

ROUTING SLIP

BRANCH OF WILDLIFE REFUGES

DATE: _____ 194_____

MR. SALYER _____

MR. KRUMMES _____

MR. DUMONT _____

MISS BAUM _____

SECTION OF HABITAT IMPROVEMENT:

~~MR. GRIFFITH~~ REG 12-6

~~MR. ESMAN~~ 9-2)

~~MISS COOK~~ mc 11-26

SECTION OF OPERATIONS:

~~MR. BALL~~ _____

~~MR. REGAN~~ MR 12/10/48

SECTION OF LAND MANAGEMENT:

~~MR. KENT~~ JK

~~MR. [unclear]~~ wa

SECTION OF STRUCTURES:

~~MR. TAYLOR~~ now 3/10/49

MR. JOHNSTON _____

STENOGRAPHERS:

B

NARRATIVE REPORT

REFUGE: _____

SWAN LAKE

PERIOD: _____

MAY - AUGUST 1948

File

3-15'70
NR-8a

REFUGE GRAIN REPORT

Refuge Swan Lake

Months of May thru August 1948.

(1)	(2)	(3)	(4)	(5)			(6)	(7)			
VARIETY	ON HAND BEGINNING OF PERIOD	RECEIVED DURING PERIOD	TOTAL	TRANS- FERRED	SEEDED	FED	TOTAL	ON HAND END OF PERIOD	PROPOSED USE		
									SEED	FEED	SURP.
Winter Wheat	None	200	200		125		125	75	75		

(8) Indicate shipping or collection points. Combined, Swan Lake Refuge

(9) Grain is stored at White Barn, Swan Lake Refuge

(10) Remarks. Wheat seeded for goose browse

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

- (1) List each type of grain separately: Corn, wheat, proso millet, etc. Include only domestic grains; aquatic and other seeds will be listed on NR-9.
- (3) Report all grain received during period from all sources, such as transfer, share-cropping, or harvest from food patches.
- (4) A total of Columns 2 and 3.
- (6) Column 4 less Column 5.
- (7) This is a proposed breakdown by varieties of grain listed in Column 6.
- (8) Nearest railroad station for shipping and receiving.
- (9) Where stored on refuge: "Headquarters grainary", etc.
- (10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

W813

9-27

TABLE OF CONTENTS

Weather Conditions	Page 1
Water Conditions	1
Migratory Birds	2
Upland Game Birds	4
Big Game Animals	5
Fur Animals, Predators and other Mammals	6
Predacious Birds	8
Fish	8
Physical Development	9
Plantings	11
Cultivated Crops	14
Collections	16
Economic Use	17
Field Investigation	17
Public Relations	19
Refuge Participation	20
Fishing	20
Other Items, Transfer of Goslings	21

GENERAL

Weather Conditions

Weather conditions were very much different this summer than last and approached the ideal for the farmer from an overall standpoint. Barring high water during the fall months that would interfere with the harvest, this has been one of those exceptional seasons when nearly all plantings made an exceptional stand. Only one condition occurred to mar this record, a two week dry spell in late May and June that burned up small acreages of newly planted clover and lespedeza. Naturally such weather conditions favored wildlife as well as the farmer. The following is a summary of weather data obtained from the U. S. Weather Bureau at St. Joseph, Mo:

Precipitation		Maximum Temp.	Minimum Temp.
May	2.88	86	42
June	7.01	95	52
July	6.82	96	56
August	<u>4.36</u>	100	68
Total	21.07		

Departure + 0.33

Water Conditions

Water levels in both the Swan Lake and Silver Lake pools were pulled down to ^{656.0}~~668.0~~ and 663.0 respectively to permit repair work on the levees. As the period progressed it was found that run-off and precipitation was insufficient to maintain the water level established in Swan Lake, and by the end of the period it had dropped to 655.0. However, as outlined in another section of this report no adverse effects were experienced as a result of these lowered levels in this pool. Silver Lake was a different matter in that near normal rainfall maintained a steady flow of water

into the pool from Elk Creek that had to be passed off in order that the beach could be kept dry enough to permit the equipment to work on the levees. As a matter of fact there was a period of a week or so in July when, with the control gate wide open, water levels crept up to 664.0 and nearly stopped the repair work. At the close of the period the level in this pool finally dropped down to 662.5 as a result of evaporation. The gate was closed August 11 with water levels at 663.0. This situation further indicates the acute need for additional water control structures in this pool as we have previously reported.

Fires

This has been one of those rare summer seasons that every manager looks forward to with no appreciable fire hazard and no fires. May it happen every year!

