

ROUTING SLIP

DIVISION OF WILDLIFE REFUGES

DATE: Sept. 25 1946

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REMARKS:

SENEY

NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

MAY - AUGUST 1946

Return to:

MISS COOK



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Seney National Wildlife Refuge

NARRATIVE REPORT

May, June, July and August 1946

I. GENERAL

A. Weather Conditions.

<u>Month</u>	<u>Year</u>	<u>Rainfall inches</u>	<u>Mean Temperatures</u>	
			<u>Maximum</u>	<u>Minimum</u>
May	1942	3.23	61.8	38.7
	1943	3.67	62.7	39.7
	1944	2.97	68.8	43.8
	1945	2.31	56.5	35.4
	1946	2.58	61.9	38.7
June	1942	1.97	73.3	49.5
	1943	7.13	72.9	52.8
	1944	3.82	73.8	50.2
	1945	2.59	70.1	45.7
	1946	3.76	72.0	48.1
July	1942	2.42	76.6	52.0
	1943	1.59	82.4	56.3
	1944	3.66	78.3	54.4
	1945	2.35	75.2	51.4
	1946	3.00	77.5	52.0
Aug.	1942	1.30	75.8	51.7
	1943	3.69	75.6	53.8
	1944	1.83	77.6	53.8
	1945	2.33	77.0	51.9
	1946	3.81	73.7	50.9

Year by year comparison for the four month period

May - June - July - August

		<u>Extreme temperatures</u>	
1942	8.92	93	27
1943	16.13	96	25
1944	11.28	90	31
1945	9.58	88	26
1946	13.15	89	29

The period was comparable to 1943 in the above average amount of rainfall, below average in temperature.

B. Water Conditions.

Repairs to the Driggs Diversion Ditch which were made last winter and this spring enabled the refuge personnel to maintain pool levels near the optimum during the dry season except for the following named impoundments:

G. Pool. Subsidence in this pool was such that the gauge reading remained around 4.40 during August. This is 1.6 feet below crest. The cause of the low water level is lack of supply. Formerly a break in the ditch bank, coupled with excessive sedimentation below the junction of the break and the supply ditch, afforded a condition which kept G pool well supplied with water. Closure of the break shut off this supply. In order to feed any water into G under present circumstances it is necessary to raise the level of J pool by 7 inches. This is not feasible until J dike is repaired and the wave wash erosion on the eastern arm of the dike compensated for by dirt fill and some rip-rap.

D Pool. This pool is also down about a foot. For almost ten years the water level in this pool was maintained by an old beaver dam between the pool proper and the drainage basin coursing toward Pine Creek. The dam has finally disintegrated. Since the pool has a deficiency of suitable margin, it is believed that repairs, if made, should reestablish the level at 6 inches below the former crest. This will increase the proportion of marsh to water and at the same time save some wear and tear on the dike itself.

C-3 Pool (Unit 3). This pool carried a foot less water than permitted by its fixed crest. However, a foot of subsidence is not unusual in neighboring lakes and ponds, and there is apparently no harm done in a fluctuation of this type, provided it is downward. The considerable seepage from C-3 dike is conclusive evidence that the Walsh Ditch would otherwise provide an ample water supply.

C. Fires.

Climatic conditions on the refuge were such that a bad fire year was anticipated. Extra precautions were taken to meet any emergency, and fire equipment has been kept in a ready-to-go status all summer. No one was disappointed when things did not turn out that way, since fighting fire is hard work. It is not too late yet for a 50,000 acre conflagration. At this time the marshes are golden brown, the soil fairly dry, it is hot and otherwise propitious for marsh or woods fires.

On July 8, fishermen started a fire on C-2 pool, and naturally ran away and left it. Three-quarters of an acre of brushland was burned, with no perceptible damage to other vegetation. Several fires occurred along the north border, on State land. These were suppressed by the owners.

II. WILDLIFE

A. Migratory Birds

1. Population and Behavior

Waterfowl

As compared with the past three years, waterfowl this period were somewhat less abundant than previously. There was, also, a distortion in the relative density of species, an unexplainable situation for an observer limited to a worms eye view of the duck population in its national aspect. At least we think it unusual to find the wood duck taking precedence over the mallard duck in terms of relative abundance.

