SENEY NATIONAL WILDLIFE REFUGE
SENEY, MICHIGAN

HURON ISLANDS NATIONAL WILDLIFE REFUGE
AND
HARBOR ISLAND NATIONAL WILDLIFE REFUGE

ANNUAL NARRATIVE REPORT
CALENDAR YEAR 1985
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L. INFORMATION PACKET (inside back cover)
INTRODUCTION

The Seney National Wildlife Refuge is situated in the east central portion of Michigan's Upper Peninsula equidistant from Lake Superior and Lake Michigan. Located in northeastern Schoolcraft County, the refuge is removed from major population centers. The three nearest major communities are all over 80 miles away.

The 95,455 acre refuge was established in 1935 in what is locally known as the Great Manistique Swamp. Habitats range from marshes and open water areas to hardwoods, spruce and pine forests. There are 21 major, managed impoundments with 7,000 surface acres. The 25,150 acre Seney Wilderness Area, characterized by string-bog topography, is located in the northwest corner of the refuge.

Also administered from the Seney National Wildlife Refuge are the Huron Islands National Wildlife Refuge and Wilderness Area, eight small islands located off the south shore of Lake Superior, and the Harbor Island National Wildlife Refuge located in Lake Huron. Total acreage is 842 for these two satellite stations.
A. HIGHLIGHTS

A sudden spring melt caused great concern for water control structures and dikes. (Section B)

Sandhill crane researchers were surprised to find that migrating cranes stopped over in Wisconsin and not lower Michigan. (Section D.5)

A Black Duck Production Workshop was held in April/May at Seney National Wildlife Refuge. John Bart, Ohio Cooperative Wildlife Research Unit, was coordinator for the workshop which was funded by the Office of Information Transfer. (Section D.5)

Division I Project Leaders' Meeting was held at Seney NWR and Manistique, Michigan. (Sec. E.8)

ARMMS monies were very kind to Seney in CY 1985. (Sections E.5 and I.2,3,4)

Twenty-two waterfowl nesting islands were reconstructed in F Pool. (Section F.2)

White fronted geese (Section G.3) and a scissor-tail flycatcher (Section G.7) were sighted on the refuge.

Seney's public use and bookstore sales increased substantially. (Section H.1, 18)

Seney celebrated its 50th Anniversary. (Section H.1)

CCC barracks donated to the Newberry Historical Society. (Section I.8)
B. CLIMATIC CONDITIONS

Weather records, precipitation and temperature for 1985 are from the National Oceanic and Atmospheric Administration (NOAA) cooperative weather station located at the Seney National Wildlife Refuge (NWR). The refuge has maintained an official station since January 21, 1939. Refuge personnel record rainfall, snowfall, snow depth, temperature and evaporation data daily including weekends and holidays.

In 1985 NOAA installed a National Weather Service ROSA encoder so that the secretary programs the daily weather readings into the encoder and then transmits this information via telephone to the NOAA computer in Bismarck, North Dakota. NOAA hopes that this computer system will assist them in tracking and providing current weather information throughout the country.

The year started with heavy snowfall of 41.4 inches in January and continued heavy throughout CY 1985 winter months for a total of 162.88 inches of snowfall in 1985 which is well over the 125 inch average.

A sudden temperature change over a five day period in late April caused rapid runoff. The Schoolcraft County Commissioners declared a water emergency and asked the refuge to hold back as much water as possible. However, we were already at capacity and were unable to assist them. Fortunately, a sudden lowering of temperatures prevented any flooding in the town of Manistique approximately 35 miles downriver from the refuge.

A quick melt throughout U.P. tested water control structures and dikes to their limits.
A warm May and June brought off a black fly emergence during a critical time for goslings; therefore approximately 40 percent of the refuge's goose production was killed by leucocytozoon disease.

The 1985 summer is best described as cloudy and wet. The refuge received above the normal average 32.24 inches of precipitation during CY 1985 with an annual total of 41.23 inches.

Although frosts in May and June are common, the refuge received an unusually late frost on July 23 when the temperature reached a low of 29 degrees. The refuge received its first snowfall of the fall on October 16 and finished CY 1985 with 43.5 inches of snow in December alone.

### 1985 Weather Statistics

<table>
<thead>
<tr>
<th>Month</th>
<th>Precipitation Received</th>
<th>Precipitation Average</th>
<th>Snowfall</th>
<th>Temperature Max Temp.</th>
<th>Temperature Min Temp.</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>3.45</td>
<td>2.08</td>
<td>41.41</td>
<td>38</td>
<td>-15</td>
</tr>
<tr>
<td>February</td>
<td>1.59</td>
<td>1.69</td>
<td>27.77</td>
<td>41</td>
<td>-36</td>
</tr>
<tr>
<td>March</td>
<td>2.29</td>
<td>2.08</td>
<td>22.6</td>
<td>51</td>
<td>-10</td>
</tr>
<tr>
<td>April</td>
<td>3.85</td>
<td>2.23</td>
<td>10.54</td>
<td>77</td>
<td>13</td>
</tr>
<tr>
<td>May</td>
<td>3.88</td>
<td>2.96</td>
<td></td>
<td>81</td>
<td>31</td>
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<tr>
<td>June</td>
<td>3.01</td>
<td>3.53</td>
<td></td>
<td>84</td>
<td>33</td>
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<tr>
<td>July</td>
<td>3.78</td>
<td>2.80</td>
<td></td>
<td>87</td>
<td>29</td>
</tr>
<tr>
<td>August</td>
<td>4.43</td>
<td>3.11</td>
<td>.01</td>
<td>86</td>
<td>42</td>
</tr>
<tr>
<td>September</td>
<td>4.43</td>
<td>3.43</td>
<td></td>
<td>82</td>
<td>32</td>
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<tr>
<td>October</td>
<td>2.43</td>
<td>2.83</td>
<td>17.01</td>
<td>67</td>
<td>26</td>
</tr>
<tr>
<td>November</td>
<td>3.78</td>
<td>3.04</td>
<td>43.54</td>
<td>33</td>
<td>-12</td>
</tr>
</tbody>
</table>

**ANNUAL TOTALS** 41.23 32.24 162.88

Average precipitation is calculated using monthly readings from 1940 to 1985.
C. LAND ACQUISITION

1. Fee Title
   Nothing to Report

2. Easements
   Nothing to Report

3. Other
   For the past two years, no further action has been taken on a land exchange proposal between the Michigan Department of Natural Resources and the U.S. Fish and Wildlife Service. (See NR 84) The proposal has been pending for several years. A written correspondence from our Regional Office Division of Realty to the Department of Natural Resources requested a status updating. A phone response in August by the Department of Natural Resources (DNR) stated they were still interested but land acquisition projects were taking priority.

D. PLANNING

1. Master Plan
   Nothing to Report

2. Management Plan
   Part III of the Refuge Management Plan was completed on August 8, 1985. Regional Office approval was received on September 4.

3. Public Participation
   Nothing to Report

4. Compliance with Environmental and Cultural Resource Mandates
   Section 10, 404 and Act 247 permits were obtained from the State of Michigan DNR for 1985 ARMMS projects. An environmental assessment was submitted and approved by the Regional Office to assure that no long-term damage was done during the reconstruction of the waterfowl nesting islands in F Pool.
The Harbor Island National Wildlife Refuge hunting plan environmental assessment was resubmitted in January and approved in March.

5. Research and Investigations

Seney (NR84-31510-1) and Ohio Cooperative Wildlife Research Unit (14-16-0009-1539) Work Order No. 6 "Nesting and Movements of Sandhill Cranes at Seney NWR"

This project was initiated in 1983 by the Ohio Cooperative Research Unit. Jan McMillen is the principle field investigator under the guidance of Unit Leader Ted Bookhout. This year was the second field season of four scheduled.