WILDLIFE

Migratory Birds

The situation in this regard remains much the same as usual. We had a small number of nesting wood ducks, mallards, and one pair of blue-winged teal. Three broods of mallards were observed early in August, two of five and one of six that were all nearly ready to fly. One brood of six wood ducks was seen on the wing late in August. While we are quite sure there was one or more pairs of blue-wings that nested here, no young were seen.

The first fall arrivals of blue-winged teal were noted August 25 comprising a flock of 30 birds passing over No. 5 Levee late in the afternoon. Reports of observations of up to 300 of this species have reached us from the Fountain Grove State refuge located about four miles northwest of Swan Lake. Our refuge population should increase rapidly during

September judging by our observations made last year.

About the same number and species of shore birds nested on the refuge this summer as last consisting of kill deer, spotted sandpipers, and king rails.

The doves had an excellent season and are more abundant by far than last year. As a matter of fact they are reported to be more numerous here than they have ever been. We found their nests everywhere we turned; there were three in the cedar trees at headquarters and they were commonly found on the long flat branches of the honey locusts. Twice we found dove nests on the ground. This species is becoming more and more popular locally as a game bird.

Great blue herons were numerous as usual. The American Egret was just as common this year as the blue heron which is rather unusual since we failed to make an observation on the egret last summer. One yellow-crowned night heron was seen in July, and two little green herons were noted during June.

A few white pelicans visited Silver Lake late in July and early in August. Approximately ten of these birds were present but did not nest on the refuge.

Food and Cover

Food and cover conditions were good during the period for the few nesting waterfowl we had as well as for other migratory birds on the area. Cover plants, as usual, were abundant; an excellent growing season with no floods contributed heavily to this condition. While there was a marked absence of aquatic vegetation (as in the past), one of the emergents, water smartweed, grew much more extensively than last year and blossomed profusely late in August indicating a good seed crop from this species.

It is believed that the lower water levels maintained in the two pools to permit repair work on the levees stimulated the growth of this plant.

Waste wheat was present over about 45 acres that had been combined under cooperative agreement in July. A part of the refuge share from this crop was left standing in strips in the field, all of which was utilized heavily by doves and song birds. This field is located on the north side of the refuge east of the old CCC camp. A good crop of wheat was combined on many neighboring farms which helped to provide additional feed of this type. Prospects are for an excellent supply of feed this fall as a result of marginal and agricultural plantings which are described in detail later on in this report.

Disease

No dead birds were found during the period nor any indication of disease observed.

Upland Game Birds

Bob white quail have shown a nice increase over last year and are very numerous. We have called up as many as five cocks at one time near headquarters. Three broods averaging 12 birds three-fourths grown were noted near the service building late in August. Four broods on which no count was made were seen near Secondary Headquarters, and four broods averaging about 12 birds each were observed along the north boundary near the road. Two broods of ten each were seen in the bottoms east of headquarters this year which is encouraging as the high water last year drove them all out. We feel that the population on the refuge at this time close approximates the 800 birds reported some three or four years ago although we have made no special census. This species is also abundant on the area surrounding the refuge.

The picture on Prairie Chickens is a little brighter this year. One nest containing nine eggs was found in the spartina marsh area southwest of Secondary. The eggs all hatched but no observations have been made on the young. This is not surprising as the cover is heavy over there and it is difficult to travel except on foot. Several reports of young seen on nearby farms lead us to believe that this species gained somewhat during the period. We shall be able to get a better perspective on the population later in the fall after they have flocked and started feeding in the corn fields.

Food and cover conditions were fine this summer for both quail and prairie chickens. Rather extensive plantings of head crops at strategic points should prove attractive this fall and winter and we managed to get in additional meadow area for prairie chickens consisting of a 40 acre tract just east of headquarters and 35 acres near the old CCC camp. The latter has already been noted to be fine for quail which is attributed to the fact that the pasture area has increased the "edge" or periphery there which had previously been lacking due to an over abundance of the heavy-cover plant types. As previously mentioned, winter food patches consisting of dwarf milo maize and club kaffir were planted adjacent to these tracts.

No evidence of disease was noted during the period.

Big Game Animals

During the summer months our white-tailed deer seek out the willow thickets and for that reason are difficult to see. According to evidence such as tracks and browse marks there was a good fawn crop with a preponderance of twins. One report from a neighbor told of seeing a doe with tripletts. We have seen big bucks near headquarters any number of times, especially late in the evening when they like to come down along the shore

of Swan Lake. There were several reports of their feeding on soy beans and rye but there was no appreciable damage from this source.

