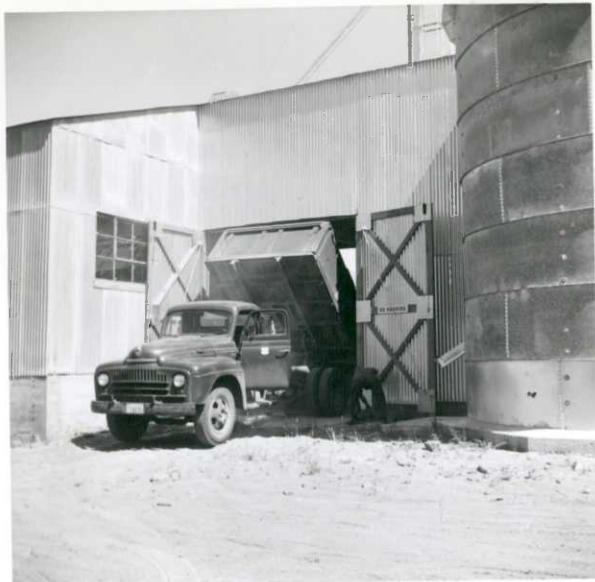
Publicity was widespread, coverage being broadened and greatly increased by the cooperation of the Herald and News. Very favorable comment has accrued.



HUNTERS NOTICE
COMPARE THESE BIRDS
BEFORE HUNTING

SNOW GOOSE
O.K. TO SHOOT

SWAN
DO NOT SHOOT



Haunchen Barley seed harvest.
Dumping barley from truck bulk
bed to Refuge grain building
receiving pit. This barley is
from Tule Lake field E-1.
(8/31/54) (88-TL)

Haunchen Barley seed harvest.
Barley dumped from truck bulk
beds to grain building receiving
pit is elevated and may be de-
livered direct to cleaning and
treating plant or to either one
of three bulk bins for storage.
(8/31/54) (89-TL)





Combining Haunchen Barley for seed. Refuge Maintenance Man Edward White operating IHC combine in field C-1. 593,050# (11,861 bu's.) testing 52 to 54# was harvested for seed. 6,521,200# (130,424 bu's.) was unharvested and used by waterfowl on Tule Lake Refuge fields. (9/4/54) (100-TL)

Combined Haunchen Barley dumped to bulk truck bulk truck bed. Combine operator "Ed" White recording load No. Refuge Maintenance Man Johnnie Johnson levelling load before placing canvas cover for trip to refuge headquarters. Loads weighed 12,000#. (9/4/54) (101-TL)



FWS exhibit at Potato Festival, Merrill, Oregon. Booth had desirable location in auditorium. Construction: Carpentry by J. C. Tatum; scenery, painting, and placards by Johnnie Johnson.



Scene depicts Sheepy Ridge, replete even to this years blackened fire area, and waterfowl in the sky. Mounted specimens from Tule Lake collection. Pictures with camera w/o flash attachment by manual operation of separate flash. (10/24/54) (112-114-TL)





Identification of Service owned metal boats. (See Mid-year Progress Report, Management Improvement Program, Region 1, January 1955. III, projects completed. Page 7, Item 10. Metal Boat Marking Kit.) Drilling holes with 1/4" electric drill and template.

Riveting the letters FWS with hammer and bucking bar.





Dodge Power Wagon completely rebuilt in Tule Lake Shop by Mechanic Henry Steer. It looks good "after", but you should have seen it "before". The vehicle was obtained from the Arizona Border Patrol, and is destined for use by "Oc" Deming at Hart Mtn. and way points. (1/6/55) (127 & 130-TL)



Hunters blind in open water on P.H.A. of Upper Sump, Tule Lake Refuge. Blinds located at a distance from the heavy emergent marsh growth make it possible for hunters to retrieve birds and prevent an otherwise serious loss. (11/15/54) (120-TL)



Lower Klamath

LK

I N D E X

LOWER KLAMATH NATIONAL WILDLIFE REFUGE

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I GENERAL

A. Weather Conditions

In general the Lower Klamath weather conditions were like that recorded for Tule Lake, with the minimum and mean temperatures probably being slightly lower.

Frost did not penetrate the dry ground deeply, making it possible to plow and do field work through December 31st.

Ice did form on the water units during November, and they were iced over by the end of that month, becoming more solidly frozen through December.

B. Water Conditions.

The levels of Lower Klamath water units 2,3,4, and 8 were managed with precision for the prevention of botulism through July, August and September, with most excellent results.

The Bureau of Reclamation was engaged in improving their facilities at pumping plant "E", and as a result no water could be discharged from Lower Klamath to the Klamath River. This improvement will result in better removal of water in the future.

Partly as a result of this discharge facility not being in operation, and to hold irrigation water supplies available, the Bureau coordinated their pumping at Plant "D" from Tule Lake to Lower Klamath to meet our ability to receive water in the Lower Klamath Units, and to flood irrigate fields on and adjacent to the Refuge in California.

Due to known increased requirements for irrigation water, with the additional 2400 acres of Unit 12-A to be irrigated during January, the levels of refuge water Units were held at elevations to aid in supplying this additional requirement.

Flood irrigation of refuge farm fields 6F,7F & 8F, and sharecrop fields 4-2 & 9-1 was completed, and underway on 3F-1 to 8, and 4-1.

Summary of Gauge Readings:

	<u>1st</u>	<u>7th</u>	<u>15th</u>	<u>22nd</u>
Unit 2. Sept	4078.79	4078.76	4078.74	4078.76
Oct	78.72	78.80	78.82	78.80
Nov	78.88	78.90	78.98	79.04
Dec	79.10	79.14	78.70	78.34

	<u>1st</u>	<u>7th</u>	<u>15th</u>	<u>22nd</u>
Unit 3. Sept	4077.59	4077.77	4077.78	4077.82
Oct	77.69	77.72	77.50	77.49
Nov	77.80	77.86	77.96	77.95
Dec	78.10	77.73	77.61	77.65
Unit 4. Sept	77.26	77.24	77.28	77.23
Oct	77.23	77.26	77.14	77.00
Nov	76.99	77.40	77.10	77.20
Dec	77.26	77.32	77.56	77.62
Unit 8. Sept	76.65	76.72	76.70	76.70
Oct	76.71	76.68	76.34	76.20
Nov	76.14	76.10	76.20	76.22
Dec	76.20	76.22	76.24	76.40

C. Fire s

No field fires occurred.

A fire destroyed 12 dragline mats, which were stored near the parking area on the 3-6 dike. This occurred on November 25th during the process of clearing this dike preparatory to seeding grass for permanent cover.

II WILDLIFE

A. Migratory Birds

1. Population and Behavior

Waterfowl usage on this area for this period was down considerably from that of last year. Frosts every month of the summer prevented much of the grain from heading and consequently the average yield was low.

The first 6 Swan were observed on October 20, and the number increased steadily throughout the period. During the hunting season 54 swan were known to have been killed on this refuge. In addition, 9 cripples were picked up. As usual, a few individuals will shoot at anything that flies, at least 232 attempts to kill swan were made.

Apparently the peak waterfowl usage on this area occurred during the second and third weeks of October. Again, no accurate census figures are available for this period. However, in the opinion of the people who have had an opportunity to observe the area for a number of years this was the period of maximum numbers.

Canada geese were present in limited numbers and a few were bagged by some of the luckier hunters. White-fronted, Cackling, and Snow geese were also regularly taken with the White-fronted the most common victim. As mentioned in VI, D of this report the lack of food and the change of the flooding procedures on this area altered the flight pattern of the birds considerable. Thus, some of the species did not concentrate in such numbers as previously or stay for so long.

Because of the lack of food, the grain eaters were less common. Mallards become more conspicuous as the period progressed. Baldpates were present in moderate numbers, usually on Units 2 and 8. As was to be expected, Pintail were most numerous but even so they were far less common than last year.

Shovelers were present in moderate numbers during the first two weeks of November.

Canvasbacks were very common and at times represented a considerable portion of the entire population. The Ruddy was much in evidence during the latter part of the period.

Coot were present and were to be found wherever there was sufficient food, both on the land and water.

2. Food and Cover

Because of the frost damage, the grain supply was short on this area and most of the birds were forced to seek food elsewhere. Many of the field feeders went north into Oregon or south and west into some of the adjacent valleys. Some of the geese managed to do quite well on the refuge itself, especially the common Canada geese.

In any future plan to control waterfowl concentrations by refuge plantings this factor of frost must be taken into consideration. It is one item that cannot be controlled and it is possible to frost any month of the year.

A check of the refuge fields this year revealed that there were approximately 730 producing acres out of a total of 2,360 acres. Likewise, of the 3,722 sharecrop acres approximately 1,000 produced grain.

The submerged vegetation in the water units was apparently adequate to furnish the divers with food until the freeze up.

3. Botulism

This years report on botulism was contained in the narrative

report for the preceding period. (See Tule Lake Narrative Report, May-August for full report.)

The low level of losses occurred mainly on newly reflooded Unit 8, and Unit 4, during August, with the peak occurring from the 15th to the 28th. The loss dropped off completely during the week ending September 4th, and there was no further outbreak. An occasional suspected case was observed during September in Unit 8, but no loss was detected.

4. Lead Poisoning

No evidence observed.

B. Upland Game Birds

1. Population and Behavior

Pheasants were present in abundance both before and after the special hunting season. This season is described under Section VI, E of this report.

Valley quail were observed along the southern edge of the refuge. As is the case with the quail on Tule Lake, these birds spend the days on the high ground outside the refuge and then descend to the refuge in the evening.

Chukkar Partridge were observed on several occasions, also near the southern edge of the refuge. Their use of the refuge is occasional and they are not abundant.

