

LAKE ANDES NATIONAL WILDLIFE REFUGE

REFUGE STAFF

Leo Kirsch.....REFUGE MANAGER

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I. GENERAL

Weather Conditions

No weather station is located at Lake Andes Refuge. All weather data in this report comes from the nearest official station which is located at Pickstown, South Dakota approximately 7 miles south of Lake Andes. The following table compares weather data for the period during the past three years:

	<u>Precipitation</u>			<u>Maximum temp.</u>			<u>Minimum temp.</u>		
	1952	1953	1954	1952	1953	1954	1952	1953	1954
September	.14	.14	2.63	98	96	89	41	41	39
October	.00	.21	1.14	87	91	88	30	27	28
November	.74	1.21	.41	76	80	76	3	16	12
December	.41	1.43	.01	88	86	55	-2	-1	12
Totals	1.29	2.99	4.19	ext 98	96	89	-2	-1	12

Precipitation during the period was higher than in 1952 or 1953. September and October were wet months while November and December were very dry. December temperatures averaged above normal. Evidence of this abnormally warm December is shown in the large open holes on the center lake which are not occupied by ducks or geese. The only snowfall during the period came during the closing days of November when 7 to 8 inches were recorded. All of this snow had melted by the end of December.

Water Conditions

Water gauge readings as of September 1 and December 31 for the past 4 years appear in the following table:

		<u>Unit</u>			
		<u>North</u>	<u>Center</u>	<u>South</u>	<u>Owens Bay</u>
September 1, 1951		6.8	7.5	7.5	6.2
" " 1952		6.6	8.0	8.0	5.9
" " 1953		6.0	7.25	7.25	5.6
" " 1954		8.1	*	7.25	4.85
December 31, 1951		6.5	7.4	7.4	6.1
" " 1952		5.7	7.3	7.3	5.3
" " 1953		5.7	7.1	7.1	5.2
" " 1954		7.5	*	6.8	4.2

* Level too low to gauge.

The water level in the north unit at Lake Andes was higher at the beginning and at the close of the period than it has been at these times during the past 4 years. This high water level resulted from heavy rains which filled the unit during the late summer. The water level in the center lake became too low to gauge during late summer. The unit still has at least 6.5 feet of water and is in no immediate danger of going dry. The south unit was slightly lower at the end of the period than it has been during the past 4 years but still is in good shape. The Owens bay unit is at its' lowest ebb for this period since 1947 when the previous well went bad. This small unit will be dry in another 8 to 10 months if some source of water is not developed to save it. Money has been set up to drill a new well on the bay and it is hoped that this project can be completed before the bay is lost.

II WILDLIFE

Migratory Birds

Population and Behavior

No population data is available for much of the fall migration period of 1953 for direct comparison with data collected this period. The table below compares the little available comparable data for the 3 years:

Date	<u>Number of ducks</u>		<u>Number of geese</u>	
	1953	1954	1953	1954
November 1	50,000	25,000	6	100
" 7	94,000	68,000	50	150
" 14	110,000	100,000	50	100
" 21	130,000	54,000	200	200
" 28	130,000	170,000	300	300
December 5	150,000	150,000	1,500	300
" 12	50,000	140,000	1,000	1,000
" 18	--	200,000	---	2,500
" 26	50,000	200,000	1,200	4,000
" 30	50,000	100,000	3,000	6,500

These data indicate that the early season duck flight was lighter this year than in 1953, but that the late season or mallard flight built to a much larger peak and remained in the area a great deal longer than in 1953.

The goose population at Lake Andes was about the same as last year during the hunting period. The post season build up was more rapid this year and built to a higher peak during the period than in 1953.

Canada Geese The first Canadian geese noted this fall were seen on October 30. The goose flock built up slowly from then until the end of November when 300 birds were using the refuge. Immediately following the hunting season geese began to move into Lake Andes and by the end of December 6,500 birds were using the area. Only a handful of snow and blue geese used Lake Andes this year. A few white-fronted geese were present during late October and early November. Goose use days for the period increased from 50,000 in 1953 to 106,000 this year.