Food and cover conditions remain good for deer and no indications of disease were seen during the period.

Fur Animals, Predators, Rodents and other Mammals

Muskrats are still very scarce on the refuge although we have seen three or four this summer as compared to one last year! It would seem that we should have a larger muskrat population in spite of the widely fluctuating water levels experienced in this locality. However, there is a marked deficiency of food plants for this species here, and this is believed to represent the major reason why we don't have a larger population. As we report under "Plantings" several acres of hardstemmed bullrush was put in here this summer which, if successful, should attract muskrats.

The raccoon population continues to increase, not only on the refuge but on all surrounding lands. In fact, local people say that never in the history of the country have there been so many 'coons. They turn up everywhere; several local farmers found half grown young wandering around in the wheat fields where they combined and brought them home for pets. While they make good pets, they seem to have a pretty consistent tendency to hit the hen house, and at that point Mr. Farmer usually returns the little rascal to the woods! Late one July night the refuge manager's peaceful slumber was rent asunder by an unholy commotion under the front porch. My springer spaniel was barking and carrying on, and soon my wife lent her gentle tones to the, by now, general uproar insisting that the old man rise and quell the disturbance. Of course, "the old man" was still pretending deep sleep, and, anyway, wasn't too keen about going out there in his P J's with all that thumping and growling taking place. But he finally had to come to it and

get a flashlight. A rather cautious reconnaissance with the light showed the dog about half way under the porch and two red points of reflected light coming from under the steps some ten feet away, a dead giveaway on a 'coon's eyes. The retriever seemed to take on courage at this point, and made a scramble to get closer, growling and barking like mad. The 'coon also took the offensive and soon the dog's barks and growls changed to yipes as he came backing out followed by his antagonist. The battle ended as the 'coon bolted when he reached the edge of the porch and dog didn't try too hard to catch up. And so back to bed after making sure that friend wife waked up to hear the details of the episode.

Under "Field Investigations" is offered a progress report on our 'coon study. It is obvious that additional removals should be made this winter and we intend to base our recommendations along these lines on the results from returns on 'coons tagged this summer. These should come in during the open season on raccoons in December and January from hunters working near the south and west boundaries. Our live trapping program will follow the open season and in all probability we shall recommend taking a larger number than last year.

A few crop damage complaints have come in on 'coons, particularly on sweet corn patches. We investigated one case and found that they had wiped out an acre of sweet corn in less than a week. In this connection it was interesting to note that the farmer involved maintains spick and span fence rows and about the only food for a coon on the place was his corn. During the same period on the refuge, the 'coons fed primarily on wild grapes, and of the several hundred acres of refuge corn, we failed to find any indication of raccoon damage.

Examination of approximately 50 'coon scats failed to turn up any

indication of predation on waterfowl although we are quite sure that with our heavy 'coon population there is a one-sided competition between that species and our wood ducks for nesting sites as there simply aren't enough den trees to go around.

Coyotes remain in the same status as previously reported and are not numerous. We plan to continue our program initiated last year whereby local farmers having trouble are given instruction on trapping. We recently received word from the State Conservation Department that they would have a man available to help us with this work again this year. We have found that most farmers make good trappers once they get properly started, and with the bounty of \$15.00 paid by the County as an incentive, they will go right after Mr. Coyote. We have also found that a cooperative program of this type makes for excellent public relations and is a mighty big help in getting us away from the stigma usually attached to refuges as breeding grounds for predators.

Rodents and other mammals remain in about the same status as previously reported except that we have had some trouble with house rats and moles. A series of 1080 baits cleaned up the rats but the moles are more difficult to get rid of and certainly are a nuisance on the lawn at headquarters.

Predacious Birds

These species are just about the same this year as last with no large concentrations or excessive activity. Crows are fairly numerous; several observations were made on great-horned owls, barred owls, sharp-shinned hawks, Cooper's hawks and sparrow hawks. The larger hawks are uncommon here in the summer.

Fish

The crowded condition of fish in the pools prevailed again this year and presents a real problem. The rough fish such as carp, buffalo and

catfish predominate but there are a great many crappies and blue gills with a few large-mouthed bass. The excessive number of rough fish tends to destroy much aquatic vegetation and to keep the silt on the bottom stirred up maintaining a high degree of turbidity. Rough fish removals were made regularly starting in May under the supervision of the State Conservation Department with the fish taken being distributed for food. (Rough fish are much more popular locally for food than game fish.) In spite of the fact that these operations were frequent and the catch large, we are fighting a losing battle in working along these lines for our outlet gates are not screened, and every time we open them in comes a new supply of rough fish. Several large fish were taken in the nets in the course of the removal work; one paddle-nose sturgeon weighing 35 pounds, and three sheepheads weighing 14, 11, and nine pounds respectively to mention a few. An estimated five tons of rough fish were removed during the period. The much lower water levels maintained in the pools this summer did not appear to have any ill effects on fish.