Sage grouse made minor use of the refuge but it is on an off and on basis. The natural habitat for these birds lies immediately adjacent to the refuge and the birds are seldom present on the area for any extended length of time.

2. Food and Cover

Food and cover for these species was, as usual, to be found in abundance.

3. Disease

None found or suspected.

C. Big Game Animals

1. Population and Behavior

Mule deer use seems to be increasing steadily on this area. Deer were commonly seen, especially on Units 2 and 12. Several large bucks that normally stay on the refuge made mistakes and ventured over the line during the hunting season. They can no longer be included in the refuge census.

Several bands of up to 25 antelope have been seen on the refuge from time to time. They normally stay on the higher ground south of the refuge boundary but occasionally they drift onto Unit 12.

2. Food and Cover

The food on the area is apparently sufficient to support the comparatively small number of big game animals.

Cover is abundant in several of the dry units and the resident animals apparently find it much to their liking.

3. Disease

No disease observed.

D. Fur Animals, Predators, Rodents, and Others

Evidence of excessive muskrat activity can be seen in most of the water units of this refuge. Emergent vegetation is nonexistent in Unit 8, and very sparse in Units 3 and 4. These rodents are also causing damage along many of the dikes and canals of the area. Trapping permits were issued on December 1 (See Section IV.)

A few individual coyotes were seen commonly during this report period. As on Tule Lake they seem to do quite well on the cripples furnished by hunters. Feral cats, often released as kittens by well meaning but misguided people, are also present in appreciable numbers.

Evidence of the common species of rodents and lagamorphs was observed throughout the period. Species of these two orders furnish appreciable amount of food for various hawks and owls that normally inhabit the area.

E. Predaceous Birds

The usual species of predaceous birds were present during this report period; Red-tailed Hawk, American Rough-legged Hawk, Marsh Hawk, and Sparrow Hawk. In addition Bald Eagles, Golden Eagles, and Short-eared Owls were to be found. These birds again, as on Tule Lake, performed a useful service by picking up cripples. Not more than 1% of those seriously crippled birds would survive, and it is just as well to have the carcasses cleaned up.

F. Fish

No observed change in status.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. Construction

During this period two draglines (Northwest Model 5, and Northwest Model 8) worked practically full time on dike construction, while two others (Speeder and P&H) were used to some extent on dike work, but mostly on the building, repairing, and riprapping of structures. 110,136 cu. yards of material was handled by these machines in performing the following work:

Rebuilding of the Unit 9 contour dike was completed.

The P Canal extension ditch and dike was completed.

7,497 lin. ft. of the Unit 9 east boundary dike was raised.

350 lin. ft. of the west end of the 12A-8 dike was built, completing that dike.

Riprapping and road surfacing continued at a fair pace although some difficulty was encountered in maintaining the dike roads as a result of the dry fall. Material used in filling the chuck-holes wouldn't compact because of a lack of moisture as a result the trucks would push it out again. This was overcome somewhat by keeping the road grader going constantly refilling them.

This resulted in more broken springs for our already over-worked shop force to repair.

Rain and freezing temperatures in December relieved this situation somewhat.

3,912 cu. yds. road surfacing and 18,273 cu. yds. riprap was hauled during this period in completing the following work:

Riprapping of the 6-5 and 7-8 dikes was completed.

897 lin. ft. of the 7-12 dike was riprapped.

792 lin. ft. of the P Canal extension dike in Unit 9 was surfaced and riprapped.

The broken headwalls on structure 7A were repaired. 16.5 cu. yds. cement was used.

A new flash board structure with 9 float head walls was built in the P Canal extension in Unit 9 using 2 48" x 8 foot concrete pipes which we had on hand. 54 $\frac{1}{2}$ cu. yds. concrete was used.

Structure 6B, 7A, 100, 108, and the new structure in Unit 9 were backfilled.

Structures 100, 106, 108, 6A, 6B, 7A, 9C, and 9D were riprapped.

Flash boards were cut for structures 100, and the Unit 9 structure.

A 48" corrugated, galvanized metal pipe was put in the south end of Unit 9 contour dike drain for field irrigation control.

A 24" corrugated, galvanized metal pipe was placed in the Unit 9 contour dike drain about one third of the way down from the north end for field irrigation control.

The west side of the 6-5 dike was leveled preparing it for seeding. Weeds were dozed off and burned on several of the dikes in order to stop snow from drifting on haul roads.

2. Building, and general maintenance & repair

All boundary, and roadside posts repainted white, and 54 posts replaced with new ones.

Posted 100 of the new metal "closed area" signs along the State Line Highway, and boundaries of the Refuge.

Posted the closed and open areas of the entire Refuge for the Migratory Waterfowl and Pheasant Seasons.

Installed 25 swan and 3 Snow Goose silhouettes for hunter instruction to prevent loss of swan.

B. Plantings

1. Aquatic and Marsh: None
2. Trees and shrubs: None
3. Upland herbaceous plants

Dike slopes, berms and Mitchell Bridge area were planted, as indicated in red on map, as follows:

<u>Date</u>	<u>Location</u>	<u>#Seed mix</u>	<u>Acres</u>
12/3	Dike slope & berm on N. & W. sides of Unit 6 Field (6F) from NE corner at Central Canal (Str. C-1) to SW corner of Field 6F at Str's. 6F-P, & 6F-6.	430	15.0
12/5	Dike slope of W. side of Unit 6 from Str. 6F-6 to SW corner at Str's. 6-P & P-3.)	(2.5
12/10	Mitchell Bridge triangle area between Units 3, 5, & 6F.)	(3.5
12/16-17	Dike slope and berm on E. side of Primary ("P") Canal (P-6F & P-6 Dike) from Mitchell Bridge triangle S. to Str. P-3 at Unit 12.	(366)	(13.0
Totals		796#	54.0 Acres

For seed mixture used see Tule Lake Report.

4. Cultivated crops

(a) Refuge planting

The adverse weather, which included continuing frosts of damaging severity, reduced production over most of the Lower Klamath area to a near record low. Production on Refuge fields suffered heavily.

Rye and Overland Oats from which seed was desired were low in yield and of doubtful quality. Harvesting of the better spots of these grains was as follows:

<u>Crop</u>	<u>Field</u>	<u>Acres</u>	<u>Bushels</u>	<u>Pounds</u>
Rye	3F-1 to 8	22	450	
"	8F	5	150	
		<u>27</u>	<u>600</u>	33000
Overland Oats	8F	3	100	3000
		<u>30</u>	<u>700</u>	<u>36000</u>

The remainder of all Refuge fields was left standing for waterfowl, with production as follows:

<u>Crop</u>	<u>Acres</u>	<u>Bushels</u>	<u>Pounds</u>
Hanchen Bly.	1600	14,500	725,000
Rye	361	2,311	127,100
Overland Oats	369	3,866	115,980
1954 Totals for Waterfowl.	<u>2330</u>	<u>20,677</u>	<u>968,080</u>

For comparison 1953 production was as follows:

(1953)	2360	116,200	5,810,000
--------	------	---------	-----------

This years low yield of inferior quality grain did not attract waterfowl, consequently their numbers and use were far below last year.

A portion of field 6F was purposely flooded just prior to arrival of this years migrants. This and newly reflooded Unit 8 attracted the lion's share of early September concentrations, having 103000 of the 155,000 ducks on Lower on September 8th. The low quality and quantity of grain was general over the entire Lower Klamath area and the result was that field feeding species were not attracted or held on Lower Klamath in numbers to compare with last year.

The Hanchen Barley on the north borders of fields 6F and 7F, adjoining water Units 3 and 4, was browsed heavily by Canada Geese all through spring and summer. Fields 3F-1 to 8 were browsed less than in previous years until after the flightless period when the flocks began moving, then the above average number of Honkers used these fields heavily, preferring the Overland Oat planting to the Rye.

In preparation for 1955 refuge fields 6F, and 7F were burned to remove surplus vegetation after full utilization of waterfowl food had been obtained. These two fields and 8F were flood irrigated with surplus water available, and fields 3F-1 to 8 were being irrigated by pumping at the close of the period. This flood irrigation added to the waterfowl use obtained on all of these fields.

(b) Sharecropping

In general, like all other on Lower Klamath, sharecrop production was poor, ranging from complete failure to fair.

Sharecrop field 1-4, that had earlier appeared would not ripen, produced the highest yield. On the Government's share 33 acres of Hanchen Barley yielded 30 bushels per acre and carried a heavy browse use, and the sharecropper's 66 acres of mixed white oats yielded 41 bushels per acre.

Other barley (Hanchen, Velvon, Vaughn) yielded from 3 to 12 bushels, and oats (Kanota, Overland, Shasta, Winema) from "0" on field 10-1 to 22 bushels on field 4-1.

Waterfowl had more than the refuge share of this grain since harvesting of the lower yields was not profitable or possible, and this additional feed was left standing.

Browse use by Canada Geese was exceptionally heavy all spring and summer on the Hanchen Barley of Field 1-4, and the Overland Oats of field 1-9. Other fields of Unit 1 along the highway were used, but fields 1-4, and 1-9 were adjacent to favored portions of the water areas of Units 3 and 2, and in addition had easy approach conditions on the banks of the units.

The 12, one year term share crop permits on Lower Klamath had production as follows:

Crop	Acres	Permittees Share	Government Share	
			Seed	Waterfowl feed
Hanchen Bly	293	841 bu		2229 bu
Vaughn & Velvon Bly	500	1540 "		3128 "
Mixed Oats	3107	37880 "	1703 bu	17319 "
Rye	50			
Totals 1954	3950	40,261	1703	24,379
				838,510#

For comparison 1953 production was as follows:

1953	4160	107,212 bu	2478 bu	116,807	4,328,695#
------	------	------------	---------	---------	------------

For the last several years share crop permits have been issued on an annual basis only. This fall ten of the regular permits were set up on a five cropyear term, 1955-1959, with provision for the share crop permittees to accomplish additional field improvement, especially leveling and land planing.