Other changes noted are the decline in Baldpates and ~~Green~~ ^{Blue} Winged Teal. The latter is common in C-3 pool but not elsewhere. Only the Black Duck approaches the status of abundance it has always maintained. In September it may be expected that the numbers of Black Ducks and Mallard Ducks, and possibly Bald Pates will increase materially, but summing up the situation for resident populations, it now appears that Black Ducks are only slightly less abundant than last year; mallards are definitely down, wood ducks are abundant, green winged slightly down, ring necked ducks (summer residents) raising a few broods, but not so common as in the last period. Johnston
9-23-56

The refuge goose flock has again produced a good crop of goslings. The wintering flock of 140 birds, augmented by approximately 300 geese which made the round trip to the south and back, now adds up to over 1000 resident geese. It is expected that more will come into the refuge in September and October when the feed begins to become scarce in the outlying lakes and ponds. The number of geese on the refuge is not known definitely, but a close count made in Unit 1 this past week totaled 782 for that unit, with no record of the birds in the goose enclosure, Units 2 and 3, Blaney Park or the Fox River. The figure used, 1000 geese, is then, not optimistic.

There was nothing significant in the status of other migratory birds this period. Forms NR-1 reflect the situation as far as they are concerned.

2. Food and Cover.

Marginal plants suitable for cover have become well established in some of the older ponds as a result of water level fluctuations and the cover aspect is more encouraging. Cat-tails especially are showing up in increasing density, and should relieve the pressure on more desirable species by muskrats. The place is beginning to look more "ducky" at any rate. It is impossible to make a general statement on aquatic plants for the situation varies a lot in different locations. Some of the plants which do all right in the type of soil and water on this refuge are: smartweed, wild celery,

most pondweeds (except sago), duck potato, water shield and the white water lily. Elodea of course is still the dominant plant in the waters of Unit 1. Other units have a variety of food with the fine leaved ponds dominant, and featured by small amounts of Najas, P. amplifolius, P. natans, mud plantain and odds and ends. It is quite obvious the available food is ample for the present duck population. What is needed is large beds of plant life suitable for migrant diving ducks, and the development of grain fields for migrant geese.

3. Botulism.

None observed.

4. Lead Poisoning and Other Diseases.

None observed.

B. Upland Game Birds

1. Population and Behavior.

a. Ruffed Grouse, the most popular game bird in this part of the State is making a slow comeback from the bottom of the so called cycle and is not by any means common. However, single birds have been observed from time to time in various parts of the refuge and several small coveys have been noted. Our estimate of the situation is that there has been a slight improvement over last year.

b. Coveys of sharptail grouse have been observed in all units, but here again it must be admitted that the bird is hovering on the line marking an advance or decline. It is too early to make a reasonably accurate appraisal of the status of this bird. Our impression is that the bird has made no gain over last year.

c. Prairie chicken seem to be practically out of the picture on the Seney area. Not a single bird has been observed this summer. Later in the year some may move in from other breeding grounds, as they usually do, but at this writing the picture looks very pessimistic. In so far as the importance of the bird is concerned, as a game factor, it is no more abundant than the spruce hen.

d. Though not a game bird, the spruce hen belongs in the same classification grouping, and may be commented upon here. Coveys have been noted in the jackpine forests near Delta Creek, on C dike in Unit 2, near the old sawmill site south of D pool and near Sand Creek. The population is sufficient for all purposes, which are mainly as a source of interest to ornithologists.

2. Food and Cover.

There is little new to be submitted in the way of information on this subject which has not already been rendered. This office has been interested, however, for many years in the beneficial results of controlled burning and took the time to check on the status of the land which was burned over in 1944. This 500-acre tract was considered good chicken ground at one time, though overgrown with willow and aspen at the time of the fire. About 1/5 of it was well-drained soil and suitable for food types used by chicken. The fire burned well into the soil in the drier parts and consumed the willow and aspen roots as well as cleaning the surface. In 1945 proso was planted on 7 acres of it, but none germinated. Inspection made this year brought to the light sparse stands of barnyard millet, brambles and low weeds which are considered most typical of preferred chicken habitat.