Long-range plans for successful recovery of the endangered whooping crane (Grus americana) include establishment of at least two additional populations of at least 20 nesting pairs each, disjunct from the wild population that nests in Wood Buffalo National Park, Northwest Territories, and winters on the Aransas National Wildlife Refuge, Texas. Cross-fostering experiments at Grays Lake NWR, Idaho, in which whooping crane eggs are placed by sandhill crane (G. canadensis) nests and the chicks are raised by sandhill cranes, show promise of success; about 34 whooping cranes comprise the Grays Lake population presently.

The Upper Peninsula of Michigan has the desirable attributes for the site of a cross-fostering program with whooping cranes that are required by the Whooping Crane Recovery Team. The estimated population of breeding sandhill cranes is more than 125 pairs, and the population is increasing. The human population is sparse, and many square kilometers of breeding habitat are remote from a surfaced road. Importantly, the U.P. sandhill cranes migrate to Florida, thus assuring a disjunct population of whooping cranes.

Presently the U.S. Fish and Wildlife Service is funding three concurrent studies of sandhill crane populations as a move to identify the site of the next whooping crane population. The sites under study are Seney National Wildlife Refuge, Okefenokee National Wildlife Refuge (Georgia) and central Florida. The Georgia and Florida cranes under study are non-migratory. No assurance can be given that any of the three sites
will be selected as the site for the next whooper population, however.

Objectives of the Seney NWR study are to determine breeding population size, to measure reproductive success of nesting pairs, to monitor movements of marked cranes to identify staging areas, migration routes, migration stops, and wintering sites, and to evaluate the sandhill crane population in the eastern portion of the Upper Peninsula for a cross-fostering program with whooping cranes.

In 1984 67 pairs of cranes were identified in 12,113 ha of habitat, and 29 of these were visually located on territory prior to incubation. Five nests, none of which was successful, were found by ground searching. Seventeen pairs of cranes with 20 chicks were located between May 23 and June 30. The 67 pairs, including 22 known breeding pairs, occupied about 31 percent of the refuge. Extrapolation indicated that 216 total pairs, 71 breeding pairs, and 83 non-fledged chicks could have been on Seney NWR in 1984. Two chicks were banded and individually marked with four colored leg bands each. In August and September, 71 cranes (68 adults, 3 fledged young) were captured by rocket-netting in 17 firings at six sites. In October and November, 52 of the color-marked cranes were sighted at the Jasper-Pulaski State Fish and Wildlife Area in northwestern Indiana, a major staging area for upper Midwest cranes. None of the marked birds were seen in southern Michigan. Three birds were observed in Florida in December and January, two west of Ocala and one well west of Orlando. During spring 1985 migration, nine cranes were seen at Jasper-Pulaski in late March.

In May 1985 helicopter flights were used to locate 21 crane nests on Seney NWR and 27 nests on the East Unit of Hiawatha National Forest. Thirty-four broods were located on Seney, and transmitters were placed on 27 young to monitor movements. During June-September, 77 cranes (13 chicks, 64 adults) were captured and color-marked, and solar-powered radio transmitters were placed on 16 birds (10 adults with chicks, 5 adults without chicks, and 1 subadult).

During the later part of June, Mr. Li De-hao, Deputy Board Member of the Zoological Society of Qinghai and the Northwest Plateau Institute of Biology Academia Senica, Xining City, Qingha, China spent several days on the refuge learning field techniques for crane research. Mr. De-hao had brought a pair of black-necked cranes to the International Crane Foundation and they arranged his stay at Seney.
First sandhill crane chicks of 1985 captured by Brad Peterson

JAK

Tracking of migrating cranes resulted in some very interesting data. Up until this time, it was not known which route, east or west side of lower Michigan or if they flew across Lake Michigan, the birds took. During the second week in October, initial attempts to track migrating cranes failed. Signals were lost or never picked up by aircraft along Lake Michigan's shoreline. Finally on October 11, the LAST radioed pair left Seney NWR at 1150 hours and were successfully tracked. They spent the first night in a Sphagnum bog west of Menominee, Wisconsin and the second night southeast of Shawano, Wisconsin. The next two nights were spent southwest of Wautoma, Wisconsin. It was in this last location that four other radio-colored birds from Seney were located! From earlier studies on cranes, this area had been identified as a staging area for birds from Minnesota. On the 15th, the same pair of birds moved on to Jasper-Pulaski, a distance of about 280 miles. The other four radioed birds remained in Wisconsin until October 28 at which time funding, personnel and equipment with the proper frequency were no longer available. However, by the end of November the majority of birds had made it to Jasper-Pulaski.

Birds were followed on November 24 to areas north of Greencastle and northwest of Bloomington, Indiana where they remained for nearly three weeks.
Migration Route of Seney's Sandhill Cranes
from J-P, IN to Gainesville, FL
Then their signals were lost and they could not be followed. Other birds at Jasper-Pulaski departed on December 12, spent the night of the 13th southeast of Bloomington, the night of the 14th near Sparta, Tennessee, the night of the 15th near Macon, Georgia and arrived in the vicinity of Gainesville, Florida on December 16. The next day, three birds were located at Okefenokee NWR, Georgia, six near Gainesville, Florida, and 1 near Leesburg, Florida.

Section written by Dr. T. Bookhout

SNY 85-01 Investigation "Black Duck Production Workshop"
Office of Information Transfer

The objectives of the investigation and workshop were:

a. Summarize current information about habitat requirements of black ducks nesting and brood habitat at Seney NWR

b. Advise the refuge staff on best procedures for mapping black duck habitat

c. Provide guidelines for conducting inventories of black duck breeding pairs and broods

d. Provide broad management strategies to improve black duck habitat on Seney NWR

Project coordinator John Bart, Assistant Leader from Ohio Cooperative Wildlife Research Unit, facilitated the April 30 to May 2 workshop. Participants included waterfowl and habitat biologists from the State of Michigan DNR, Ohio State University, Patuxent Wildlife Research Center and the Fish and Wildlife Service.

Following the workshop, the Ohio Cooperative Research Unit provided a summary including comments by Dr. Jerry Longcore who is a Fish and Wildlife Service expert on black ducks. This summary made the following recommendations:

a. Research should be initiated to identify black duck breeding habitat and methods to improve this habitat

b. Map existing known black duck habitat using aerial imagery

c. Determine the best methodology for censusing black duck production on the Seney NWR
d. Continue efforts to improve impoundment habitats through drawdowns and mechanical methods.

Dr. Longcore returned to the refuge in early July to assist the staff in conducting brood counts. He concluded given the size of refuge impoundments, that brood counts were probably impractical. He recommended trying pair counts during the spring of 1986 both from the ground and the air.

SNY 85-02 Yellow Rail Study, Ohio Cooperative Wildlife Research Unit, CY 1985

Since completion of the yellow rail field work in 1980 by J.R. Stenzel, which was the basis for his M.S. thesis in 1982, efforts to capture and leg-band rails has continued. Long-range objectives of this work will be to ascertain habitat use by breeding males, to examine factors that affect calling rates of males (both objectives leading to an ultimate goal of determining whether call counts can be used to measure breeding densities and, if so, when and under what conditions call counts ought to be taken), and to investigate the feasibility of developing "rail walks" at the refuge to accommodate serious birdwatchers wishing to add the yellow rail to their life list.