Mallard The mallard build up began during the week of October 7-14 when a few thousand birds moved into the area. A large increase in mallards occurred November 6 and again on November 27. The peak mallard population was not reached until after the close of the season during the third week of December when 200,000 mallards were using the Lake Andes area.

Gadwall The peak build up of gadwalls came during the week of October 16 to 23 when about 1,000 birds were using the area. A large movement of gadwall passed through the area the following week on October 27 but very few of these birds stopped at the refuge.

Baldpate The peak baldpate population occurred between October 9 and 16 when approximately 1,000 were using the area.

Pintail The peak pintail population occurred between October 16 and November 6 when from 3,500 to 5,000 birds were using the area.

Green-wing teal The green-wing flight was not heavy at Lake Andes but a vast number of these birds passed through the area making heavy use of the pothole country and the Fort Randall Reservoir area.

Blue-wing teal The blue-wing teal flight was not heavy at Lake Andes. A peak population of 1,500 birds was reached on October 9. The pothole area and reservoir were used heavily by these birds during late September and early October.

Shoveller The shoveller flight at Lake Andes was light this year. A peak population of 1,000 birds was reached on October 30.

Redhead The redhead peak was higher this year than in 1953. An estimated 2,500 redheads were using Lake Andes on October 16.

Canvasback The canvasback flight was much lighter this year than in 1953. The peak population was only 500 birds as compared to 2,000 a year previous.

Scaup The scaup flight peaked at 3,500 birds on November 30 as compared to a peak of 14,000 during the 1953 flight.

Food and Cover

Aquatic waterfowl foods were not abundant on the Lake Andes Refuge this year. The only unit with large amounts of aquatics was Owens bay. High water levels and carp have destroyed much of the sago pondweed which was so abundant in Lake Andes a few years ago. Feeding conditions for the terrestrial feeding species have been excellent during most of the period. Snow cover during the first 2 weeks of December covered much of the waste corn in the fields but thawing weather removed this snow before Christmas and at the end of the period all fields in the area were open.

Depredations

The only depredations complaints from the refuge vicinity were minor having to do with the loss of corn on the ground after picking before livestock could eat it or it could be picked up. This type of loss is almost impossible to prevent. Some depredations of a more serious nature occurred along the Fort Randall Reservoir during the waterfowl season and while the snow cover was on immediately following the season. In two instances picked corn was left piled near the reservoir and quite heavy losses were sustained. One farmer lost an estimated 200 bushel of corn to geese. This corn was piled in long rows to dry near the reservoir. The water in the reservoir came up across the road to the corn and the farmer could not get to it to move it. The geese discovered the corn and approximately 7,000 of them worked on it for a 2 week period. Needless to say there was very little corn left in the piles when the geese moved from the area.

Lead Poisoning

Fluoroscopic work completed January 8 indicates that there is very little lead poisoning in the Lake Andes mallard flock. Approximately 2% of the mallards fluoroscoped had shot in the gizzard. Most of the birds carrying gizzard shot had only one pellet which is rarely a lethal dosage.

Upland Birds

Population and Behavior

The pheasant population at Lake Andes appears to be at about the same level as a year ago. There has not been enough snow this winter to concentrate the birds so that accurate population counts could be made.

None of the bob-white quail which use the area around Owens bay were observed during the period.

Food and Cover

Food is never a problem for wintering pheasants in this area unless severe winter conditions make waste corn unavailable. Winter cover is inadequate to protect birds during the severest storm conditions, but for normal winter conditions there is adequate winter cover. No winter storm losses occurred during the period.

Big Game Animals

Population and Behavior

White-tailed deer are observed periodically along the shores of the lake. The last deer observed was seen prior to the 3 day season in December. No deer tracks have been seen on the refuge since the season.

Food and Cover

There is plenty of food for deer on and near the refuge but almost no suitable cover is available for a large deer population.