Controlled burning could be used to advantage in at least two places on the refuge to improve chicken habitat at this time. The most important of the two embraces the 8 square miles in and adjacent to the north part of Unit 2. The area still supports a few birds, but is beginning to show too heavy a growth of aspen and willow, with desirable food plants on the wane. The area has natural fire barriers on four sides, with the Driggs road on the west, State Highway M-28 on the north, Holland Ditch on the east and the Driggs Diversion Ditch on the south. Control would not be a big problem, though selection of the proper time is one. An operation executed before or during the bird season would result in public criticism, though the fire would be effective at that time. If the fire were planned for the latter part of October, it might be ineffective because of fall rains. On the other hand a spring fire could be effective if planned after the ground had dried out some, but here again chicken and sharptail nesting sites would be burned out too. Another place where a fire might do the upland game bird some good would be along the upper three miles of the Walsh ditch area, where aspen is much too dense to afford good habitat. There is a conflict here, in that the soil cover is in fair shape. Any fires planned for this area would have to be rigidly controlled to prevent a runaway affair which might do more harm than good. It is apparent that at least one good firelane will have to be made to prevent damage to the extensive stand of virgin hemlock in this area. The refuge staff is working on the matter as much as time and previous commitments will permit.

3. Diseases.

None observed.

C. Big Game Animals

It is a moot question whether deer are more numerous or less plentiful than last year. The majority of the refuge force subscribes to the belief that the animal is less common. All will agree that deer are certainly more timid than they were last year. This might be due to the heavy shooting which obtained in part of Unit 1 and all of Unit 2, after being closed to the public for many years. This pressure, plus 2 months of public fishing in Unit 2, and combined with the fact that three timber permits in operation would almost certainly make deer more cautious. Then there can be no question that the open season last fall in these two units removed a fair percentage of old inhabitants, including does and fawns. On more than one occasion in past years observers have counted over fifty animals in an evening drive thru a circular route in Units 1 and 2. A trip at this time will seldom turn up over a dozen deer. Most of those seen are sensitive to the danger of being exposed to mankind, except where they have been unmolested, such as in the goose pen neighborhood and in certain parts of Unit 1.

In Unit 3, there is no apparent change in the deer population and the fawn crop has been excellent.

Bears, including cubs have been seen on a number of occasions in all units. Their working in the blueberry patches, old orchards and wild cherry stands leads to the belief that the animal is comparatively numerous this year.

2. Food and Cover.

The practice of making timber cuttings with a view to improve browsing conditions or providing open space for grasses and shrubs has been effective so far as utilized. The action has contributed little to improvement of the winter range, and it is doubtful that anything can be done in that direction until white cedar stands are re-established. Any attempt to plant and mature cedar of course requires protection from deer browsing, - either adequate fencing or control of the deer population. The latter is a problem child of the State of Michigan.

3. Diseases.

None observed.

D. Fur Animals, Predators, Rodents and Others

A muskrat census can most conveniently be made when the animals have completed their fall session of house building. It is far too early for that, so the estimate contained herein is based upon examination of favorable locations apt to reflect the over all picture.

It has been noted that some pools show a rise and fall of muskrat use, where others are consistently productive. Water fluctuations seem to be the cause, for rats will desert a pool which has been flooded for one which has been lowered. This estimate is laid on an in-between location; in between the good and the poor.

The evidence at this time seems to point to another share-trapping season. It should be no worse than that of 1945, which was probably the low point of muskrat take. The animals are common though not abundant, and because it is believed that the rats should be kept under continuous pressure until bulrush, wild celery and wild rice plantings are fairly free from molestation, or extensive enough to stand some muskrat pressure, they should be taken to the limit of minimum return this fall season. It is true that cat-tails have increased sufficiently in several pools to permit an increase of rats. However, the animal gets around in no time, and it would be no time at all until it had increased to a point where it would be a damage factor in places where cat tail and bur-reed are relatively scarce as a buffer plant.

Mink are as numerous as in 1945. They keep the muskrat from becoming too abundant, but they are even too numerous for that and are increasing. In fact they may be seen almost daily along the pool edges or watercourses, - when you can see them, they are common, and assuming the status of a predator factor.

Coon: This animal has been increasing over a period of years under safeguards provided by protective State trapping laws. This animal is too common now for comfort, and has already killed 16 ducks in our banding traps this season. If State law permits recommendations will be made for taking some of them in the muskrat season.

Otter: Only two families of otter have been observed this summer, but otter signs are to be noted thruout the three water systems at all times. It is estimated that the refuge population of this species is about fifty animals. It is desired to maintain a representative number of them for purposes of preservation, but half the present population would be sufficient. When the next beaver trapping program is submitted recommendations for taking otter will be included to reduce the number.