Emphasis in 1985 was placed on capturing calling males and marking capture sites. The birds arrived by mid-April, earlier than in any year since our rail work began in 1979. Twenty-three yellow rails were captured and banded in 1985, all in the vast sedge meadow south of Marsh Creek Pool. We continue to receive requests from serious birding enthusiasts for an opportunity to be taken to our study sites to observe this elusive bird.

Section written by Dr. T. Bookhout
Dr. Richard Urbanek with two of the major pieces of equipment needed to call in rails. Banging two rocks together with a certain tempo and rhythm simulates the male courtship call causing breeding males to move in and challenge the intruder. Hand nets are then used to capture birds. This work is done at night.

Carl Sams 'II
In flight the white wingpatch shown here distinguishes it from all other rails. These tiny, shy birds are one of the top "10 most wanted" for birders lists in U.S.

Carl Sams II

6. Other

Four refuge action plans were written or revised by the refuge staff in 1985. These include:

a. Wilderness Air Quality Proposal
b. Law Enforcement Plan
c. Long-term Water Management Plan
d. Search and Rescue Plan
E. ADMINISTRATION

(left to right) Front Row: Don Frickie, Debbie Kesel, "JR" Losey, Maggie Anderson  Back Row: Lawrence Zellar, Terry Papple, Jim Kesel

1. Donald N. Frickie  Refuge Manager  GS-12
2. Margaret M. Anderson  Assn't Refuge Manager  GS-11 EOD (2/85)
3. James A. Kesel  Refuge Biologist  GS-11
4. Donald G. Hultman  Assn't Refuge Manager  GS-07 Transferred (3/85)
5. Deborah J. Kesel  Secretary  GS-05
6. Glen "JR" Losey  Maintenance Worker  WG-07
7. Terrence B. Papple  Maintenance Worker  WG-07
8. Lawrence Zellar  Automotive Worker  WG-08

*All personnel are permanent full-time
Petersen and Beneke ran the visitor center

The following were seasonal staff:

<table>
<thead>
<tr>
<th></th>
<th>Name</th>
<th>Position</th>
<th>Grade</th>
<th>Type</th>
<th>Dates</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Greg Petersen</td>
<td>Park Technician</td>
<td>GS-5</td>
<td>TFT</td>
<td>5/6-9/14</td>
</tr>
<tr>
<td>2</td>
<td>Elizabeth (Betsy) Beneke</td>
<td>Coop Student</td>
<td>GS-3</td>
<td></td>
<td>5/18-9/28</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Park Technician</td>
<td>GS-4</td>
<td>SFT</td>
<td>9/29-10/14</td>
</tr>
<tr>
<td>3</td>
<td>Tim Granger</td>
<td>Laborer</td>
<td>WG-2</td>
<td></td>
<td>7/15-9/30</td>
</tr>
<tr>
<td>4</td>
<td>Steve Jack</td>
<td>Laborer</td>
<td>WG-1</td>
<td></td>
<td>7/15-9/30</td>
</tr>
<tr>
<td>5</td>
<td>Max McAlpine</td>
<td>Laborer</td>
<td>WG-1</td>
<td></td>
<td>7/15-9/30</td>
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<tr>
<td>6</td>
<td>Joe Reid</td>
<td>Laborer</td>
<td>WG-1</td>
<td></td>
<td>7/21-9/30</td>
</tr>
</tbody>
</table>
1. Personnel

Margaret M. Anderson transferred from the Upper Mississippi River NW&FR in February to fill the Assistant Refuge Manager position.

Assistant Manager Don Hultman transferred to Devils Lake WMD, ND in March.

Greg Petersen returned for his second year as Park Technician under a temporary appointment from May 6 to September 14. Cooperative Student Betsy Beneke was assigned primarily to visitor center duties from May 18 to October 14. She was converted on September 29 to Park Technician (GS-4) subject to furlough. She accepted a position at Tamarac NWR and will be returning there next spring.

Laborers Tim Granger, Joe Reid, Steve Jack and Max McAlpine worked on two ARMMS’s projects from mid-July to the end of September. ARMM’s monies funded their salaries.

<table>
<thead>
<tr>
<th>Personnel Staffing Since FY 81</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Permanent</strong></td>
</tr>
<tr>
<td>Full-Time</td>
</tr>
<tr>
<td>FY 1985</td>
</tr>
<tr>
<td>FY 1984</td>
</tr>
<tr>
<td>FY 1983</td>
</tr>
<tr>
<td>FY 1982</td>
</tr>
<tr>
<td>FY 1981</td>
</tr>
</tbody>
</table>

*transfers, resignations reduced full-time to 7 during last part of FY. One full-time slot vacant at end of FY.
In summary, although staffing was still less than adequate we faired much better this year than in 1984. We had much better visitor center coverage; however, we were down one assistant manager position for 11 months. Nor was there funding or FTE's for biological aids in FY 85 which causes some biological work to be carried out by volunteers or not done at all.

2. Youth Programs

Seney again hosted a non-resident YCC program from June 17 through August 9, 1985 with 10 enrollees and 2 paid staff members. For the past several years, the staff has been hired by contract with a local school district after the solicitation of bids. Enrollees were selected by the Germfask Elementary School kindergarten class by random drawing of applicants in a manner which assured equal selection of sexes; 75 applications were received.

a. Paul Stoetzer, Camp Director
b. Terry McLaren, Group Leader
c. Gregory Rutherford, Youth Leader
d. Patricia L. Edwards
e. Amy K. Fox
f. Adam Hetchler
g. Susanne Kopecky
h. Scott Loehr
i. Allan McCaulay
j. Gary Moore
k. Diana Norris
l. Yvette Rousseau

Fortunately, the YCC staff has remained fairly unchanged the past several years, thus giving continuity to Seney NWR's program as well as minimizing refuge staff supervision. No injuries were sustained during the eight week camp. Dan Tabberer, Regional Office YCC Coordinator, visited the Seney YCC camp on July 17 and 18.

The following projects were completed during 1985:

<table>
<thead>
<tr>
<th>Projects</th>
<th># of Units Completed</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. general maintenance and cleaning of visitor center and picnic areas</td>
<td>--</td>
</tr>
<tr>
<td>b. removing brush from nesting islands</td>
<td>25 islands</td>
</tr>
<tr>
<td>c. assist with goose banding</td>
<td>219 geese</td>
</tr>
<tr>
<td>d. interpretive foot trail brushing and chipping</td>
<td>2.5 miles</td>
</tr>
</tbody>
</table>
Projects

- e. waterfowl nest box survey and maintenance: 110 boxes
- f. assist sandhill crane researchers: --
- g. removal of single strand wire "fence" from boundaries: 13 miles
- h. washing and waxing cars: --
- i. painting entrance and information signs: 10 signs
- j. restoration of dikes/banks - placing riprap, planting bullrush, seeding and mulching: 3 areas

Valorie Tate returned to the refuge for her third year. In 1983 and 1984 she was a YCC youth leader. This year she worked under the Summer Youth Employment and Training Program (SYETP) from June through August. She worked a total of 260 hours primarily in the visitor center and office, although she did manage to get her feet wet occasionally. Valorie is attending college and is majoring in biology this school year. She is an excellent worker and very capable person.

3. Other Manpower Programs

The refuge again cooperated with the Michigan Department of Social Services in providing work and supervision of welfare recipients under the State's "workfare" program. Participants worked from 56 to 80 hours per month on refuge maintenance projects at no cost to the refuge other than supervision and tools or equipment to do the work. The program accomplished various labor-intensive tasks during the year including headquarters area mowing, picnic area maintenance, road and trail clearing, gate construction, and bucking and splitting 15 cords of firewood for heating the refuge shops.