REFUGE DEVELOPMENT AND MAINTENANCE

Physical Development

First priority work during the period was once again the seemingly never ending job of levee repairs. The two temporary spillways at each end on No. 5 Levee were raised from 18" to two feet to bring them to grade over a total length of approximately 400 feet by 100 feet wide. The upstream slope on this levee was filled in over the entire length and the east one-half of the crest was brought back to grade by filling over about 1,500 feet. All work was leveled, dressed and seeded in timothy, lespedeza and other soil binders. A grand total of 7,540 Cu. Yds. of earth was placed in the course of this repair job of which 1,490 yards was moved during the

period. Cost per yard for the job was .088. The work on No. 5 Levee was completed in June.

Following this, it finally dried up enough on the Silver Lake pool to permit work on the repair of the No. 3 Levee consisting of replacing the eroded section on the upstream slope of the levee. This was a much more difficult repair job due to the fact that all earth must be hauled from borrow pits located west of the levee in the bottoms at a greater distance and tending to be wet and sticky. In some cases ramps are already available for crossing the original borrow pit west of the levee which is full of water, but in two cases, as the repair work moved on south, new ramps had to be built wide enough to permit safe travel to and from the new pit with the scrapers.

The early stages of this job consisted of removing a solid mat of drift wood from the beach which was piled up with the dozer and burned. Following this the rock riprap which had been previously placed was shoved up on top of the levee where it remained until the fill was made; then it was pushed back down to its new location, and the entire new fill dressed to the desired slope. Our recently acquired U9 LeTourneau scraper and Continental 5-yard scraper were both used for hauling dirt. We experienced a lot of trouble with sticky going along the beach on the upstream slope, particularly in turning around. The new U9 scraper worked quite well except that it is long and narrow and tends to upset at the slightest provocation. In spite of these difficulties and aggravations combined with more than our share of wet weather, we managed to push the job along south to about one-fourth mile south of the control gate placing a total of 15,230 Cu. Yds. at a cost of .072 per yard. This work was done in July and August.

A fair share of the mechanic's time has been taken up in keeping the

two tractors, scrapers and the dozer rolling on the earth moving project.

The usual maintenance work was done on five trucks, the Oliver farm tractor the Allis Chalmers combine and other farm machinery.

The two refuge residences came in for some attention during the period. The manager's house was painted two coats throughout on the interior excluding the woodwork and the house at Secondary was given the same treatment plus painting all the woodwork and sash. We also painted all the screens on the manager's house and on the service building as well as the large doors on the service building.

The Kansas City Power and Light Co. finally ran a line into Secondary headquarters providing electricity at that point which has been sorely needed for years. In checking over the house wiring before hooking on we found it in very poor shape and extremely hazardous. It required two days work with the services of an electrician to correct this condition.

The water supply at headquarters had been giving trouble for some time so we pulled the well-point and re-drove the well. A larger supply of water was obtained but the quality is about the same. The pump and cylinder were overhauled and put back into operation. However, this unit is not designed for a well of this type and the plan is to replace it.

All of the refuge trails were mowed twice during the period and the weeds and grass on the out-lying parts of the two headquarters areas were cut three times, not only for the sake of appearance but to reduce the fire hazard.

Plantings

With water levels down to enable repair work on the levees, it gave us a fine opportunity to make some marginal and sub-marginal plantings on the strip of beach exposed. We were particularly anxious to try some hard-

stemmed bulrush from seed and two locations on Swan Lake were chosen comprising about ten acres each. These were located at each end of levee No. 5 in a sort of a cove. The seed was broadcast by hand approximately ten pounds to the acre and then disced in. At the time of planting early in May, there was no other vegetation showing. However a little later a rank weed growth came up and so far as we can tell none of the bulrush seed germinated. It is hoped to get water back over these plots this fall which will bring the seed along if it is going to grow. Previous plantings of bulrush on Swan Lake have not been successful.

