RICE LAKE NATIONAL WILDLIFE REFUGE
McGregor, Minnesota

ANNUAL NARRATIVE REPORT
Calendar Year 1977

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service
U.S. DEPARTMENT OF THE INTERIOR

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Personnel
(listed left to right on photo)

1.	David E. Heffernan	Refuge Manager	GS-11
2.	Richard D. Schultz	Asst. Refuge Manager	GS-5
3.	Leland A. Thornbloom	Biological Technician	GS-7
4.	Henry W. Trebesch, Jr.	Maintenance Worker	WG-7 (5)

Review and Approvals

David E. Heffernan 2/27/78
Submitted by Date

Area Office 9/19/78 Date

Rice Lake National Wildlife Refuge
Refuge

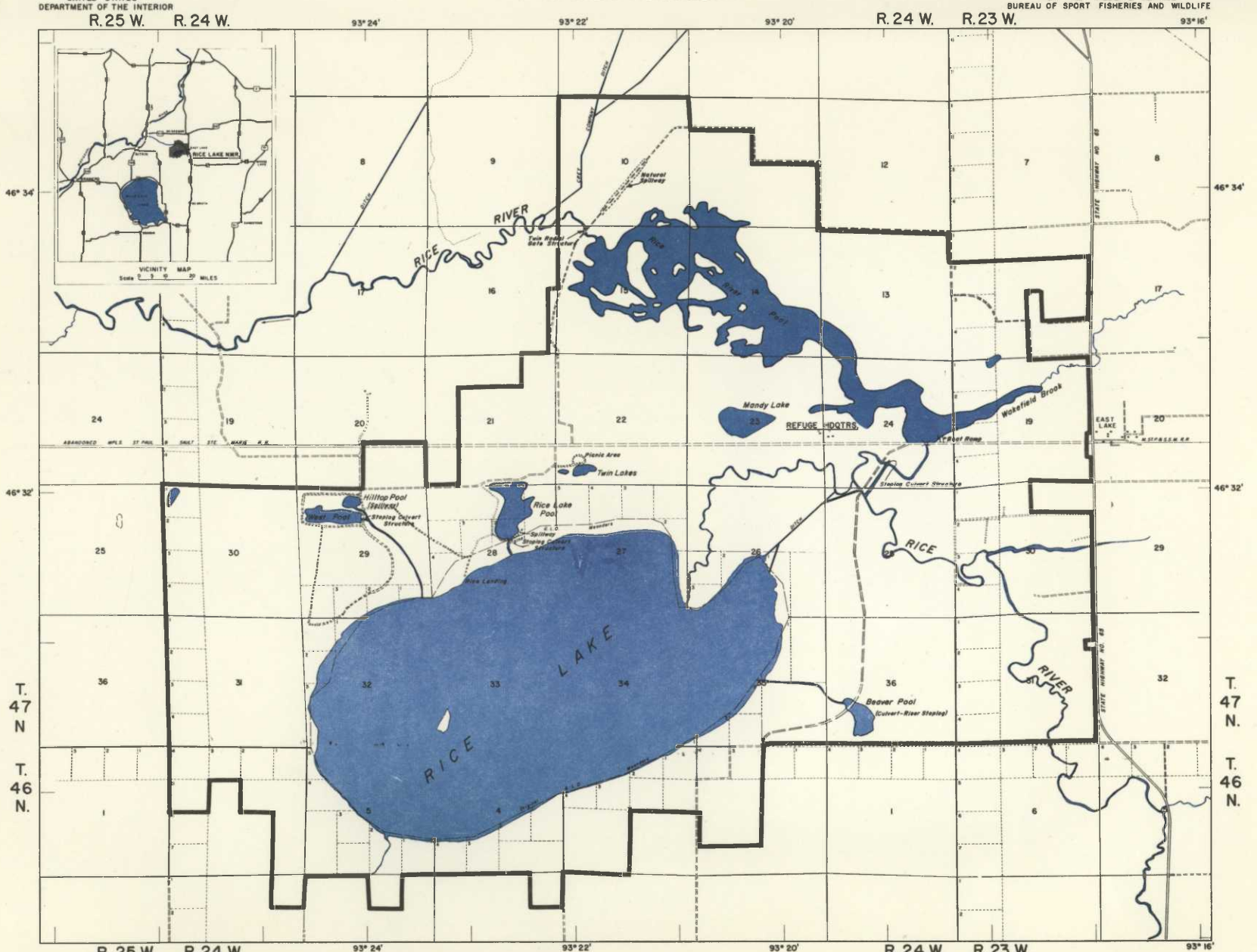
R. Wayne Stein 8/31/78
Regional Office Date

RICE LAKE NATIONAL WILDLIFE REFUGE

AITKIN COUNTY, MINNESOTA

UNITED STATES
DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE



COMPILED IN THE BRANCH OF ENGINEERING
FROM AERIAL PHOTOGRAPHS AND SURVEYS
BY THE U.S.G.S.