Each worker was enrolled as a refuge volunteer to provide workers compensation protection. Below are the persons enrolled in the program during 1985 and the total hours worked.
The total number of hours in 1985 was down by 453 hours as compared to 1984. One worker found employment, two moved out of the area, another became ineligible when his spouse found employment and one was rejected by the refuge. The State program suffered some major administrative and policy changes and there has been a lack of qualified persons on the State rolls. Consequently we haven't had anyone on board since September.

4. Volunteers

The refuge hosted an extensive and varied volunteer program in 1985 which included 66 participants at one time or another during the year. A total of 6,185 hours were contributed by general volunteers and an additional 611 hours by State of Michigan workfare volunteers (see above) for a total of 6,796 hours, up about 20 percent from 1984. Many refuge projects and programs would have been difficult to accomplish without volunteer help.

Nineteen general volunteers assisted with visitor center operation from May 15 through October 15. Most of these people were signed-up through the Retired Senior Volunteer Program run by the Community Action Agency based in Escanaba, MI. Each volunteer worked a four hour shift for one day per week, handling general information duties, bookstore operation and film presentations.

A group of 28 students and teachers from the "Tamarack Center" in the Upper Peninsula volunteered their services for a day of rip-rapping pool shorelines. The Tamarack Center is run by the Fresh Air Society based in Detroit, where most of the students lived.

Volunteers Mr. and Mrs. Lawrence Ledy donated 2,128 hours during 1985 by living in the residence on Harbor Island NWR from June through
October. They not only provided security for the newly acquired refuge, but assisted with maintenance chores to some degree. The Ledy's had been summer caretakers of the island during The Nature Conservancy's tenure.

Another major portion of Seney's volunteer program were seven volunteer biologists and two foresters. These students or recent graduates come to us from Ohio, Michigan and North Dakota State Universities, Lake Superior State College, MI and Luther College, IA. One student recruited by the Ohio Coop. Research Unit for the sandhill crane project came from Poland. Most of these students were provided housing in the refuge's log cabin. Each of them worked for one to four months contributing a total of 4,020 hours. They worked on various biological projects including waterfowl migration and nesting census, bear census, sandhill crane research, goose and waterfowl banding, timber cruising and type mapping, and vegetative and wildlife surveys.

Volunteers Liz Dykstra and Brad Peterson banding, color-coding and collecting measurements on sandhill crane chick.
Refuge Volunteer Forester Craig Allen with Certificate of Appreciation. Craig did an excellent job while acquiring valuable job experience.

JAK

Refuge Volunteer Biologists from left to right John Kanter, Brad "Pete" Peterson, and Brad Stermer. This was a good crew which assisted the refuge with surveys and habitat management projects.

JAK
1985 Volunteers

<table>
<thead>
<tr>
<th>Name</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>Elizabeth Anderson</td>
<td>RSVP</td>
</tr>
<tr>
<td>Rose Anderson</td>
<td>RSVP</td>
</tr>
<tr>
<td>Don Dexter</td>
<td>RSVP</td>
</tr>
<tr>
<td>Madeline Dexter</td>
<td>RSVP</td>
</tr>
<tr>
<td>Florence Harris</td>
<td>RSVP</td>
</tr>
<tr>
<td>Marie Jones</td>
<td>RSVP</td>
</tr>
<tr>
<td>Mae Lawrence</td>
<td>RSVP</td>
</tr>
<tr>
<td>Emma Jean Lustila</td>
<td>RSVP</td>
</tr>
<tr>
<td>Pauline McAlpine</td>
<td>RSVP</td>
</tr>
<tr>
<td>Bertha Morrison</td>
<td>RSVP</td>
</tr>
<tr>
<td>Christine Peters</td>
<td>RSVP</td>
</tr>
<tr>
<td>Vivian Reagen</td>
<td>RSVP</td>
</tr>
<tr>
<td>Mary Rutherford</td>
<td>RSVP</td>
</tr>
<tr>
<td>Dick St. Martin</td>
<td>RSVP</td>
</tr>
<tr>
<td>Myrtle St. Martin</td>
<td>RSVP</td>
</tr>
<tr>
<td>Edna Skarritt</td>
<td>RSVP</td>
</tr>
<tr>
<td>Les Walstrom</td>
<td>RSVP</td>
</tr>
<tr>
<td>Lawrence Ledy</td>
<td>General</td>
</tr>
<tr>
<td>Lillian Ledy</td>
<td>General</td>
</tr>
<tr>
<td>Kathy White</td>
<td>General</td>
</tr>
<tr>
<td>Russ Fox</td>
<td>General</td>
</tr>
<tr>
<td>Larry Anderson</td>
<td>General</td>
</tr>
<tr>
<td>Barbara Musgrave</td>
<td>Forester</td>
</tr>
<tr>
<td>Craig Allen</td>
<td>Forester</td>
</tr>
<tr>
<td>Dave Evers</td>
<td>BBS</td>
</tr>
<tr>
<td>John Kanter</td>
<td>Biologist</td>
</tr>
<tr>
<td>Brad Stermer</td>
<td>Biologist</td>
</tr>
<tr>
<td>Brad Peterson</td>
<td>Biologist</td>
</tr>
<tr>
<td>Marek Krywult</td>
<td>SHC</td>
</tr>
<tr>
<td>Mary Jo FitzGerald</td>
<td>SHC</td>
</tr>
<tr>
<td>Lori Summer</td>
<td>SHC</td>
</tr>
<tr>
<td>Liz Dykstra</td>
<td>SHC</td>
</tr>
<tr>
<td>BBS-Breeding bird survey biologist</td>
<td></td>
</tr>
<tr>
<td>SHC-Sandhill crane research biologist</td>
<td></td>
</tr>
<tr>
<td>RSVP-Retired Senior Volunteer Program</td>
<td></td>
</tr>
</tbody>
</table>

On September 6 a "pot-luck" dinner was held at the visitor center for all the 1985 volunteers. At that time, Certificates of Appreciation were presented to all RSVP volunteers. Other volunteers received their certificates on their last day of work. We also sent Christmas Cards to our RSVP volunteers and kept them abreast of changes occurring at the visitor center.

5. Funding

The Seney Refuge was fortunate to have many ARMMS projects funded in 1985. Major rehabilitation projects for habitat improvement and facilities maintenance were initiated or completed. Those ARMMS projects not completed in 1985 have had all funds obligated and work will be carried out in 1986.

