SWAN LAKE NWR - NARRATIVE REPORT - 1968

Narrative Report
Swan Lake National Wildlife Refuge
January - December, 1968

PERMANENT PERSONNEL

Robert H. Timmerman	Refuge Manager
Lawrence G. Kline	Asst. Refuge Manager
Bennie M. Hull	Biological Technician
Benny N. Howerton	Operator General
Marvin F. Lentz	Refuge Clerk

TEMPORARY EMPLOYEES

Floyd A. Holland	Laborer, Farm
Roy T. Warren	Laborer, Farm
Ervin Windsor	Laborer, Farm

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I. GENERAL

A. Weather Conditions

	Precipitation			Max.	Min.
	Month	Normal	Snowfall	Temp.	Temp.
January	.35	1.64		59	-15
February	1.22	1.79		56	4
March	1.13	2.57		80	14
April	4.75	3.72		81	24
May	4.55	4.52		87	38
June	2.44	4.87		92	53
July	4.06	3.92		95	48
August	3.84	3.67		93	54
September	4.93	4.88		85	42
October	2.36	2.72		86	26
November	3.34	2.32	5.0	76	19
December	1.60	1.65	1.5	60	-9
Annual Totals	34.57	38.27	6.5	Extremes 95	-15

This data was collected from the weather station at Fountain Grove, located about eight miles north of refuge headquarters.

A. Weather Conditions

Our total precipitation for the year was 3.7 inches less than the area average. However, it was generally well distributed during the growing season, and proved to be adequate for optimum crop production. We received only .14" of rain from June 17 to July 14, but this dry period did not have any significant adverse affect on our corn production. It did delay germination on a small amount of late planted milo to the extent that it didn't reach maturity before the first killing frost.

Temperatures were near normal throughout the year with no extended periods of extreme heat or cold.

B. Habitat Conditions

1. Water

All refuge impoundments were maintained near approved levels throughout the year. No major floods occurred during 1968.

2. Food and Cover

The following table compares food production during the past fourteen years.

Foods Available For Waterfowl 1955-1968

Year	Bushels of Grain*	Acres of Wheat	Acres of Legumes	Acres of ** Moist Soil Foods
1955	11,450	718	-	400
1956	27,330	712	-	400
1957	29,800	967	-	400
1958	4,920	1,276	15	400
1959	34,750	979	212	2,000
1960	16,000	1,250	204	2,285
1961	21,180	223	638	2,200
1962	26,280	687	487	2,200
1963	52,600	667	525	2,200
1964	29,240	775	427	2,200
1965	86,300	660	250	2,200
1966	69,000	1,125	383	2,200
1967	35,000	1,150	-	2,200
1968	101,200	1,124	308	2,200

*This includes corn, milo and rice.

**Includes mainly wild millet, chufa, tame millet, and smartweed.

The acreage figures in the above table can be confusing and do not present a true comparison of available foods. This year we had good

stands of clover in all fields about eight to ten inches tall when the geese arrived. The wheat and rye was planted early and made good growth. The moist soil plant food production was excellent in South Pool, better than average in Swan Lake, and slightly below average in Silver Lake.

Cover conditions continue to improve in the prairie chicken area except for invasion of Reed's Canary grass in some areas. Part of the area was mowed to control woody vegetation.

II WILDLIFE

A. Migratory Birds

Ducks and Coots

At the beginning of the year we had a wintering population of about 100 mallards. They increased to 5,000 by the first of February. Mallards peaked at 40,000 during the third week of March. This compares to a spring peak of 60,000 in 1967. Total ducks peaked at 68,625 during this same week. Our spring peak on pintails and green-winged teal was 10,000 of each. All other common duck species were represented in lesser numbers. Most of the ducks had departed by late April, although we still had about 1,000 blue-winged teal until mid-May.

Our summer population was estimated at 400 wood ducks, 20 mallards, and 20 blue-winged teal. A few wood duck broods were observed in the borrow pits along levee roads.

Blue-winged teal began arriving during the third week of August. They peaked at 2,500 the second week of September. Mallards and total ducks peaked at 85,000 and 102,465 respectively in mid-November. Divers peaked at 5,450 in early November, 5,000 of these being scaup.

This years total duck use was 7,467,215 days. This compares with 7,805,455 in 1967, and 9,401,420 in 1966. Despite the fact that refuge food production was much improved over 1967, it was apparent that there were fewer ducks in our area this fall.

Coots peaked at 4,000 in the spring and 3,500 during the fall. Total use days for the year was 275,975. This was a considerable decrease from the 816,270 use days recorded for 1967.

Geese

We had from 50,000 to 85,000 Canada geese wintering on the refuge. During extremely cold weather many of these birds would move to the Missouri River and the large cut-off lake near Dalton. During more moderate weather most of them would return to the refuge. Our spring peak never exceeded 85,000. Canadas began departing in mid-March, and were nearly all gone by the second week of April.

About 200 Canada geese spent the summer on the refuge. No nesting attempts or broods were observed by refuge personnel. However, there were several unconfirmed reports of broods by refuge visitors.

Fall migrants began arriving on September 25. They peaked at 137,500 on November 5. During the Mississippi Flyway Canada Goose Survey which was held on December 17, there were 122,730 Canadas in the Swan Lake Zone.

Use days for this species totaled 16,123,100 for the year.

From 100 to 500 blue and snow geese were seen on the refuge during January and February. These birds spent most of their time on the Missouri River, but they could occasionally be found on the refuge. The peak on migrants was 35,000 in mid-March. The peak fall count was 28,000 on November 20.

White-fronted geese peaked at about 500 early in March. They never exceeded an estimated 50 birds during the fall.

The following table compares waterfowl use for the months of September through December for the last 14 years.

Number of Days Use

Year	Canada Geese	Other Geese	Ducks	Coots	Totals
1955	4,692,100	170,100	7,691,500	90,800	12,644,500
1956	3,390,300	354,900	4,097,700	52,700	7,895,600
1957	2,449,000	36,300	4,289,300	32,450	6,807,050
1958	2,505,700	198,600	2,131,400	14,500	4,850,100
1959	3,364,825	468,489	4,363,621	373,800	8,570,735
1960	5,738,300	358,610	3,400,925	317,435	9,815,825
1961	4,546,580	428,953	4,393,500	85,750	9,454,783
1962	7,113,600	657,300	1,344,360	107,100	9,222,360
1963	8,831,375	969,920	4,677,750	230,300	14,709,345
1964	7,980,700	687,050	4,931,220	175,350	13,774,320
1965	9,122,400	831,180	5,845,560	321,440	16,120,580
1966	11,272,800	1,684,340	6,979,630	398,650	20,335,420
1967	9,774,800	1,578,570	5,792,395	444,500	17,590,265
1968	9,576,700	1,063,825	4,691,960	126,350	15,458,835

Our population figures are based on weekly aerial counts made by Dick Vaught of the Missouri Department of Conservation.

See pages 5 and 6 for comparative zone counts on Ganada geese.

Waterbirds

Two eared grebes were observed on several occasions during the first week of September. One of them was twice trapped and released

SWAN LAKE COMPARATIVE POPULATION COUNTS

CANADA GEESE

Date	1955	1956	1957	1958	1959	1960	1961
Sept.	2,500	2,500	107	620	100	230	150
Oct.	55,000	4,600	3,675	41,000	12,650	50,500	24,750
	96,000	54,850	21,500	44,000	46,350	73,500	48,275
	133,500*	35,180	36,500	48,000	46,130	86,850*	73,600*
	96,000	35,000	No Count	54,000*	52,000	81,000	70,955
							70,300
Nov.	90,000	55,000*	42,000	41,000	57,000*	55,500	71,600
	No Count	55,000	34,000	31,700	53,555	50,000	62,465
	57,000	41,000	22,000	19,365	33,905	51,530	
	49,000	35,000	20,000	19,395	37,055	42,500	
Dec.	21,000	36,000	23,000	14,000	34,620	No Count	54,900
	15,000	31,745	18,000	20,000	No Count	29,133	39,500
	12,000	12,000	18,000	20,000	No Count	No Count	38,550

* Peak Populations

SWAN LAKE COMPARATIVE POPULATION COUNTS

CANADA GEESE

Date	1962	1963	1964	1965	1966	1967	1968
Sept.	8,000	1,800	50,025	32,050	35,065	29,450	No Count
Oct.	13,325	33,725	85,150	57,650	76,425	50,245	43,250
	17,628	72,895	99,050	90,350	97,525	74,125	88,775
	74,300	111,800	121,450*	106,650	102,775	105,500	81,050
	84,000	130,225*	115,200	No Count	124,400	No Count	88,100
	93,000	115,300	No Count	No Count	138,000*	122,200	110,585
							113,080
Nov.	107,950	122,000	119,000	89,980	137,050	118,965	137,500*
	95,000	101,650	76,000	119,350*	126,900	127,265 *	125,050
	118,200*	98,700	88,000	79,750	104,350	108,600	126,475
							115,350
Dec.	95,200	124,150	45,530	82,250	No Count	106,605	No Count
	102,500	84,650	45,230	110,250	No Count	No Count	122,730
	60,900	56,500	54,065	104,650	123,160	No Count	No Count
	28,000	Mo. River		86,555			

* Peak Populations

from a wire duck trap.

White pelicans peaked at 120 in the spring and 500 in the fall. Seven pelicans spent the summer on the refuge.