MINNEAPOLIS, MINNESOTA JUNE, 1963

FOURTH PRINCIPAL MERIDIAN

Scale 0 20 40 80 120 160 CHAINS
0 1/4 1/2 1 1 1/2 2 MILES

TOWNSHIP DIAGRAM

MEAN DECLINATION 1960

3R MINN. 192

401

I GENERAL

A. Introduction

Rice Lake National Wildlife Refuge was established in 1935 during the drought years. The purpose was to provide protection to waterfowl migrating through this portion of the Mississippi flyway. The abundant wild rice and other aquatics have long provided an attraction to many species of ducks, especially mallards, ringnecks and scaup. The refuge, containing 18,056 acres, is situated in the north-central bog country near McGregor, Minnesota. Rice Lake, from which the refuge takes its name, is a shallow lake of 4,500 acres. Four other lakes of much smaller size are found on the refuge, and a flowage called the Rice River Pool has been developed for waterfowl use. The refuge headquarters is located approximately seven miles south of McGregor, Minnesota.

B. Climatic and Habitat Conditions

All snowfall and precipitation measurements are taken and recorded at refuge headquarters. The temperature data comes from the Government Weather Station at the Sandy Lake Dam, located 23 miles north of refuge headquarters.

January was a very cold month with strong winds prevailing. A brief warming spell occurred January 22-26 with a high of thirty-one degrees occurring on the 23rd. The minimum was -42 degrees on January 9. February was typical with some warm days occurring toward the end of the month.

Mild weather was the rule for March. A minor snowstorm occurred during the period March 3-5 and the following weekend a heavy rainfall totalling 2.09 inches was received. The ice went out of Rice Lake, Mandy and Twin Lakes on April 11. This set the pace for an early spring and unusually warm and dry weather prevailed through May. Extremely dry conditions were present to the middle of May when the rains finally came. Moisture for the month was slightly above average.

A fairly violent windstorm hit the area on the afternoon of June 7. It was quite unusual in that it came out of the north. Damage on the refuge was confined to uprooted and twisted trees but areas to the north and east of us suffered building damage and an airplane was overturned at the McGregor airport.

The summer period was quite normal with the exception of August. The entire month was below normal temperature-wise and above normal in precipitation received. September continued with cool, rainy weather. A total of 4.44 inches received was 1.77 inches

over the average of 2.67 inches. Moisture received to the end of August totalled 16.26 inches compared to an average of 15.46 inches. Moisture received for the same time period last year totalled 13.49 inches.

The weather finally straightened out in October and a delightful month was enjoyed. November for the most part was cool and damp. Above normal precipitation was received for the month. Extremes for the month were 59 degrees on the 4th and -13 degrees on the 25th. December was a very unpredictable month. Record below zero readings were recorded the weekend of the 10-11 and the following weekend, the 17th and 18th, saw temperatures above freezing and .99 inches of rain received. This warm spell continued until Christmas day and colder temperatures prevailed the rest of the month.

Precipitation for the year totalled 33.080 inches compared to a 30 year average of 27.316 inches. Snowfall for the year totalled 41.3 inches.

Dry conditions of the previous fall carried over into spring and very little run-off occurred. By the middle of March, Rice River Pool had sufficient water to allow a flow into Rice Lake. At the time of freeze-up in the fall of 1976 the Rice Lake landing gauge was estimated at 95.16. By the end of April the lake level was up to 96.24. Rice Lake had a very gradual gain through June and reached a maximum elevation of 96.68 on July 11. On August 29 the Rice Lake landing gauge read 96.48. Precipitation received in August and September finally filled all the small reservoirs in the Rice River watershed and ultimately Rice River came up and stayed high. The Rice Lake control was open most of the summer to attain a level of approximately 96.50 at the time of the Indian wild rice harvest. As soon as the harvest was over a gradual drawdown of Rice Lake was to begin. However, it was October 30 before any water could be moved from Rice Lake into the river. November precipitation brought the Rice River up again and precluded any attempts at Rice Lake drawdown. In fact, Rice Lake level continued to rise and when Rice Lake finally froze over the lake level read 97.60.

Rice River Pool was dry in March; rose to 96.94 by March 30, and was high enough to allow a good flow into Rice Lake. Rice River Pool remained fairly constant during April and May. The highest level for April and May was 97.40 on April 28, and then a gradual decline during the month of May. Although precipitation for the month of June was just average it was difficult keeping the pool down to the planned level. A gauge reading of 97.92 was recorded June 8 and at the end of the month was 97.40. July levels were

constant to the end of the month. August levels were much the same with the pool level hovering around the 97.00 elevation. Above normal rainfall for August and September began to have it's effect. By September 26 the pool level was up to 97.86 and continued to rise despite letting more water pass through the radial gates. The maximum pool level for the year was attained on October 18 at 98.18. A gradual decline was noted through November and December. On December 19 the gauge reading was 96.50 and was the last reading obtained for the winter months. By the end of the period the pool was down to an estimated 96.00.

Habitat conditions in Rice River Pool provided good cover for the bulk of the refuge goose flock during their moulting period. Food production in the pool was poor. Fluctuating water levels through the years have had an adverse effect on submergent vegetation. Emergent plant growth is sparse with the prime food being wild rice. A narrow band of rice was present along most of the north side of Rice River and scattered patches along the south side. These food patches were clipped by the geese as soon as the leaves were erect. Once the main stalk comes up the geese leave it alone and the plant follows its normal growth pattern. The bulk of any seed produced is eaten by geese and ducks. Waterfowl use of Rice River Pool is steadily declining in part due to the lack of choice waterfowl foods.