The permittees had in the past carried on field improvement, in some instances for more than the one year tenures had warranted. However, after the issuance of the 5 year permits, more than the usual improvement and field preparation has been accomplished and still more is lined up. Better production should accrue as a result.

The share crop fields 10-1 (Laird's Landing), and 2-3 (McKay) have not had permits issued, because of the lack of production.

A new sharecrop permit area was established on a one year term for 2400 acres of Unit 12-A. To farm this Unit prior to flooding as a water area will aid by control and removal of vegetation, which is a serious problem and botulism hazard when a unit is reflooded. Such tremendous weed growths exist on 12-A that to accomplish their control will be important.

An association of 8 Lower Klamath sharecrop permittees was formed to farm Unit 12-A, each of the 8 to farm 200 acres for himself and 100 acres for waterfowl food as the Government's share. These tracts were established, and 75% of the area has been plowed as initial cultivation prior to winter flood irrigation and farming next spring.

PLANT (WEED) CONTROL

Lower Klamath Refuge grain fields, berms, and dikes.

Plants involved and relative percentage density

1. Lower Klamath grain fields (as per #3).

Hanchen Barley, Overland Oats, and Cereal Rye	96 %
Sisymbrium Altissium (Tumbling Mustard)	3 %
Descurvainia Sophia (Flixweed))
Atriflex Hastalu (Fat Hen)	(1 %
Salsola Kali Tennifolia (Russian Thistle)	(
Bassia Hyssopifolia (5 Hook Bassia))
	<hr/> 100 %

Lower Klamath dikes and berms (as per #3).

Sisymbrium Altissium (Tumbling Mustard)	70 %
Atriplex Hastata (Fat Hen)	12.5 %
Bassia Hyssopifolia (5 Hook Bassia)	12.5 %
Descurvainia Sophia (Flixweed))
Salsola Kali Tennifolia (Russian Thistle)	(4.5 %
Brassica Aruensis (Wild Mustard)	(
Brassica Juncea (Indian Mustard))
Cardaria Pubescens (Hairy White-top)	.5 %
	<hr/> 100.0 %

2. Stage of growth.

Cereal grains (barley, oats, rye)	2 to 5 inches.
Weeds in grain fields	1 to 8 inches.
Weeds on berms and dikes	1 inch to flowering, and immature seed.

3. Acreage and location of plants involved.

Lower Klamath Fields - Perimeter and checks of 3F1 to 8, perimeter and spot infestations of 6F, perimeter and West end of 7F, and perimeter of 8F.

900 acres

Lower Klamath berms and dikes - Berms and dikes around fields 6F, 7F, and 8F, which are, or are to be seeded to grain and perennial grass cover, and berms and dikes of Primary Canal infested by White-top adjoining Units 3 and 6.

100 acres

1000 acres

Relative percentage density as per #1.

4, 5, and 6. Herbicide, strength, dilution, and method of application.

2, 4-D Amine, 1/2 pound (1 pt.) a.e. to 2 gallons of water per acre (16:1), by aircraft.

7. Dates of application: 6/29-7/1.

Tule Lake was given priority in weed control, and Lower Klamath weeds on the dikes, berms, and parts of 6F and 7F were flowering or in the immature seed stage. ✓

8. Results: 75 % on a basis of 1000 acres involved. (Only heavier weed areas comprising 900 acres of fields, and 100 acres of berms and dikes were sprayed). ✓

The growth stage of Tumbling Mustard was too far advanced, and 5 Hook Bassia made later growth, as examples of the conditions that prevented better results. ✓

The Hairy White-top was treated later in a separate project by ground rig.

9. Costs: See Tule Lake Report.

Cardaria pubescens var. *virginiana*

NOXIOUS WEED CONTROL

Lower Klamath Refuge berms, dikes, drains, field and marsh borders.

1. Plant involved: *Cardaria Pubesceus* (Hairy White-top) 10 %
Plants listed for Lower Klamath dikes and berms 90 %
100 %

2. Stage of growth: Flowering.

3. Acreage and location of plant involved: Acres

Unit 1 - Fields 1F-9 and 10, and adjacent.	200
" " - East side Straits Drain, State Line Str. and connecting drains, Hiway & State Line, Sec. 15.	100
" 3 - Primary Canal dike and berms, 3F-1 and 2 field division and perimeter drain, 3F-Mitchell Bridge area.	110
" 4 - Entrance Road spots.	10
" " - East boundary dikes, drains, field edges from Adams Tule Cut area to Unit 9.	150
" 6 - Primary Canal dike, and berms to Unit 12.	60
" 5 and 10 - Area at this entrance to refuge.	40
" 12 - Stub dike area extending South from corner Units 5 and 6.	80
(See map in Tule Lake section)	750

4, 5 and 6. Herbicides, strength, dilution, and method of application:

2, 4-D Amine, 1/2# a.e. (1 pt.) to 8 gallons of water (64:1) applied with pickup-mounted portable pumper and hand wand. All colonies, plants and immediate area thoroughly soaked with mixture.

7. Dates of application: 7/6-21/54.

8. Results: 99 % for this years plant growth.

9. Costs: 2, 4-D Amine, 109 gallons at \$ 2.56	\$ 279.04
Labor, 2 men 12 days	285.12
Equipment, tank truck, pickup, and spraying	42.00
Total Costs	\$ 606.16

Cost per acre - 750 acres \$ 0.808

Note: Greater emphasis is given the "hold the line" effort to prevent further encroachment on to the main, central area of the refuge by these bordering infestations.

See map in Tule Lake Section of report.

NOXIOUS WEED CONTROL

1. Plant involved: *Cirsium Arvense* (Canada Thistle)
2. Stage of growth: Flowering
3. Acreage and location: $1/4$ acre. Unit 4, near Sec. line between Sec's. 25 and 36, about midway on Sec. line, on elevation separating North and South parts of Unit 4 water area. (See map) in Tule Lake Section).
- 4, 5, and 6. Herbicide, strength, dilution, and method of application:
2, 4-D Amine, $1/2\%$ a.e. (1 pt.) to 8 gallons of water (64:1).
Applied by hand wand from portable pumper and backpack pump. All colonies, plants and immediate area thoroughly soaked with mixture.
7. Date of application: 7/30/54.
8. Results: 99 %. To all appearances this years plant growth was killed. Next years regrowth cannot be determined until that time.
9. Costs:

2, 4-D Amine 1 gallon at \$ 2.56	\$ 2.56
Labor, 2 men 2 hours	6.64
Equipment, pickup and pump	2.15
Total	<u>\$11.35</u>

See map in Tule Lake Section of report.

IV ECONOMIC USE OF REFUGE

A. Grazing

Three grazing permits were in force during this period as follows.

TUL-86,	Unit 10 & 12,	cattle 9/1 to 12/31,	1005 AUM @ \$.60	\$603.00
" 87,	" 6 & 7,	sheep, no use to 12/31 (Will start early in Jan.)		
" 88,	" 2,	cattle, 11/16 to 12/31,	75 AUM @ \$.60	45.00

All grazing is on heavily vegetated areas, principally weed growth of high fire hazard, and the reduction of this hazard is beneficial.

B. Haying

None

C. Fur Harvest

On December 1st three permits were issued for the taking of muskrats on this area. The total removal quota has been set at 8,215 animals. This will be subject to revision if information should come to light that would warrant a change.

It is our desire to trap some of the units as completely as possible. The areas so treated will be the ones on which attempts to establish emergent vegetation have been unsuccessful. Also, bank dens in dikes and canal banks have necessitated extensive repairs. Attempts will be made to take as many of these nuisance animals as possible.

The trapping take in the first few weeks was small due to the alternate freezing and thawing of the water areas.

V FIELD INVESTIGATION AND RESEARCH

A. Progress Report

As mentioned in the report for Tule Lake, a number of swan measurements were taken during this period. The majority of these birds were killed on the Lower Klamath Refuge.

During the special pheasant hunting season on the refuge, November 20th and 21st, a sample consisting of 180 legs was collected from the 763 male birds brought through the five checking stations. This sample was given a superficial examination to determine the various age classes represented by the spur lengths. This was the first year that hunting was allowed on the majority of the area and consequently no information was available as to what spur lengths would represent what age class. For a start, the legs were divided into two groups, those that were obviously old birds and those that were just as obviously young. Then, the border line lengths were divided until it was determined that a combined leg width and spur length of

16 mm. was the mean point between the two groups. The measurements were made with calipers and the distance measured was that between the front part of the leg and the tip of the spur.

It was determined that 46.7 % of the sample had a measurement in excess of 16mm. and naturally the remaining 53.3 % measured less than 16mm.

As can be seen, and as might be expected, the ratio of mature to young birds was very high on this first general hunting season.

Following the examination of the sample at this station, the legs were forwarded to Mr. Chester M. Hart, Pheasant Research Leader for the California Department of Fish and Game. After Mr. Hunt examines the sample it will be sent to Dr. Allen Stokes at the Utah State Agricultural College for still more minute examination.

The information returned to this station regarding the various age classes represented will be basic data that can be used in evaluating the results of future hunting seasons.

Additional information regarding the mechanics of this particular pheasant hunt may be found elsewhere in this report.

VI PUBLIC RELATIONS

LK
A. Recreational Uses

Hunting Use	14,598
Fishing "	none
Misc. "	<u>35,000</u>

Total Visitor Days 49598

* Farming, and other official and economic use, sightseeing, birdwatching, photography, etc. "

B. Refuge Visitors

See Tule Lake Report.