We counted 82 double-crested cormorants on October 17. This is more cormorants than have been seen on the refuge for several years. At least two were shot during goose season in the vicinity of the refuge.

One sandhill crane spent the second week of December on the refuge. This is only our second record for this species. It should be added to the bird list at the next revision.

Several king rails were seen during the summer. On two occasions adults with downy young were observed.

A black rail was sighted by Asst. Manager Kline on July 17. This species has been reported only a few times in Missouri, although because of its secretive nature it is probably more common than is generally supposed. It should also be added to our bird list.

Shorebirds, Gulls, and Terns

Dowitchers were again common during late summer. Several American avocets were observed in the fall. These species are not on the current bird list.

A flock of 40 sanderlings were seen on the margin of Silver Lake on September 11.

An estimated 150,000 Franklin's gulls passed over refuge headquarters on October 23.

Black terns were again abundant in this area in early September.

Doves

Doves were plentiful in the area through most of September. Concentration areas received fairly heavy hunting pressure. More than the usual number of doves are wintering in this vicinity.

B. Upland Game Birds

The bobwhite population was up this year, and is considered to be at the highest level in recent years. We had very little snow during the winter of 1967-'68, and bobwhite survival was excellent. Weather conditions were also near ideal during the nesting season.

A small, apparently stable population of pheasants still holds out north of the refuge. Occasional sightings and road kills are reported.

We are still maintaining some prairie chicken habitat on the refuge. We hope to be able to obtain some of these birds for restocking. Historically this area supported a high population of prairie chickens. It may be possible to establish a remnant population if sufficient birds can be obtained for a release.

C. Big Game Animals

The refuge white-tailed deer herd seems to be unchanged from last year. However, they have been increasing for the past several years. We estimate the refuge population at 325. Road kills continue to be a serious hazard on the public road bordering the refuge on the north and east.

A special deer hunt has been written into our hunting and fishing plan. When and if the state is ready to work out a hunt, we are prepared to go ahead with it. It would have to be held in January to avoid any conflict with the goose season.

This fall the deer season ran from November 16-19 and from November 30 to December 7. The first portion was open for any deer, while the second part was for bucks only. It was generally considered to be a successful season.

The biggest deer story of the year was made by Marv Lentz our refuge clerk. Marv killed a big buck on the first day of the season, which has now been officially measured and declared a new Missouri state record for a typical rack. It scored 183 4/8 Boone and Crockett points.

D. Fur Animals, Predators, Rodents and other Mammals

Allen Dysart of Sumner was again allowed to trap on the refuge strictly as a reccoon control measure. He was also instructed to remove some muskrats that were damaging pond levees behind Secondary Headquarters. We had him remove four beaver from the colony located at the junction of levees 1 and 3. This beaver colony had grown so large that we anticipated problems with them. His total catch for the period 12/1/68 to 1/15/69 was 105 raccoons, 10 opossums, 22 muskrats, 4 beaver, 1 mink, and 1 dog (manager's and owner's approval to shoot).

The raccoon population is down significantly. Mr. Dysart removed 204 last year during the same period. There should be less competition with wood ducks for nesting cavaties and less damage to crops.

Except for the one colony mentioned above, the beaver population appears to be down. The large lodge located in South Pool seems to be abandoned.

Coyotes seem to be increasing in this general area and are probably also increasing on the refuge. At least two litters of pups were raised on the refuge.

Fox numbers remain low. I did not see a fox during the entire year.

The muskrat population has increased somewhat, especially in South Pool. Some animals that were causing pond levee damage in the grassland area were removed.

Cottontails do not appear to be as numerous as last year. However, last year all of our corn fields had been rotary mowed by this time while this year we have several fields still standing. Many of the cottontails may be staying in these fields.

Fox and grey squirrel populations remain high in the timberland areas along Yellow Creek. Some of these squirrels could just as well be harvested. However, in this area there are plenty of places to hunt squirrels and the demand does not justify the expense involved in conducting a refuge hunt.

E. Hawks, Eagles, Owls, and Crows

There have been 40-60 bald eagles and 2-4 golden eagles on the refuge this fall. The mid-winter eagle inventory made on 1/9/69 gave us a total of 67 eagles. This compares with 44 on 1/9/68. The 1969 total included 19 adult bald, 41 immature bald, 1 adult golden, 3 immature golden and 3 unknown.

We received no dead or crippled eagles this fall. However, G.M.A. Sanders brought us a crippled immature bald eagle on 1/11/69. It is still alive at this writing, but will never regain the ability to fly.

Red-tailed hawks were very abundant all year.

An osprey was seen over Swan Lake on 9/2.

A pigeon hawk was observed near headquarters on 10/4.

No unusual species or numbers of owls were noted.

There were no large concentrations of crows near the refuge this year.

F. Other Birds

A red-breasted nuthatch was observed near the refuge on 11/4. This species is not on the refuge bird list and is considered uncommon in this area.

G. Fish

The refuge was open to fishing March 1 through September 10 this year. Prior to 1968 the opening date had been April 1 and some years this was too late for the good early season channel catfishing. The

most ardent fishermen were out in numbers when the season opened, but very few fish were caught. Most of the activity was concentrated on Swan Lake. About a week after the season opened some fishermen started catching fine strings of channel catfish in the shallow water on the north side of Silver Lake.

The fishing season as a whole could only be classed as fair. Crappie fishing was never good as we had very little water to pass through the refuge. The only time crappie fishing is much good is when we have relatively clear water flowing through one of the control structures.

A four day seining season for removal of rough fish was held July 10-13. A total of 618 seiners in 59 parties removed over 16 tons of rough fish. All of the lakes were open to seining, but most of the fish were taken out of the one deep hole along the entrance levee in Swan Lake. Probably over 75% of the take consisted of buffalo with carp accounting for most of the remainder of the catch. Paddlefish were placed on the game fish list by the State this year and could not be taken. Several "spoonbill" were hauled out but had to be released. One fish must have been seined out at least a dozen times before he finally died. Several of the others may have died. Next year we hope to be able to allow the seiners to take paddlefish as they are harvested no other way and some of them are wasted during the operation.

H. Disease

We have practically nothing to report under this heading. Not more than half a dozen crop impacted geese were observed. We found no lead poisoned birds.

III REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

We reclaimed 100 acres of brushland on the east side. The larger trees were uprooted and piled with the dozer. The remaining brush was plowed under and the field was planted to wheat.

A large windrow of brush, trees, and dirt which had been previously piled across the middle of a 60 acre field on the east side was dozed to the edge of the field. This opened up the field and will greatly facilitate farming operations.

The K-lane ramp on the patrol road was completely rebuilt and raised. It was previously washed out whenever Yellow Creek came out of it's banks.

The dam on Russell pond was repaired and sloped.

The emergency spillway on the small pond west of sub-headquarters was lowered. This was necessary to prevent wave damage to the dam.

All three cannon net sites were sloped and filled. Two of them were completely rewired.

A drainage ditch was dozed to drain a 17 acre field on the east side.

B. Plantings

A total of 936 acres of corn were grown on the refuge this year. Permittees plante 236 acres and the remaining 700 acres was grown as a refuge operation. Permittees harvested about 9,800 bushel of corn from 164 acres. The remaining 772 acres produced about 86,200 bushels which remained in the field for waterfowl food. This was a very good year for farming in this area. The yields on all fields of corn grown by the refuge staff were sampled by representatives from a seed corn company. They sampled all brands of corn without knowing in advance which company had provided the seed. Yields ran all the way from a low of 96 to a high of 141 bushels per acre. The average for all fields was slithtly over 117 bushels per acre. We experienced no major problems with weeds or insects.

Permittees planted 104 acres of soybeans and harvested 3,100 bushels of beans. No beans were taken as the refuge share.

The refuge staff planted 300 acres of milo that produced approximately 15,000 bushels of seed. Normally we have to flood at least a portion of a milo field before it is utilized by waterfowl. This year fall rains provided water between the rows and both geese and ducks cleaned out several fields before they were actually flooded. Milo is grown in rotation with wheat for browse. One year the ground is plowed during the summer and drilled in wheat. The following year it is disked and planted to milo. This rotation works quite well to maintain soil fertility and control woody vegetation.

Through combined efforts of State and Federal personnel 308 acres of clover were available and used heavily by geese in most areas. An excellent stand on about 20 acres next to the picnic area was almost completely ignored. This year we used a mixture of half ladino and half alsike at eight pounds to the acre. We again had good results over-seeding the landing strip using the Brillion seeder with no ground preparation. In 1969 we will try this method on other lands that were in clover this year. If this turns out to be a reliable way to get a stand, it can save a lot of time and work during a very busy season.

Wheat was drilled on 1,010 acres and Elbon rye on 114 acres at the rate of two bushels per acre. Parts of a field of wheat and one of rye were cross drilled at the same rate to see how much the tonnage of browse per acre could be increased. There definitely was an increase in the amount of browse, but no measurements were made. This grain was drilled early, germinated quickly, and had made good growth by the time the geese arrived. There is still some green browse in these fields even in the interior of the refuge. Geese seemed to show a

slight preference for wheat over Elbon rye, but both were readily accepted.

This year there was more cooperation between the State and Federal personnel during farming operations. They helped us during the spring and early summer when we are rushed to get row crops planted. We helped them get their wheat planted in the fall. This type of cooperation gets maximum use out of manpower and equipment.

C. Collections and Receipts

This year again we obtained all our seed wheat (800 Bushel) from Clarence Cannon Refuge.