Habitat conditions in Rice Lake were good. Although the wild rice crop could not be called good from a harvester's point of view it was good for waterfowl. There were good, healthy wild rice plants scattered over all of the normal rice bed areas. These plants ripened individually and being out by themselves dropped their seed faster as a result of wind and wave action, blackbirds and any other disturbance that agitates the seed head. These plants also reached maturity earlier than plants growing in a heavy stand of rice. Thus they had gone to seed before the rice is ready to harvest in the heavier rice beds. If next summer's water conditions are anywhere near normal there should be a good wild rice crop. Bulrush beds continue to be present in the same areas and provided both early brood cover and some food. Wild celery beds were present over much of the lake, and other miscellaneous food-producing plants such as pondweeds, arrowhead and pickerelweed were present.

C. Land Acquisition

1. Fee Title

Nothing to report.

2. Easements

Nothing to report.

3. Other

Nothing to report.

D. System Status

1. Objectives and Funding

The advent of the Bicentennial Land Heritage Program provided a considerable improvement in funding for Rice Lake, as it did for nearly all refuge system lands. This is readily apparent from the following breakdown:

Table 1

Base Funding Summary, 1973-1978

Fiscal Year	1973	1974	1975	1976	1977	1978
Basic O&M	$56,800	59,000	64,100	66,000	75,800	121,100*
Rehab.	-	-	-	28,000	-	34,000
B.L.H.P.	-	-	-	-	83.300	237,000
Total Funds Available	$56,800	59,000	64,100	94,000	159,100	392,100

*Includes $32,000 designated for "cyclical maintenance"

A further breakdown, based on the Program Management System, is provided for the fiscal maintenance of I&R facilities. Rehabilitation funds are ear-marked for additional road improvements, and BLHP funds will be expended on the replacement of the Rice Lake water control structure, and cleaning and widening of the Rice Lake outlet (logging) ditch.

In summary, the BLHP program thus far has succeeded in bringing Rice Lake from near "caretaker" status back to active management. We are optimistic that this trend will continue throughout the 5-year program, and beyond.

II CONSTRUCTION AND MAINTENANCE

A. Construction

Work was continued in November to finish converting the old shop stall next to the office into an office and general use area. Work was done by force account and consisted of putting insulation and paneling on the walls; lowering the ceiling by putting in a suspended-type ceiling and a door opening directly into the Manager's office. The west end was partitioned off to provide a small storage area. By the end of the year, only the wiring, floor covering and a few odds and ends remained to be done.

Funding for FY 1978 includes rehab funds for a replacement oil house and fuel service area plus rehab of the toilets located at the Rice Lake landing. Other rehab work will include upgrading refuge roads and Quarters #68 sewage system.

B. Maintenance

Routine maintenance continued. The YCC took over some summer maintenance duties and kept the picnic and fishing areas plus the roadsides free of visitor and transient litter. Other YCC maintenance projects included finishing brushing the west end of the main entrance road, brushing under the power line from headquarters to highway 65, which was primarily removing small dead trees and brush killed by power line spraying in 1975. They also brushed out and mapped an area given the name of "Wiita Trails System" located on the Wiita and Magnuson tracts, and repaired and re-painted all refuge informational and directional signs.

A gravel contract was awarded on September 30 to Lundeen Contractors of Cromwell, Minnesota for 3,750 yards of Class 5 crushed aggregate for the sum of $2.74 per cubic yard. The price included truck spreading at locations designated by the refuge manager. The bulk of the gravel was put on the entrance road from headquarters to highway 65, headquarters and picnic area and other small areas on dikes and trails.

Some spraying was done with 2,4-D (Dow Esteron 99) to combat willow and brush growth along the west end of the entrance road where the YCC cut brush and on a portion of the north bog road. In addition, some spraying of thistle was accomplished in the west field area and along the trail leading to the Rice River Pool control. All spraying was done in late August and early September. Plans were to spray in late June or early July but due to circumstances beyond our control it was spray late, or wait another year.

C. Wild Fire

A fire of undetermined origin, started just west of the tavern at the junction of highway 65 and the refuge entrance road April 9, at approximately 2:00 p.m. The fire was believed to have started in the tavern's trash pile but no one was admitting it. It quickly spread into the refuge and burned over 60 acres before being stopped at Wakefield Brook by members of the DNR, McGregor Volunteer Fire Department and the refuge crew. The area burned was primarily tall grass interspersed with small aspens and little damage was done. Letters of appreciation were sent to the local DNR office and McGregor Fire Department by the Regional Director for their quick response and assistance.

III HABITAT MANAGEMENT

A. Croplands

Approximately 27 acres of cropland was limed during the fall of 1976. The rate of application was 300 lbs./acre.

Spring field work got off to an early start due to dry field conditions. Crops planted in the spring of 1977 included corn, oats, buckwheat and millet. All produced wildlife food. Browse strips seeded to rye the previous fall were allowed to grow, ripen, and then were disced up in late August to provide fall browse. These strips were heavily utilized by geese, ducks, deer and sharptails.