C. Refuge Participation

See Tule Lake Report.

D. Hunting

See following sheets.

E. Fishing

None.

F. Violations

See Tule Lake Section of Report.

LK

D. Waterfowl Hunting

This area is also in California and therefore had the same hunting season as did Tule Lake; October 9th to November 13th, and December 6th to January 10th. The northern boundary of the Refuge is on the State Line between Oregon and California and as Oregon had a straight season the shooting in this area extended from October 16th to January 3rd.

The weather during the hunting season was mild as a rule but the hunters enjoyed a **fair success**. This was especially true of the goose hunters along the Oregon Line. It should be remembered that "fair and Good" hunting on this area, especially as it concerns geese, would be considered fabulous on most refuges.

The peak concentration of birds was reached shortly after the first season opened and dropped off rapidly thereafter. Because of the frost damage to the grain on and around the refuge, food was in short supply this fall. Consequently, the numbers of birds using the area for extended lengths of time was much reduced from last year. This, combined with the flooding of Unit 8, and the draining of Unit 9, changed the flight pattern and consequently the kill on the public hunting area.

Skull boats were more in evidence as a means of hunting than ever before. They were used with excellent results on the open water of Unit 8. This newly reflooded Unit was the most favored resting place for waterfowl as it provided ample sanctuary except when invaded by skull boats. Limit bags were regularly taken in this manner. Considerable success was had ~~and~~ by this method on the open water of Unit 4.

Outside the Refuge they were used with success on White Lake.

The same system of roving checks that was employed on Tule Lake was used on this area. During the first ten days of the season Mr. Johnnie A. Johnson, and Mr. Eldon Bates of the Refuge staff performed this task. The remainder of the season Mr. Johnson carried the entire load seven days a week. An expression of thanks is little payment indeed for the long days and weeks spent on the job.

Separate checks were ^{not} made this season on the West Boundary Hunting Area. The change in use and flight pattern was responsible for a marked reduction of waterfowl on the West Boundary, and hunting pressure dropped in comparison. The principal success was in the take of dark geese (mainly Canadas) by hunters well back from the Refuge Boundary. Manpower was not adequate to regularly check these and other hunters on areas accessible by back roads.

Hunter counts were maintained for White Lake, (see other items for information and status of this area), and spot checks on this added hunting area was as follows:

Calif.
Hunters

1025

Oregon
Hunters

232

Total
Hunters

1257

Geese
Bagged

630

Ducks
Bagged

1380

The information obtained from checks was used to compile the tables on the following pages. (See Tule Lake section of report for comparative data of waterfowl population and use, hunter kill and success ratio for Lower Klamath and Tule Lake Refuges.)

1954
BAG RECORD, PUBLIC HUNTING AREA - FIRST SEASON & SUMMARY

	Oct. 9	Oct. 10	Oct. 11-15	Oct. 16-17	Oct. 18-22	Oct. 23-24	Oct. 25-29	Oct. 30-31	Nov. 1-5	Nov. 6-7	Nov. 8-13	Total 1st Season	Total 2nd Season	Grand Total
Hunters	841	624	743	517	605	387	439	395	295	360	855	6061	380	6441
Geese/Hunter	.2	.2	.2	.3	.7	1.1	1.0	.6	.1	.5	.5	.5	.5	.5
Ducks/Hunter	1.7	1.1	1.3	2.2	1.6	1.5	1.1	1.2	.8	.8	1.5	1.4	1.3	1.4
Canada Goose	44	40	24	13	36	11	39	5		45	49	306	64	370
Cackling "	3	2	40	44	243	206	285	170	13	91	195	1292	68	1360
White-fronted "	143	69	86	88	154	195	108	65	13	51	98	1070	32	1102
Snow Goose		4	8		18	19	22	10		8	52	141	14	155
Ross' "											3	3		3
Total Geese	190	115	158	145	451	431	454	250	26	195	397	2812	178	2990
Mallard	269	113	70	66	309	187	123	70	28	82	153	1470	83	1553
Gadwall	79	30	50	22	23	11	15	10			16	256		256
Widgeon	228	155	144	162	30	42	42	15	10	48	124	1000	39	1039
Pintail	196	50	103	74	295	117	180	130	116	93	462	1816	136	1952
G. W. Teal	38	30		83	48	3	34	120	15	8	23	402	17	419
Cinn. Teal	38	12	12		23	7	5	5	5		7	114		114
Shoveler	117	93	167	127	82	74	17	10	48	14	81	830	205	1035
Redhead	395	157	324	403	125	62	7	20	15	17	59	1584	1	1585
Ringnecked				4							3	7	2	9
Canvasback		4	28	175	27	15	42	50		31	110	482	12	494
L. Scaup	29	4	22	26	11	4	5				26	127	2	129
C. Goldeneye													9	9
Bufflehead			2		2			35	3		32	74	2	76
Ruddy	46	26	14	13	14	55		15	3		29	215		215
Total Ducks	1435	674	936	1155	989	577	470	480	243	293	1125	8377	508	8885

1954
BAG RECORD, PUBLIC H UNTING AREA - SECOND SEASON

	Dec. 6	Dec. 7	Dec. 8-10	Dec. 11-12	Dec. 13-15	Total
Hunters	48	65	97	121	49	380
Geese/Hunter	.7	1.0	.5	.2	.1	.5
Ducks/Hunter	1.1	1.4	1.5	1.2	1.4	1.3
Canada Goose	16	19	20	7	2	64
Cackling "	14	32	15	7		68
White-fronted Goose	1	3	12	14	2	32
Snow Goose	2	10	2			14
Total Geese	33	64	49	28	4	178
Mallard	18	5	12	32	16	83
Widgeon	1	5	7	19	7	39
Pintail	17	3	25	56	35	136
G. W. Teal	3	5	2	7		17
Shoveler	13	67	100	16	9	205
Redhead	1					1
Ring-necked			2			2
Canvasback				12		12
Lesser Scaup		2				2
Common Goldeneye	2	7				9
Bufflehead			2			2
Total Ducks	55	94	150	142	67	508

BAG RECORD ON OREGON FIRING-LINE (1954) BASED ON 16.28 PERCENT SAMPLE

	Oct. 16	Oct. 17	Oct. 18-22	Oct. 23-24	Oct. 25-29	Oct. 30-31	Nov. 1-5	Nov. 6-7	Nov. 8-12	Nov. 13-14	Nov. 15-19	Nov. 20-21	Nov. 22-26	Nov. 27-28	Nov. 29-3	Dec. 4-5
Hunters	833	1011	642	424	416	485	229	404	575	511	271	149	186	143	165-	222
Geese/Hunter	1.0	.8	.5	.4	.5	.3	.2	.2	.4	.5	.4	.3	.4	.4	.3	.3
Ducks/Hunter	.8	1.1	.8	.7	.5	.9	.6	1.1	.8	.4	.2	.4	.8	.4	1.2	.6
Canada Goose	89	65	72	18	30	16	5	22	16	17		14	4	5	8	17
Cackling "	101	83		97	80	78	35	44	104	67	39	7	27	15		33
White-fronted"	631	630	243	60	60	16	10	22	24	25	13	14		5	23	11
Snow Goose	6	19			37	16		11	96	134	44	7	19	10	15	11
Total Geese	827	797	315	175	207	126	50	99	240	243	96	42	50	35	46	72
Mallard	229	306	160	73	70	109	35	55	112	50	17	7	27	5	19	33
Gadwall	17	9	11	18					8				4		4	
Widgeon	34	93	22	85		141		22	9					5		11
Pintail	296	620	298	103	120	141	89	207	327	159	35	27	108	51	138	78
G. W. Teal	6			12				33				7	4			
Cinn. Teal	6															
Shoveler	11	28	6				10	44	8			20	8		23	6
Redhead	34	37	6			16				17						
Canvasback	11							44								
L. Scaup							5				4					
Com. Goldeneye															11	
Bufflehead						16										
Ruddy								55			4					
Total Ducks	644	1093	503	291	190	423	139	460	463	226	60	61	151	61	195	128

OREGON FIRING-LINE (CONT'D)

	Dec. 10	Dec. 11-12	Dec. 1954 13-15	1954 Total	1953 Total	1952 Total
Hunters	247	104	49	7053	11061	4254
Geese/Hunter	.5	.5	.4	.51	.3	.5
Ducks/Hunter	.8	.5	.1	.76	.6	3.2
Canada Goose	19	4	6	427	270	181
Cackling "	42	34		886	1258	814
White-fronted "	23	9	9	1828	959	633
Snow Goose	42		6	473	333	482
Total Geese	126	47	21	3614	2820	2110
Mallard	65	26		1398	2357	1502
Gadwall				71	35	98
Widgeon	9			430	573	359
Pintail	98	26	3	2924	3655	10344
G. W. Teal				62	68	456
Cinn. Teal				6	14	0
Shoveler	14			178	109	261
Redhead				110	31	33
Canvasback				55	27	0
L. Scaup	14			23	54	0
Comm. Goldeneye				16	0	0
Bufflehead				16	0	0
Ruddy				59	25	130
Total Ducks	200	52	3	5343	6957	13411