Fur Animals, Predators, Rodents, and Other Mammals

Muskrat Muskrats are the most abundant fur-bearers on the refuge. Trapping was allowed on the easement portions of the area during the later part of the period. The population is not high because there is very little suitable habitat for them at Lake Andes. The best rat areas are at the extreme north and southwest ends of the lake where heavy stands of emergent vegetation are available. The muskrat population on Owens bay is very low this year.

Food and Cover

The chief factors limiting muskrat numbers at Lake Andes are the absence of suitable food and cover plants. There is almost no shoreline suitable for bank borrows so most of the rats have to build houses. There are very few stands of emergent vegetation on the lake suitable for the construction of houses.

Mink The mink population appears to be lower this year than in 1953.

Raccoon There are a few raccoons on the area. The raccoon population is apparently lower than last year also.

Skunk The skunk population on the refuge is apparently lower than it was a year ago.

Red fox, coyote, badger, and civet cat are all present on the refuge at times but none of them are common on the area.

Predacious Birds

The fall and early winter population of predacious birds includes prairie falcons, duck hawks, Cooper's hawks, sharp-shinned hawks, rough-legged hawks, marsh hawks, short eared owls, horned owls, snowy owls, bald eagles, and golden eagles.

The bald eagle population on Lake Andes apparently varies daily. The largest number observed at any one time during the period was 11 birds. It is believed that between 15 and 30 bald eagles were using Lake Andes during most of December. These birds are believed to be feeding almost exclusively on the wintering ducks and goose flock. It is difficult to believe that the bald eagle is in danger of extermination after spending a little time along the Missouri River, Red Lake, and Lake Andes at this time of the year. It is possible to see 50 eagles from a plane in 2 hours of flying time in this area if snow conditions are good.

Fish

Lake Andes is still suffering from a badly unbalanced fish population. The overabundance of crappies has apparently partially taken care of itself because of a heavy die off of old fish and poor reproduction. The overabundant bullhead population is still here, and carp are rapidly becoming a problem.

III. REFUGE DEVELOPMENT AND MAINTENANCE

Physical Development

The work of erecting sign holders for 6 refuge recognition signs and painting them was completed early in the period. The 6 signs were replaced and have weathered all of the storms thus far. We were amazed that we got through the entire hunting season with no shot holes in any of the signs. The roads in the Owens bay area were given a final mowing and 3 areas were mowed in preparation for winter banding.

All but a small portion of the west diversion ditch was cleaned by blasting. The work was abandoned when the last charge fired broke some windows in the town of Lake Andes.

The duck holding pen was rebuilt and moved to a better location.

The winter trapping and banding project was started in December. A total of 406 mallards were trapped banded and fluoroscoped by the end of the period.

A load of grain was hauled from Sand Lake Refuge for bait, and a load of corn was picked up at the state public shooting area near Platte for the same purpose.

The new net trap was delivered during the period and rigging was completed at the refuge.

Weekly waterfowl surveys were carried on at Lake Andes and periodic surveys were made on the Fort Randall Reservoir during the period.

The necessary patrol was maintained during and after the hunting season. This included intensive bag check work on the passes at Lake Andes.

Cultivated Crops

The only cultivated field on the refuge is the 18 acre Berquest tract. This field produced 375 bushel of speltz wheat this year. The refuges 125 bushel share was used as bait during December. It was discovered that Speltz is not a very attractive bait for ducks in this area, and in the future we do not plan to raise this crop on the refuge.

IV. ECONOMIC USE OF THE REFUGE

Grazing

The 3 grazing units produced 144.16 ANMs of grazing this year. The income from grazing amounted to \$136.25.

Fur Harvest

Trapping permits were issued to most of the landowners on the easement portions of the refuge this year. No permit was issued for trapping on Owens bay because of the lack of furbearers on the area and because trapping would interfere with the banding program on the area.

V. FIELD INVESTIGATION OR APPLIED RESEARCH

The only investigational work on the refuge this period was the fluoroscopic study of the wintering mallard population. The summary of this work will appear in the April narrative. Enough data has been compiled at this date to indicate that approximately 30% of the mallard drakes and 20% of the hens in the flock are carrying shot in the body. Less than 2% of the birds contain gizzard shot. The largest pellets found during the work were 22 rifle bullets of which 2 were found lodged in apparently healthy ducks. Many fully recovered birds were found to be liberally springled with shot.