Timber wolves are a rarity on the refuge, and are today uncommon in Michigan. One occasionally passes thru the refuge in the summer, and during the deer yarding winter period make a circuit of the small yards regularly.

Coyotes seem to persist in all units in spite of the trapping pressure. The permittee operating in Units 1 and 2 has taken only four animals this period. The trapper working in the public use area (Unit 3) has been reported to have taken 20 coyotes and 4 bobcats this season. Coyote-getters will be tried again this fall if there are no other commitments to absorb the time of the patrolmen.

E. Predaceous Birds, including Crows, Ravens, etc.

It would be difficult to point toward any predaceous bird and indicate it as a serious pressure factor. True enough we have the Great Horned Owl which has a large capacity for muskrats, as well as mice and rabbits; the Bald Eagle, now a nesting resident and taking his large share of game animals as well as fish; hawks of all sizes, with the Coopers and Sharp shinned hawks more numerous than in past years. Flocks of crows and blackbirds are present in August, the former partial to the dewberries and grasshoppers found in the dry marshes. Yet, by and large, it cannot be said that any one is a serious factor deserving of special efforts toward elimination.

F. Fish.

This subject can be dismissed with the statement that northern pike still flourish in refuge waters and furnish recreation for tourists as well as natives during the summer months. Some large specimens have been taken from C-3 pool, which is open to fishing from May to November. The largest reported was sixteen pounds, with a substantial number being taken in excess of ten pounds.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development.

Work done this period was in the direction of clearing the decks for future improvement of older developments. Aside from dragline work, accomplishment consisted of bringing Units 1 and 2 in good order so that there would be an end to the perpetual scurrying about and patching here and there, starting something and being forced to drop it in favor of a new effort. Most refuge managers are no doubt familiar with such efforts and the feeling of futility that accompanies it.

Most all the permanent signs in the two eastern units were taken down, cleaned and refurnished. In addition pool markers, directional signs and many temporary signs for the use of fishermen were manufactured and installed.

The temporary guide fence installed in Units 1 and 2 last fall was done over and set on more attractive posts. The telephone line to the tower was replaced (one wire 6 miles long was utilized for fencing last fall).

Several sheds were torn down and sites cleaned up. The entire right of way on Route 4 and Route 5 was cleaned up and the debris hauled away and burned.

The north shore of the upper goose pool was restored to grade with sand fill and rip-rapped thruout. Wave wash in this location has been more or less of an annual headache but is now out of the way, it is hoped.

The granary at refuge headquarters was cleaned out, and the building was moved to secondary headquarters, set on new foundations, painted and filled with grain.

1.5 miles of fence in the southeast part of Unit 3 was restored to good condition by the replacement of new posts thruout. Work was halted on this project by the month long hiatus in use of funds beginning July 1.

The service building, the stable, and the pump house were painted. The stone equipment storage building was painted on all but the south side where lack of paint forced a suspension of operations. Green paint to match that used here is off the market. At secondary headquarters the patrolman's wife donated here services and painted the front side of the residence and the porch. She refuses to paint the second story or the dormers, on the ground that working on a ladder makes her dizzy.

Probably more time was spent on the business of preparing and shipping out property than any other single item of work. There seems to be no need of chronicling the material, equipment and supplies handled.

A planing mill was set up and put in operation this period and though the machine is an old one and can handle only one side of a board at a time, it works quite well. Miscellaneous small piles of lumber left by the contractor who shipped out a car of refuge lumber to Des Lacs were sorted over, surfaced and stored. All small piles of 2000 feet or less were likewise surfaced and put away. The main stacks were fitted with new covers and left for other disposition. Most of the lumber stacked at the old CCC mill had deteriorated and was worked over for buzzing into fuel wood.

The number of waterfowl banded this period is approaching the 1000 mark. Lack of No. 7 bands made it necessary to suspend operations on the larger ducks. However, the objective of banding the number stated above will be reached easily enough in our goose banding project.

B. Plantings.

No planting was done this period; everyone was too occupied with items enumerated under III-A. Experimental plantings made last year by Student Assistant Cole, wherein an attempt was made to evaluate soil deficiencies, were checked and will be reported upon separately.