Equipment purchases were made for habitat improvement including a side mower, ATV powered seeder/spreader, dump box trailers and one Bush Hog mower. Equipment was purchased for facilities maintenance including tools for the automotive shop and specialized tools for water control structure repairs and visitor center remodeling projects such as rotary and power hammers and circular and radial saws. ARMMS funds also made it possible to purchase needed supplies of lumber and metal channels for present and future water control structure and bridge maintenance. A projector and various audio equipment as well as films and new exhibits were purchased under the visitor center rehabilitation project. (See Equipment and Facilities)

We greatly appreciate the ARMMS funding which enabled us to have a rewarding year of accomplishments for the refuge and resource.
The return of Quarters receipts (8610) to the refuge also assisted Seney to upgrade refuge quarters during 1985. Quarters Program Schedules were developed so that funds may be spent in the most efficient manner. The fact that quarters funds can be carried over into the next fiscal year also has helped us better manage those funds and plan maintenance. One example of this would be the furnace replacement Seney is planning for the manager's quarters. We initially planned to purchase this furnace in 1985 but due to questions in the design needed we were not able to obligate the funds. However, since quarters funds are carried over we can purchase the furnace in FY 86 without causing our Quarters Program Schedules to be seriously altered or setting back needed repairs to other quarters.
## FISCAL BUDGET - 1985

### O & M FUNDS

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1260</td>
<td>$244,850</td>
</tr>
<tr>
<td>6860</td>
<td>$35,000</td>
</tr>
<tr>
<td><strong>TOTAL O &amp; M FUNDS</strong></td>
<td><strong>$279,850</strong></td>
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</table>

### QUARTERS

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>8610</td>
<td>$8,245</td>
</tr>
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</table>

### YOUTH CONSERVATION CORP (YCC)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>1520</td>
<td>$19,000</td>
</tr>
</tbody>
</table>

### ARMMS (large)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Suburban 4X4</td>
<td>$13,000</td>
</tr>
<tr>
<td>Headquarters Rehabilitation</td>
<td>$80,000</td>
</tr>
<tr>
<td>Water Control Structure Rehabilitation</td>
<td>$61,220</td>
</tr>
<tr>
<td>Visitor Center Rehabilitation</td>
<td>$20,500</td>
</tr>
<tr>
<td>Dike Maintenance/Side Mower</td>
<td>$28,000</td>
</tr>
<tr>
<td>Goose Island Rehabilitation</td>
<td>$38,000</td>
</tr>
</tbody>
</table>

### ARMMS (small)

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Visitor Center Parking Lot</td>
<td>$3,000</td>
</tr>
<tr>
<td>Photo Interpretation</td>
<td>$4,500</td>
</tr>
<tr>
<td>Water Control Facilities</td>
<td>$2,700</td>
</tr>
<tr>
<td>Road Gravel</td>
<td>$2,300</td>
</tr>
<tr>
<td>Electrical Inspection</td>
<td>$2,000</td>
</tr>
<tr>
<td>Interpretive Trail Boardwalk</td>
<td>$3,000</td>
</tr>
</tbody>
</table>

Garage Doors (cancelled - the doors were purchased with end-of-year funds in 1984)  
$4,000
## FIVE-YEAR FUNDING COMPARISON

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>$279,850</td>
<td>$305,250</td>
<td>$290,000</td>
<td>$241,000</td>
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</tr>
<tr>
<td>1210</td>
<td></td>
<td></td>
<td>147,000</td>
<td>124,000</td>
<td>127,000</td>
</tr>
<tr>
<td>1220</td>
<td></td>
<td></td>
<td>45,000</td>
<td>28,000</td>
<td>25,000</td>
</tr>
<tr>
<td>1230</td>
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<td>1240</td>
<td></td>
<td></td>
<td>63,000</td>
<td>58,000</td>
<td>71,000</td>
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<tr>
<td>1260</td>
<td>244,850</td>
<td>270,250</td>
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</tr>
<tr>
<td>6810</td>
<td></td>
<td></td>
<td>35,000</td>
<td>29,000</td>
<td>26,000</td>
</tr>
<tr>
<td>6860</td>
<td>35,000</td>
<td>35,000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>OTHER FUNDS</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1520 (YCC)</td>
<td>$19,000</td>
<td>$23,125</td>
<td>$17,700</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1994 (QRTS)</td>
<td>$ 8,245</td>
<td>$ 5,600</td>
<td>$ 6,500</td>
<td>$ 2,600</td>
<td></td>
</tr>
<tr>
<td>1510 (FIRE)</td>
<td>$42,790</td>
<td>$427,200</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
6. Safety

During this past year no minor or lost time injuries occurred to any staff or volunteer workers. We experienced several equipment accidents as did the visiting public.

<table>
<thead>
<tr>
<th>Date</th>
<th>Person(s) involved</th>
<th>Incident/Damage</th>
</tr>
</thead>
<tbody>
<tr>
<td>April</td>
<td>Maintenance Worker Papple</td>
<td>Changing from lane into left turn lane, front fender contact with vehicle in that lane-no damage-no citations</td>
</tr>
<tr>
<td>June</td>
<td>Visiting Public (1)</td>
<td>Left V.C. was under influence of alcohol, went off entrance road into trees causing extensive damage to vehicle and badly bruised passenger-State issued citations</td>
</tr>
<tr>
<td>July</td>
<td>Laborer Reid</td>
<td>Backed dump truck into sand dike while trying to get out unguarded exhaust muffler contacted hay/straw mulch starting a fire under truck $500 damage to vehicle</td>
</tr>
<tr>
<td>August</td>
<td>Visiting Public (2)</td>
<td>Drove off auto tour route while viewing wildlife - State issued citation-damage to vehicle</td>
</tr>
<tr>
<td>September</td>
<td>Visiting Public (3)</td>
<td>Drove off auto tour route while viewing wildlife-vehicle had to be pulled out</td>
</tr>
</tbody>
</table>
Eleven safety meetings were held. The following is a list of topics discussed or films shown.

<table>
<thead>
<tr>
<th>Month</th>
<th>Safety Topics/Films</th>
</tr>
</thead>
<tbody>
<tr>
<td>January</td>
<td>Three-wheelers/&quot;Talking ATC Safety&quot;/ id refuge safety hazards</td>
</tr>
<tr>
<td>February</td>
<td>Safety Shoes/ &quot;The Better Step&quot;</td>
</tr>
<tr>
<td></td>
<td>Defensive Driving/ &quot;Handling the Unexpected&quot;</td>
</tr>
<tr>
<td>April</td>
<td>Fire/ &quot;Fire VS Fire&quot; and &quot;Leave A Way Out&quot;</td>
</tr>
<tr>
<td></td>
<td>ATC safety discussion for those absent in Jan. Demo's on fire tent and all fire equipment</td>
</tr>
<tr>
<td>May</td>
<td>Blood Pressure/ &quot;Measuring Blood Pressure&quot;</td>
</tr>
<tr>
<td>June*</td>
<td>Hand Tools/ &quot;Portable Electric Power Tools&quot; and &quot;Portable Ladders&quot;</td>
</tr>
<tr>
<td>July*</td>
<td>Seat Belts/ &quot;It'll Never Happen to Me&quot;</td>
</tr>
<tr>
<td></td>
<td>Drinking &amp; Drivers/ &quot;Stop Drunk Driving&quot;</td>
</tr>
<tr>
<td>August</td>
<td>Defensive Driving/ &quot;Space Cushion Driving&quot;</td>
</tr>
<tr>
<td></td>
<td>Safety Inspection done of buildings and fire extinguishers</td>
</tr>
<tr>
<td>September</td>
<td>Stress/&quot;Coping with Change&quot; and &quot;Everybody's Job&quot;</td>
</tr>
<tr>
<td>October</td>
<td>Heavy Equipment/ &quot;Roll of Drums&quot;, &quot;It Always Happens to the Other Guy&quot;, &quot;Operating Tips on Backhoe&quot;, &quot;Tractor Safety is No Accident&quot; and &quot;Multiple Choice&quot;</td>
</tr>
<tr>
<td>November</td>
<td>General Health/ &quot;Chest Pains&quot;, &quot;Aches, Pains and Arthritis&quot;</td>
</tr>
<tr>
<td>December</td>
<td>General Health/ &quot;As Young as Your Feet&quot; and &quot;Wellness Revolution&quot;</td>
</tr>
</tbody>
</table>

*Volunteers, YCC or temporary staff also attended
On May 17 and November 20 the Public Health Nurse took blood pressure readings of all personnel on station. On June 5 all residents, shops, offices and out buildings were inspected by State certified electrical inspector. All recommendations were implemented. In August Beneke, G. Petersen, B. Peterson and J. Kanter completed the eight hour defensive driving course.