VI PUBLIC RELATIONS

Recreational Use

An estimated 50,000 fisher use days were spent on Lake Andes during the year.

Hunting use was also heavy around the lake and on the 2 passes. Field data indicates that a minimum of 1,300 hunter days were expended on the 2 passes alone. It is estimated that a total of approximately 3,000 hunter days were spent on the 2 passes and in the vicinity of the lake.

Pionickers, campers, skaters, swimmers and boaters also make heavy use of the lake during the year.

Refuge Visitors

<u>Name</u>	<u>Title & Station</u>	<u>Purpose of Visit</u>
C. T. Rollings	Supervisor, Minneapolis, Minn.	Refuge inspection
Robert Meyerdig	USGMA, Alexandria, S.D.	Law enforcement work
Charles Cadieux	USGMA, Sioux City, Iowa	Law enforcement and banding
Kenneth Crumm	Refuge Mgr., Martin, S.D.	Courtesy Call
Eldon Smith	Research Leader, Pierre, S.D.	Banding & fluoroscopic work, & discussion of Fort Randall area.
Ray Murdy	Biologist, Webster, S.D.	Banding & fluoroscopic work.

<u>Name</u>	<u>Title & Station</u>	<u>Purpose of Visit</u>
Maurice Anderson	Biologist, Madison, S.D.	Banding & fluoroscopic work
Bob Gage	Photographer, Pierre, S.D.	Banding pictures
L. Carlson	Photographer, Pickstown, S.D.	Banding pictures
Russel Robins	Ranger, Pickstown, S.D.	Banding work, & discussion of Fort Randall waterfowl.
George Kostal	Biologist, Omaha, Nebr.	Discussion of Fort Randall waterfowl.
Leonard Bancroft	Warden, Burke, S.D.	Law enforcement
Les Helsen	Warden, Lake Andes, S.D.	Many contact about mutual work & problems.

Refuge Participation

Cooperated with Mr. Bates of the Sioux Falls Argus Leader by giving him population and hunter success information periodically during the hunting season.

Took part in all of the activities of the local sportsmen club.

Gave a talk on gun safety to 150 high school students at Wagner.

Gave a talk on duck depredations control to 30 members of the Lakers club at Lake Andes.

Hunting

Hunter success showed a wide variation during the season in this area. Average hunter success by weekly period was as follows:

Period.....	10/1-8	10/9-16	10/17-23	10/24-30	10/31-11/6
Ducks/man...	4.1	1.9	.9	.2	.53

Period.....	11/7-13	11/14-20	11/21-27
Ducks/man...	1.1	.5	.1

Hunting was good the first 9 days of the season but tapered off rapidly and hit a low during the period from October 13 to 23. Success picked up again during the first 2 weeks of November and then decreased to almost nothing by the end of the season.

A comparison of bag check data from the Lake Andes area appears below:

Year	No. of hunters interviewed	Average no. of ducks/man
1952	45	.98
1953	104	1.17
1954	388	.95

Bag check data indicate that hunting was poorer this year than in 1953.

Species composition data from bag checks in this area during the past 3 seasons are compared below:

	<u>Percent of birds checked</u>		
	1952	1953	1954
Mallard	43	44	33
Scaup	9	39	13
Canvasback	19	5	3
Redhead	0	3	9
Shoveller	9	2	1
Baldpate	7	2	4
Gadwall	5	1	1
G.W. teal	5	1	7
Bufflehead	5	1	2
Pintail	0	1	11
Goldeneye	0	1	0
Merganser	0	3	1
W.W. Scoter	0	1	0
Blue-wing teal	0	0	17

The large decrease in the importance of the mallard in the bag does not reflect a decrease in mallards in the area but the poor hunting weather during the later portion of the hunting season. The increase in the importance of the blue-wing teal in the bag reflects more the fact that some bag checks were made early in the season and in areas where teal are killed rather than that there were more blue-wings this year. The decreased kill of scaup and canvasback and the increased kill of redheads is apparently a direct reflection of the populations of these birds.