We harvested 400 bushels of Elbon rye in the area around the A-1, 2, 3 blinds. We purposely plant rye here in a low goose use area so we will have some to harvest.

We received 1,600 bushels of popcorn from the A.S.C. Office. The farmer who raised this popcorn was in the feed grain program. When the popcorn was rejected for human consumption he could not use it for animal feed without losing his feed grain check. We had to haul the grain about 45 miles, but this was the only cost involved. Several loads were dumped on refuge roads and levees during January and February to help alleviate depredation problems on private land. The remainder was stored in the White Barn for use as cripple feed and trap bait.

D. Control of Vegetation

Atrazine was band sprayed on about 500 acres of corn at the rate of 1 pound per acre primarily for control of giant foxtail. Results were excellent on foxtail and all other weeds.

Roads were mowed as needed and time permitted. Number one levee was mowed to control brush and sapling growth. Brush and trees were cut by hand along the lake side of No. 3 levee.

E. Planned Burning

Conditions were never right for burns planned during the year except for burning South Lake and No. 1 levee to dispose of trash and discourage woody plant growth.

F. Fires

None. We usually have at least one or two fires caused by goose hunters. Due to damp conditions we had no fires during the goose season this year.

V FIELD INVESTIGATION OR APPLIED RESEARCH

A. Blue-Winged Teal Banding

We had a quota of 1,000 blue-winged teal to be banded in August and September. Although our blue-wing population never exceeded 2,500 we were able to reach the quota without too much difficulty. We did have to move the traps frequently as the teal moved to different feeding areas.

We began trapping teal on August 24 and finished on September 9 with 1,014 blue-wings and one green-wing. All of them were trapped in welded wire traps using corn and wheat for bait. No preference was noted between corn and wheat.

Our traps are made of 1" x 2" welded wire. We had considerable trouble with the teal getting their heads and wings caught in the wire. This occasionally caused injury to the birds, and made them hard to remove from the traps. The use of 1" x 1" material would prevent this problem from occuring. Two dogs killed 40 teal in the traps. The dogs were unable to enter the traps, but they caught the ducks by the head or wing when they became caught in the wire. This problem could also be largely prevented by using 1" x 1" wire.

The following table gives a breakdown as to age and sex on the teal.

Species	Adult Male	Adult Female	Immature Male	Immature Female	Total
Blue-Winged Teal	141	122	382	369	1014
Green-Winged Teal				1	1
				TOTAL.....	1015

B. Canada Goose Banding

Our quota for Canada geese was 2,000 pre-season and 2,000 post season. In addition to this we needed over 1,000 birds both pre-season and post season for our fluoroscopy sample. Due to exceptionally warm weather this fall we were unable to complete our pre-season sample. The geese arrived a little late and were not always interested in our trap bait. We were able to band 1,191. These consisted of 475 adult males, 370 adult females, 189 immature males, and 157 immature females. The immature to adult ratio was .409.

The pre-season fluoroscopy sample consisted of 1,083 birds. These included 359 adult males, 300 adult females, 244 immature males and 180 immature females. In this sample 8.3% of the immature birds were carrying body shot.

Our post season sample was easier to obtain, as the birds came to

to the bait much more readily. We caught 960 geese on one shot using three 40' x 60' nets. This does not include an estimated 150 birds which escaped from under the nets. We banded 2,083 Canadas for our post season sample plus an additional 1,304 for the fluoroscopy sample. These 3,387 birds included 896 adult males, 791 adult females, 926 immature males, and 774 immature females. The immature to adult ratio was 1.01.

In the fluoroscopy sample 38.7% of the adults and 16.7% of the immatures were carrying shot.

Shot incidence in immature birds is being explored as a possible means of measuring distribution of kill on the Eastern Prairie Population of Canada geese. For example, using the 1968 fluoroscopy data we found that 8.3% of the immatures were carrying shot before our season compared to 16.7% after the season. This indicates that 49.7% of the hunting pressure, and therefore of the harvest, occurred to the north of Swan Lake, while 50.3% occurred within the Swan Lake Zone. Since our road-block data showed that we harvested 22,265 Canadas in the zone, we can deduce that the harvest north of Swan Lake was 22,000. The above figures do not include crippling loss. If this method can be proven to be valid we may be able to materially reduce our banding quota on Canada geese.

C. Other Goose Banding

We banded only one blue goose and five small Canadas this fall. Our quota stated that we were to band as many blues and snows as possible, but they refused to cooperate.

D. Canada Goose Transplant

There is nothing new to report on the transplant program of 1963, '64, and '65. Most of the transplanted birds returned to Swan Lake the following fall, and we continue to pick them up in our trap samples. The program may have had limited success at Holla Bend, as they are presently wintering about 3,000 Canadas.

E. Water Quality in Relation to Waterfowl

Population Levels on Swan Lake Refuge

Mr. Timothy W. Joseph a biology teacher at Northwestern High School, Mendon, Missouri has initiated the above study on the refuge. This is part of his Master's requirements at Northeast Missouri State College, Kirksville, Missouri. We have received no written report on the study as yet, however Mr. Joseph has been spending considerable time on the refuge, and contacts us frequently. He has been taking a number of water samples, and trying to correlate bacterial and chemical analyses with our weekly waterfowl populations.

VI PUBLIC RELATIONS

A. Recreational Use

Our recreational use for this year was slightly less than a year ago. Due to a mathematical error on the NR-6 we reported more visits for 1967 than actually occurred. The actual visits should have been hunting 4,218, fishing 14,600, misc. 54,000, for a total of 72,818. The 1968 figures are hunting 10,125, fishing 12,100, and total visits 71,510. The increase in hunter visits is simply a reflection of a 70 day goose season in 1968 compared to a 24 day season in 1967.

We were again required to collect L.W.C.F. entrance fees on Swan Lake. We collected a total of $2,296.00. Most of our visitors during the collection period are local people who seldom visit other Federal areas. A permit for one area only, at a reduced price, would be much more acceptable to the public than the present $7.00 permit.

B. Refuge visitors are listed on the following pages.

Name	Organization	Purpose of Visit	Date
Allen Bodenschatz	M.D.C. Brunswick, Mo.	Canada Geese	1/8
John McClure	DeKalb Seed Corn	Sell Seed Corn	1/11
Charles Guthrie	M.D.C. Brookfield, Mo.	Law Enforcement	1/16
Coval Gann	M.D.C. Chillicothe, Mo.	Law Enforcement	1/16
Max Mull	Soil Consv. Service	Visit	1/24
Kenneth Maib	Maib Const. Company	Test Well	1/29
Robert Hambkins	Div. of Health	Test Well	1/29
Dale Fuller	Mo. Geological Survey	Test Well	1/29
Walter Deweese	Sumner Water Dept.	Test Well	1/29
Jim Monnie	FWS Quincy, Ill.	Goose Management	1/30
Karl Slagle	MDC Columbia, Mo.	Visit	2/6
Amir Khalili	Ag. Eng. Dept, U of Mo.	Doctoral Thesis	2/6
Yuell Willis	MDC Schell-Osage Area	Bring Corn	2/6
Tom Toney	Univ of Mo.	Employment	2/12
Wayne Sanders	FWS Jefferson City	Law Enforcement	2/13
John Hague	FWS St. Joseph, Mo.	Law Enforcement	2/16
Robert Hambkins	Div. of Health - Mo.	Inspect Wells	2/21
Mack Holman	Div. of Health - Mo.	Inspect Wells	2/21
Ted Shanks	MDC - Jefferson City	Visit	2/22-23
Sammie Lewis	MDC - Montrose Area	Visit	2/22
Charley Blanchard	MDC - Trimble Area	Visit	2/22
Coval Gann	MDC - Chillicothe	Fishing Success	3/4
Vernon Rennie	MDC - Carrollton	Fishing Success	3/4
Allen Bodenschatz	MDC - Brunswick	Seining Season	3/21
John Martin	Northup King Seed Co.	Milo Seed	3/26
John Hague	FWS St. Joseph	Law Enforcement	3/26
Wayne Sanders	FWS Jefferson City	Law Enforcement	3/26
Bill Hamilton	FWS Squaw Creek	Fishing	3/29
Harlan Morgan	FWS Sikeston	Zon Guns	4/5
Allen Bodenschatz	MDC Brunswick	Check Trot Lines	4/11