The following safety equipment was purchased: a variety of adhesive safety signs, "Sting Kill" for first aid boxes, fire extinguishers 10 woodcutters helmets with face and ear protection, 9 pairs of steel toe boots or shoes, 3 pair of safety glasses, circular and radial arm saws with guards, tire cage for changing tires, 6 hard hats with solid jaw design for ATV use safety, 2 smoke alarms and a ground fault for the shop.

A safety hazard still remains in the automotive shop. An open petroleum sump in the shop floor and combustible fumes trap in the bathroom/utility room have not been corrected. Construction funds were allocated in 1984 for correcting this problem, as well as remodeling the entire shop. Engineering and architectural plans were completed this year and bids will be let early next year.

7. Technical Assistance

Public use information for 1983, 1984, and 1985 was supplied to the Tip of the Mitt Watershed Council. In November Maintenance Worker Papple, Automotive Worker Zellar and Volunteer L. Anderson assisted Pendalls' Creek NFH in unloading 40,000 pounds of frozen fish food.

Refuge Biologist Kesel provide technical assistance to various agencies and units of government including the following:

a. assistance to the Alger County Economic Development Corp. for improving waterfowl habitat on the Autrain Basin and River. A survey of available waterfowl habitat on the Autrain River was conducted during July. As a result, a plan was developed and presented to the Corp. and Autrain Sportsmen Club;

b. training assistance to the U.S. Forest Service and National Park Service was provided in conducting prescribed burns. Both agencies attended a burn workshop given at the refuge visitor center in the first week of May. The MI DNR, U.S. Forest Service and National Park Service participated in a joint burn exercise in mid-May;
c. a survey and planning assistance were provided to the Hiawatha National Forest for the development of the Ogontz Waterfowl Impoundment Project;

d. assistance to the MI DNR Cusino Wildlife Research Station at Stephenson, MI was provided by Biologist Kesel spending two weekends at the check station performing necropsies on white-tail deer. Thymus glands were removed and weighed and jaw and femur measurements taken. Information will be used to determine herd conditions. Stephenson is located in Menominee County, MI which presently has one of the highest deer densities in the United States; and

e. biological assistance was provided to Schoolcraft, Luce, Mackinac and Chippewa Counties by gathering deer physical data including age, sex and animal weights during bow, firearms and muzzleloader deer season. A total of 61 whitetail deer were examined.

8. Other Items

The old YACC complex continues to be used by the Schoolcraft County Mental Health Department for their adult day care program. The special use permit was renewed in November. This agreement ensures upkeep on buildings that would otherwise stand empty.

Refuge personnel participated in a variety of formal meetings and training sessions in 1985. The following is a summary.
<table>
<thead>
<tr>
<th>Staff</th>
<th>Month</th>
<th>Activity</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Frickie</td>
<td>March</td>
<td>Wildlife Resources Programmatic</td>
<td>St. Paul, MN</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>L.E. Refresher (40 hrs)</td>
<td>LaCrosse, WI</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>Seney Black Duck Workshop</td>
<td>Seney NWR</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>(24 hrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>Project Leaders Meeting</td>
<td>Manistique, MI</td>
</tr>
<tr>
<td></td>
<td>December</td>
<td>Midwest Wildlife Conference</td>
<td>Grand Rapids, MI</td>
</tr>
<tr>
<td>Anderson</td>
<td>March</td>
<td>Administrative Workshop (20 hrs)</td>
<td>St. Paul, MN</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>Seney Black Duck Workshop</td>
<td>Seney NWR</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>(24 hrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>L.E. Refresher (40 hrs)</td>
<td>La Crosse, WI</td>
</tr>
<tr>
<td>Kesel, J.</td>
<td>April</td>
<td>Seney Black Duck Workshop</td>
<td>Manistique, MI</td>
</tr>
<tr>
<td></td>
<td>May</td>
<td>(24 hrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>U.S. Coast Guard Boating</td>
<td>Seney NWR</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>Skills &amp; Safety (52 hrs)</td>
<td>Grayling, MI</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>Wildfire Cause Investigation (40 hrs)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>4th Midwestern Biological Foray</td>
<td>Cusino Lake, MI</td>
</tr>
<tr>
<td></td>
<td>August</td>
<td>Project Leaders Meeting</td>
<td>Manistique, MI</td>
</tr>
<tr>
<td></td>
<td>January</td>
<td>MI DNR In-Service Session</td>
<td>Higgins Lake, MI</td>
</tr>
<tr>
<td>Kesel, D.</td>
<td>April</td>
<td>Fire Business Management S-260 (16 hrs)</td>
<td>Manistique, MI</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td>Government Bookkeeping &amp; Account- Correspondence</td>
<td></td>
</tr>
<tr>
<td>Losey</td>
<td>June</td>
<td>Heavy Equipment Operator (32 hrs)</td>
<td>Shiawassee NWR</td>
</tr>
<tr>
<td>Papple</td>
<td>April</td>
<td>L.E. Refresher (40 hrs)</td>
<td>LaCrosse, WI</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>Heavy Equipment Operator (32 hrs)</td>
<td>Shiawassee NWR</td>
</tr>
<tr>
<td>Zellar</td>
<td>January</td>
<td>Hydro-Axe Operator (16 hrs)</td>
<td>Necedah NWR</td>
</tr>
<tr>
<td></td>
<td>April</td>
<td>Instructor for Heavy Equipment Operator Training (32 hrs per session)</td>
<td>Crab Orchard NWR</td>
</tr>
<tr>
<td></td>
<td>June</td>
<td>Operator Training (32 hrs per session)</td>
<td>Shiawassee NWR</td>
</tr>
<tr>
<td></td>
<td>September</td>
<td></td>
<td>Necedah NWR</td>
</tr>
</tbody>
</table>
F. HABITAT MANAGEMENT

1. General

In 1985 habitat management was strongly emphasized, especially water impoundment management and waterfowl nesting habitat work. Upland habitat management was accomplished using fire, timber sales and cooperative haying.

2. Wetlands

The objective of water management on the Seney NWR is to create habitat diversity while increasing wetland productivity. It goes without saying that this is easier said than done.

Several management methods were tried in order to achieve these objectives, including long-term drawdowns, partial drawdowns, uniform water levels and seasonal drawdowns. A summary of the results accomplished using these management practices on refuge pools by adjusting water control structure gates follows:

a. Unit 1 Summary

(1) Pool A-1. This pool was managed for the production of moist soil plants. The pool was supposed to be drawn down by June 1; however, communication problems delayed its full drawdown until June 30. As a result, smartweed and biden production was nonexistent. Woolgrass (Scirpus cyperinus) invasion increased and now covers approximately one quarter of this pool. This plant was proven to be noxious in character with little value to wildlife. Needlerush (Eleocharis acicularis) production was less than 50 percent of 1984 production levels. Waterfowl use of this pool was still far above pre-1983 levels when this pool was kept at a high uniform water level. Nineteen eighty-five was the third year in which A-1 Pool was drawn down during June. It is obvious that a delay in drawdown reduces preferred plant species production. The Seney NWR has only an average of 87 growing days and thus it is important to establish a drawdown date of May 25 to assure good smartweed and biden production.

Metal channels and new stop logs were installed on all stop log gates by the refuge's maintenance staff.
F Pool was drawn down to facilitate the reconstruction of waterfowl nesting islands. Smartweed, rice cutgrass, burreed and cattail flourished.