Total refuge acreage was 95 acres with two cooperators planting another 15 acres. One cooperator didn't get off the ground due to poor timing and wet weather. The other plowed, disced and picked rock off his area and finally got his crop of oats in towards the middle of June. He used no fertilizer - the oats was afflicted with rust, and no crop resulted.

B. Grasslands

Due to the previous year's drought and a dry spring, permittees were allowed to cut all available grassland for hay. Summer and fall rains furnished needed moisture and all area grasslands went into the fall period green and growing. It is hoped a more normal weather pattern will reduce the farmers need for extra hay acreage next summer.

C. Wetlands

All wetland areas were filled with water by late fall rains.

D. Forestlands

A permit was issued to Eugene Wayrynen of McGregor, MN to clear-cut approximately 22 acres in timber unit #3, W½ of NE¼, Sec. 36, T47N, R24W. The purpose was to open up a predominately hard maple stand and increase winter wildlife habitat along the west edge of the refuge's main deer yarding area. At the end of the period the permittee had about half of the area cut.

E. Other Habitat

Nothing to report.

F. Wilderness and Special Areas

The wilderness areas proposed for Rice Lake NWR are still pending.

G. Easements for Waterfowl Management

Nothing to report.

IV WILDLIFE

A. Endangered and/or Threatened Species

Nothing to report.

B. Migratory Birds

1. Waterfowl

The first Canada goose arrived March 13. By March 24th there were 36 Canadas using the old goose pen site. Geese kept filtering in and by April 5th their numbers had increased to 175 birds. By April 20 the refuge had 300 Canada geese. Primary use was the area around Rice Lake landing and the area above the radial gates in the Rice River Pool. Normally when the geese return in the spring they immediately start nesting activities. This year was different in that they stayed together as a large group for a longer period of time. The annual goose nest survey conducted May 10 and 11 was very disappointing - only nine nests were found. The old goose pen site has traditionally been the best nesting area with as many as 15 nests being found in past years. This year's total for the area was two. In past years, when goose production was good, very few non-nesting birds were observed. However, the past

three years has indicated more non-nesting pairs for unexplained reasons. This year's production was estimated at 75 birds. The following table depicts nesting activity from 1968 - 1977.

Canada Goose Flock Production

Date & Year	Number of Nests	Pairs	Broken Nests	Estimated Production
May 2-15, 1968	16	7	2	100
May 13-14, 1969	18	5	0	100
May 18, 1970	19	4	3	150
May 21, 1971	23	5	0	150
May 21-22, 1972	21	10	3	150
May 9, 1973	7	5	8	50
May 17, 1974	13	6	0	100
May 13-16, 1975	24	11	2	150
May 11-13, 1976	12	13	6	75
May 10-11, 1977	9	14	3	75

The program instituted in 1975 to band at least 25 per cent of the year's production is still in effect but the drought in 1976 and shortage of personnel in 1977 made it impossible to trap any geese. Prospects for the coming year look much better. Reports of Canada geese nesting off the refuge continue to come in but it is impossible to accurately state production figures.

The summer population of Canada geese was estimated at 250 birds. By the middle of August the Canada goose population began to build up as birds that had nested and lived in areas around the refuge began to use the refuge as their staging area. By the middle of September the Canada goose population numbered 300; rose to 1,000 on October 4 and peaked at 2,000 birds October 18. Mild weather and a good food supply held Canada's a little later than usual. The refuge had 100 Canada geese on November 1 but all had departed by November 15.

Very few snow and blue geese used the refuge this year. The bulk of the fall migration evidently passed to the west of the refuge as few flocks were observed. The first movement of snows and blues was noted September 21.

Seventy-six whistling swans were observed on Rice Lake April 10. By the next day 234 swans were present and by April 12, five hundred swans were using the area near the Rice Lake landing. Their stay was brief however, and by April 18 only 125 were left. By April 25 all swans had

continued their northward migration. On June 6, three immature whistling swans were seen on Rice Lake. They were last observed July 1. Fall populations of whistling swans were low. On October 25 only 12 swans were present and the November population peaked at 21 birds on November 11.

A neck-banded, immature whistling swan was observed near the south landing on Rice Lake October 28. Subsequent information furnished by Dr. William Sladen of John Hopkins University indicated the bird was one of 64 marked on the North Slope of Alaska (Prudhoe Bay) this past summer and was likely headed towards its east coast winter quarters.

As usual, the mallard led the spring duck migration with a few birds observed the middle of March. They were followed by wood ducks, ring-necks, hooded mergansers and goldeneyes. The bulk of the duck migration occurred the first half of April and by May 1 most of the migration had passed through. Wood ducks, hooded mergansers and goldeneyes were especially low during the spring migration.

Several commercial wild rice growers were contacted concerning waterfowl use of ther paddies. They reported heavy use by puddle ducks as late as early June, and also that quite a few duck broods were brought off. Waterfowl production on the adjacent Kimberly Marsh was down due to very low water conditions. Waterfowl production on the refuge was similar to last year with an estimated 620 birds produced.

Waterfowl populations began building up in August with the most noticeable being mallards, black ducks, blue-winged teal and wood ducks. The build-up continued into September with widgeon, ring-necks and wood ducks moving in. By October 4 the divers began moving in and by October 6 Rice Lake had approximately 18,000 ring-necks. Waterfowl populations peaked on October 25 with nearly 90,000 ducks being recorded. The ring-neck population peaked at 66,930 birds - a figure that hadn't been reached for some time. By November 1, all waterfowl numbers had dropped substantially. The exception was the mallard which reacked a peak for the fall with 4,500 birds. Other species present on the November 1 census was 20,000 ring-necks and 1,650 miscellaneous species for a total of 26,150 ducks.