Name	Organization	Purpose of Visit	Date
Charles Guthrie	MDC Brookfield, Mo	Check Trot Lines	4/11
Robert W. Hyatt	U. of Mo.	Bird Observation	4/11
Gene R. Baldwin	U. of Mo.	Bird Observation	4/11
Max Mull	Soil Consv. Service	Salt Creek Plan	4/11
Keith Thornsberry	Jamestown, N. Dakota	Visit	4/12
Tom Follrath	FWS Minneaplis	Information	4/26
Bill Cushman	FWS Minneapolis	Information	4/26
Allen Bodenschatz	MDC Brunswick	Muskrat Damage	5/7
Dick Vaught	MDC Columbia	Goose Season	5/7
Phillip Morgan	FWS Minneapolis	Inspection	5/13-14
Clair Rollings	FWS Minneapolis	S&M Inspection	5/15-14
Wayne Sanders	FWS Jefferson City	Shell Crackers	5/15
Harold Burgess	FWS Squaw Creek	Sub-speciation	5/22-23
Dick Vaught	MDC Columbia	Sub-speciation	5/22-23
Allen Bodenschatz	MDC Brunswick	Dove Count	6/4
W. H. Thornsberry	FWS Jamestown, N. Dakota	Visit	6/10
Allen Bodenschatz	MDC Brunswick	Seining Season	7/9
James Berg	Ext. Service, Fargo N.D.	Visit	7/12
Bill Knight	County Ext. Agent	Patricia's Work	7/16
Monty Burch	MDC Schell-Osage Area	Bring Wheat	7/22
Herb Dill	FWS Minneapolis	Goose Study	7/31
Dr. Bill Green	FWS Winona, Minn.	Goose Study	7/31
Bill Crawford	MDC Columbia	Goose Study	7/31
Dick Vaught	MDC Columbia	Goose Study	7/31
Harold Burgess	FWS Squaw Creek	Goose Study	7/31
John Hosking	FWS Squaw Creek	Goose Study	7/31
Wayne Sanders	FWS Jefferson City	Dove Trap Bait	7/31
Larry Campbell	Florida Consv. Dept.	Visit	8/6
Joe Hanes	MDC Jefferson City	Hunting Land Value	8/15
Earl Baysinger	FWS Patuxent	See Larry Kline	8/15
Max Mull	Soil Consv. Serv.	Land Use	8/29
Wayne Sanders	FWS Jefferson City	Dove Banding	8/29
Lyle Miller	FWS Minneapolis	Defensive Driving	9/5-6
Harold Keltner	None	Visit	9/10
Allen Bodenschatz	MDC Brunswick	Dove Case	9/16
Gene Kelly	MDC Columbia	Goose Banding	9/16
Don Pogue	MDC Columbia	Goose Banding	9/16
Jack Fairman w/7			
High School Students	Wheeling High School	Goose Banding	9/17
Wayne Sanders	FWS Jefferson City	Work on Trailer	9/18-19
Dick Basler	FWS St. Charles	Work on Trailer	9/18-19
Dick Vaught	MDC Columbia	Goose Trapping	9/23-25
Karl Schlagle	MDC Columbia	Goose Trapping	9/23-25
Coval Gann	MDC Chillicothe	Speaking Engagement	9/27
Frank Kimme	England	Photography	10/6
Max Hamilton	Chillicothe, Mo.	Visit	10/8
H.R. Kraemer	Los Angeles, Calif.	Bird Observing	10/8
Allen Bodenschatz	MDC Brunswick	Law Enforcement	10/9
Lyle Miller	FWS Minneapolis	Goose Trapping	10/10
Harry Rogers	Photographer	Goose Pictures	10/10

Name			Date
Wayne Sanders	FWS Jefferson City	Law Enforcement	10/16-22
Ralph Von Dane	FWS Peoria, Ill.	Law Enforcement	10/16
Dick Basler	FWS St. Charles, Mo.	Law Enforcement	10/16-23
Allen Bodenschatz	MDC Brunswick	Law Enforcement	10/17
Jack Fennel	MDC Thomas Hill	Law Enforcement	10/17
Bill Scroggins	MDC Moberly	Law Enforcement	10/17
Ron Byrd	MDC	Law Envorcement	10-17
John Hague	FWS St. Joseph	Law Enforcement	10/24
Ned Pardes	Minneapolis, Minn.	Tour	10/27
Phil Morgan	FWS Minneapolis	Vehicles - P.H.A.	10/28
Wayne Sanders	FWS Jefferson City	Law Enforcement	10/29
Warren Lambert & Son	St. Louis, Mo.	Tour and Pictures	10/31
Mike Milonski	MDC Jefferson City	Visit	10/31
Charles Schwartz	MDC Jefferson City	Visit	10/31
Taylor Houston	FWS Minneapolis	Law Enforcement	11/6
Max Mull	Soil Consv. Service	Levee Dist. Meeting	11/12
Bob Simpson	Hyland Park, Calif	Visit	11/12
Gerald Cummings	FWS Quincy, Ill	Goose Management	11/15
Tom Follrath	FWS Minneapolis	Realty	12/3
Gov. Harold Hughes	Iowa	Tour	11/30
Don Wooldridge	MDC Jefferson City	Photography	12/5
Jerry Clawson	FWS Chautauqua Refuge		12/5
Jerry Cummings	FWS Quincy, Ill	Goose Management	12/5
Bob Delaney	MDC Commissioner	Tour	12/7
Lyman Reynoldson	FWS Minot North Dakota	Law Enforcement	12/9-16
Charley Guthrie	MDC Brookfield	Law Enforcement	12/9
Herb Dill	FWS Minneapolis	Visit	12/16-17
Bob Ballow	FWS Washington	Visit	12/16-17

C. Refuge Participation

1/17	Kline	Discussion with 20 members of Mendon Lion's Club Mendon, Missouri.
1/26	Kline	Slide talk for 55 persons at Prairie Hill Extension Club. Prairie Hill, Missouri
1/29 to 2/1	Kline and Hull	Attended Law Enforcement Workshop at Marion, Illinois
2/16	Timmerman	Talk and tour for 30 Boy Scouts and leaders from Des Moines, Iowa.
2/20-23	Kline Timmerman	Attended Flyway Council, Tech. Section, Winter Workshop St. Joseph, Missouri.
2/22	Timmerman Kline	Talk and tour for 70 personnel from Flyway Council, Technical Section, Winter Workshop.

2/23	Kline	Talk and tour for 30 Boy Scouts and leaders from Indianola, Iowa.
2/24	Timmerman	Talk and tour for 30 members of University of Missouri Wildlife Club, Columbia, Missouri.
2/26	Timmerman	Slide talk for 75 members of Chillicothe Kiwanis Club Chillicothe, Missouri.
4/8	Timmerman	Slide talk for 25 4-H members at Sumner, Missouri.
4/21	Timmerman	Talk and tour for 50 4-H members and leaders from Harrison County, Missouri.
4/22 To 5/7	Kline	Attended Basic Refuge Manager's course at Arden Hills, Minnesota.
6/19-21	Timmerman	Attended Federal-State meeting on 1968 Swan Lake Canada Goose hunting regulations at Walker, Minnesota.
7/24	Kline	Judged 25 Entomology and Outdoorsman project exhibits at Carroll County Achievement Day, Carrollton, Missouri.
8/18-23	Lentz	Attended Law Enforcement Workshop at Madison, Wisconsin.
10/5	Timmerman Kline	Net trapping participation and tour for leader and 8 Explorer Scouts from Kansas City, Missouri.
10/5-6	Timmerman	Assisted photographer from England, Mr. Frank Kimme with photography on refuge.
10/5	Kline	Talk and tour for 10 teachers and students from Simpson College, Indianola, Iowa.
10/8	Timmerman Kline	Talk and tour for 118 teachers and students of 5th grade from Brookfield, Missouri.
10/10	Kline Lentz	Talk and tour for 120 teachers and students of 6th grade from Brookfield, Missouri.
10/11	Kline	Talk for 75 Rotary Club members at Chillicothe, Mo.
10/12	Timmerman	Talk and tour for 50 teachers and students from Hickman High School, Columbia, Missouri.
10/12	Kline	Talk and tour for six women from Fortville, Indiana.
10/12	Timmerman	Talk and tour for Cub Scout Pack from Keytesville, Mo.
10/13	Staff	Open House (Self Guided Tour) for 3,500 people.

10/14	Timmerman	Tour for teacher and 7 students from the Conservation Class of Wheeling High School, Wheeling, Missouri.
10/24	Kline	Slide Talk for 50 members of the Hale Lion's Club, Hale, Missouri.
10/29	Kline	Talk and tour for two den mothers and 8 Cub Scbuts from Den 2, Pack 207, Mendon, Missouri.
10/29	Kline	Slide talk for 70 members of Swan Lake Sportsman's Club, Sumner, Missouri.
11/5	Timmerman	Assisted three photographers from Calvin Productions, Kansas City, Missouri with pictures on refuge.
11/18	Timmerman	Talk and tour for party of five from Texas, including a brother of Governor Connelly.
11/19	Timmerman	Discussion and tour for four personnel of Nebraska Game and Parks Commission.
11/21	Timmerman Kline	Talk and tour for 87 teachers and students of Northwestern Grade School, Mendon, Missouri.
11/26	Timmerman	Discussion with 60 members of Swan Lake Sportsman's Club, Sumner, Missouri.
11/30	Timmerman	Talk and tour for Iowa Governor Harold Hughes and three associates.

In addition Asst. Manager Kline served as Outdoorsman Project Leader for the Mendon 4-H Club and Cubmaster for Cub Scout Pack 207 Mendon.

D. Hunting

The Canada goose season opened on October 20 and ran the full 70 days through December 28. The daily bag limit was one Canada goose with a possession limit of four. The bag limit was cut from two to one by State regulation with the understanding that if the kill was low the daily bag limit could be increased to two. When the State Commissioners saw how well satisfied the hunters were and how good the season was going they decided to leave it at one bird. The Canada goose quota for the Swan Lake Zone was again 25,000. The total kill was 22,265 which just about compensates for the number killed over the quota in 1967.

The kill was high the first two days of the season as it is expected to be with a fairly late opening. Four thousand six hundred thirty three Canada geese were harvested the first two days before the birds began to get wise. The harvest dropped to 846 on the third day and continued to

decline for a few days. Then it became quite stable except for week-ends and holidays when more hunters in the field resulted in higher kills. The weather was cold and wet the last part of the season resulting in few hunters afield.