Late June draw down of F-1 Pool provided a good stand of green browse (Eleocharis spp.) which was heavily used by geese, cranes and ducks. Mud flats provided invertebrates for shorebirds.
(2) Pool B-l. This pool is managed as a control pool. Uniform water levels following nesting season are maintained. The result appears to be poor production of both emergents and submergents. This may be the result of rapid water level fluctuation during spring breakup and poor nutrient capture because of high water level during florescence. B-l Pool was last drawn down in 1968.

(3) Pools C-l and D-l. These pools were managed for the production of preferred submergent plants. Water levels were dropped prior to inflorescence to increase seed production of both submergents and backwater emergents. C-l Pool response was good with narrow leafed pondweed (Potamogeton robbinsii), bigleaf pondweed (Potamogeton amphiloliis) and variable pondweed (Potamogeton gramineus) producing floating seedheads. Wildcelery production was poor in both C-l and D-l Pools. Emergent vegetation in the form of red-leged smartweed (Polygonum persicaria), three-way sedge (Dulichium arundinaceum) and softstem bulrush (Scirpus validus) providing excellent structure on the pool's backwater. Waterfowl response by all species was excellent. Tundra swans used C-l Pool heavily just prior to inflorescence through senescence of submergents. The wildrice (Zizania aquatica) bed located in C-l Pool no longer exists. The refuge first attempted to establish wildrice in 1939, the last planting attempt took place in 1959. We must conclude that wildrice was not meant to grow on the Seney NWR.

(4) E-l Pool. This pool is the largest pool in Unit 1 covering more than 1,000 acres. The pool was managed as a partial drawdown pool for the production of submergents and emergents particularly needlerush (Eleocharis acicularis). The partial drawdown commenced on June 6 and was completed on June 26. The maintenance staff installed metal channels and stop logs during August. This will greatly assist in maintaining correct water levels. E-l Pool was maintained at .75 feet below planned level in order to facilitate the drawdown of F-l Pool. E-l Pool saw a peak use of 3,000 plus geese during peak migration. This pool was also preferred by four and as many as 10 Tundra swans during the summer.

(5) F-l Pool. This second largest pool in the refuge's Unit 1 is immediately adjacent to the refuge's headquarters and visitor center. Upper F-l is essentially a non-manipulative show pool surrounding the visitor center. Lower F-l has, previous to 1985, been managed as a "uniform level" pool. It, with exception of its northwest corner, was lacking emergent structure and had poor submergent plant diversity. In 1985 we drew the pool down on May 24 to facilitate the construction of 22 waterfowl nesting
islands. Emergent plant response was excellent. Cattail (Typha latifolia), red-legged smartweed and bidens flourished. Rice cutgrass (Leersia oryzoides), burreeds (Sparganium spp) and needlerush production was good on the western pool area.

Cattail growth is considered a curse on many management areas, but this is not the case at Seney NWR. Poor soil fertility, sands, greatly restrict this species and make control easy. Canada geese use the pool extensively, browsing back most of the cattails growth and heavily used smartweed and needlerush.

Metal channels and new stop logs were installed in the F to E Pools structure. Channels running through F-l from I Pool were cleaned out at the lower ends to improve drawdown capability. Additional work is needed below I-l Pool spillway.

6) G-l Pool. G-l Pool is managed as a spring drawdown pool. However, water was removed 30 days later than scheduled causing a serious woolgrass problem on its northeastern side. Late water removal also accounted for a total loss of all smartweed and biden production. It was not until July 12 that all water was removed. Waterfowl and shorebird use also fell to less than 25 percent of 1983 and 1984 use.

The silt filled Holland Ditch now diverts water directly into G-l Pool instead of J-l Pool. We feel this is a serious, potential problem especially during years of heavy spring runoff when this additional volume will exceed the structures designed capacity. An IPW has been submitted to correct this problem.

7) H-l Pool. This pool is managed as a partial drawdown pool for the production of submergents and emergents. Water levels were reduced in mid-July to increase inflorescence of fern leaf, bigleaf and variable pondweeds and wildcelery. All responded well to reduced water levels. Timing of water level reductions should be moved ahead to mid-June to facilitate better emergent seed production on pool backwaters. The marsh adjacent to the pool is choked with alder (Alnus spp) and red and sandbar willow (Salix spp.) which will be burned.

8) I Pool. This pool is managed for Canada goose production. Islands constructed in 1964 to 1965 produce between 20 and 25 percent of the Unit 1 goose young-to-flight. However, spring water levels appear to be .45 feet too high which with poor design features has caused the loss of five nesting islands. In addition, this pool has two excellent stands of wildcelery which are heavily used by geese, widgeon and ring-necked ducks. Water levels should have been lowered during the florescence to senescence period for better submergent production.
Near record rainfall caused considerable delays and operational problems during the construction of F Pool waterfowl nesting islands. However, 22 islands were completed.

JAK

Refuge staff mulching the Riverside Dike which had a number of sand blow outs. Most erosion was caused by poor maintenance and increased traffic.

JAK
Serious erosion problem on A-2 Dike prior to ARMMS project.

JAK

A-2 Dike following shaping, seeding and rip-rap. Jute netting was used to stabilize slope toe to facilitate rip-rap. Three-wheeler ATV's with trailers proved valuable to rip-rap application.

JAK
(9) J Pool. J Pool is situated at the north end of the refuge's Unit 1 and is supposed to receive water from the Diversion-Holland Ditch system. It has the capability to distribute water to three different pools, I, H and G Pools. However as stated in the G-1 Pool section, it is unable to accomplish this function due to the large silt/sand delta at the invert of the Holland Ditch and heavy siltation of the Clark, Holland and Diversion Ditches.

This pool was maintained at a uniform level as demonstration/control and for water control purposes. It has good stands of wild celery in its eastern one quarter. A small leak beneath the J to I structure was scheduled for repair but was delayed until 1986.

(10) Upper Goose Pen Pool. This pool has in the past been of little value to wildlife. It is subject to rapid fluctuation in water levels and has an extremely small littoral zone. In late summer this pool was drawn down for radial gate repair. As a result, needle rush grew well on the flatter sites. This lower water regime appears to be the only way this pool will contribute to production or migration habitat. A timber sale is proposed for the east side of this pool to remove red and jack pine to make the site more suitable for shorebirds and waterfowl.

The repair of the radial gates was postponed until 1986.

(11) Lower Goose Pen. This is the most productive pool on the Seney NWR. It is blessed by good soils and agricultural runoff from the adjacent subheadquarters farms. It is managed for waterfowl production with a special emphasis on mallards, black ducks and Canada geese. During most years this pool produces 15 to 25 percent of the Canada goose young-to-flight and 10 to 20 percent of the refuge's mallard production. The backside of this pool is in the process of converting from a cattail marsh to a shrub community. It was scheduled for burning in 1985 but communication problems and weather prevented execution.

Waterfowl made heavy use of the submergents during early migration which were made available by water level reductions at plant senescence. Adjacent grasslands on the Smith and Subheadquarters farms should be converted to native warm season grasses for nesting.

b. Unit 2 Summary

Refuge Unit 2 continues to have problems with T-2 and M-2 structures. Repair work completed in 1984 appears to be inadequate. T Pool's box inlet walls still weep and water continues to leak along downstream
wing walls. M-2 structure problems are related to continued erosion of soil from behind the box inlet structure. This problem appears to be getting worse. Approximately 100 cubic feet of earth were lost downward along the back concrete face of the inlet and apparently along or through the corrugated metal pipe.