HUNTING RECORD FOR LOWER KLAMATH REFUGE

	10/9/54 to 11/13/54	12/6/54 to 1/3/55		10/16/54 to 1/3/55	Total	Total, P.H.A. & Oregon	Total 1953	Total 1952
	PUBLIC HUNTING AREA		Total	OREGON FIRE. LINE				
Hunters	6061	380	6441	7053	7053	13494	23679	12901
Geese/Hunter	.5	.5	.5	.51	.51	.5	.5	.5
Ducks/Hunter	1.4	1.3	1.4	.76	1.76	1.08	1.0	2.5
Canada Goose	306	64	370	427	427	797	1120	478
Cackling "	1292	68	1360	886	886	2246	4202	2933
White-fronted Goose	1070	32	1102	1828	1828	2930	3707	1790
Snow Goose	141	14	155	473	473	628	1284	645
Ross' "	3		3			3		
Total Geese	2812	178	2990	3614	3614	6604	10313	5846
Mallard	1470	83	1553	1398	1398	2951	5281	2480
Gadwall	256		256	71	71	327	435	201
Widgeon	1000	39	1039	430	430	1469	2603	1628
Pintail	1816	136	1952	2924	2924	4876	11484	16735
Green Wing Teal	402	17	419	62	62	481	878	1251
Cinnamon Teal	114		114	6	6	120	147	22
Shoveler	830	205	1035	178	178	1213	2158	2934
Redhead	1584	1	1585	110	110	1695	300	135
Ringnecked	7	2	9			9		
Canvasback	482	12	494	55	55	549	211	179
Lesser Scaup	127	2	129	23	23	152	239	41
Com. Goldeneye		9	9	16	16	25	18	5
Bufflehead	74	2	76	16	16	92	7	245
Ruddy	215		215	59	59	274	884	2194
Merganser							3	
Coot							371	97
Total Ducks	8377	508	8885	5342	5342	14227	25031	28457

D. Pheasant Hunting

As mentioned in Section V of this report, a special pheasant hunt was held on this area the 20th and 21st of November. A total of 763 cocks were checked out by 1104 hunters.

All units of the Refuge except 2 and 3 were thrown open to the hunters (see map). The closed units are mostly water and contained the majority of the waterfowl present on the refuge at that time.

Five checking stations were established to check the greatest possible number of hunters (see map). Various questions were asked each of the hunters (see check sheet) and a summary of the answers are as presented.

It should be stated that the figure of 2.8 shells per bird is felt to be low. Every effort was made to use only figures from hunters who were reasonable sure of the number of shells shot. However, as was to be expected, the better shot had a better idea of the times he fired to get a bird.

It is also interesting to note that the preseason sex ratio was 1 male : 1.50 female, and that the post season count was 1 male : .98 female. Part of this apparent reversal of expected results can be explained by the fact that the regular season outside of the refuge continued for an additional 8 days. However, it is apparent that the desired harvest was not even approached.

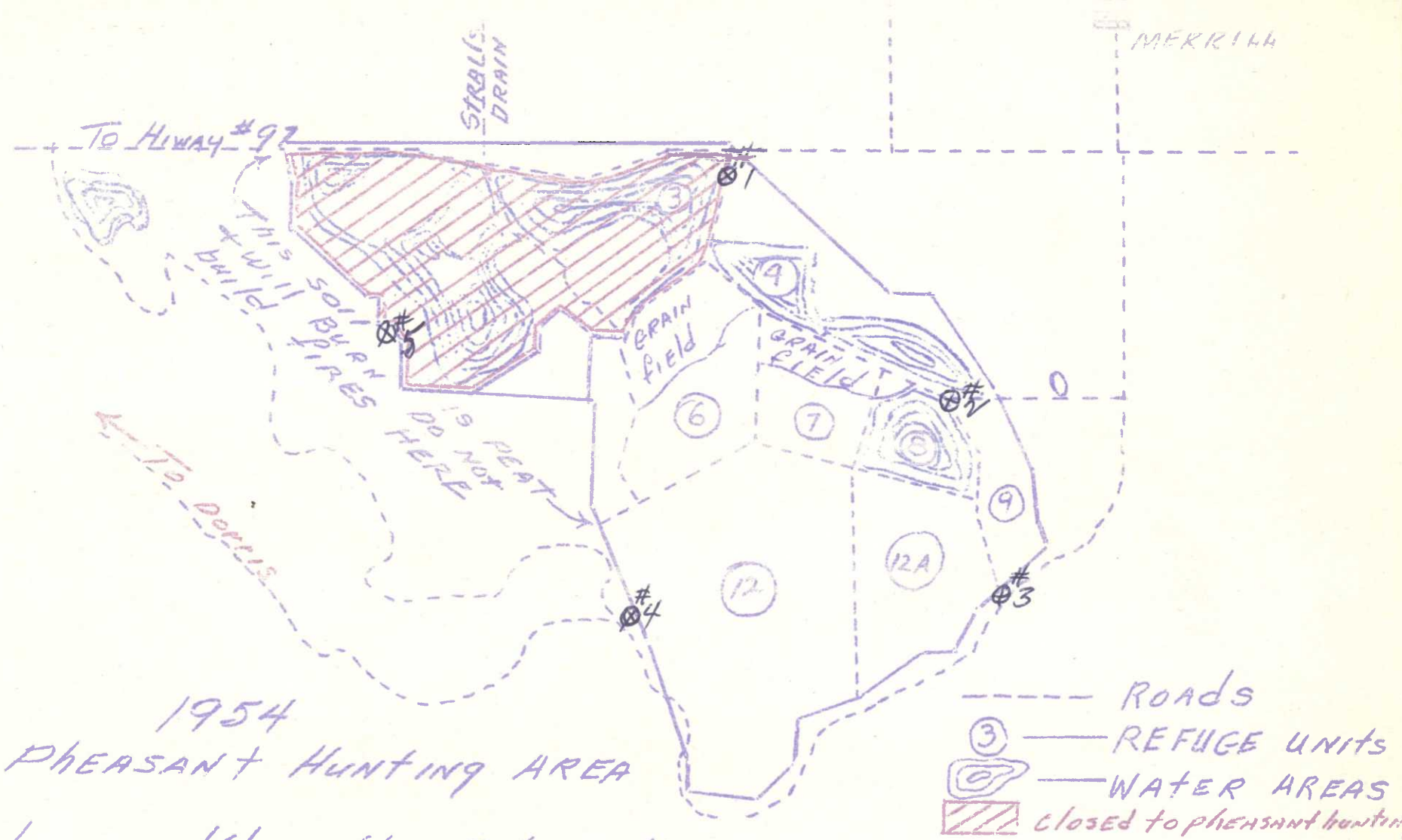
If Patrol problems, and conflicts between waterfowl and pheasant seasons can be worked out it would seem to be to the advantage of the refuge in subsequent years, to allow pheasant hunting during the entire regular season rather than on a special hunt basis. The largest kill would undoubtedly still be on the first two days and the value, from a public relations standpoint, would be considerable.

Final recap sheet for all checking stations for pheasant season on Lower Klamath
November 20-21, 1954

REFUGE _____ AREA _____ DATE _____ 19__

CHECKING STATION _____

								Residence								Total Pheasants Checked	Remarks						
								Hunters	Was Dog in Party	How Many Cripples Lost	Shells per Bird	Lower Klamath Basin	Butte Valley	South to Stockton	Except Above	Stockton to Bakersfield	South of Bakersfield	Non-Resident	Total				
Total number of cars checked								441	981	123	249	73	404	121	2.8	157	191	34	20	5	34	763	
Number of male hunters																							
Number of female hunters																							
Number of parties with dog																							
Number of parties with more than one dog																							
Number of parties asked about cripples																							
Number of cripples lost by these parties																							
Average number of shells expended, per bird																							



1954
 PHEASANT HUNTING AREA
 LOWER KLAMATH NATIONAL
 WILDLIFE REFUGE
 UNITED STATES
 DEPARTMENT OF THE INTERIOR
 FISH & WILDLIFE SERVICE

PHEASANT HUNTING ON OPEN AREAS
 TWO DAYS ONLY NOV 20-21
 8:00 AM TO 4:30 PM

#1 CHECKING STATIONS, NOVEMBER 20-21, 1954

1954

PHASANT HUNTING

U. S. FISH AND WILDLIFE SERVICE

LOWER KLAMATH NATIONAL WILDLIFE REFUGE:

Area to be opened: All of Lower Klamath Refuge except Units 2 and 3 (First time open for most of this area). Entry not permitted on closed area, Units 2 and 3.

Dates: November 20 and 21 (Two days only)

Regulations: State of California hunting regulations will apply, which include:

Bag Limit: Two cocks per day (No hens may be taken).

Hours: 8:00 A.M. to 4:30 P.M. daily.

License: Valid California state hunting license required.

Tags: Pheasant tags are required and birds must be tagged immediately after taking.

FEDERAL REGULATIONS governing entry, conduct, possession and type of firearms will be enforced.

CHECKING: Hunters will be checked upon leaving pheasant hunting area.

TULE LAKE NATIONAL WILDLIFE REFUGE:

NO PART OF TULE LAKE REFUGE WILL BE OPEN FOR PHEASANT HUNTING DURING 1954.

TL 11/16/54

VII OTHER ITEMS

A. Items of Interest

White Lake:

Within the eastern border of Lower Klamath Basin, astride the Oregon-California State Line, is a shallow lake bed known as White Lake.

It is enclosed by low dune-like ridges except for an opening on the south side which originally connected it with Lower Klamath Lake, and thus provided a water supply.

Lower Klamath Lake was fed mainly by overflow from the Klamath River through the Klamath Straits. Control of this inflow was made possible with construction of the Southern Pacific RR Grade across this Straits in 1905 and 1906, and subsequent installation of control gates by the Bureau of Reclamation. Water from this Klamath River source was withheld and the basin, including White Lake, became dry lake beds.

Later, the Bureau constructed the P-1 Canal around the south side of White Lake, as part of their system for transporting water from Tule Lake to Lower Klamath, and provided controls by which it could be furnished water or drained.