After November 1, weather conditions deteriorated rapidly and the east half of Rice Lake was frozen over by November 11. Waterfowl present were: swans, 21; Canada geese, 150; mallards, 1,000; ring-necks, 3,000; canvasback, 500; and lesser scaup, 500.

Banding quotas established for the refuge included 50 of each age and sex for the wood duck. In addition, a wildlife study is in effect to band at least 25% of the year's production of Canada geese plus a DNR-FWS program to preseason band 500 ring-necks yearly.

Unless summer populations increase it is practically impossible to band 200 wood ducks from a total summer population estimated at 250-300 ducks. If the banding program extended into October there would be a better chance of attaining the quota.

Banding efforts to trap and band at least 20 young of the year Canada's met with little success. Two banding sites were pre-baited with corn and both were used by geese. However, by the time the birds were big enough to hold a band, lack of personnel, the YCC program and other duties simply did not allow enough time to set up and watch the net. By the time the net was set in late August the geese were flying and decided to feed elsewhere. They did return to the site in September but with migrants already in the area it was decided captured birds could not be banded as refuge-raised birds.

The main wood duck banding site was baited throughout the summer and was frequented by 20-30 wood ducks. Two small traps were set the middle of August, and immediately raccoons became a constant nuisance. As acorns of the white and burr oak ripened the raccoons changed their diet and did not frequent the banding site as often. As migrant wood ducks arrived banding success picked up and by September 30 sixty-four ducks had been banded. Twenty-six birds were banded on September 30, the last day of the program.

The first coots were observed April 11, peaked at 600 birds on April 16 and gradually levelled off to a summer population of 300. Fall populations started to build up the last of August and peaked at 5,000 birds September 30. Coots were present in fair numbers during October. By November 1, only 500 coots were left and they soon departed for their wintering grounds.

2. Marsh and Water Birds

The first great blue heron was observed March 26. A check of the heron rookery below the refuge on Rice River May 2 revealed only 20 herons on the site. An amateur photographer had hung a blind in a tall oak in the center of the area with a ladder constructed of 2x4's leading to it. A subsequent

check of the area on June 9 found an abandoned rookery. One nest was found on the ground with a dead heron chick beside it. No adult birds were observed in the vicinity. The ladder and tree blind had been removed but another small, portable blind was there. It is thought there was too much disturbance and the birds moved out. An attempt will be made in the spring to find where they relocate--hopefully back to the island in Rice Lake.

Green herons were common and seen frequently during the summer.

Double-crested cormorants were present in larger numbers than for some years past. Five were observed on Rice Lake April 20 and 45 on September 26. During the summer one or two were occasionally sighted on the Rice River Pool.

A pair of common loons nested on Mandy Lake. Their nest was located on the west end of the lake on an old muskrat house. Two young were hatched.

3. Shorebirds, Gulls, Terns & Allied Species

Three woodcock routes were run on May 11, 12 and 17. All reports were furnished to the Enhancement Biologist stationed at Bemidji, Minnesota.

A Bonaparte's gull was observed flying over Rice Lake on September 30.

4. Raptors

An adult bald eagle was sighted February 18 near the springs on Rice River. On March 9 the first kestrel was seen followed by a red-tail March 23, two marsh hawks March 24 and a broad-winged hawk April 22. A goshawk was observed April 20. Broad-wings, kestrels and red-tails were observed frequently during the summer. Marsh hawks were seen quite often but their numbers are down from past years. An aerial survey of the eagle nest located on the south shore of Rice Lake was made on May 3. Pilot Winship reported incubation was in process. One immature was observed near the Rice Lake landing before fall migration began and it was assumed to be from this nest.

5. Other Migratory Birds

Stormy weather and very high winds occurring on November 20 evidently pushed a large number of horned larks off their normal migration route. Immediately after the storm and for a week or so later, large flocks numbering up to 200 birds were found

feeding on the shoulders of all highways in the area. Many birds were killed by passing vehicles before they moved out.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

White-tailed deer were frequently seen during spring, summer and fall throughout the refuge. However, low surrounding populations again prompted the Minnesota DNR to specify areas adjacent to Rice Lake NWR as a "bucks only" zone. The area had a 16-day season running from November 5-20. Hunting success during the 1977 season was fair. The refuge remained closed to deer hunting throughout the period.

Populations of aquatic furbearers were low at Rice Lake. Therefore, no trapping was allowed on the refuge. Muskrat populations were almost non-existent. Beaver were observed throughout the warm weather months and have returned to most of the areas abandoned during the previous drought year. The colony located adjacent to the entrance road west of headquarters must have had a "rough" winter. By early February they had gnawed a hole through the ice and could commonly be seen in the area. More than one motorist had to stop and let a beaver drag a branch down the road to their entrance hole in the ice. Most beaver colonies are located in areas where they are beneficial to the refuge programs. The exceptions are the colonies located on the borrow ditch on the north bog road and the one near the eagle nest on the south shore of Rice Lake. There are 15 active colonies on the refuge compared to 19 and 11 active colonies found during the fall and winter months of 1975 and 1976, respectively.

