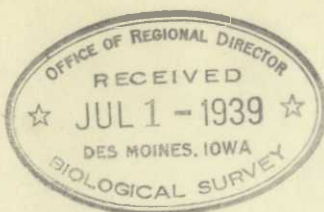


*Bureau*



BIOLOGICAL NARRATIVE REPORT

Squaw Creek Migratory Waterfowl Refuge  
Mound City, Missouri

for the

Quarter Ending April 30, 1939

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## BIOLOGICAL NARRATIVE REPORT

### I. General Conditions.

The weather during the period covered by this report was mild for the season of the year. We experienced many clear days and the precipitation was relatively light. There were a few light falls of snow and a few showers. However, we had one heavy fall of snow which totaled about six inches on the level. It came on February 28. It drifted quite badly and blocked the highway south of Headquarters so that no cars came through for five or six days. It covered the corn in the fields and probably caused the ducks to go hungry for two or three days. The water produced by the melting of this snow helped to moisten the ground.

We also had a fairly heavy rain on March 11, which caused Squaw Creek to rise and put considerable water in the refuge. The water flowed over the spillway on our Squaw Creek levee for the first time since it was built last fall. This filled up our northwest basin almost to the point where the water would flow over the spillway in Cross Levee No. 1.

Due to the fact that we wanted to pave some of the levees, we let most of this water pass out of the refuge at the control gates. ) ?

There were no rains during this period that were heavy enough to cause floods. The rain on March 11 did bring enough logs, weeds, corn stalks, brush and other rubbish down Davis Creek to cause a log jam against the piling of the new bridge that we were building west of Headquarters at that time. Mr. Tonkin and Mr. Dahl were here then and helped us clear this jam out of the creek. We shall probably be bothered by similar jams in the future.

Spring is usually a time of the year when we have trouble from fires in this vicinity. The farmers burn off their fields and unless they are given firm warnings they are apt to permit the fires to get beyond control and burn over parts of the refuge adjacent to their land. We have watched this matter pretty carefully this year and posted many fire warnings around the refuge. Only two fires got into the area. One of these occurred on February 25. It started on privately owned land near Refuge Headquarters and burned over about ten acres of hilly brush land. We do not know just how it started, but are inclined to believe that it was started by a man who was



moving away from a nearby farm. He may have done it to discredit the farmer who was moving on the same place. There had been friction between the two parties. Of course, the fire may have been purely accidental.

Another fire occurred on April 29. It burned over about twenty acres of marsh and brush land on the east side of the refuge. It was started by a farmer who was burning corn stalks on his privately owned land adjacent to the refuge. He left the fire unattended for awhile and the wind shifted from one direction to another, causing it to get away from him.

After this happened we were frequently called upon to inspect the precautions taken by neighboring farmers to prevent their fires from getting on to the refuge. They wished us to do this before they would start a fire.

## II. Wildlife.

### A. Waterfowl.

At different times during the period covered by this report, the following waterfowl were seen.

- Mallards (*Anas platyrhynchos*)
- Black Ducks (*Anas rubripes*)
- Widgeons (*Mareca americana*)
- Pintails (*Dafila acuta*)
- Blue-Winged Teals (*Querquedula discors*)
- Green-Winged Teals (*Nettion carolinense*)
- Shovellers (*Spatula clypeata*)
- Wood Ducks (*Aix sponsa*)
- Canvas-Backs (*Nyroca valisineria*)
- Redheads (*Nyroca americana*)
- Ringnecked Ducks (*Nyroca collaris*)
- One of the Scaups (*Nyroca affinis* ?)
- Ruddy Ducks (*Erismatura jamaicensis*)
- American Mergansers (*Mergus merganser americanus*)
- Canada geese (*Branta canadensis*)
- Snow geese (*Chen hyperborea*)
- Blue geese (*Chen caerulescens*)
- White-Fronted Geese (*Anser albifrons*)

Spring is the season of the year in which the greatest concentrations of waterfowl visit the refuge. During one or two days in January, when we were having a blizzard, we probably

had less than 5,000 ducks here. Most of the winter there were at least 25,000 which is the number that was probably present when this quarter opened on February 1st. The numbers soon began to increase rapidly. By February 8, there was estimated to be 50,000 ducks here. The numbers had jumped to 75,000 by February 22. On the 26th the estimate was 100,000. Mr. Jesse Thompson, Game Management Agent for this region, was here on March 7 and estimated that there were 250,000 ducks present. Approximately the same numbers remained on March 10.