Generally speaking, this was the best goose season held in the Swan Lake zone since it was established. After the first two days the kill was never excessively high and yet the chances were always fairly good for the good or persistant hunter to kill a goose. The average daily kill per hunter on the Swan Lake Refuge was .58. On any given day it was almost impossible to predict what direction the geese would fly or what blinds would be in position to kill birds, so all hunters had about an equal chance.

We had the greatest food supply ever produced on the refuge. The geese were never forced to fly out because of hunger, as they were in 1967. Picking plants and hunters reported that they had never handled birds in better condition or with as much fat on them throughout the season.

The one Canada goose bag limit was well accepted by almost all hunters and many expressed the wish that the one bag limit continue in future years. Prior to the season opening some State personnel were pessimistic and felt that the hunters just wouldn't bother hunting for "just one goose." The total number of hunters using the puclic shooting area in 1968 was exceeded only five times since the area went into operation in 1955. The total number of goose hunter days for the Swan Lake zone hit an all time high this year. I personnally see no reason for ever going back to a two bird bag.

There was also some indication that there is no need for a 70 day goose season. During the late part of the season few hunters with reservations were showing up at the public hunting area. The percentage of reservations claimed dropped below 10% on one occassion and for the last ten days of the season averaged less than 25%. There were many days when there were very few hunters on private land in spite of the fact that almost all hunters who were in the field killed geese. Ten days could be cut from the end of the season without greatly influencing the total kill and would meet with no great objection from the hunters.

The ten shell limit was again in effect and by now seems to be accepted by the hunters as just a part of hunting on the refuge. There were fewer cases prosecuted for exceeding the shell limit this year, but this may be just a reflection of less time spent on spy blind activity.

This was a fairly good fall for the farmers to get their crops harvested. Almost all crops were harvested by the time goose season closed. By this time last year we had issued 36 scaring permits. This year we have issued a total of three to protect harvested fields to be gleaned by livestock and one to protect green wheat. We will probably have a few more complaints of geese on wheat when the ground thaws, but

this has certainly been different from last year.

The following tables were taken from the public hunting area report of operations.

E. Violations

Refuge personnel occassionally assisted State Conservation Agents and U. S. Game Management Agents on enforcement patrols. All cases made in the Swan Lake Zone were processed through State Court. A summary of violations is appended on page 24.

F. Safety

No lost time accidents occurred during the year. We now have 1,356 accident free days through December 31, 1968.

Safety meetings were held periodically throughout the year.

Regional Safety Officer Lyle F. Miller was with us on September 5th and 6th, at which time he presented the Defensive Driving Course, and conducted a safety inspection.

We are now in the process of installing seat belts and roll bars on all of our farm tractors and our open jeep, as required by a recent Regional directive.

VII OTHER ITEMS

A. Credits For Preparation

Mr. Lentz compiled the visitor list, typed and helped assemble the report. Mr. Kline made out most of the N.R. forms and wrote sections IA, B1; II A, B, C, E, F; III A; V; VI except D. Mr. Timmerman wrote the remainder of the report, edited and helped assemble it.

B. Photographs

The few photographs included were collected from various sources. The photographer and ownership of equipment is credited for each photo. We always promise to do a better job on this section, but never seem to get it done.

DAILY CANADA GOOSE HARVEST IN ZONE - 1968

Date	Canada Geese	Total
Oct. 20	2,523	2,523
" 21	2,110	4,633
" 22	846	5,479
" 23	800	6,279
" 24	509	6,788
" 25	248	7,036
" 26	342	7,378
" 27	376	7,754
" 28	322	8,076
" 29	264	8,340
" 30	268	8,608
" 31	265	8,873
Nov. 1	220	9,093
" 2	324	9,417
" 3	327	9,744
" 4	288	10,032
" 5	450	10,482
" 6	633	11,115
" 7	542	11,657
" 8	472	12,129
" 9	296	12,425
" 10	355	12,780
" 11	319	13,099
" 12	71	13,170
" 13	114	13,284
" 14	196	13,480
" 15	270	13,750
" 16	297	14,047
" 17	248	14,285
" 18	173	14,468
" 19	163	14,631
" 20	170	14,801
" 21	174	14,975
" 22	192	15,167
" 23	315	15,482
Nov. 24	388	15,770
Nov. 25	226	15,996
" 26	248	16,244
" 27	238	16,482
" 28	255	16,737
" 29	354	17,091
" 30	369	17,460
Dec. 1	342	17,802
" 2	149	17,951
" 3	198	18,149
" 4	209	18,358
" 5	148	18,506
" 6	99	18,605
" 7	452	19,057
" 8	470	19,527
" 9	142	19,669
" 10	111	19,780
" 11	265	20,045
" 12	373	20,418
" 13	257	20,675
" 14	92	20,767
" 15	83	20,850
" 16	48	20,898
" 17	106	21,004
" 18	147	21,151
" 19	139	21,290
" 20	129	21,419
" 21	106	21,527
" 22	114	21,641
" 23	67	21,708
" 24	62	21,770
" 25	48	21,818
" 26	110	21,928
" 27	203	22,132
" 28	133	22,265

COMPARISON OF SHOOTING DATA SINCE 1955

Year	Length of Season	Peak Population	No. of Hunters	Canada Goose Kill on Area	Ave. Kill Per Hunter	Outside Kill	Bushels of Grain on Area
1955	53 days	133,500 (10-26)	10,137	8,836	.87	3,727	11,500
1956	70 days	55,000 (11-5)	11,204	3,118	.27	1,140	27,500
1957	70 days	42,000 (11-4)	10,360	3,680	.35	1,074	30,000
1958	70 days	59,500 (10-27)	9,256	6,186	.66	3,410	14,500
1959	70 days	57,000 (10-16)	11,014	5,254	.47	2,425	35,000
1960	31 days	86,850 (10-17)	6,343	6,895	1.08	3,680	16,000
1961	25 days	75,000 (10-16)	3,483	3,356	.96	3,116	21,000
1962	60 days	118,200 (11-21)	9,609	5,506	.57	7,208	26,280
1963	70 days	130,225 (10-21)	9,954	5,890	.59	10,244	52,600
1964	55 days	121,450 (10-19)	9,164	9,069	.98	15,691	29,240
1965	70 days	119,350 (11-8)	10,313	4,624	.44	12,255	86,300
1966	39 days	138,000 (10-31)	6,933	8,015	1.15	18,605	69,000
1967	24 days	127,265 (11-12)	4,216	5,274	1.25	22,669	35,250
1968	70 days	137,500 (11-5)	10,123	5,747	.56	16,518	100,000

VIOLATIONS

Type of Violation	No. of Cases	Total Fines	Total Cos
Over limit of 10 shotgun shells	19	$ 300.00	$ 209.00
Over limit of Canada Geese	6	139.00	66.00
Attempting to take over limit of geese	5	85.00	55.00
Shooting out of assigned blind	5	90.00	55.00
Refuge tresspass	13	265.00	143.00
Unplugged shotguns	5	70.00	55.00
Shooting Ducks on Refuge	3	25.00	33.00
Non-resident hunting on resident permit	4	139.00	44.00
	60	$1,113.00	$ 660.00

One attempting to take over limit of birds was dismissed and one over limit of shot gun shells is still pending.

During the 1967 season (24 days) there were 79 cases made totaling $1,190.00 in fines and $759.00 in court costs.

CANADA GEESE EXAMINED AT CHECK STATION - 1968

Immatures				Adults			
Males	Females	Total	M/F Ratio	Males	Females	Total	M/F Ratio
1194	1221	2415	.98	533	594	1127	.90

Totals -	Immatures	Adults	Males	Females	I/A Ratio	Males/ Females
	2415	1127	1727	1815	2.14	.95

62% of total kill were examined plus 62 Blue Geese, 62 Snow Geese and 4 White-fronted Geese.

NON-RESIDENT HUNTERS USING SWAN LAKE DURING 1968

State	Individual Hunters	No. of Days Hunted	No. of Geese Killed
Iowa	209	421	292
Illinois	172	266	211
Kansas	148	230	150
Minnesota	28	47	30
Ohio	7	11	9
Arkansas	6	6	5
Indiana	4	5	3
Wisconsin	4	12	9
West Virginia	3	5	3
Wyoming	3	3	1
Nebraska	3	18	9
Montana	2	4	4
Utah	2	2	0
Texas	1	2	3
Oklahoma	1	2	1
New Jersey	1	1	1
California	1	1	0
New Mexico	1	1	0
Pennsylvania	1	1	0
South Dakota	1	1	0
Virginia	1	1	0
Totals	599	1040	731

Year	No. of Individual Non-Resident Hunters
1968	599
1967	333
1966	469
1965	523
1964	370
1963	332

SIGNATURE PAGE

Submitted by:

Robert H. Timmerman
(Signature)
Robert H. Timmerman

Date: 2/17/69

Refuge Manager
Title

Approved, Regional Office:

Date: FEB 20 1969

Phillip S. Morgan
(Signature)