Fishing

Walleye and crappie fishing was good for a short period during November, and a large number of combination fishing and hunting trips were expended on the north pass at that time. The remainder of the period saw little fishing activity on the lake.

Violations

Warden Nelson apprehended 2 youths shooting ducks after hours near the refuge the last day of the 1954 season. This case was never brought to court because of lack of evidence. The refuge manager apprehended Mr. Robert Bowen of Geddes, South Dakota shooting ducks during the closed season. Mr. Bowen was fined \$35.00 plus \$12.00 court costs and his shotgun was confiscated.

VII OTHER ITEMS

Goose Browse Preference

Field observations in the Lake Andes area indicate that the geese prefer rye over other browees. The second choice appears to be fallow land, and the third alfalfa fields. Use of alfalfa is especially high just before the geese migrate north in late February and March.

Respectfully submitted:

Leo Kirsch
Refuge Manager
January 12, 1955

Approved:

WATERFOWL

REFUGE Lake Ardis Refuge

MONTHS OF September TO December, 1954

(1) Species	(2) Weeks of reporting period									
	1	2	3	4	5	6	7	8	9	10
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada									120	
Cackling										
Brant										
White-fronted								6	30	present
Snow								24		
Blue										
Other										
Ducks:										
Mallard	200	200	100	300	230	1,000	7,000	7,000	15,000	60,000
Black	present	present	present	present	present	present	present	present	present	present
Gadwall	30	30	30	20	present	300	1,000	1,000	500	present
Baldpate	20	20	present	100	100	1,000	500	500	500	present
Pintail	200	50	200	300	200	1,500	3,500	3,500	3,000	5,000
Green-winged teal	present	present	present	present	present	500	500	500	1,000	500
Blue-winged teal	700	400	150	600	300	1,500	100	100		
Cinnamon teal										
Shoveler	50	10	present	20	present	800	400	400	1,000	present
Wood							present	3	present	
Redhead	30	30	30	30	present	400	2,500	1,500	1,500	300
Ring-necked	Probably present at times during migration but not separated from scaup.									
Canvasback						50	500	500	500	
Scaup	20	20	20	50	present	25	1,000	2,000	2,000	3,000
Goldeneye										
Bufflehead								present	present	1,000
Ruddy				150	150	25	1,000	2,000	present	present
Other										
Coot:										
Int. Dup. Sec.,	550	500	500	3,600	6,500	11,000	13,800	10,000	present	present

WATERFOWL
(Continuation Sheet)

REFUGE Lake Arches Refuge

MONTHS OF September TO December, 1954

(1) Species	(2) Weeks of reporting period								(3) Estimated waterfowl days use	(4) Production : Broods: Estimated : seen : total	
	11	12	13	14	15	16	17	18			
Swans:				1					7		
Whistling											
Trumpeter											
Geese:											
Canada	100	200	300	300	1,000	2,500	4,000	6,500	106,000		
Cackling											
Brant											
White-fronted	present	present	present						250		
Snow											
Blue											
Other											
Ducks:											
Mallard	95,000	50,000	168,000	150,000	140,000	200,000	200,000	100,000	8,358,000		
Black	present	present	present	present	present	present	present	present			
Gadwall	present	present	present	present	present	present	present	present	20,400		
Baldpate	present	present	present	present	present	present	present	present	22,700		
Pintail	present	present	present	present	present	present	present	present	122,200		
Green-winged teal	present	present	present	present	present	present	present	present	21,000		
Blue-winged teal									27,000		
Cinnamon teal											
Shoveler	present	present							15,200		
Wood									20		
Redhead	present	present	present						44,200		
Ring-necked											
Canvasback	present	present	present						12,300		
Scaup	3,000	3,500	1,000	present	present	present	present	present	95,400		
Goldeneye	present	present	1,000	present	present	present	present	present	3,500		
Bufflehead	2,000	500	500	present	present	present			28,000		
Ruddy									16,300		
Other											
Coot:											
									325,000		

(over)

Lake and Refuge

September thru December - 1954

(5)

(6)

(7)

Total Days Use : Peak Number : Total Production

SUMMARY

Swans	<u>7</u>	:	<u>1</u>	:	<u> </u>
Geese	<u>106,250</u>	:	<u>6,500</u>	:	<u> </u>
Ducks	<u>8,785,000</u>	:	<u>200,000</u>	:	<u> </u>
Coots	<u>325,000</u>	:	<u>13,800</u>	:	<u> </u>

Principal feeding areas Corn fields on adjacent privately
owned farms.