This shallow lake bed includes 1154 acres under Reclamation Withdrawal, 912 acres in California, and 243 in Oregon. It is crossed by the California-Oregon State Line Highway, and a surfaced road from Klamath County points joins this highway on the Oregon side. There are more than 400 low, rounded knolls that become small islands when the lake bed is flooded to a desirable level.

In the past the Bureau has leased the tract for grazing, with only a minor amount of water being delivered to it, resulting in a dry lake bed.

Some water was turned into White Lake from the P-1 Canal in 1952 and 1953, with very satisfactory results for its value as an evaporating pan and consequent reduction of pumping costs, and increase in forage production and use by waterfowl.

Beginning with 1954 the Bureau revised the leasing plan, with the major use to be as a water area, and grazing restricted to a secondary role. An important provision in the new operational setup was for the Fish and Wildlife Service to plan and carry on the water management for the benefit of wildlife and as an evaporation pan to reduce pumping costs.

The Service agreed to this provision, and with the start of pumping from Tule Lake in April, 1954 the operation of White Lake as a water unit began.

An operating level was established which gave a maximum depth of three to four feet but averaged from one to three feet over the major area, and which made desirable levels against the highway grade, and for the shoreline and islands.

Results from all phases were most gratifying, including utilization by waterfowl, reduction of pumping costs through use as an evaporating pan, increasing the area available for public hunting in California and Oregon (see "Hunting" for record of hunter use) and relieving the pressure on Refuge Public Hunting Areas. Other values were the accessibility for birdwatchers and sightseers, and this winter the Oregon side was used extensively for skating, which use, on this shallow, non-hazardous ice area, was furthered through the efforts of the Merrill, Oregon Fire Department in spraying the ice to keep the surface in good shape (see pictures of this project).

Continuation of this cooperative management plan with the Bureau is most advantageous to the Service.

LK
Items
of
interest

Earth Tremors:

Two earth tremors that inflicted considerable damage in Nevada and northern California localities were felt here. The first broke ice in spots on canals and drains and shook considerable material from precipitous banks. The second did the same, and in Unit 9 caused a break in a sharecropper's new field dike, shook down check boards blocking a drain pipe, and all but spilled one man from a footbridge over a borrow ditch. Muskrat trappers on Unit 2 felt the tremor distinctly, as the ice heaved and the muck shook.

Depredations:

The extensive freezeout of grain on Lower Klamath, both on and off the Refuge, sharply reduced this food supply in that area. Waterfowl populations were very low as a result. Refuge fields supplied quite adequate area, if but little cereal food, until many other fields were either sampled and proven unharvestable or harvested to the extent possible to afford additional area for the waterfowl.

Depredations were minor both on and off the Refuge. See Tule Lake section for summary of herding permits issued.

See Tule Lake section of report for summary of herding permits issued.

W A T E R F O W L

REFUGE Lower Klamath

MONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period									
	9/1-4 1	9/5-11 2	9/12-18 3	9/19-25 4	9/26-10/2 5	10/3-9 6	10/10-16 7	10/17-23 8	10/24-30 9	10/31-11/6 10
Swans:	E		E	E	E		E	E	E	
Whistling Trumpeter		1(crip)					20	40	75	100
Geese:										
Canada	5500	6075	6000	6000	6000	3500	4000	4500	4750	4719
Cackling							100	200	300	400
Brant										
White-fronted	100		5000	25000	50000	70000	70000	50000	25000	100
Snow						100	1000	1000	1000	
Blue										
Other										
Ducks:										
Mallard	35000	9470	30000	35000	35000	3000	30000	25000	15000	9120
Black										
Gadwall	7000	5500	10000	15000	20000	21000	20000	10000	5000	900
Baldpate	500	2200	10000	30000	50000	75000	65000	40000	30000	22600
Pintail	100000	127280	135000	135000	140000	140000	200000	100000	60000	53900
Green-winged teal	1000	380	1000	1000	1000		500	500	500	350
Blue-winged teal	100		100	50	50					
Cinnamon teal	3000		2500	2000	1500		500	100		
Shoveler	10000	14900	20000	25000	30000	40000	35000	20000	15000	9100
Wood										
Redhead	7500	700	1000	1200	1400	1500	1000	1000	500	300
Ring-necked										
Canvasback	50	100	500	1000	1500	2000	5000	10000	15000	17300
Scaup	400	500	600	700	900	1000	1500	2500	3500	4125
Goldeneye										
Bufflehead							500	700	900	1200
Ruddy	6000	450	1000	1000	1000	1000	5000	6000	7000	7800
Other										
Coot:	18000	18100	50000	100000	200000	250000	250000	200000	100000	32475

WATERFOWL
(Continuation Sheet)REFUGE Lower KlamathMONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11/7-13 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	12/26-31 18			
Swans:											
Whistling	75	200	1180	1250	1300	1390	1000	100	47110		
Trumpeter											
Geese:											
Canada	1450	900	700	2830	3050	3280	2000	500	461644		
Cackling	3700	2100	600	600	600	600			66400		
Brant											
White-fronted	600	1100	1900	1400	1300	1200	500	60	2122820		
Snow	600	1800	6200	5000	3050	1100			145950		
Blue											
Other											
Ducks:											
Mallard	4100	8300	13000	14000	16100	18300	7500	1000	2161530		
Black											
Gadwall	1000	600	800	600	500	400			828100		
Baldpate	39100	32000	13400	12000	6300	600	250		3002650		
Pintail	38800	26100	8000	9400	15300	21100	10000	3000	9260160		
Green-winged teal	300	200	200	200	200	200			52710		
Blue-winged teal									2100		
Cinnamon teal									67200		
Shoveler	19400	18000	18500	10400	7000	3600	2000	1300	2094400		
Wood											
Redhead	200	100							114800		
Ring-necked											
Canvasback	6200	5800	3600	2400	1350	300	200	50	506450		
Scaup	800	200	300	300	200	100			123375		
Goldeneye				50	60	75			1295		
Bufflehead	300	700	1200	800	600	400			51100		
Ruddy	15200	13300	12000	8200	4400	600	500	400	635950		
Other											
Coot:	11400	12100	6300	5500	3500	1500	1000	500	8843625		
Total Waterfowl	146225	123500	87880	74930	64810	54745	24950	6910			

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	17,116	1,000	
Geese	2,725,014	22,600	
Ducks	11,000,000	340,000	
Coots	2,241,400	200,000	

SUMMARY

Principal feeding areas _____

Principal nesting areas _____

Reported by _____

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

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

3-1751

Form NR-1A
(Nov. 1945)MIGRATORY BIRDS
(other than waterfowl)Refuge Lower KlamathMonths of Sept. to Dec. 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. <u>Water and Marsh Birds:</u>										
Eared Grebe			400							2,000
Western Grebe			75							900
Pied-billed Grebe			200							800
White Pelican			400							1200
Farallon Cormorant			150							400
Treganza's Heron			20		7	12/31				100
American Egret			15							500
Black-crowned Nt. Heron			35		5	12/31				100
Brewster's Egret			100							400
American Bittern			15							100
II. <u>Shorebirds, Gulls and Terns:</u>										
Killdeer			500		4	12/31				1200
W. Sandpiper			100							1500
Greater Yellowlegs			7							50
Lesser Yellowlegs			6							25
Dowitcher			100							1200
Avocet			600							1500
Northern Phalarope			200							600
California Gull			200							300
Ring-billed Gull			800							1000
Forester's Tern			300							500

(over)

95-

UPLAND GAME BIRDS

1613

Refuge Lower Klamath

Months of Sept

to Dec

, 1945

(1) Species	(2) Density	(3) Young Produced	(4) Sex Ratio	(5) Removals	(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'd. Estimated Total	Percentage	Hunting For Re- stocking For Research	Estimated number using Refuge Pertinent information not specifically requested. List introductions here.
*Pheasant					924	13,000
Valley Quail						80
Chukar Part.						30
Sage Hen						15
						*A total of 763 male birds were brought through five checking stations. It is felt that 95% of all birds killed were checked. In addition, at least 121 cripples were lost. Thus a minimum of 924 birds were removed from the area.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
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		8										75	20	
Antelope												50		

Remarks:

Reported by _____

76

INSTRUCTIONS

Form NR-3 - BIG GAME

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

116000

DISEASE

Refuge Lower Klamath

Year 19 54

Botulism

Lead Poisoning or other Disease

Period of outbreak August 1-31

Period of heaviest losses August 15-28

Losses:

	Actual Count	Estimated
(a) Waterfowl	<u>751</u>	<u> </u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

	No. Recovered	% Recovered
(a) Waterfowl	<u>112</u>	<u>84</u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

(a) Waterfowl	<u> </u>	<u> </u>
(b) Shorebirds	<u> </u>	<u> </u>
(c) Other	<u> </u>	<u> </u>

Areas affected (location and approximate acreage)

Unit 8 (loss 617), and Unit 4 (loss 134)

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

Unit 8 reflooded this spring--quantities of seeds and other organic matter formed floating masses and shoreline winrows--losses abated by bouncing water level.

Unit 4. South winds on 8/13 piled organic matter on north shore--lines just prior to minor outbreak.

Condition of vegetation and invertebrate life

Remarks See Tule Lake, May-Aug. NR for full information.

Only an occasional sick bird in Unit 8 after ~~Aug~~ August.