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The above numbers are based on Mr. Thompson's estimates. He was here several times during the winter and estimated the ducks by calculating approximately how many there were per acre in various places, and then multiplying that number by the number of acres covered.

The numbers began to decline quite rapidly after March 10, and by the end of the quarter there were probably not more than 5,000 ducks using the area.

Of course, the dominant species present varied from time to time. During the winter perhaps 95% or more of the ducks were mallards, with a very light sprinkling of black ducks. For a time in February about one third of the ducks were pintails. During March and April, there was quite a variety of species. At one time we had a rather heavy concentration of shovellers and blue-winged teals.

A few ducks remained on the refuge after the quarter ended and are nesting. They will be discussed in the next Quarterly Report.

While the ducks were here this spring they did most of their feeding in the corn fields. We had left several hundred bushels of corn in our fields for them and they also went out to feed on private lands. Sometimes they went 12 or 15 miles.

There were always some sick and crippled ducks present when the large concentrations were here. A few of them were caught in our banding traps and some that were in very bad condition were killed and posted. Some of them showed old shot wounds. The cause of sickness was not determined in some cases. Two eagles and a number of large hawks frequented the refuge during the winter. They seem to subsist almost entirely upon sick and crippled ducks. The eagles were observed attempting to catch



some healthy ducks one day. They did not succeed. It is believed that they were a benefit in that they removed a possible source of infection for the other ducks.

The first blue geese were reported on February 23. A flock of 22 blue geese and three snow geese were observed on February 24. A representative of the Biological Survey who has had a great deal of experience with wildlife was here on March 7. He estimated that there were 25,000 geese here on that date. Most of them were blue geese. About 5% were snow geese.

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The big flight of geese came on March 8. From 6:00 o'clock in the morning until darkness arrived they were continually coming in over Headquarters. They arrived in strings of from 5 to 500. Sometimes several large flocks could be seen in the air at one time. There must have been at least 50,000 geese on the refuge by nightfall of March 8. The large concentration remained a few days and then moved on. However, a small bunch remained until April 30, when there must have been 200 left. The proportion of snow geese to blue geese increased as time went on until there were more of the former than the latter at times. The flock that remained in April was probably made up of mostly unmated males and immature birds that did not nest this year and were hence in very little haste to reach the northern country.

The Canada geese came later than the others. There were times in April when we estimated that we had between 500 and 1000 of them.

One lone white-fronted goose was caught in a trap being used in our duck banding operations. This bird was in very bad condition but the nature of its sickness was not diagnosed by the superficial examination given it. We turned it loose without banding it, thinking that it would soon die anyhow. It did not seem able to fly.

When the large concentrations of geese were here most of them fed on wheat fields near the refuge. They were divided into two flocks. By far the larger flock fed in a wheat field a short distance north of the Mound City - Bigelow highway. A much smaller flock used a wheat field near the west side of the refuge. None of the people on whose land they fed registered a protest with the refuge personnel. In fact, it is thought that very little damage was done by them.

For two or three weeks during February, American Mergansers were seen. About 100 were observed on the sixth.

There was quite a concentration of shore birds for awhile. Among other species were Greater Yellow-legs and a number of kinds of sandpipers.

Some three or four thousand white pelicans stopped on their way north this spring. The first ones were seen on April 2. The largest concentration was here on April 19 and 20, after which the numbers decreased rapidly, but a few remained up into May.

A great blue heron was observed on March 9. The numbers of these birds increased until there must have been 50 of them using the refuge as a feeding ground by the end of April. They have a rookery a few miles from the refuge. American coots also appeared in the first part of March. Five thousand or more were here for awhile, but only a few remained for the nesting season.

#### B. Upland Game Birds.

One covey of about 15 Bobwhite quail was observed during the winter near one of our bird shelters and feeding station. These quail have not been seen for two or three months.

It has been estimated that there were at least 100 ring-neck pheasants on the refuge. Ten of them were seen from one place on Cross Levee No. 2 at one time. Several nests were found by people cutting hay or doing other farm work on land adjacent to the refuge.

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down*

#### C. Predator and Rodent Control.

No work of this kind was done on the refuge during this period. There is need for some control of rats and mice around the grain stored at Headquarters. There were pocket gophers in the alfalfa field just west of Headquarters, but this field has been plowed and planted to row crops on a share crop basis. The gophers will probably move out now. Wood chucks are quite numerous on parts of the refuge. They do not seem to be doing much harm.

#### D. and E. Furs Taken.

None were taken during this period.