Principal nesting areas

Reported by Leo Kirsch

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
(Aug. 1952)MIGRATORY BIRDS
(Other than Waterfowl)Refuge Lake UmbagogMonths of September to December 1954

(1) Species	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Production			(6) Total Estimated Use
Common Name	Number	Date	Number	Inclusive Dates	Number	Date	Number Colonies	Total # Nests	Total Young	
I. <u>Water and Marsh Birds:</u>										
Pied-billed Grebe	Summer resident		500	October						
White pelican	Summer resident		250	September						
Double-crested Cor.	Summer resident		600	October						
Great Blue Heron	Summer resident		unknown							
Black crowned nt. heron	Summer resident		unknown							
Spoon-billed bittern	Summer resident		unknown							
Little green heron	Summer resident		2							
Horned grebe	Migrant									
Barnegate grebe	Migrant									
II. <u>Shorebirds, Gulls and Terns:</u>										
Black tern	Summer resident									
Franklin's gull	Summer resident									
Killdeer	Summer resident									
Marbled godwit	Summer resident									
Willet	Summer resident									
Dowitcher	Migrant									
Avocet	Summer resident									
Wilson's snipe	Migrant									
Lesser yellowlegs	Migrant									
Greater yellowlegs	Migrant									

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. <u>Doves and Pigeons:</u> Mourning dove White-winged dove	Summer resident	unknown	noted	12/15/54	
IV. <u>Predaceous Birds:</u> Golden eagle Duck hawk Horned owl Magpie Raven Crow Bald eagle Prairie falcon Rough-legged hawk Marsh hawk Cooper's hawk	1 1 Common year around Occasional stray Common year around 7 1 Common winter resident Year around resident 1	11/6/54 November resident 11/7/54 November resident October	2 1 7 2 1	12/30/54 November 12/30/54 December Winter resident Winter resident Winter resident Winter resident	
Reported by				Leo Kirch	

INSTRUCTIONS (See Sec. 7532, Wildlife Refuges Field Manual)

- (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 migration record for the species for the reporting period.
- (3) Peak Numbers: Estimated number and inclusive dates when peak population of the species occurred.
- (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 species days use (average population X no. days present) of refuge during the reporting period.

(April 1946)

UPLAND GAME BIRDS

 Refuge Lake Andes Refuge Months of September to December, 1946

(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'y'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ring-necked pheasant		10			50 cocks per 100 hens				500	Birds use lake shore area for resting and loafing cover and food in near by fields. Approximately 100 birds area around Oceans bay during winter months.
Bobwhite quail									57	Males were heard during year but no birds have been seen.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

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

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

3-1753

Form NR-3

(June 1945)

BIG GAME

Refuge Lake Umbagog Refuge Calendar Year 1954

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
			Hunting	For Re- stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Common Name	Cover types, total Acreage of Habitat	Number												
white-tailed deer	Entire area											2	none	

Remarks:

Reported by Leo Kirsch, Refuge Manager

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) REMCVALS: Indicate total number in each category removed during the year.
- (5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.
- (6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.
- (7) TOTAL REFUGE POPULATION: Give the estimated population of each species on the refuge at period of its greatest abundance and also as of Dec. 31.
- (8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

DISEASE

Refuge Lake Umbagog Refuge

Year 19 54

Botulism

Period of outbreak none noted

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease Lead poisoning

Species affected Mallard

Number Affected	Actual Count	Estimated
Species		
<u>Mallards</u>	<u>15</u>	<u>150</u>
_____	_____	_____
_____	_____	_____

Number Recovered none

Number lost Eagles pick up and devour weak birds about as fast as they become weak

Source of infection unknown

Water conditions normal except for Owens bay which is lower than usual.