ASST

Regional Refuge Supervisor

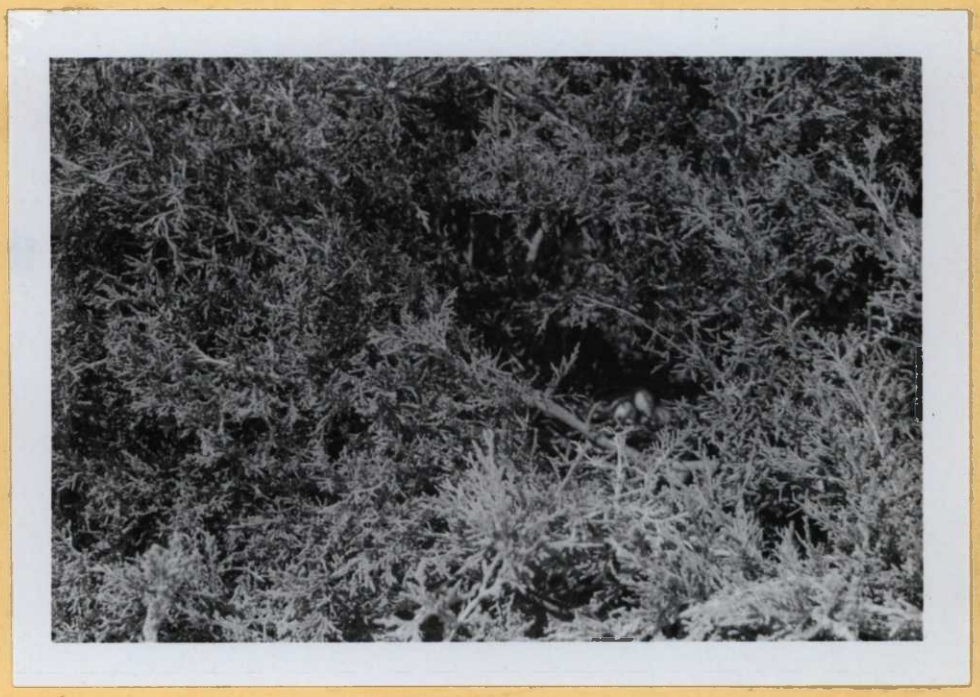
This new 856 International tractor was purchased with F.Y. 1968 funds. The bare tractor and plow was all we could afford out of these funds. Lentz - Personal

During F.Y. 1969 the roll bar and canopy, floatation wheels, and front end weights were added. Tractor is parked in the only equipment shed space available. Lentz - Personal

M. G. Lentz with some of the channel catfish that he caught out of Silver Lake. These were probably some of the fish stocked in 1964 after the lake was dry in 1963.
Lentz - Personal

This Brown Thrasher nest was located in the red cedar bush just outside the office door. Kline also took a picture of the bird on the nest, but I couldn't even locate the nest in that photo. 68-1

FEB • 69



The rough fish seining season was quite a success this year. Here the fish are being weighed after the party has quit for the day.
68 - 1

The fellows were mighty proud of their catch. Men, women, and children alike get out and wallow in the mud to get fish. They get mighty tired and dirty but if they get fish they go home happy.
68- 1

This is the goose research laboratory that was built just east of hunting area headquarters. The pen area in the left part of the photo can hold up to 1,000 geese. The work area and small living quarters are located in the metal building at the far end of the pens. The laboratory was built by the State for use in our cooperative goose research.
68 - 1

You always run into some "odd balls" when you handle as many geese as we do. This one was caught during post-season fluoroscopy, so we decided to use him for this series.
68 - 1

A lot of work goes into obtaining information needed concerning a flock of Canada geese. These geese were held in the pen at refuge headquarters. They were separated by age and sex while being loaded on the truck for the trip to the lab. Here Larry Kline gets a goose out of one of the crates on the truck.
Lentz - Personal

Gene Kelly "stuffs" him in a box to hold him immobile.

Lentz - Personal

FEB • 69

FEB • 69

Bennie Hull feeds the box into the fluoroscope. The bird is examined and the number of body shot recorded.

Lentz - Personal

"Doc" Howerton checks the weight of the bird and this is also recorded.

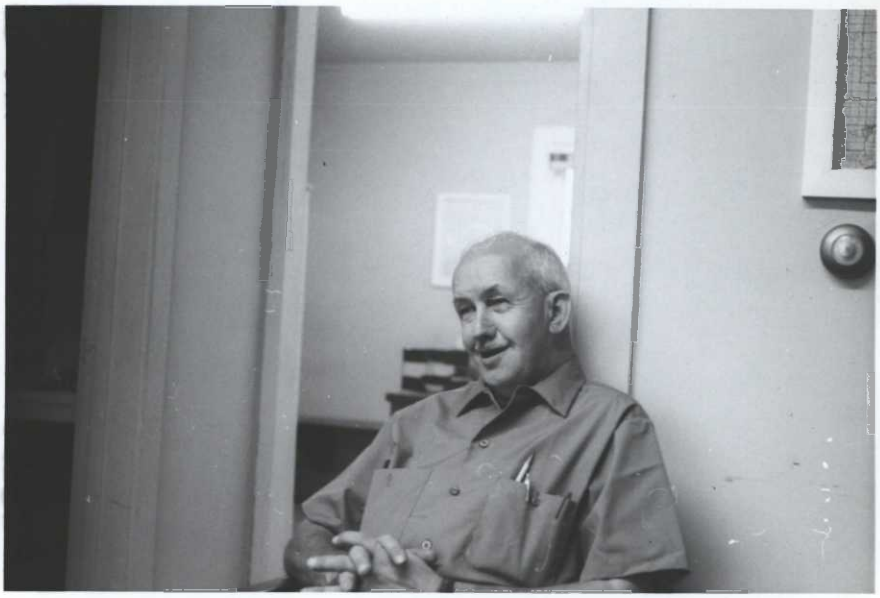
Lentz - Personal

Howerton removes the bird from the box and holds it while Timmerman clamps on the band.
Lentz - Personal

Thats all for you "baldy". The entire process took less than a minute, but may have seemed like a lifetime for the goose.
Lentz - Personal

And speaking of "baldy" ----- This is Karl Slagle the man who is usually in the box doing the fluoroscoping. Karl is retired from the Air Force and has been working for the State for the past several years. He couldn't even keep his mouth shut to have his picture taken.
68 - 1

This year much of our corn was so tall the geese couldn't reach the ears. Even after the geese had worked the field repeatedly, this particular field of Funks 5757 still had about 70 bu/acre of corn made available when it was rotary mowed. We plan to grow some of this high eared corn each year so we can have better control of utilization.
68 - 1



Here are some of the pelts from raccoons removed by Allen Dysart. Raccoon pelts were selling for about $5.00 this year. Mr. Dysart made good wages trapping this year.
Dysart - personal

Marv killed the deer and took the picture, so will let him finish it by writing the caption. I shot this nice buck on the same stand I have been hunting for ten years. It was my turn since I didn't get one last year and my wife did. It took two well placed shots from a .308 at a distance of approximately 60 feet to kill this deer and then he ran out of sight. I waited 40 minutes before making a search and found him dead about 60 yards away.
Lentz - Personal

This is not our living room but I tried. The whitetail weighed 209 pounds field dressed. He had an 11 point rack that officially scored 183 4/8 Boone and Crockett points which was good enough for a new Missouri record. I have entered the measurements in the 1968 Boone and Crockett Club competition. The head is being mounted in Columbia, Missouri.
Lentz - Personal

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

WATERFOWL

REFUGE Swan Lake MONTHS OF January TO April, 1968

(1) Species	(2) Weeks of reporting period 12/31-1/6/68 (1)	1/7-13 (2)	1/14-20 (3)	1/21-27 (4)	1/28-2/3 (5)	2/4-10 (6)	2/11-17 (7)	2/18-24 (8)	2/25-3/2 (9)	3/3 - 9 (10)
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	60,000	50,000	65,000	80,000	85,000	85,000	85,000	80,000	85,000	85,000
Cackling										
Brant										
White-fronted										
Snow										
Blue			100	100	500	300				15,000
Other										
Ducks:										
Mallard	100	100	200	500	5,000	5,000	5,000	2,500	5,000	25,000
Black										50
Gadwall										
Baldpate										100
Pintail					50	50	100	50	350	10,000
Green-winged teal										100
Blue-winged teal										
Cinnamon teal										
Shoveler										
Wood										
Redhead							10			
Ring-necked							10			
Canvasback							10			100
Scaup										100
Goldeneye										25
Bufflehead										
Ruddy										
Other Common Merganser					40	25	25			50
Hooded Merganser										25
Coot:										50

INT.-DUP., D.C.-53824-59

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

WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF January TO April, 19 68

(1) Species	(2) Weeks of reporting period 3/10-16 11	3/17-23 12	3/24-30 13	3/31-4/6 14	4/7-13 15	4/14-20 16	4/21-27 17	4/28-5/4 18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	75,000	40,000	30,000	15,000	5,000	5,000	1,000	300	6,522,600		
Cackling											
Brant											
White-fronted	500	500	400	100	50	25			11,025		
Snow (	30,000	35,000	25,000	15,000	5,000	2,000	200		897,400		
Blue											
Other											
Ducks:											
Mallard	35,000	40,000	35,000	20,000	12,000	10,000	3,000	400	1,426,600		
Black	100	100	75	50	25	25			2,975		
Gadwall	2,000	2,000	1,200	500	300	2,200	50	10	43,820		
Baldpate	3,000	3,500	3,500	3,500	3,500	3,000	2,000	500	158,200		
Pintail	10,000	7,500	5,000	2,500	1,000	500	100	20	260,540		
Green-winged teal	4,000	10,000	7,500	6,000	3,000	2,000	200	30	229,810		
Blue-winged teal	100	200	500	5,000	6,000	6,000	6,000	3,000	187,600		
Cinnamon teal											
Shoveler	1,200	2,000	2,500	7,000	7,000	6,500	5,000	2,500	235,900		
Wood	100	250	350	500	500	500	400	400	21,000		
Redhead	100	100	100	50	50	50	20		3,360		
Ring-necked	2,000	2,000	1,500	1,000	750	500	400	20	57,190		
Canvasback	100	150	100	100	100	100	40		4,900		
Scaup	500	500	500	750	1,000	1,000	800	50	36,400		
Goldeneye											
Bufflehead	25	25	25	25	25	25	10		1,295		
Ruddy	100	250	250	300	250	250	100		10,500		
Other C. Merganser	50	50	50	50	50	25			2,905		
N. Merganser	50	50	50	50	50	25			2,100		
Coot:	200	500	1,000	2,000	3,500	4,000	4,000	2,000	120,750		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	7,431,025	91,000	
Ducks	2,685,095	69,175	
Coots	120,750	4,000	

SUMMARY

Principal feeding areas Lake margins, corn and milo fields.