C. Collections.

1. None.

D. Receipts of Seed and Nursery Stock.

1. None

IV. ECONOMIC USE OF REFUGE.

A. Grazing.

No activity under this heading, this period.

B. Haying.

A Special Use Permit was issued to a local farmer for taking 10 tons of hay from the goose pasture. The price received was 75¢ per ton. The purpose of the sale was to remove the hay so that second growth would provide grazing for the geese. The action was satisfactory and 300 geese were making use of the field during August.

Five tons of hay were sold from the Conlin farm, Sec. 8 - 44 - 13. The purpose of the sale was to keep the field clean of weeds and shrubs, which have a tendency to take root if some attention is not given to abandoned fields. The price was \$1.00 per ton, for quack grass hay.

C. Fur Harvest.

Not active this period.

D. Timber Removal.

Six permittees carried on logging operations on the refuge this period. All but one was involved in taking out pulpwood. The exception has been taking hardwood, pine and hemlock mill timber for the past two years along the west boundary.

The purpose of the cuttings is to remove aged timber and permit the growth of a healthy stand, to provide suitable openings in the forest canopy, and improve the game food and habitat situation on the refuge. 4 permits were dispersed thru the two eastern units, two others covered the west boundary area and the Driggs-Delta Creek country. Clean selective cuttings is being followed in the hardwood areas. The operations are considered practical and beneficial. The removal of the older pulpwood stands merely leaves openings in the remaining stands of younger growth.

Approximately \$3,100.00 has been taken in for the period May - August from timber sales.

E. Other Uses.

None.

V. FIELD INVESTIGATIONS & APPLIED RESEARCH.

Pursuing a suggestion advanced by Mr. R. E. Griffith of the Chicago office, experiments were carried on during the summer with the use of one of the commercial weed-killers in destroying noxious aquatic plants. An effort was made to determine the cost and effect of the compound on water-weed (Elodea).

Six oil barrels were cleaned out, the top and bottom ends cut away with an acetylene torch. These open end containers were taken to shallow waters where wave action would not be a factor and placed over beds of Elodea, preferably where other plants were also represented, and sunk well into the bottom much in order to make a seal with the soil.

pH and temperature readings were taken; the type of soil and the variety and volume of the plants were noted for each numbered container. Then the amount of water by volume was measured and in each container was placed an amount of weed-killer to bring the concentration to a known amount. For ample coverage, it was determined that the solutions should vary from a considered minimum to a highly concentrated solution.

Each plot was visited periodically and the results of the experiment determined. It is quite apparent that the weed-killer is effective on Elodea and many other plants. However, it should be borne in mind that there is as yet no evidence that the roots of the plant have been killed; that cannot be determined until the next growing season. The containers will remain in place until the next growing season and a current report made. 65 parts per million seems to be the minimum effective solution in waters where run-off is not a factor.

Use of the weed-killer on an extensive scale is something to be carefully considered. A pool averaging 2 ft. in depth and covering 600 acres would contain some 412,000,000 gallons of water. On the basis of 65 parts per million, the cost of killing Elodea by use of the hormone preparation would appear to be excessive.

The attached report on the experiment gives all necessary detail, and is submitted for review by more experienced personnel.

Obviously there has been a misunderstanding in procedure. Instructions called for application of 2500 as a surface spray. This is to be done in '47 REG.

VI. PUBLIC RELATIONS

A. Recreational Uses.

Man day use of the refuge is given as follows:

Fishing	5100	
Picnic facilities	180	
Berry picking	<u>380</u>	5260

B. Refuge Visitors.

Dr. Morosky and Dr. Wynd of Michigan State College	May 16
L. Claire Hulbert (interested in Sand Hill cranes)	26
Mr. Trudell - Pres. Northern Mich. Sportsmen's Ass'n.	June 7
Mr. Gerhard - Marquette, Mich. M.C.D.	7
Mr. Campbell - Iron Mountain, Michigan.	5
Mr. Stanley Shust - Fisheries - M.C.D.	June 10
Dr. J. Van Tyne - University of Michigan	June 12
Dr. Mayfield - from Ohio	June 12
Mr. S. Creech - F.W.S.	June 12
Conservation Group from Lake States	June 12
Dr. Whitlock - M.C.D.	June 13
Commissioner Schulty - M.C.D.	22
Roger Tory Peterson - Artist & author on wildlife	27
Dr. Cottam, FWS - Ass't Director.	28-30
F. C. Gillett & party	July 6-11.
Michigan Tech. Student group	July 14
Michigan Tech. Student group	July 26
A. C. Elmer and Mr. Gregg of M.C.D.	July 17
Frank Dufresen and Wm. Hendrickson & party	July 20
	to Aug. 2
Don D. Green, of FWS Office in Chicago	Aug. 5-12.
Michigan Tech Student group	Aug. 14
Harry W. Burrier, Ass't. Chief Clerk, U.S.D.I.	Aug. 13-15.
Mr. Ackerknecht of FWS Office in Chicago	Aug. 13-15.
Dr. Miles D. Pirnie, Michigan State	Aug. 21-28.
Karl Kobes - Rice Lake Refuge	Aug. 22
W. R. Dillon - Chief, Div. of Admin. FWS	Aug. 25-Sept. 4

Also about 700 "common visitors" during this period.

C. Refuge Participation.

Activity under this heading was limited for the period to one appearance before the Manistique Lions Club, and four lecture-tours of the refuge with Student groups from Michigan colleges.

D. Hunting.

No hunting this period.

E. Fishing.

Approximately 5000 persons utilized refuge waters for fishing purposes this period. Traffic was heaviest ever noted here, and it appears that all of ~~the~~ Ohio, Indiana and Lower Michigan were on vacation. For the first time, the area was open to use without formal permit, and no record was maintained of the fishermen entering the grounds. However a rough check was kept on the number of cars passing thru the gates and an estimate of the total persons made on that basis. On July 4, for instance from 8 to 11 AM over 75 carloads of people concentrated at the parking ground near C-2 pool. No count was made after that hour, but it is fair to assume that 100 carloads or 300 persons were on C-2 dike that day. During the height of the tourist season the daily use of the area was only slightly less on warm sunny days. C-3 pool, which is continuously open to fishing has its daily quota of from 2 to 15 cars a day.

As stated elsewhere the fishing was good for the more experienced Waltonians and many large fish were taken. People kept coming in all summer, saying they had been referred to Seney by friends who had returned home after spending their vacations in this neighborhood. (It is hard for a trout fishermen to believe that any one with a normal appetite could eat northern pike which infest these waters.) In our opinion the place is too well advertised, and we cannot afford to let the public continue to wear out our thin gravel roads for this sort of thing.

F. Violations.


None.


C. S. Johnson
Refuge Manager

Date: September 22, 1946

SEP 24 1946

APPROVED:


REGIONAL DIRECTOR



UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE

IN REPLY REFER TO:

Seney National Wildlife Refuge
Germfask, Michigan
Sept. 11, 1946

EXPERIMENT WITH WEED-KILLER 1946

In an effort to establish the efficacy, of a commercail weed-killer known as, Differential Weed-Killer #1, a product of the Sherwin-Williams Co., several test plots were established in the refuge waters. In each test plot a different solution, varying in parts per million was tried, to determine the best solution to be used.

The plots were established on July 10, 1946 and periodic inspections made thru August 10, 1946. At that time we felt that the desired results was obtained, although the test plots were left for later inspection to determine if plant life would again regain itself and begin to grow. Up to the date of September 10, 1946, all test plots were apparently still effective with the exception of plot #6. This plot with a strength of 12 p.p.m. began to lose its strength on the third week of the test and on the fourth week of the test, plant life was regaining its strength and apparently growing again. This may have been caused by the heavy rains, at that time, which sufficiently diffused the solution so as to weaken it further and it may have been caused by infiltration of the pool water into the container. The solution was of a weak nature, only 12 p.p.m., and may have naturally lost its efficacy, in that period of time.

In the remaining test plots, varying in strength from 65 p.p.m. to 1100 p.p.m., a definite result was obtained. All plant life in the conatiners was destroyed. Animal life such as, minnows, snails, blood-suckers, mosquito larvae, was killed while the solutions maintained their maximum efficacy, this during the first two weeks of the test. Later as the plant life decomposed within the containers, it produced a heavy scum upon the water and created a heavily turbid condition thruout the water. This condition, if an entire pool were treated, would produce an undesirable effect upon fish. Just what this condtion would do to ducks feeding upon the area is not known, apparently it would not have a desirable effect upon the ducks.