River otter were frequently seen near the goose pen area. This family frequently raided the Minnesota DNR fish trap during November and December.

2. Other Mammals

The Minnesota DNR has added the red fox, lynx and bobcat to their protected list. These species join the raccoon which was given protection several years ago. Refuge populations of raccoon are fair, red foxes are low and although seldom seen, bobcats sign indicate they are holding their own. Local trappers report coyotes are afflicted with mange and consequently many of their pelts are worthless.

3. Resident Birds

Ruffed grouse populations of the refuge and surrounding areas have increased from low levels of recent years. They were frequently observed along most roads and trails. Likewise, sharp-tailed grouse were often seen in or near the refuge. Groups of 7-10 were common on the Wiita and Magnuson tracts. Large groups of up to 55 birds were occasionally seen in and near the west fields. The combination of relatively dry springs and open grasslands appear beneficial to the sharp-tails. Fall population estimates of ruffed and sharp-tailed grouse for the refuge were 400 and 85, respectively.

4. Other Animal Life

The State DNR fisheries crew conducted their winter fish removal operations from November 12, 1976 to February 10, 1977. They removed 10,516 northern pike weighing an estimated 8,839 pounds.

V. INTERPRETATION AND RECREATION

A. Information and Interpretation

1. On-Refuge

Various schools in the area continued to use the refuge. One of the principal users was the Long Lake Conservation Center. The picnic area and nature trail received steady use during the warm months.

Driving through the refuge to see deer and other wildlife species remained high.

2. Off-Refuge

The Manager talked to classes of the Brainerd Vocational-Technical Wildlife School on February 2 concerning various aspects of wildlife management.

B. Recreation

1. Wildlife Oriented

Public fishing was permitted in designated areas of the refuge from May 1 until November 30, 1977. Most public use occurred at the Rice River bridge although Mandy Lake and

Rice River Pool were also open for fishing. Poor success was attributed to low river levels during the spring run. Rice River was practically dry from the Mississippi River to the Rice River Pool structure. Fishing did improve during the fall period as Rice River approached more normal conditions and some fish movement occurred.

Ruffed and spruce grouse hunting on the refuge coincided with the Minnesota state season of September 17 to December 31, 1977, both dates inclusive. Public use of the 2,000 acre hunting area was light even though hunting success was generally good.

The East Lake Band of Chippewa Indians began harvesting wild rice on Rice Lake on September 12, 1977. Dusty Aubid and George Green ran a preliminary survey the preceding day and determined the rice was ripe. Dusty Aubid also acted as spokesman for the Band and provided the refuge with a "ricing list". They were allowed ten days to harvest the rice excluding bad weather and predetermined Sundays. During this period, they took off one Sunday and were allowed two bad weather days due to rain and winds. All harvesting was completed on September 24, 1977.

Ricing conditions were poor and only 3,203 pounds of rice were taken. A total of 37 boat-days were spent ricing. A maximum of only six boats were on the lake on any one day. No major problems were encountered.

2. Non-Wildlife Oriented

Nothing to report.

C. Enforcement

A break-in occurred at the Henry Miller building complex on February 1 or 2nd. The building used as an office by the YCC was entered by knocking out a window. An inventory revealed nothing had been taken. On February 11 a theft was discovered at the same location and must have occurred sometime between February 3-11. A quonset-type building adjacent to the YCC office had been entered and two 40 h.p. outboard motors were removed from a boat stored by the Duluth-based Game Management Agent. The Game Agent, F.B.I., and the Aitkin County Sheriff's Department were notified. The F.B.I. agent, Mike Watson from St. Cloud, MN investigated the incident and stated it was doubtful if the motors would ever be recovered. At the end of the period the motors were still missing.

Patrol operations around the refuge boundary and along the main refuge road were necessary, especially during the deer season, to guard against illegal hunting on the refuge. At least one deer was taken along the main refuge road but no apprehensions were made. Four deer hunters were apprehended in the refuge grouse hunting area and a "button buck" was found freshly shot near the point of apprehension. The evidence linking the deer to the hunters was only circumstantial; however, when tried in state court each was fined $100, with $75 suspended, on a charge of hunting deer in a closed area.

VI OTHER ITEMS

A. Field Investigations

Nothing to report

B. Cooperative Programs

The Long Lake Conservation Center continued to use the refuge as part of their education program. One of their favorite activities was to arrive shortly after sunrise, tour the refuge and then have breakfast and a critique at the picnic area. Members of the refuge staff usually met them at the picnic area for a brief talk and general exchange of information. The refuge manager continued as an ex-officio member of the Long Lake Advisory Board.