#### F. Other Animals.

There are several hundred muskrats on the refuge. If they make a normal increase during 1939 they may become numerous



enough to damage the vegetation and perhaps the levees. Representatives of the Missouri Conservation Commission have signified a desire to trap some of these animals alive and transfer them to other areas for stocking purposes. This might be a good way to dispose of the surplus. The writer has been informed that a certain party once started to develop part of this area as a muskrat farm. This party is said to have imported some dark colored northern muskrats into the area with the idea of improving the local stock. If this is the case, the muskrats here may be of better quality than the average for this region.

The tracks of racoons and mink are frequently seen along the margins of our lakes. Last fall a racoon got into one of our duck traps and killed a wood duck drake.

Coyotes have occasionally been seen on the levees by our W.P.A. workers. They have also been seen on the agricultural land by farmer who lease the land from us. They are frequently heard on the refuge at night. Early this spring Mr. Munkres, our Laborer-Patrolman, made a diligent search for their dens along the old levees extending across the refuge. He did not find any then. Since the quarter closed, one of our neighbors has reported seeing an old coyote and her partially grown pups playing in his pasture one morning. He lives along the bluffs, about one-half mile from the refuge. It is very likely that these animals have their dens in the brushy and wood hills and use the refuge as part of their hunting grounds.

In spite of the presence of the coyotes, racoons, minks, and a considerable number of skunks, pheasants continue to live on the refuge in fairly large numbers. It is doubtful if the coyotes kill many ducks. Only occasionally are remains of ducks found and it usually seems that these are birds that were sick or crippled before they were killed by the predatory mammals or birds. We seem to have a good demonstration here of the ability of many kinds of wildlife to live on a single area where food and cover conditions are favorable. ~~It frequently happens that~~ <sup>man is the disturbing factor that</sup> upsets the balance of nature and causes all of the trouble.

While foxes are known to occur in the hilly portions of this county, no one has reported seeing any on the refuge within the past year. There is a question as to whether they frequent the grassy and marshy country found on the refuge.

✓  
Cottontail rabbits are numerous, especially near Headquarters. Last winter they did some damage to our young trees, both those in the nursery and those that had been set in the field.

About 50 crows frequented the refuge last winter. Most of them left in the early spring. However, two or three pairs nested in the timber along the bluffs.

✓  
Large snapping turtles are very plentiful. It is feared that they kill some water birds. Fishermen have reported seeing them do this. We may never have a large nesting population of ducks as long as we have so many turtles. Large numbers of them are killed and many of their nests are destroyed by the workmen on the levees, but they continue to be numerous. *Recommend use of turtle traps*

#### G. Bird Banding Operations.

Although we built and used five new portable traps this spring, we did not have much success in catching birds for banding. They would swim around the traps where we caught them last fall and not go in. Perhaps they had sufficient food outside the traps. For awhile we used the portable traps in the field for ducks feeding on wheat, but only caught a few. Nine mallards were caught and banded during February and March. Two of these were caught a second time, one three days after it was banded and one two days after being banded. We also banded one pintail duck, two ringneck pheasants, one marsh hawk, and three crows. One crow was caught six times in the same trap. He would get in this trap every two or three days and finally got so he would only fly a few yards after being liberated. He would alight and "caw" at us after being released.

### III. Refuge Development and Maintenance.

#### A. Physical Development.

One of the principle physical developments on the refuge during the period covered by this report was the construction of the bridge across Davis Creek, west of Headquarters. This bridge has one 25 foot span and two 15 foot spans. It is built on cypress piling that were driven by using the dragline as a pile driver. Some of them are set 20 feet in the ground.

The goose pen road leading to the bridge from Refuge Headquarters has been raised for about a third of its distance, in order that it will be more nearly on a level with the bridge.



The dragline was used to drive the piling for the bridge, to raise the grade of the goose pen road, and to build up the approaches to the bridge. It also travelled down the Davis Creek levee from the bridge to the south levee and back during this period. On this trip it dug out earth from the creek, thus widening and deepening the channel and placed it on the levee so that we have a wider and better levee.

During these months, a strip 13 feet wide and 1200 feet long was riprapped on the south levee. This was done to protect the levee against wave erosion.

Work was done repairing roads where they were rutted by heavy hauling and in hand grading the Davis Creek levee to make it smooth after the dragline had been over it.

The site for the new barn was graded down and levelled.

A new strip of road from the Napier crossing to the southwest entrance was built to facilitate hauling of rock for paving the levees.

#### B. Plantings.

1. Aquatics and Marsh Plants. - A row of round stemmed bulrushes (*Scripus* sp.) was planted along the edge of the paving work that was done on the south levee.