Plot descriptions and pertinent details, together with subsequent inspections and their results, follows.

(2)

PLOT # 1:

Location: Upper "F" pool, near bridge in rear of Hdqs. Bldg.

Container, dimension and water content:

depth: 10"

dia: 22"

contents: app. 16 gal of water

Temperature of water: 70 degrees

Ph: 6

Species in container: Seven (7) burredd, early seed, well formed spikes.

Fifty (50) brazenia, in flower.

20 per cent of volume, Elodea.

Bottom: Muck.

Concentration: 125 p.p.m. (parts per million) 1 fl.oz. weed killer.

Heads of burredd 12" above water.

Minnow in container apparently dead, in three minutes, floated to top.

Minute animal life seemingly effected, from solution.

PLOT # 2:

Location: Lower "F" pool near Gray's creek basin.

Container, dimension, water content:

depth; 11"

dia; 22"

Contents: 16 gal

Temperature of water: 70 degrees.

Ph; 6.

Species in container: Four(4) natans

Volume, normal density. 20 percent, Elodea.

Bottom: Sand over muck.

Concentration: 500 p.p.m. Four(4) fl.oz. of weed-killer.

Polywog on top of water, apparently dead in two(2) minutes.

PLOT # 3:

Location: Lower "F" pool, along dike between H and F, beyond(west) spillway.

Container, dimensions, contents:

depth; 9"

dia; 22"

Contents; 13 gallon.

Temperature of water: 70 degrees.

Ph; 6

Species in container: Elodea

Bottom: Muck.

Concentration: 1000 p.p.m. Six (6) fl.oz. weed-killer.

PLOT # 4:

Location: Lower "F" pool, between H and F dikes beyond(west) spillway,
Container, dimensions, contents;
depth; 9"
dia; 22"
contents: 13 gallon.
Temperature of water; 70 degrees.
Ph; 6
Species in container; Elodea.
Bottom: Muck.
Concentration; 65 p.p.m. $\frac{1}{2}$ fl.oz. weed killer.

PLOT # 5:

Location: Lower "F" Pool between "F" and "H" dykes, beyond(west) spillway.
Container, dimensions, contents;
depth; 12"
dia; 22"
contents; 18 gallon.
Temperature of water; 70 degrees.
Ph; 6
Species in container; Elodea.
Bottom: Muck;
Concentration: 1100 p.p.m. , ten(10) fl.oz. weed-killer.

PLOT # 6:

Location: U per "F" pool, near weather station.
Container, dimensions, contents;
depth: 12"
Dia; 22"
Contents; 18 gal.
Temperature of water; 70 degrees.
Ph: 7
Species in container: Celery, amplipholius, elodea.
Bottom: mick/
Concentration: 12p.p.m. 1/16 fl.oz. weed-killer;

(4)

First examination of results of Differential Weed-Killer.
July 15, 1946

- Plot #1: Brazehia , apparently dead, discolored, blackened.
Burreeds , dying slowly, some foliage brown.
Animal life, insects, in container, all dead.
Elodea, pulls up easily, apparently not effected, as yet.
- Plot #2: Elodea, Shriveled up, broken off, little effect, still green.
Natans, Blackened leaves, stems green.
Dead dragon fly in solution.
- Plot #3: Elodea, still green, little effect apparent.
- Plot #4: Elodea, colored brown, otherwise little effect apparent.
- Plot #5: Elodea, still green, little effect apparent.
- Plot #6: Elodea, turning brown, shriveling, easily segmented.

Second examination of results of Differential Weed-Killer.
July 24, 1946

- Plot #1: Burreed, dark brown leaves. Heads, still green.
Elodea, dying, decomposing and falling to bottom of container.
Mosquito larvae observed. (alive)
- Plot #2: Elodea, decomposed and fallen to bottom of container.
Natans, same condition.
- Plot # 3: Same condition as Plot # 5.
- Plot # 4: Elodea, 90 per cent of it dead and in a state of decomposition and falling to bottom. Some plants still connected to root system but apparently dead.
- Plot #5: Elodea, all loose from bottom, not connected to root system, in a state of decomposition.
Blood-sucker, in solution dead.
Snail in solution dead.
100 per cent kill in container.
- Plot # 6: Elodea; Dk brown in color, easily segmented, pulls up very easy.
Celery, dk brown in ~~dark~~ color, brittle.