Principal nesting areas

Reported by Robert H. Timmerman

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

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

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

INT.-DUP., D.C.-53824-59

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

WATERFOWL

REFUGE Swan Lake NWR MONTHS OF May TO August, 19 68

(1) Species	(2) Weeks of reporting period 1	2	3	4	5	6	7	8	9	10
	5/5-11	5/12-18	5/19-25	5/26-6/1	6/2-6/8	6/9-15	6/16-22	6/23-29	6/30-7/6	7/7-13
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	200	200	200	200	200	200	200	200	200	200
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	50	20	20	20	20	20	20	20	20	20
Black										
Gadwall										
Baldpate										
Pintail	10									
Green-winged teal										
Blue-winged teal	1,000	800	300	100	30	20	20	20	20	20
Cinnamon teal										
Shoveler	800	400	100	50	10					
Wood	400	400	400	400	400	400	400	400	400	400
Redhead										
Ring-necked										
Canvasback										
Scaup										
Goldeneye										
Bufflehead										
Ruddy										
Other										
Coot:	1,500	1,200	800	300	100					

INT.-DUP., D.C.-53824-59

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

WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake NWR MONTHS OF May TO August, 19 68

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
	7/14-20	7/21-27	7/28-8/	8/4-10	8/11-17	8/18-24	8/25-31				
Swans:											
Whistling											
Trumpeter											
Geese:											
Canada	200	200	200	200	200	200	200		23,800		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	20	20	20	20	20	50	150		3,710		
Black											
Gadwall											
Baldpate											
Pintail									70		
Green-winged teal							50		350		
Blue-winged teal	20	20	20	20	20	200	1,500		28,910		
Cinnamon teal											
Shoveler									9,520		
Wood	400	400	400	400	400	400	400		47,600		
Redhead											
Ring-necked											
Canvasback											
Scaup											
Goldeneye											
Bufflehead											
Ruddy											
Other											
Coot:						25	200		28,875		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	23,800	200	
Ducks	90,160	2,260	
Coots	28,875	1,500	

SUMMARY

Principal feeding areas Moist soil plant areas in Swan and Silver Lakes

Principal nesting areas None

Reported by Robert H. Timmerman

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

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

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

INT.-DUP., D.C.-53824-59

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

WATERFOWL

REFUGE Swan Lake

MONTHS OF September TO December, 19 68

(1) Species	Weeks of reporting period (2) 1	2	3	4	5	6	7	8	9	10
	9/1 - 7	9/8 - 14	9/15-21	9/22-28	9/29-10/5	10/6-12	10/13-19	10/20-26	10/27-11/2	11/3-9
Swans:										
Whistling										
Trumpeter										
Geese:										
Canada	200	200	200	1,000	25,000	60,000	88,000	112,000	125,500	130,000
Cackling										
Brant										
White-fronted				25	50	50	50	50	50	50
Snow					1,500	5,000	5,000	8,000	15,000	18,000
Blue /										
Other										
Ducks:										
Mallard	250	500	750	1,500	5,000	6,000	20,000	20,000	30,000	40,000
Black		25	25	50	100	100	250	250	500	500
Gadwall						200	1,000	1,500	2,000	1,000
Baldpate		100	300	350	500	750	2,000	2,000	2,000	1,500
Pintail	250	3,000	3,500	7,000	10,000	10,000	15,000	15,000	15,000	12,000
Green-winged teal	100	500	1,100	1,500	2,000	2,500	8,000	7,500	10,000	7,500
Blue-winged teal	2,000	2,500	2,000	2,000	1,500	1,000	750	500	100	100
Cinnamon teal										
Shoveler			300	350	500	500	750	1,000	750	500
Wood	500	500	500	500	500	400	400	350	350	350
Redhead									50	50
Ring-necked									250	250
Canvasback										
Scaup						100	100	100	5,000	5,000
Goldeneye										
Bufflehead										
Ruddy						150	150	150	100	100
Other H. Mergansers									50	50
Coot:	250	250	200	500	2,000	3,000	3,500	3,000	3,000	1,500

Int. Dup. Sec., Wash., D.C. 37944

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

WATERFOWL
(Continuation Sheet)

REFUGE Swan Lake MONTHS OF September TO December, 19 68

(1) Species	(2) Weeks of reporting period 11	12	13	14	15	16	17	18	(3) Estimated waterfowl days use	(4) Production Broods seen	Estimated total
Swans:	11/10-16	11/17-23	11/24-30	12/1 7	12/8 14	12/15 21	12/22 28				
Whistling											
Trumpeter											
Geese:											
Canada	131,000	125,000	120,000	120,000	120,000	110,000	100,000		9,576,700		
Cackling											
Brant											
White-fronted	50	50	50						3,325		
Snow	20,000	18,000	20,000	15,000	10,000	5,000	1,000		1,060,500		
Blue											
Other											
Ducks:											
Mallard	60,000	85,000	75,000	30,000	25,000	15,000	5,000		2,933,000		
Black	500	500	400	100	50				23,450		
Gadwall	1,000	750	400						54,950		
Baldpate	1,500	1,000	500	100					88,200		
Pintail	10,000	10,000	8,000	5,000	1,000	500			876,750		
Green-winged teal	2,500	4,000	4,000	3,500	1,000	500			122,400		
Blue-winged teal	100								89,[illegible]		
Cinnamon teal											
Shoveler	500	350	100						39,200		
Wood	350	350	200	100	50				37,800		
Redhead	50	50	25						1,575		
Ring-necked	250	50	50						5,950		
Canvasback		50	25						525		
Scaup	5,000	250	250	150					111,650		
Goldeneye											
Bufflehead		15	15						210		
Ruddy	100	100	50						6,300		
Other H. Mergansers	50								1,050		
Coots:	500	250	100						126,350		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans			
Geese	10,640,525	153,050	
Ducks	4,691,960	102,465	
Coots	126,350	3,500	

SUMMARY

Principal feeding areas Marshes, grasslands, crop fields and bottomland timber.

Principal nesting areas

Reported by Laurence G. Kline

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

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

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of January to April 19~~5~~ 68

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied Billed Grebe	1	3/18								
White Pelican	30	3/30	120	4/22						
Great Blue Heron	1	1/2								
American Bittern	1	4/10								
II. Shorebirds, Gulls and Terns:										
Killdeer	1	March								
Common Snipe	1	3/30								
Upland Plover	1	4/18								
Greater Yellowlegs	1	3/20								
Dowitcher	1	4/5								
Franklins Gulls	4	3/24								

(over)

(1)	(2)		(3)		(4)		(5)		(6)
III. Doves and Pigeons:									
Mourning dove	Permanent Resident								
White-winged dove									
IV. Predaceous Birds:									
Golden eagle			2	1/9	1	3/21			
Duck hawk									
Horned owl	Permanent Resident								
Magpie									
Raven									
Crow	Permanent Resident								
Turkey Vulture	1	3/24							
Red-Tailed Hawk	Permanent Resident								
Red-Shouldered Hawk	3	2/28							
Bald Eagle			40	1/9	7	4/7			
Marsh Hawk	Permanent Resident								
Sparrow Hawk	Permanent Resident								
Barred Owl	Permanent Resident								
Short-Eared Owl	Permanent Resident								

Reported by Robert H. Timmerman

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

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

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

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

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

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

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of May to August 1968

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
White Pelican	7	6/14	7	Turn Period						
Great Blue Heron	Summer Resident		300	August						
Green Heron	Summer Resident		50	8/31						
Common Egret	Summer Resident		100	8/31						
Least Bittern	Summer Resident		25	August						
American Bittern	Summer Resident		25	August						
King Rail	4	7/12	50	August						
Black Rail	1	7/17								
Sora Rail	1	July	100	8/31						
II. Shorebirds, Gulls and Terns:										
Killdeer	Summer Resident		300	8/31						
Upland Plover	Summer Resident		50	July						
Spotted Sandpiper	Summer Resident		300	July						
Greater Yellowlegs	Common	May and August								
Lesser Yellowlegs	Numerous	May and August								
Least Sandpiper	Numerous	May								
Dunlin	100	5/22								
Dowitcher sp.	25	8/28	200	8/31						
Stilt Sandpiper	2	5/22								
Semipalmated Sandpiper	Numerous	5/22								
Ring-billed Gull	2	5/22	25	May						
Franklin's Gull	3	6/12	300	June						
Black Tern	Numerous	5/18	400	June						