Kind of disease None

Species affected

Number Affected Species	Actual Count	Estimated
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>
<u> </u>	<u> </u>	<u> </u>

Number Recovered

Number lost

Source of infection

Water conditions

Food conditions

Remarks

PLANTINGS
(Marsh - Aquatic - Upland)

Refuge Lower KlamathYear 1945

Species	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount & Nature of Propagules	Date of Planting	Survival	Cause of Loss	Remarks
Seed Mixture Parts				Seed Mixture				
Perennial Ryegrass 1 (Lolium Perene)	Unit 6 Mike Field 6F	29 # per Acre	15 acres	430#	12/3			
Tall Wheatgrass 10 (Agropyron Elongatum)	Unit 6				12/5			
Smooth Brome 20 (Bromus Inermis)	Mitchell Bridge	19# per Acre	19 acres	366#	12/10			
Tall Fescue 30 (Festuca Elatior) Var. Arundinacea	E. side of Primary Canal				12/16-17			

TOTAL ACREAGE PLANTED:

Marsh and aquatic _____
Hedgerows, cover patches 54
Food strips, food patches _____
Forest plantings _____

CULTIVATED CROPS

Refuge.....Lower Klamath.....Year 1945

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
					Acres	Bu. Har- vested	Harvested		Unharvested		
							Acres	Bu.	Acres	Bu.	
		Field 3F-1-8	Rye	7			22	450	351	2161	
		" " "	Oats, Overland	8					327	2616	
		" 6F	H. Bly	10					1100	11000	
		" 7F	" "	7					500	3500	
		" 8F	Oats, Overland	30			3	100	42	1250	
		" "	Rye	20			5	150	10	150	

CONTINUED SLOES
DIRECTIONS FOR FILLING FORM MS-8

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share				Total Revenue
			Acres	Bushels	Harvested Acres	Bu.	Unharvested Acres	Bu.	
	H. Bly.	1600					1600	14,500	
	Rye	388			27	600	361	2,311	
	Overland Oats	372			3	100	369	3866	

66

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or Location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or 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. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, brome grass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis indicate the total cash revenue received by the Service.

CULTIVATED CROPS

Refuge Lower Klamath Year 1954

Permittee (If farmed by refuge personnel, so indicate)	Permit No.	Unit or Loca- tion	Crops Grown	Avg. Yield per Acre	Permittee's Share		Government's Share or Return				Compensatory Services, or Cash Revenue
					Acres	Bu. Har- vested	Harvested		Unharvested		
							Acres	Bu.	Acres	Bu.	
Moore Bros.	TUL-66	Field 1-1	Barley	3					100	300	
Murd Long	" 67	" 1,2 & 3	"	10	15	300			185	1700	
Roy Huff	" 68	" 1-4	"	30					33	990	
" "	" "	" "	Oats	41	66	2715					
Jack Liskey	" 69	" 1-5, & 6	Barley	12	106	1240			94	1128	
Tulana Farms	" 70	" 1-7, & 8	"	8	110	841			90	7759	
Verland Huff	" 71	" 1-9, & 10	Oats	21	67	2683			122	1320	
C.W. McPherson & R. Carson	" 72	" 2-1	"	12	40	1200			172	1344	
C.W. McPherson & R. Carson	" 73	" 4-1	"	22	746	18646	68	1703	486	8251	
J.J. & Addie McKay	" 74	" 2-3	Rye						50		
A.H. Patterson	" 75	" 4-2	Oats	15	260	6220			390	3530	
Anton Suty Jr.	" 76	" 9-1	"	19	320	6416			170	2894	
" " "	" "	" "	Barley	8					60	480	
Laird & Dayton	" 85	" 10-1	Oats						200		

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share		Total Revenue	
			Acres	Bushels	Harvested Acres	Bu.	Unharvested Acres	Bu.
	Barley	793	231	2381			562	5357
	Oats	3107	1499	37880	68	1703	1540	17319
	Rye	50					50	

Interior Duplicating
Section, Wash.D.C.

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS

Cultivated Crops Report Form NR-8 should be prepared on a calendar-year basis for all crops harvested or utilized during the calendar year and submitted with the December 31 refuge report.

Permittee - List each permittee separately. If lands of the refuge are farmed by refuge personnel or hired labor, this should be indicated in the Permittee column.

Permit No. - List the number of the Special Use Permit issued to the individual.

Use or location - The Unit No. or name specified in the Economic Use Plan should be listed in this column.

Crops Grown - A separate line of the form should be used for each crop grown by each permittee or by refuge personnel. This is important, since if each crop grown by each operator is not specifically enumerated, the report will be of no value for statistical purposes.

Average Yield per Acre - It is important that the average yield per acre of each crop grown by each operator should be shown.

Permittee's Share - Only the number of acres harvested or 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. It is requested that all crops harvested be reduced to bushels wherever possible, or, as in the case with the harvesting of seed such as that of sweet clover, alfalfa, bromegrass, etc., the total harvested crop in pounds may be shown. Timothy, alfalfa, or other hay harvested by the permittee should be shown on Form NR-10 and should not be shown in the Permittee's Share column.

Government's Share or Return - Harvested - Show the number of bushels harvested for the Government and the acreage from which this share is harvested, both for grain raised by refuge personnel and by permittees. Unharvested - show the exact number of acres of crops allowed to remain unharvested as food and cover for wildlife. An estimate of the number of bushels of grain that is available for the wildlife in such unharvested crops should be shown in the Bushels column.

Compensatory Services, or Cash Revenue - Show other services received by the Government in cooperative farming activities, the number of acres of food strips planted for wildlife, the amount of wildlife crops not otherwise reported that are planted by cooperators for the Service, or the cultivation of wildlife plantations. If the permit is on a fee basis, the total cash revenue received by the Service.

Refuge Lower KlamathYear 1945

Permittee	Permit No.	Unit or Location	Actual Acreage Utilized	Animal Use Months	Tons of Hay Harvested	Period of Use From - To	Rate	Total Income	Remarks
J.J. & Addie McKay	TUL-65	Unit 2	940	225		1/1 to 3/31/54	.60	135.00	
G.W. & Hattie Heitman	" 81	" 10 & 12	6000	440		" " " "	.60	264.00	
Perry A. Langer	" 82	" 6 & 7	2500	2187.74		" " 4/15/54	.125	273.47	
G.W. & Hattie Heitman	" 86	" 10 & 12	6000	1005		9/1 to 12/31/54	.60	603.00	
Perry A. Langer	" 87	" 6 & 7	2500	----		-----	.125	-----	
J.J. & Addie McKay	" 88	" 2	940	75		11/16 to 12/31/54	.60	45.00	

Totals:

Acreage grazed 9440Animal use months 3707.74Total income Grazing 1320.47

Acreage cut for hay _____

Tons of hay cut _____

Total income Haying _____

Recreational use of White Lake.
 This area straddling the Oregon-
 California State Line Highway,
 is under Bureau of Reclamation
 withdrawal but management is as
 recommended by FWS for wildlife.
 Here the ice surface is being
 prepared for skating. Note the
 nesting islands also.
 (1/7/55) (131-LK)



Improving ice on White Lake for skating
 by spraying with fog nozzle. The multi-
 ple use was enjoyed by both Oregon and
 California locals.
 (1/7/55) (132-LK)

The Merrill Fire Dept. used their
 portable pumper and fog spray to
 keep the skating surface in con-
 dition. A pavement from Merrill
 and Oregon State Highway #39 con-
 nects with the Oregon-California
 State Line Highway on White Lake,
 and access is easy, the water is
 shallow, and safe.
 (1/7/55) (134-LK)



Upper Klamath

I GENERAL

A. Weather Conditions

The weather picture is similar to that of Tule Lake, except slightly higher precipitation, and more uniform temperatures with a higher mean.

Records of the Klamath Falls Sta.

	Precip.	Max. Temp.	Min. Temp.	Mean Temp.
Sept.	.17	83	34	56.8
Oct.	.29	72	24	48.4
Nov.	1.05	65	14	42.1
Dec.	<u>1.54</u>	<u>50</u>	<u>9</u>	<u>31.8</u>
	3.05	83	9	44.7

Stream Year Precip. Summary

<u>To date</u>	<u>N ormal</u>	<u>Last Year</u>
2.88	4.69	5.89

B. Water Conditions

The below normal precipitation is reflected in the water level of Upper Klamath Lake, by the following comparison:

		<u>Low Stage</u>		<u>High Stage</u>
1953	11/20	4139.50	12/31	4141.30
1954	12/22	39.36	12/31	39.61

Condensed Gauge Readings:

	<u>10th</u>	<u>20th</u>	<u>30th</u>
Sept.	4140.26	4140.06	4139.96
Oct.	4139.81	4139.76	4139.61
Nov.	4139.47	4139.47	4139.43
Dec.	4139.42	4139.37	4139.47

C. Fires

None.

II WILDLIFE

Two aerial censuses were completed on this area during this report period. The results were as follows:

	November 3	December 10
Swan	150	15
Canada Goose	150	55
Mallard	200	
Pintail	24000	
Gadwall	900	650
Shoveler	150	
Green-winged Teal	2000	25
Redhead	20	
Scaup	150	400
Ruddy	200	
Bufflehead	100	100
Merganser	22	
Coot	2700	7200

The above counts were made on or immediately adjacent to the refuge lands on the edges of Upper Klamath and Agency Lakes. In addition to the birds listed above, the following birds were observed within two miles of the refuge boundary.

	November 3
Canada Goose	114
Pintail	174000
Mallard	3000
Baldpate	3000
Canvasback	500
Ruddy	1000
Bufflehead	500
Scaup	500
Coot	1000

IV ECONOMIC USE

A. Grazing

None.

B. Haying

None.

C. Fur Harvest

On December 1 two permits were issued for the taking of a total of 6,000 muskrats on this area. In addition to this number, rats will be removed from the Maenpaa Tract and the Wampler Lease.

In the case of the Maenpaa Tract, a ten year right was reserved which gave the vendor the right to trap muskrats for that period of time after the property had been sold.