On the east side of Swan Lake a beautiful stand of smartweed volunteered all along the strip of beach mentioned previously. However, the rest of the beach showed indications of producing a mixed weed growth so we disced it all up and planted most of it in wild millet. Three check strips were left unplanted but were lightly disced. These strips were marked with posts for comparison purposes later on. We also planted some short strips of straight smartweed. All seed was broadcast by hand and disced in. Millet was planted about 25 pounds to the acre and smartweed about ten pounds. These plantings were all made the latter part of May. At the close of the period a check showed that all of the millet plantings were highly successful with a rank stand loaded with seed. The smartweed was about 50% effective and for some reason did not germinate too readily. ~~The~~ the control strips which had been left unseeded but which had been disced showed a mixed stand of several weeds together with a little volunteer millet and smartweed. They very definitely failed to produce a suitable stand of marginal vegetation. We are quite enthusiastic about our marginal millet plantings which we are quite sure will be heavily utilized this fall by waterfowl on a part of the pool heretofore largely non-productive and

used very lightly by ducks and geese. After the millet has thoroughly ripened, we propose to mow about two swaths up and down the beach to make this feed readily available. This is in line with our observations on utilization of millet last fall in that the birds worked into the areas where it had been combined quite readily and from there worked out into the strips still standing.

We also worked out something of an experiment on growing wild millet using standard agricultural practices. This was prompted by the fact that we do not get a good volunteer stand of millet every year and it is desirable that we have some each year for shipping out to other areas to be used as seed. We had 40 acres of rather poor farm land available for the experiment which is located in a poorly drained section of bottom land east of Swan Lake. We broke the ground disced it and harrowed it down broadcasting the seed with an end-gate seeded about May 29; approximately 1,400 pounds of seed was sown and it was harrowed in afterward. At this point we got a bad break on the weather for the first two weeks in June were hot and dry. The seed germinated and came up but grew so slowly that the weeds got a head start on it. So early in August we mowed the tops off the weeds which permitted the millet to come on up through and head out. Ultimately we got a fair stand that will make excellent feed. However, the seed is small and we question whether it will be entirely suitable for planting. We are convinced that wild millet can be grown on most any of the poorer ground on the refuge and we feel that a small field should be produced each year in the event we don't hit a volunteer seed crop. There is also the fact that such a field of millet provides a very desirable feeding area after combining.

We have requested repeatedly that
some of unit 3 be used for growing
millet. REG.

Cultivated Crops

The need for a browse crop for geese has long been recognized here and in the past several attempts have been made to share crop wheat to meet this requirement. However, since much of our land is not suited to this crop, and since wheat fields near the pools are subject to excessive damage by geese, the burden of getting in a browse crop has fallen back on refuge personnel. Another complicating factor is that to provide browse in sufficient quantity, wheat should be seeded prior to the middle of September. An insect pest known as the Hessian fly sometimes gets into this early wheat while it is in the boot causing up to 100% crop loss. Local farmers usually plant their wheat after the first frost to avoid this fly, usually sometime after October 1. This procedure is, of course, entirely inconsistent with our requirements, so we just about have to go ahead late in August and early in September and hope for the best.

This year we started plowing wheat ground August 17 and picked a 50 acre tract east and south of Swan Lake that had not been cultivated in over ten years. Such cultivation serves a dual purpose in this case in that it not only provides a food patch but serves to kill out the smaller undesirable woody plants that enroach on idle land of this type. This was mighty tough going and rain held us up a time or two but we managed to complete drilling by September 3 on this tract. At the date of this writing the wheat is up about three inches and looks fine. We hope to plant a total of 100 acres by September 25.

In addition to this, we worked out two cooperative farming agreements whereby a part of the Government share is to be taken in wheat and rye which gives us another 66 acres of wheat that is in and up.

Since wheat is somewhat lacking in the volume of green feed it produces,

we had one of the permittees put in 32 acres of Balboa rye. We noted last fall that the geese would eat it and that it produced a far heavier growth of succulent material. It also requires less moisture to make a good stand, an important factor where plantings are made in August. This field was drilled September 13, a little later than we would ordinarily plant it.

The crops planted under cooperative agreements totaling 1,134 acres all are better than average and most of them are excellent. Earlier estimates on corn and soy beans placed the average yield at 40 bushels and 20 bushels respectively. However, recent estimates are still more encouraging and we have found several fields of beans that will make 30 bushels and some corn that will beat 60 bushels. The head crop plantings for quail and prairie chickens are in fine condition and loaded with seed. We tried two varieties, dwarf milo maize and club kaffir; we have had previous experience with dwarf milo and had found it a good producer on poor ground. Our observations in this respect were borne out as the milo did very well. The club kaffir was highly recommended for this locality but we find that it does not produce the quantity of seed that milo does. Also, it grows much taller and is obviously one of the canes developed more for fodder than for a seed crop.