(over)

(1)	(2)	(3)		(4)	(5)	(6)
III. Doves and Pigeons:						
Mourning dove	Summer Resident	1,800	8/31			
White-winged dove						
IV. Predaceous Birds:						
Golden eagle						
Duck hawk						
Horned owl	Permanent Resident	100	August			
Magpie						
Raven						
Crow	Permanent Resident	150	August			
Turkey Vulture	Summer Resident	10	August			
Sharpshinned Hawk	Seen occasionally during period					
Cooper's Hawk	Seen occasionally during period					
Red-tailed Hawk	Common Permanent Resident					
Marsh Hawk	Seen occasionally during period					
Sparrow Hawk	Seen occasionally during period					
Screech Owl	Uncommon Resident					
Barred Owl	Common Resident					
Loggerhead Shrike	Common Resident					

Reported by Robert H. Zimmerman

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

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

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

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

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

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

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge Swan Lake Months of September to December 1968

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	2	9/2								
Pied-billed Grebe	25	9/4								
White Pelican	150	9/1	500	9/15						
D. C. Cormorant	4	10/10	82	10/17						
Great Blue Heron	Summer Resident		100	9/1						
Green Heron	Summer Resident		50	9/1						
Common Egret	-	-	5	9/1						
Y. C. Night Heron	1	10/29								
Sandhill Crane	1	12/6								
Sora Rail			250	9/1						
II. Shorebirds, Gulls and Terns:										
Common Snipe			100	9/15						
G. Yellowlegs			Abundant							
L. Yellowlegs			September							
Dowitcher			100-200	Sept.						
Sanderling	1	9/10	40	9/11						
American Avocet	3	10/28			2	11/14				
Ring-billed Gull	Common in September									
Frankline Gull			150,000 (Est.)	10/23						
Black Tern	Numerous in September									

(over)

(1)	(2)		(3)		(4)	(5)		(6)
III. Doves and Pigeons:								
Mourning dove	Summer Resident		2,000	9/1	A few wintering			
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	2-4	Present Nov - Dec.						
~~Duck Hawk~~ Bald Eagle	1	10/7	60 - 70	Dec				
Horned owl	Common	Permanent Resident						
~~Magpie~~ Marsh Hawk	Common	throughout period						
~~Raven~~ Osprey	1	9/2						
Crow	Common	Permanent Resident						
Sharp-shinned Hawk	Uncommon	Permanent Resident						
Coopers Hawk	Uncommon	Permanent Resident						
Red-tailed Hawk	Common	Permanent Resident						
Red-shouldered Hawk	Uncommon	Permanent Resident						
Broad-winged hawk	1	9/12						
Rough-legged Hawk	Fairly common winter resident							
Pigeon Hawk	1	10/4						
Sparrow Hawk	Common	Permanent Resident						
Barred Owl	Common	Permanent Resident						
Short eared Owl	Common	Winter Resident						

Reported by Lawrence O. Kline

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 Gruiiforme
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 nber of the species using the r uge during the period concerned.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Swan Lake Months of January to April, 1968

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifioally requested. List introductions here.
Bob-White									300	
Ring-necked pheasant										Occasional sightings to the north of the refuge.
Greater Prairie Chicken										None observed.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

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

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

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

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

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

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

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

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Swan Lake Months of May to August, 19 68

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob White									300	
Pheasant										Several sightings during period. A hen and five half grown young were observed along north boundary on 7/14/68.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

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

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

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

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

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

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

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

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Swan Lake Months of September to December, 1968

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Bob-White									325	
Ring-necked Pheasant										Several sightings on or near refuge during period.

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

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

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

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

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

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

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

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

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Swan Lake Year ending April 30, 1968

(1) *Species	(2) Density		(3) Removals					(4) Disposition of Furs						(5)
								Share Trapping						Total Population
Common Name	Cover Types & Total Acreage of Habitat	Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	
Raccoon				204	3				204				3	300
Muskrat				8	2				8				2	400
Coyote				1					1					6
Beaver														60
Red Fox														10
Gray Fox														6
Mink				2					2					30
Fox Squirrel														2,000
Gray Squirrel														1,000
Cottontail														3,000
Opossum				35					35					200
Striped Skunk				1					1					100
Woodchuck														200
Franklin's Ground Squirrel														50

Refuge Personnel
* List removals by ~~Predator Animal Hunter~~

REMARKS:

Reported by Robert H. Timmerman

INSTRUCTIONS

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

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

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

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

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

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

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

32/15

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

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

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Swan Lake For 12-month period ending August 31, 1968

Reported by Robert H. Timmerman Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3)	(3) Use-days	(4) Breeding Population	(5) Production
I Swan Lake	Crops	700	Ducks	2,000,000	0	0
	Upland	200	Geese	6,000,000	0	0
	Marsh	300	Swans	0	0	0
	Water	600	Coots	75,000	0	0
	Total	1,800	Total	8,075,000	0	0
II Silver Lake	Crops	670	Ducks	2,000,000	60	60
	Upland	1,000	Geese	4,200,000	0	0
	Marsh	530	Swans	0	0	0
	Water	1,800	Coots	250,000	0	0
	Total	4,000	Total	6,450,000	60	60
III South Lake	Crops	830	Ducks	4,067,650	60	60
	Upland	300	Geese	8,308,195	0	0
	Marsh	1,570	Swans	0	0	0
	Water	300	Coots	262,125	0	0
	Total	3,000	Total	12,637,970	60	60
IV River Bottoms	Crops	400	Ducks	500,000	100	100
	Upland	1,650	Geese	300,000	0	0
	Marsh	20	Swans	0	0	0
	Water	30	Coots	7,000	0	0
	Total	2,100	Total	807,000	100	100
Totals	Crops	2,600	Ducks	8,567,650	220	220
	Upland	3,150	Geese	18,808,195	0	0
	Marsh	2,420	Swans	0	0	0
	Water	2,730	Coots	594,125	0	0
	Total	10,900	Total	27,969,970	220	220
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			
	Crops		Ducks			
	Upland		Geese			
	Marsh		Swans			
	Water		Coots			
	Total		Total			

(over)

INSTRUCTIONS

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

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

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

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

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

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

Interior Duplicating Section, Washington, D. C. 27580

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

Waterfowl Hunter Kill Survey

Refuge Swan Lake Year 1968

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged **	(6) Crippling Loss *	(7) Total Kill	(8) Est.No. Hunters	(9) Est. Total Kill
10/20 - 26	1,359		Canada geese	986			All refuge hunters	
10/27 - 11/2	1,286			669			were checked.	
11/3 - 9	1,284			807				
11/10 - 16	1,085			505				
11/17 - 23	883			579				
11/24 - 30	1,043			750				
12/1 - 7	807			465				
12/8 - 14	799			335				
12/15 - 21	737			323				
12/22 - 28	840			318				
TOTALS	10,125	38,100		5,737	598	6,335		

*Crippling loss based on hunter reports, so is probably not reliable.

**In addition 124 blue and snow geese plus 4 white-fronts were harvested on the area.

(over)

INSTRUCTIONS

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

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

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

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

(5) Record total numbers of waterfowl bagged.

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

(7) Total of Columns 5 and 6.

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

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

80348-60

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Swan Lake Calendar Year 1968

(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	
White-tailed Deer												325	325	

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

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

3-1755
Form NR-5
60701

DISEASE

Refuge Swan Lake Year 1968

Botulism

Period of outbreak None

Period of heaviest losses _____

Losses:

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

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

Areas affected (location and approximate acreage) _____

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

Condition of vegetation and invertebrate life _____

Remarks _____

Lead Poisoning or other Disease

Kind of disease None

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

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

(1)

NONAGRICULTURAL COLLECTIONS, RECEIPTS, AND PLANTINGS

Refuge Swan Lake Year 1968

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

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

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

Remarks: _____

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

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Swan Lake County Chariton State Missouri

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Waterfowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Corn	164	9,800			772	86,200	936	Clovers	308
Soybeans	104	3,100					104	wheat, [redacted]	1,010
								Elbon rye	114
Milo					300	15,000	300		
TOTALS	268	12,900			1,072	101,200	1,340	(Waterfowl browsing Crops)	
								Fallow Ag. Land	[redacted]

No. of Permittees: Agricultural Operations 5 Haying Operations _____ Grazing Operations _____

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				2,772
Hay - Wild				2. Acreage Cultivated as Service Operation				1,608

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.DUP.,D.C.61-88850

3-1570
NR-88
(4/54)

REFUGE GRAIN REPORT

Refuge Swan Lake Months of January through December, 196 68

(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
Corn	400	1,600	2,000			1,800	1,800	200		200	
Wheat	100	700	800		700	100	800				
Elbon Rye		400	400		400		400				

(8) Indicate shipping or collection points

(9) Grain is stored at White Barn

(10) Remarks Recieved 1,600 bu. mixed field and popcorn from ASC Office. Seed wheat from Clarence Cannon. Rye harvested on 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.

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

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

Bureau of Sport Fis' ies and Wildlife

ANNUAL REPORT OF PERSTICIDE APPLICATION

Refuge: Swan Lake

Proposal Number:

Reporting Year: 1968

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

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
May	Giant Foxtail (Setoria sp.)	Corn Fields	400	Atrazine	600 Lbs.	1 Lb./Acre	Water 7 gal/Acre	Band Spray

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

Results were good to excellent. Enough moisture was available to activate the atrazine after application.

35500