The refuge hosted its second YCC Camp with a 20 enrollee, 7 day residential camp with a staff of six. The camp ran from June 13 to August 6 for the enrollees and the staff terminated August 12. The operation ran much smoother this year for both the YCC crew and the refuge staff. The carpenter shop at the Miller site was renovated into an office and meeting area, office equipment moved in, and they were able to function on their own without using the refuge office everytime they wanted to type a report, letter, etc. Of the staff of six, three members, including the director were on the Rice Lake staff in 1976. As was the case last year, the staff and enrollees were housed and fed at the Long Lake Conservation Center and commuted to and from the refuge in vans and a bus leased from the Cloquet Transit Company. The Camp had six reportable accidents ranging from a fish hook caught in an ear, a toe cut while swimming and requiring several stitches, minor infections, pulled muscles, etc. The Camp's excellent safety program played a large part in preventing serious accidents. On the last day of the program the enrollees put on an interesting program at the Long

Lake Conservation Center for all parents and interested persons. After the Long Lake program they all met at the YCC quarters on the refuge and had refuge tours and an awards program.

C. Items of Interest

Refuge Manager Adams attended the PPBE coordinators meeting in Denver February 23-25.

Refuge Manager Adams attended a YCC training session in Phoenix, Arizona on March 7-11, and served as an instructor for the YCC Workshop held in Omaha, Nebraska, April 25-29.

Maintenance Worker Trebesch attended the Region 3 Safety Conference held in Minneapolis March 7-11.

Trebesch and Biological Technician Thornbloom attended a training school for pesticide applicators at St. Cloud, MN March 17-18.

Adams and Thornbloom attended the Administrative Workshop March 28 - April 1, 1977 held at the Raddison South in Minneapolis. Other meetings were attended by various members of the refuge staff at the Twin Cities Area Office and Regional Office for the purpose of planning, etc. The Rice Lake planning group, Bather-Ringrose-Wolsfeld, Inc. along with the BLHP staff visited the refuge on November 22 for orientation and collection of resource inventory data.

An effort was made to locate and photograph for the refuge slide collection flowers of the Orchid family. Groups of pink lady's-slipper, yellow lady's-slipper and showy lady's-slipper were found on the refuge.

Don Adams, Refuge Manager, transferred to the Regional Office in Atlanta, Georgia, on June 17, 1977.

Richard D. Schultz transferred to Rice Lake NWR from the S.C.S. on August 28, 1977. Rick filled the newly created position of Assistant Refuge Manager.

The new Refuge Manager, David E. Heffernan, transferred from DeSoto NWR on September 10, 1977.

The Heffernan family was increased to four with the arrival of Daniel on December 5. He joined brother Mike and sisters Julie and Cory.

Ms. Jeanne Cunnien, McGregor, Minnesota worked in the refuge office from June 13 to the middle of September. She was employed under the CETA program and performed such duties as receptionist and miscellaneous office duties, assisted with YCC projects and even ran the lawn mower when needed.

The following personnel contributed to the preparation of this report: Heffernan, Section I, D. and overall review; Schultz, Section IV, 3; V, B; VI, D; and the report on the Sandstone Unit. Thornbloom prepared all other sections, typed and assembled the report.

D. Safety

Rice Lake NWR hosted its second YCC program in 1977. Despite some minor cuts and scratches, no major injuries occurred to YCC enrollees, their group leaders, or permanent staff of Rice Lake. Preventative measures taken during 1977 to reduce the risk of accidents included the completion of ground fault interrupter circuits in all major buildings, purchase and use of flashing blue warning lights for the grader and dump truck, installation of battery rack and exhaust fan, and the allocation of funds for a new and safer oil house and service station area.

In addition, Maintenance Worker Trebesch attended the Region 3 Safety Training Conference in March, 1977. Refuge Manager Heffernan and Assistant Manager Schultz attended a Defensive Driver's training course.

Future safety plans include regularly scheduled safety meetings, movies and inspections, recondition or disposal of all unsafe power and hand tools, rearrangement of shop to decrease hazardous storage areas and increase work space, and acquisition and updating of first aid certificates to refuge employees who desire them.

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MILLE LACS NATIONAL WILDLIFE REFUGE