According to some of the local farmers who have been operating here all or most of their lives, this year has been one of the best in history for crops. There was only one minor exception to this statement so far as climatic conditions are concerned, and that was the hot dry period we had in the forepart of June that killed out young stands of clover and lespedeza and was also hard on the wild millet we had put in as previously noted. To be sure, one of the greatest boons was the absence of any high water after the latter part of March, and even yet a wet fall could make it

difficult for some of the farmers with crops in the bottoms. The old flood bugaboo is always with us here in Missouri!

Collections

Two hundred bushels of Pawnee winter wheat was combined from the Government's share of the wheat grown on the Williams Bros. permit last year. This work was done in July. The stand was thin and rather dirty but our new Allis Chalmers combine did a nice job on this wheat; this was the first time we had tried the machine. This wheat will be used for seed this fall.

Due to the fact that there was no overflow from the river this year, and, also to extensive farming operations by local people on every bit of tillable land available, the crop of smartweed and wild millet is small. In fact we failed to find any smartweed worth combining. The millet was a little better and we shall have about 80 acres. However, it is not as good as last year; the yield will be lighter and the stands are not as clean. This acreage includes that grown on the refuge as previously described.

Receipts of Nursery Stock

Three thousand seedling plants of bush lespedeza were received without cost from the State Conservation Department in May. They averaged about 18 inches high. They were all planted along the rail fence at headquarters. Survival was good, practically 100 percent, and they all made an excellent growth this year. We are hoping that next year they will produce seed, although this would appear to be somewhat doubtful. These plantings were by way of an experiment more than anything else. Some of the local farmers who are members of the Swan Lake Sportsmans Club also obtained some of this stock, and planted it in connection with the Club's

program of food patches for quail.

ECONOMIC USE OF REFUGE

Grazing

Grazing represented the only economic use made on the refuge during the period. The following men held permits for grazing cattle:

Kenneth McKee, Permit No. 19681 covering 50 head mixed cattle from May 1 to Oct. 31 on grazing unit No. 1.

Arch McGilvray, Permit No. 19437 covering 70 head mixed cattle from July 1 to Oct. 31 on grazing unit No. 2.

Reams Downey, permit No. 19682 covering 25 head mixed cattle from June 15 to Nov. 30 on grazing unit No. 3, and 25 head mixed cattle from May 1 to Nov. 30 on grazing unit No. 4.

Grazing units Nos. 3 and 4 are new; No. 3 is located just east of headquarters and was installed on lands previously farmed to provide meadow area for prairie chickens. No. 4 lies near the old CCC camp and is partly made up from lands previously farmed. In this case the soil was thin and sheet erosion was a serious threat so the area was returned to grass. On both units early seedings of grass were burned out in June and will be re-planted this fall. However, the cover crops planted there offered some desirable forage this summer. In no case have we observed any conflict with wildlife on our grazing units.

FIELD INVESTIGATION

Raccoon Study

We were extremely fortunate to have one of the wildlife students at the State University of Missouri on the refuge this summer. Mr Glen Sanderson, graduate student, who is writing his thesis on the life history of the raccoon was with us from July 1 until early in September. It is

largely from his notes that the following observations are taken and he also did all of the live trapping and tagging which should provide us with some valuable data upon which to base future management plans.

Trapping was started July 13 and was continued until August 30. Ordinary box traps were used which were metal lined and which had a metal door. With the large 'coon population known to be present, it was thought that it would be comparatively simple to trap quite a number of these animals. However, it was discovered that the bulk of the traps, which prevented moving them readily through the dense underbrush and weeds, plus the fact that the 'coons were a little reluctant to go into them, made trapping rather difficult. This entire period was required to take 57 animals of which two were retakes. The traps were baited with corn and were located along Elk Creek both ways from the old bridge ^{and} near the junction of Levees No. 1 and 3. Thirty traps were used and they were visited daily, usually before noon.

The 'coons were transferred from the traps to a heavy wire cone with a one inch mesh. This cone has a hinged door on the back that fastens down securely, which permits close examination of the animal without much danger of being bitten. While in the cone, they were weighed, sexed, ear-tagged, toe-clipped, examined for evidence of molt and bare teats (indicating lactating female), and then released at the point of capture. A system of toe-clipping was adopted which identifies the animal caught as to number. This was to forestall any difficulty that might arise from losing the ear tags. Fresh scats found in the traps and in the course of the daily round were carefully examined to determine what the 'coons were eating.