Food conditions Good

Remarks Fluoriscopic studies indicate that only a very small percent of the wintering mallard flock at Lake Umbagog are carrying ingested lead in the gizzard. A full report on this subject will be forthcoming when the study has been completed.

(April 1946)

FISH

Refuge Lake Umbagog Refuge Year 1945

Species	Relative Abundance	Sport Fishing		Commercial Fishing		Restocking		Number removed for Restocking
		Man days Fishing	Number Taken	No. of Permits	Pounds Taken	Number Stocked	Area Stocked	
Large-mouth bass	common							500 from Owens bay. 1,000 500,000
Crappie	Abundant							
Blue gill	common							
Yellow perch	common							
Walleye	common							
Northern pike	common							
Bullhead	Over abundant							
Sunfish	Common							
Carp	Common							
Chanell catfish	Present							
		50,000 estimated						

REMARKS: The main lake is overpopulated with small bullheads. The over population of crappie has apparently taken care of itself because of a die off of old fish and poor reproduction. At the present time the state is trying to find a method of thinning the over abundant bullhead population.

3-1757

Form NR-7

(April 1946)

PLANTINGS

(Marsh - Aquatic - Upland)

Refuge.....Year 195.....

Lake Umbagog

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
Brome grass	Oxens bog	6 lbs./acre	5 acres		March & April	?		Will be unable to judge success until next year.

TOTAL ACREAGE PLANTED:

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

CULTIVATED CROPS

Refuge Lake Arden 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.	
Albert Wisterek	Pt. Mabeare #59	Barquest tract	Soybeans	21 bu	12	250	6	125			

Summary of Crops Grown:	Crop	Acreage	Permittee's Share		Government's Share				Total Revenue
			Acres	Bushels	Harvested		Unharvested		
					Acres	Bu.	Acres	Bu.	\$
	<u>Soybeans</u>	<u>12</u>	<u>12</u>	<u>250</u>	<u>6</u>	<u>125</u>			
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 Lake AndesMonths of September through December, 1954

(1) VARIETY*	(2) ON HAND BEGINNING OF PERIOD	(3) RECEIVED DURING PERIOD	(4) TOTAL	(5) GRAIN DISPOSED OF				(6) ON HAND END OF PERIOD	(7) PROPOSED OR SUITABLE USE*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Yellow dent corn	300 bu	165	465			215	215	250		250	
Spelts wheat	125		125			125					
Barley-wheat mix		140	140			140					

(8) Indicate shipping or collection points Lake Andes South Dakota(9) Grain is stored at Orens bay

(10) Remarks Corn came from state land near Platte, Barley-wheat mixture was hauled from Sand Lake Refuge, Spelts was
grown at Lake Andes Refuge.

*See instructions on back.

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

- (1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat; red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.
- (4) A total of columns 2 and 3.
- (6) Column 4 less column 5.
- (7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters granary," etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

Interior Duplicating Section,
Washington 25, D.C. 84267

HAYING AND GRAZING

Refuge ~~Lake Andes Refuge~~ Year 19~~54~~

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
Joseph Novak	Lake Andes #3	Owens bay	20	64.166		July 15 to Sept. 1	1.50/ AUM	96.25	
Paul Hruska	Lake Andes #2	Diversion ditch	12	60		July 20 to Oct. 31	2.50/ AUM	30.00	
Norris Nelson	Lake Andes #1	Diversion Ditch	6	20		July 20 to Oct. 31	1.50/ AUM	10.00	

Totals:

Acreage grazed 38 Animal use months 144.166 Total income Grazing 136.25
Acreage cut for hay _____ Tons of hay cut _____ Total income Haying _____

TIMBER REMOVAL

Refuge Lake Umbagog Year 1954

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
to report								

Total acreage cut over.....

Total income.....

No. of units removed B. F.

Method of slash disposal.....

Cords.....

Ties.....