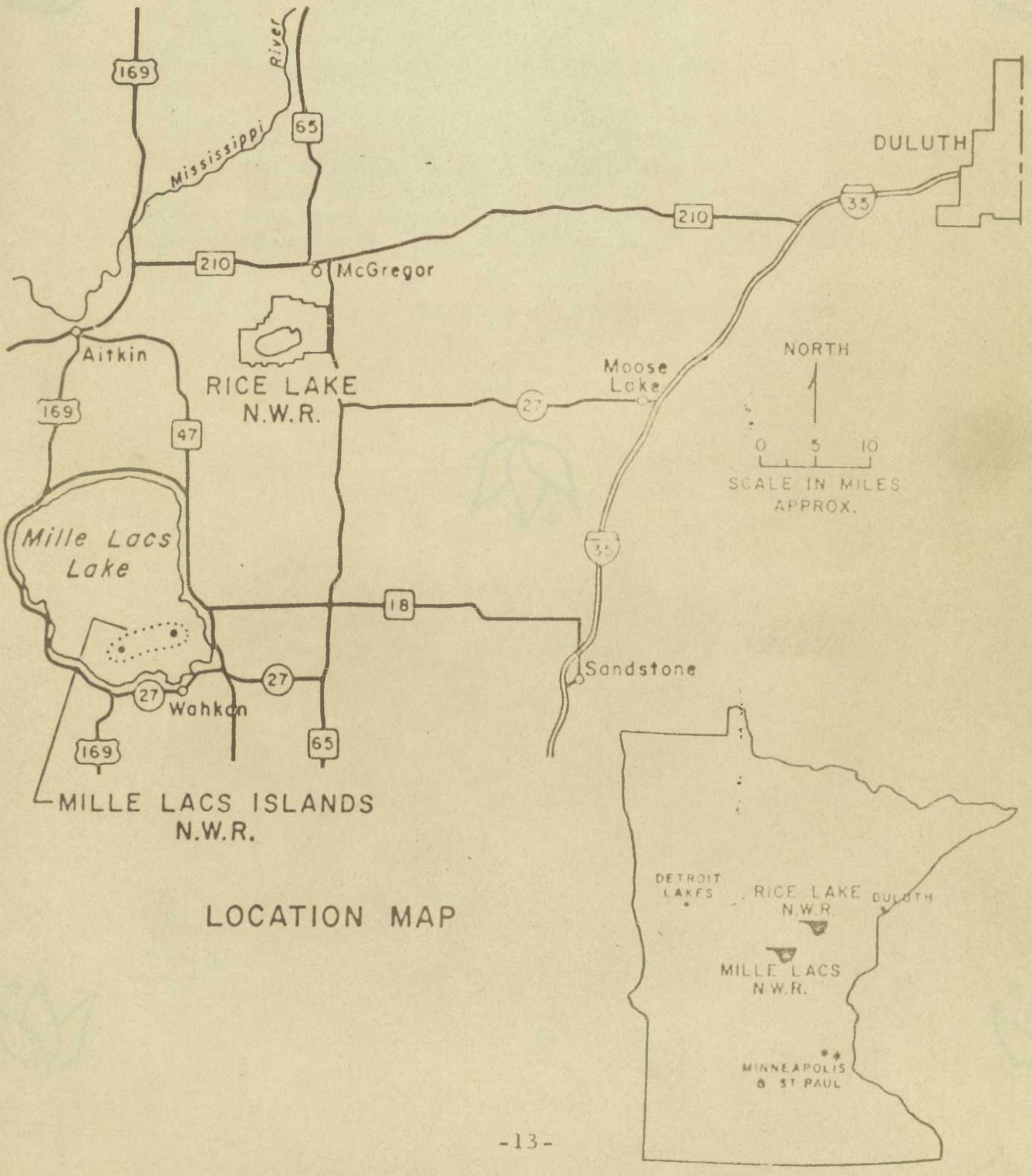
Mille Lacs National Wildlife Refuge is composed of two small islands in Mille Lacs Lake located in Mille Lacs County. They lie about 30 air miles south-southwest of refuge headquarters. Spirit Island comprises 0.24 acres of jumbled rock located approximately three miles offshore in the southwest corner of Mille Lacs Lake. Hennepin Island comprises 0.33 acres and is quite flat with both large boulders and a coarse gravel-type beach.

Spirit Island was set aside by Executive Order 2199 on May 14, 1915 and was originally known as Mille Lacs Reservation. On October 13, 1920 the reservation was enlarged by the addition of Hennepin Island under Executive Order 3340. The two islands were to constitute a "preserve and breeding ground for native birds" which are now known as the Mille Lacs Islands.

Hennepin and Spirit Islands were checked on May 12, 1977. An attempt was made this year to visit the islands before the state general fishing season opened on May 14 and then a return visit was planned a week or so later to see if fishermen use near the islands could be a disturbance factor for the gulls and terns nesting there. However, only the one trip was possible and evidently that was too soon for an accurate nest count as the bulk of the common terns hadn't arrived. Ring-billed gulls were well along with nesting and Hennepin Island totalled 89 nests varying from one to four eggs. Estimated number of ring-bills on the island was 300 with 20 common terns noted. Sixty double-crested cormorants were using the north end of the island.

Spirit Island had 40 double-crested cormorants, an estimated 450 ring-billed gulls and only two common terns. Eighty-five ring-billed gulls nests were counted.

RICE LAKE
&
MILLE LACS ISLANDS
NATIONAL WILDLIFE REFUGES



LOCATION MAP

APRIL 1973

SANDSTONE NATIONAL WILDLIFE REFUGE

Sandstone National Wildlife Refuge lies about 40 air miles southeast of Rice Lake National Wildlife Refuge. It is located in Pine County approximately one mile southeast of Sandstone, Minnesota. The 2,240 acre was acquired from the Department of Justice in 1970. It was originally part of their farm program for pasture and hayland. The land was transferred to the Fish and Wildlife Service in 1970 after the Institution phased out their beef raising program.

Sandstone has about 300 acres suitable for haying, pasture, or grazing with the balance in timber or marshland. The Kettle River, classified "wild" under the Minnesota Wiid and Scenic Rivers Act of 1973, flows through the western portion of the refuge. The recreation potential for picnic sites, overlooks, and nature-interpretive trails is good. The area also shows good use by waterfowl, ruffed grouse, woodcock and white-tailed deer.

Sandstone N.W.R. does not have any buildings, structures, or other improvements at the present time. It is in a "mothball" status with no separate funding structure of its own. No public use is planned for the immediate future.

During 1977, the YCC's removed one mile of abandoned fence which transected the refuge. Furthermore, boundary signs were checked and replaced before the November deer hunting season. Most vandalized signs were located near farmsites and/or homesites.