Summarizing, the results were as follows: During the period the major food item was found to be wild grapes. Secondary foods were fish

(mainly bullheads), plums, choke cherries and corn. The corn was probably that used for baiting the traps. A total of 25 adults was taken of which seven were males and 18 females. Average weight; male 12.1 pounds; female 9.9 pounds. Two of the females were found to be lactating and one appeared to be pregnant. Thirty two juveniles were taken, 16 males and 16 females; average weight male, 4.9 pounds; female 4.3 pounds.

Since the most of our recoveries on these tagged raccoons will be made by local hunters working near the refuge, we have taken particular pains to advertize the program through the medium of our local Swan Lake Sportsmans Club. Where an ear tag has been lost close scrutiny is required to note the missing toe or toes and we shall have to depend on the cooperation of the local sportsmen to watch for these toe clipped animals.

PUBLIC RELATIONS

Recreational Uses

The picnic area received much heavier use this year than last. Possibly the cooler weather we had this year was responsible. Over the Fourth of July week and several hundred people took advantage of these facilities. These were mostly folks attracted to the nearby town of Sumner for the celebration staged by the Swan Lake Sportsmans Club. While it was impossible to keep an accurate check on the number of people visiting the refuge, we estimate that at least 500 were here during the period.

Refuge Visitors

<u>Name</u>	<u>Title</u>	<u>Date</u>
Ray Carpenter	State Conservation Agent	Numerous
Leo George	" " "	"
Paul Johnson	" " "	"
Ted Shanks	" " "	"
Guy A. Greenwell	" " "	"
A. G. Huey	Regional Engineer	June 4, 1948

Refuge Visitors Cont. -

<u>Name</u>	<u>Title</u>	<u>Date</u>
Wm. V. Taylor	Chief Engineer, W. O.	June 4, 1948
A. G. Huey	Regional Engineer	July 16-20, 1948
O. E. Recroft	Land Acquisition, R.O.	Aug. 26-28, 1948
Joe E. Smoke	Land Acquisition, R.O.	Aug. 26-28, 1948
Mr. Jorgenson	Land Acquisition, R.O.	Aug. 26-28, 1948

Refuge Participation

As usual during the summer months club activities in general slowed down and while the refuge manager attended four monthly meetings of the Swan Lake Sportsmans Club during the period, we did not show any film or actively participate in any program during this time. It may be recalled that we were instrumental in organizing the Swan Lake Club last fall which has grown to a large and active organization during the following year. The Club now has a fine clubhouse in the town of Summer and as of September 1 had 700 members. Refuge personnel have not only enjoyed the social benefits as members of this organization, but the Refuge has gained immensely as well through a closer and much more harmonious relationship with the public.

Fishing

Fishing in the Swan Lake pool was very poor during the summer and only a comparatively few small bulheads were caught. In Silver Lake along the borrow pits it was better but very few game fish were taken. Most local people prefer rough fish to eat, and, since they caught a lot of carp and bulheads, it might be said that fishing was good. This, however, is quite definitely a matter of opinion so far as the manager is concerned! As a matter of fact with the present tremendous demand for fishing we were pleased to see so many fisherman perfectly satisfied to sit all day and yank out carp using a piece of dough for bait! One old fellow showed up several times

this year who had to be carried to the bank in a wheel chair to do his fishing; and he went right along with the rest of them, cane pole dough balls and all, so maybe there is something to this carp fishing after all! I never asked him but I wondered if he locked the brakes on that wheel chair, for there are carp in that borrow pit that could tow him overboard, chair and all! It was not possible for us to keep an accurate tally on fishermen coming in but we estimate that a total of 600 visited the refuge during the period. This is probably on the conservative side.

Violations

No violations were encountered during the period.

OTHER ITEMS

Transfer of Canada Goslings

Early this spring it was decided to try an experiment whereby young Canada geese were to be liberated on the refuge at a tender age with the hope that in growing up here the instinct to return and nest would become established. Accordingly the manager accompanied Mr. Lloyd Gunther of Squaw Creek Refuge west to the Bear River Refuge and assisted him to capture and crate 75 goslings running between Class 1 and Class 2 in age, or from the small downy fellows to birds that had started to feather and had a dim outline of the white cheek patch. They were brought straight back to the refuge from Bear River and placed in a small pen, about 25 by 25 feet partitioned in the middle. They arrived here June 2 and were placed in the pen where they could get water and browse. They were fed lay mash mixed in water and ate it readily. The larger birds were separated from the smaller ones to avoid trampling. Since these birds ate practically nothing in the course of the trip in here, they were rather weak upon arriving which was why we had built the pen. By holding them a few days we hoped to get them

back into reasonably good condition before releasing them. At this point the State offered us two pairs of captive adult Canada geese with the thought that they should be released with the young to rear them. The only trouble was the State's flock of birds was in a large enclosure and we didn't have time to make a careful selection of mated pairs. However, we were fortunate in having two of the four turn out to be mates, with the female quite solicitous for the young when we placed them together. The other two adults (placed in the other half of the pen) tolerated the young but were pretty much indifferent toward them.