Rats are being taken on the Wampler lease under a Bureau of Reclamation special use permit.

The two refuge trappers started trapping immediately after December 1 while the trappers over which the Service has no control started trapping in October. All trapping stopped following the freeze up, but will continue in the spring.

Of interest is the system used by private trappers on Agency Lake, the Williamson River Peninsula, and adjacent waters of Upper Klamath Lake. These trappers were contacted while we were co-operating with the USPHS on a survey of the incidence of tularemia among muskrat trappers and handlers.

They, being fully experienced in the problems and hazards involved with winter freezeups, water level fluctuations, storms and breakups, December through March, profess to take no chances with muskrat trapping during that time. Their trapping is started earlier, so as to give them October, November and probably part of December to make their catches.

While their approach is primarily for the revenue and protection of water management installations, we might well apply their timing technique in our muskrat harvest where marsh management is the objective.

VI PUBLIC RELATIONS

A. Recreational Uses

Hunting use	2500
Fishing "	12000
*Miscellaneous	10000
Total visitor days	<u>24500</u>

*Sightseeing, boating, birdwatching, picknicking, photography, swimming, etc.

Note: Sections of the Upper Klamath report not covered are either not applicable or are covered in the Tule Lake section.

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

W A T E R F O W L

REFUGE Upper Klamath

MONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period									
	9/1-4 1	9/5-11 2	9/12-18 3	9/19-25 4	9/26-10/2 5	10/3-9 6	10/10-16 7	10/17-23 8	10/24-30 9	10/31-11/6 10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada		20				50				150
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard		150				700				200
Black										
Gadwall		7200				4500				900
Baldpate		380				100				
Pintail		400				3200				24000
Green-winged teal		300				7000				2000
Blue-winged teal		100								
Cinnamon teal										
Shoveler		18950				70000				150
Wood										
Redhead										
Ring-necked										
Canvasback		300								
Scaup		300				1000				150
Goldeneye										
Bufflehead										100
Ruddy		180				10000				200
Other										
Coot:										

105

WATERFOWL
(Continuation Sheet)

REFUGE Upper Klamath

MONTHS OF Sept 1 TO Dec 31, 19 54

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production Broods: Estimated seen : total
	: 11/7-13	: 11/14-20	: 11/21-27	: 11/28/12/4	: 12/5-11	: 12/12-18	: 12/19-25	: 12/26-31		
Swans:										
Whistling				15						
Trumpeter										
Geese:										
Canada				55						
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard										
Black										
Gadwall				650						
Baldpate										
Pintail										
Green-winged teal				25						
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup				400						
Goldeneye										
Bufflehead				100						
Ruddy										
Other										
Coot:										

(over)

(DASH)

(5) (6) (7)
Total Days Use : Peak Number : Total Production

SUMMARY

Swans

Principal feeding areas

Geese

100

Ducks

100

Coots

Reported by

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

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

Interior Duplicating Section, Washington, D. C. 37944

1953

Clear Lake

I GENERAL

A. Weather Conditions

The Bureau of Reclamation station at Clear Lake Dam was not manned beyond September, consequently no records are available. See Tule Lake for similar weather conditions.

B. Water Conditions

The water level of Clear Lake reservoir was approximately .5' below 1953 for the first of September, and .8' lower than 1953 on October 30th, reflecting the current dearth of precipitation. Only intermittent gauge readings are available, a summary of which follows:

	<u>1st</u>	<u>20th</u>	<u>30th</u>
Sept.	4531.63	4531.10	4530.89
Oct.	30.86		30.53
Nov.	30.51		30.57
Dec.	30.57		30.60

C. Fires

None.

II WILDLIFE

No field work was conducted on this refuge during this period. Two flights were made over the area, the first on November 1, and the second on December 8. The results of these counts were as follows:

	<u>November 1</u>	<u>December 8</u>
Swan	25	6
Canada Goose	610	505
Cackling Goose	7200	
White-fronted Goose	200	1960
Snow Goose	550	6000
Mallard	320	100
Pintail	1000	
Green-winged Teal	37	
Scaup	50	

II WILDLIFE (CON TD)

Bufflehead	10	
Ring-billed Gull	400	
Shovelers		50
Mergansers		125
Antelope	128	130
Mule Deer	16	4
Coyote	1	

At the last visit the water level had been drawn down considerably and a large amount of barren shoreline had been exposed.

A variation of the pattern of flight and use by the geese resting on Clear Lake, and a change of flock composition was observed during the last half of October, and the first half of November.

The upland area northwest from Clear Lake consists of numerous and sizeable basins and flats which have been developed into grain fields. They were noted to be carrying a heavy field feeding and resting use by geese. Previously the main flight has appeared to be between Clear Lake and the Tule Lake basin to the west, rather than northwest to these upland fields and the vicinity of Malin, as observed this year.

The flock composition was changed from that observed last year, by Cacklers predominating, and Snows equaling or exceeding the White-fronts in numbers.

On three car trips, covering the area from Malin southeasterly via the upland roads and grain fields to the northwest corner of Clear Lake (which is the part of the reservoir favored by the resting waterfowl), it was evident that peak concentration exceeded 20,000 geese, which were 50% Cacklers, 30% Snows, and 20% White-fronts.

No botulism or lead poisoning was observed or reported.

There was a report of two dead antelope, presumably fawns. This was brought to the attention of State officials, since they were making a survey in this part of California. No report has been received.

VI PUBLIC RELATIONS

A. Recreational Uses

Hunting use: None

Fishing use: None

Miscellaneous use 2500

Total Visitor Days 2500.

General:

During the latter part of the California mule deer season the Oregon-California-Lava Beds herd were moving into the Clear Lake area from Oregon. Hunting pressure was heavy and success good, with better bucks taken than in other localities near Tule Lake and Lower Klamath.

Waterfowl hunters were attracted, especially by the goose use on the area northwest of the Refuge, and this flight back and forth to the water on the NW corner of Clear Lake. Ridge, and pass shooting increased in this locality northwest of the Refuge, and was less on the ridge between Clear Lake and Tule Lake.

Roadways were beaten through the sage and rocks, by both the deer and goose hunters, to permit access on this area around the Refuge.

Patrol on this locality outside the Refuge resulted in apprehension of two cases of overlimits of dark geese. These were turned over to State officers and successfully prosecuted at Alturas, Calif. Modoc County had no local court at the time, and the State officers cooperated by taking the cases to the 75 mile distant court at Alturas.

The original sign and boundary posting on Clear Lake Refuge are obsolete and in need of complete replacement. Important points on the boundary have been reposted, but to bring it up to a satisfactory standard would require a major project.

The approximately 3000 rods of fencing on the east side of the refuge is also in very bad condition. Review of the need and location of this fence is in order, especially in view of the maintenance problem and current control of economic use.

Sections of the Clear Lake report not covered are either not applicable, or are covered in the Tule Lake section.

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Form NR-1
(Rev. March 1953)

W A T E R F O W L

REFUGE Clear Lake

MONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period									
	9/1-4 1	9/5-11 2	9/12-18 3	9/19-25 4	9/26-10/2 5	10/3-9 6	10/10-16 7	10/17-23 8	10/24-30 9	10/31-11/6 10
Swans:										
Whistling										25
Trumpeter										
Geese:										
Canada		768				900				610
Cackling										7200
Brant										
White-fronted						200				200
Snow										550
Blue										
Other										
Ducks:										
Mallard		67				100				320
Black										
Gadwall										
Baldpate		10				350				
Pintail		160								1000
Green-winged teal		20								37
Blue-winged teal										
Cinnamon teal										
Shoveler		10								
Wood										
Redhead										
Ring-necked										
Canvasback										
Scaup		7								50
Goldeneye										
Bufflehead										10
Ruddy										
Other										
Coot:										

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3-7150a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Clear Lake

MONTHS OF Sept 1 TO Dec 31, 1954

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11/7-13	11/14-20	11/21-27	11/28-12/4	12/5-11	12/12-18	12/19-25	12/26-31			
Swans:											
Whistling					6						
Trumpeter											
Geese:											
Canada					505						
Cackling											
Brant											
White-fronted					1960						
Snow					6000						
Blue											
Other											
Ducks:											
Mallard					100						
Black											
Gadwall											
Baldpate											
Pintail											
Green-winged teal											
Blue-winged teal											
Cinnamon teal											
Shoveler					50						
Wood											
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:											

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	:	:	:
Geese	:	:	:
Ducks	:	:	:
Coots	:	:	:

SUMMARY

Principal feeding areas

Principal nesting areas

Reported by

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

- (1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.
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- (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).

Composition and credit for this report:

Jean F. Branson)
Richard S. Rodgers): Collaborated on all wildlife sections.

Jean F. Branson: Weather and Water Conditions, Fires, Plantings
(including experimental and weed control), Items
of interest, NR Forms, Photos and Captions.

Henry Christensen: Physical Development: Construction on Lower
Klamath and Tule Lake.

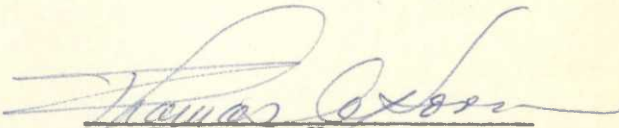
Ross Harrington: Physical Development: Building Maintenance and
Repair.

Blake F. Chapman: Physical Development: Equipment Maintenance and
Repair.

Robert H. Wills: Typing and Assembly.

Burton W. DeGraw: Visitors, Personnel Transfers and Changes, etc.

Submitted February 8, 1955


Thomas C. Horn
Refuge Manager

Mac
Regional Office Approval:


ACTING REGIONAL DIRECTOR