Third examination of results of Differential Weed-Killer.
July 31, 1946

Plot #1: Burreed, heads and leaves brown in color, leaves bent over and fallen in water.
Elodea, all dead, decomposed, fallen to bottom.
Brazenia, no trace.
Heavy scum on top of water. Turbid condition thruout solution.

Plot #2: Natans, dead and decomposed.
Elodea, dead, decomposed.

Plot #3: Same condition as Plot #5.

Plot #4: Elodea, all dead, not decomposed entirely, not attached to roots.
Heavy scum on water and a turbid condition thruout.

Plot #5: Elodea, all dead, not entirely decomposed.
Heavy scum on water turbid condition thruout.

Plot #6: Gelery: Not much change, apparently growing again.
Elodea, Still attached to root system, brittle, scum over water.
Solution apparently weakened by rains or infiltration of water into container. Plants apparently growing again, little effect from solution.

Fourth examination of results of Differentail Weed-Killer.
August 16, 1946

Plot #1: Elodea completely decomposed. Burreed completly dead with exception of one plant near edge of container, which seems to retain one green burr. The root system of this plant is probably outside the container.

Plot #2: Decomposition almost complete. Chemical odor strong.

Plot #3: All vegatable and animal life dead. 95 per cent of Elodea completly decomposed.

Plot #4: Same as Plot #5.

Plot #5: No visible evidence of plant or animal life. Elodea dead detached from root system, lying on bottom of container. (0 90 per cent of Elodea completly decomposed.

Plot #6: No change. Plant life is apparently growing again.

3-1750
Form NR-1
(Nov. 1945)

WATERFOWL

Refuge SENEY

Months of MAY

to AUGUST

1946

(1) Species Common Name	(2) First Seen		(3) Peak Concentration		(4) Last Seen		(5) Young Produced		(6) Total Estimated for Period
	Number	Date	Number	Date	Number	Date	Broods Seen	Estimated Total	
I. <u>Swans:</u> Whistling swan									0
II. <u>Geese:</u> Canada goose Cackling goose Brant White-fronted goose Snow goose Blue goose							67	400	1000
III. <u>Ducks:</u> Mallard Black duck Gadwall Baldpate Pintail Green-winged teal Blue-winged teal Cinnamon teal Wood duck Red head Ring-necked duck Canvas-back Scaup Golden-eye Buffle-head Ruddy duck							15	75	1500
							2	30	50
							1		10
IV. <u>Coot:</u>									0

(over)

SUMMARIES

Total Production:

Geese 400Total waterfowl usage during period 12,510Ducks 6605Peak waterfowl numbers sameCoots 0Areas used by concentrations Pools and water marginsE.g. F. J. E. H. G. A-1 pools, C-3 and A-2 pools.

Principal nesting areas this season

as above.Reported by C. S. Johnson

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.

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

MIGRATORY BIRDS
(other than waterfowl)

Refuge.....Seney..... Months of.....May..... to.....August..... 1946

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. <u>Water and Marsh Birds:</u>										
Sandhill Crane			115	8/15						100
Great Blue Heron			200	8/15						500
Common Loon			4	8/15						10
American Bittern			1000	8/15						1000
D. B. Johnson										
INSTRUCTIONS										
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 "seagulls", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be given to those species of local and national significance. Special attention should be given to those species of local and national significance.										
II. <u>Shorebirds, Gulls and Terns:</u>										
Terns:										
Common Tern			250	8/15						300
Caspian Tern			12	8/15						30
G. Yellowlegs			700	5/1						1500
Herring Gull			250	5/1						400
Wilson Snipe			2000	5/10						2000

(over)

(1)	(2)	(3)	(4)	(5)	(6)
III. Doves and Pigeons:					
Mourning dove		250	all summer		250
White-winged dove					
IV. Predaceous Birds:					
Golden eagle		1	7/8		3
Duck hawk		60	resident		75
Horned owl					
Magpie		75	resident		150
Raven		1500	summer resident		3000
Crow					
Reported by.....				C. S. Johnson	

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.



Refuge SENEYMonths of MAYto 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'v'd.	Estimated Total	Percentage	Hunting	For Re- stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Ruffed grouse									400	
Canada Spruce Grouse									75	
Prairie Chicken									Unknown	none observed.
Sharptailed Grouse									250	
Woodcock									100	

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.