We held the entire group from June 2 until June 7 and then opened the pen, one side at a time. The female that had showed a tendency to mother the young quickly marched her share out through the opening and then stood watching the others, still in the pen. When these were liberated, she gathered them in also and took off for the lake. The other three adults trailed along.

During the time we held the young we lost six of the weaker ones.
⁶
¹⁹
² Nineteen were released. After turning them out, we saw the group frequently on Swan Lake during the next two weeks but we were unable to get a good count on them. Then they all disappeared until about August 15. On that date 16 were seen feeding on the shore just east of headquarters. A short time after another group of three appeared near headquarters. We feel that the group of 16 represented the old female and 15 surviving young and that the other group of three were the remaining adults. From August 15 to September 1 we heard Canada geese often at night and assumed they were our birds. However, an unusually early flight of 75 Canadas pulled in here September 9, so we can't be sure about the thing any more.

In conclusion, it is our opinion that the experiment has been a success

in that we successfully raised the majority of the goslings to where they could fly. It remains to be seen whether these birds will return next spring. The odds are against us there for they are quite likely to get shot this fall.

Respectfully submitted,

Herbert H. Dill

Herbert H. Dill
Refuge Manager

Sept 22, 1948

Approved

Regional Office

WATERFOWL

Refuge Swan LakeMonths of Mayto August194 8

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	Estimated for Period
I. <u>Swans:</u> Whistling swan									
II. <u>Geese:</u> Canada goose Cackling goose Brant White-fronted goose Snow goose Blue goose									
III. <u>Ducks:</u> Mallard Black duck Gadwall Baldpate Pintail Green-winged teal Blue-winged teal Cinnamon teal Shoveller Wood duck Redhead Ring-necked duck Canvas-back Scaup Golden-eye Buffle-head Ruddy duck			100	8-31-48			8	50	100
			50	8-31-48					75
			10	8-31-48			1	20	25
IV. <u>Coots:</u>									

3-1750
(July 1946)

(over)

Form NR-1

SUMMARIES

Total Production:

Geese None

Ducks 70

Coots None

Total waterfowl usage during period 200

Peak waterfowl numbers 200

Areas used by concentrations _____

Principal nesting areas this season Along levees

Reported by _____

Herbert H. Dill

INSTRUCTIONS

- (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) First Seen: The first refuge record for the species during the season concerned in the reporting period, and the number seen. This column does not apply to resident species.
- (3) Peak Concentration: 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 in the reporting period.
- (5) Young Produced: 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.
- (6) Total: Estimated total number of the species using the refuge during the period. This figure may or may not be more than that used for peak concentrations, depending upon the nature of the migrational movement.

Note: Only columns applicable to the reporting period should be used. It is desirable that the Summaries receive careful attention since these data are necessarily based on an analysis of the rest of the form.

MIGRATORY BIRDS
(other than waterfowl)
Months of

Swamp Lake

Months of May

to gust

192

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove	50	7-1-48	Very common Resident		2,000
White-winged dove					
IV. Predaceous Birds:					
Golden eagle					
Duck hawk					
Horned owl	1	8-1-48	Resident		10
Magpie					
Raven					
Crow	5	7-1-48	Resident		20
Cooper's Hawk	1	7-15-48	Resident		5
Sharp-Shinned Hawk	2	8-1-48	Resident		5
Sparrow Hawk	10	8-15-48	Resident		50
Barred Owl	1	7-1-48	Resident		20
Reported by <u>Robert E. Hill</u>					

INSTRUCTIONS

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

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

1613

Refuge Swan Lake

Months of May to August, 1948

(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'vd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specificioally requested. List introductions here.
Bob White	Hedge rows, woods - 2,500 Acres. Agricul- tural land- 1,000 Acres	6	7	200					700	
Greater Frairie Chicken	Spartina Meadow and old fields	50								One nest observed with eggs. They hatched but young were not 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.