2. Cultivated Crops. - No cultivated crops were planted by us during this period. We have approximately twenty acres of wheat that was sown last fall for the use of birds.

3. Trees and Shrubs. - A total of 8,315 trees, shrubs, and vines were planted this spring. Most of these trees came out of our nursery. Three thousand trees were planted last fall. Planting was discontinued last fall because of the extreme dryness of the soil. The spring plantings were made early before the trees had come out of the dormant stage. The spring plantings are doing better than the fall plantings, due to better moisture conditions. A total of 920 native trees were dug up in the wild and transplanted. Five hundred hawthorn and 200 pecan trees were obtained from the Soil Conservation Service Nursery at Ellsberry, Missouri, and planted. The following is a complete list of the nursery stock planted this spring. ✓

plum .....	154 ✓	soap berry .....	565 ✓
mulberry .....	401 ✓	Caragana .....	98 ✓
American elm..	699 ✓	Russian olive .....	54 ✓
green ash....	1988 ✓	trumpet vine .....	52 ✓
Chinese elm..	1200 ✓	dogwood .....	58 ✓
black locust.	718 ✓	catalpa .....	32 ✓
wild grape...	279 ✓	salt bush .....	12 ✓
hackberry....	48 ✓	honey locust .....	25 ✓
Ailanthus....	312 ✓	Hicoria pecan .....	200 ✓
hawthorn ....	500 ✓	cottonwood .....	920 ✓

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4. Grasses and Legumes. - Sweet clover was sown on about 15 miles of levee this spring to protect it against wave erosion. Wild millet, redtop, orchard grass and brome grass were sown on about two miles of levee for the same purpose. Some of the levees are not ready to be seeded yet. A plot of about one-half acre in what was once our nursery was sown to Bermuda grass. It is our plan to permit the grass to grow in the nursery plot this year and take it up next spring for sodding an experimental section on one of the levees. If it does well we may try more of it. We believe that we can give it better care and a better start in the nursery than we can on the levee.

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#### C. Collection.

No seeds, tubers, aquatics, trees, or shrubs were collected, stored, stratified, or treated in other manners during this quarter. No bird skins were collected or preserved during this period.

#### D. Disposition of Seed and Nursery Stock.

1. Receipts. - Five hundred hawthorn and 200 pecan trees were secured from the Soil Conservation Service Nursery at Ellsberry, Missouri. They were delivered to the refuge by truck.

2. Transfer To Other Places. - The following species and numbers of young trees were delivered to Swan Lake Refuge at Sumner, Missouri by truck.

mulberry .....	50 ✓
American elm .....	100 ✓
green ash .....	300 ✓
Chinese elm.....	600 ✓
soap berry .....	200 ✓

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#### IV. Public Relations.

##### A. Recreational Uses.

1. Number of Individuals Using Public Camp Facilities. - There are no public camp grounds on the refuge. It might be a good plan to develop a picnic ground for the use of the public.

2. Fishing. - The fishing season on the refuge did not open until after this quarter closed.

3. Hunting . - There are no public shooting areas on the refuge.

4. Visitors. - Several members of the Missouri Conservation Commission have visited the refuge from time to time. A number of amateur naturalists have also come. A Biology class from the Teacher's College at Maryville, Missouri, came to collect snakes. A group of children from a nearby rural school were also here.

##### B. Refuge Violations.

Although a very careful watch was kept, no refuge violations were observed.

#### V. Economic Uses of the Refuge.

##### A. Grazing.

Grazing is not permitted on the refuge.

##### B. Haying.

No hay was harvested on the refuge during this quarter.

##### C. Timber removal.

No timber was cut during the period covered by this report.

##### D. Share Cropping.


A total of 467 acres was leased to farmer who wished to plant corn this year. However, parts of some fields are unsuitable

for cultivation, usually because they are too low and boggy. Approximately 211 acres were actually planted to corn. Fifteen acres were leased for grain sorghums and planted to ~~that~~ them.

This ground was leased on a share crop basis. The Government is to receive 50% of the crop delivered in the bin at Headquarters if the field is close to Headquarters, and 45% delivered in the bin if the fields are some distance away.

There are now about 3,000 bushels of corn and 150 bushels of wheat stored on the refuge which could be transferred to other refuges. In fact, the corn at least, should be moved away so that we can repair the corn cribs before time to put another crop in them.

Very truly yours,

  
Percy L. DePuy  
Percy L. DePuy  
Junior Refuge Manager

PLD:SP

*the bushels  
will deliver  
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most of this  
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to White  
River*



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Refuge Manager