(1) A-2 Pool. This pool was managed using the partial drawdown methodology. However, water levels were reduced later than planned which reduced both moist soil plant yield on pool backsides and submergent production. Moist soil plant production was basically limited to needlerush (Eleocharis acicularis) and Dulichium arundinaceum. Wild celery tuber production was outstanding and was heavily used by Canada geese and black ducks. Black duck production on this pool again fell below the 1983 level. High spring levels as the result of a sudden thaw may be responsible.

An ARMMS project was completed on approximately 470 feet of dike. This included shaping, topsoil, seeding, mulching and rip-rapping. Additional rip-rapping was placed around the A to C spillway. Hard stem bulrush plantings were made along 300 feet of sand dike for erosion control. Beds of metallic bog iron cover approximately 12 percent of the exposed mud flats at level 1005.4. What the relationship of reduced and complexed iron is to fertility problems is unclear; however, we suspect it has an adverse effect.

(2) C-2 Pool. Management method "partial drawdown" was employed on C-2 Pool to produce moist soil plants. However, delayed water level reductions and wet weather limited most production to needlerush. Extreme spring levels were probably responsible for the almost total lack of waterfowl production. A sudden spring thaw left the C to M structure submerged and set record runoff levels. The small 4 by 4 structure is an annual problem during spring runoff and the low dike structure of this pool exacerbates the problem.

(3) M-2 Pool. M-2 Pool management strategy was limited to the uniform level method. Pool levels were raised rapidly during spring runoff to facilitate ice out. Pool objectives were two fold with the first being to provide feeding, nesting and brood habitat for bald eagles and common loons. The second objective is to provide a control or comparison pool in order to better evaluate other management methods.

Black duck production on the M-2 Pool was down in comparison with 1983 levels but up slightly over 1984. Canada goose use during the growing season was extremely low compared to 1984. Potamogeton robbinsii and Scirpus validus appeared to produce vigorously and are the most common plant species.
(4) T-2 Pool. T-2 Pool levels were adjusted according to the partial drawdown method. This pool has had a serious fertility problem since it was first flooded in 1941 and this problem remains despite our efforts.

Spring waterfowl use of this pool was outstanding following reflooding from a two year drawdown period. Invertebrate production appeared to be very good; however, it decreased along with waterfowl use by June 15. Use of the area was light during the growing season and fall migration. Structure problems which on the surface appear to be minor, continue to appear. It was hoped that the contractor would have solved this problem in 1984.

c. Unit 3 Summary

Unit 3 contains approximately 21 pools which have a surface area of 10 acres or more. Only three pools, C-3, Delta and Marsh Creek, have control structures which allow direct manipulation. Six additional pools, S-1, S-2, S-3, S-4, S-5 and Sweeney Pools, are man-made and are the result of the Riverside Dike or Sweeney Ditch. These pools can, to some degree, be manipulated by controlling C-3 outflows. The remaining 12 pools are the result of natural basins and beaver impoundments.

High spring flows flooded much of this unit to record levels during late April and early May. Continued cool wet weather reduced moist soil plant production throughout the unit. Beaver impoundments were kept at high levels during the entire season which appeared to reduce submergent plant growth.

(1) C-3 Pool. Outstanding best described C-3 Pool in 1985. The production of moist soil plants on the pool's backside as the result of the partial drawdown contained smartweed, bidens, rice cutgrass and quack grass. Soft stem bulrush now covers 90 percent of the southwestern half of the pool which provides excellent brood cover for geese, wood ducks and mallards.

Twenty-one waterfowl nesting islands were cleared of brush and trees during summer months by the YCC program. Waterfowl use of this pool was exceptional with sightings of white fronted geese, tundra swans and large groups of black ducks during fall migration.

(2) Delta Creek Pool. Drawdown was begun on June 1 but because of unseasonable rains not completed until August 20. Reduced and/or complexed iron solution from the pools chemicline kept discharge water blood red until approximately August 1. Pool bottom was
inspected for invertebrates that might live in this solution; however, none were found. We suspect iron comes from the adjacent marsh which abounds with metallic bog iron. This pool has not been drawn down since it was first filled in 1959. It must be noted that there was very little waterfowl use during recent years. Approximately 60 percent of the pool has standing timber and all are stained red below previous water levels. Decomposition of the woody materials appears to be retarded by the "iron solution."

(3) Marsh Creek Pool. A serious woolgrass problem has developed on the northeast one-third of this pool's backwaters. We believe this is the result of annual water reduction during the growing season. Structure repairs including new metal channels and stoplogs should improve our ability to manipulate water levels.

Canada geese made good use of mud flats covered with Eleocharis bella during August. This pool exhibits an almost total lack of vegetative structure and large expanses of open water typical of refuge pools.
3. Forests

The refuge issued two timber harvest permits covering 41 acres in forest Compartments 1 and 15 and extended a 1984 permit through 1985 in Compartment 20.

The objective of the South Driggs River Sale (Compartment 15) covering 20 acres is to stimulate habitat diversity for whitetail deer and woodcock. Clear-cutting jack pine and associated aspen should produce off-site aspen suckering.

The North Walsh Farm Sale in Compartment 1 also helped diversify upland cover types by clear-cutting a black spruce and jack pine stand. Management objectives are to provide a transitional opening for sandhill cranes, woodcock and deer. It is hoped the stand will convert to trembling aspen through suckering.

The Compartment 20 sale was extended to allow the jobber to complete the sale. Heavy spring runoff washed out roads and a bridge preventing access to the site until repairs were completed in July of 1985.

Volunteer Forester Craig Allen completed a management examination of Compartments 15 and 1. Craig also did an outstanding job in assisting the refuge biologist in administering ongoing timber sales.

---

### FOREST MANAGEMENT ON SENEY NWR 1974-1985

<table>
<thead>
<tr>
<th>Calendar Year</th>
<th>New Permits</th>
<th>Acres Treated</th>
<th>Cords Removed</th>
<th>Revenue Received</th>
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<td>621</td>
<td>1,251</td>
<td>$6,644</td>
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<tr>
<td>1975</td>
<td>3</td>
<td>687</td>
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</tr>
<tr>
<td>1976</td>
<td>0</td>
<td>200</td>
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<td>5,011</td>
</tr>
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<tr>
<td>1981</td>
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<td>65</td>
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<td>0</td>
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<td>41</td>
<td>390</td>
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<td>24</td>
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<td>10,514</td>
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It should be noted that less than 20,000 acres of the refuge's 95,454 acres are covered with operable, commercial forest lands. Approximately 3,100 of this 20,000 acres are reserved as Society of American Foresters Natural Areas and/or administratively withdrawn for public use.

The objective of all refuge timber sales is to improve wildlife habitat by creating habitat diversity.

Refuge forest management prescriptions are aimed at meeting wildlife management objectives.

JL
Increased emphasis on aspen management for woodcock, deer and grouse.  

4. **Croplands**
   
   Nothing to Report

5. **Grasslands**
   
   Nothing to Report
6. Other Habitats

A total of 17 openings covering 31 acres were mowed and/or top dressed with fertilizer. These openings are adjacent to refuge pools and provide important feeding and resting habitat for sandhill crane, Canada geese and deer.

In addition, 36 miles of dikes were mowed to increase cool season grass production and knock back woody plant invasion. Dikes are favorite feeding areas for goose broods and deer.
7. **Grazing**

Nothing to Report.

8. **Haying**

Haying is used as a management tool on approximately 415 acres to provide legume/grass grazing sites for Canada geese and foraging areas for sandhill cranes. Deer, bear and a variety of non-game species also make good use of the fields which are important openings in the refuge's extensive forest cover. Waterfowl nesting is virtually nonexistent in the fields due to their distance from pools and marshes.

This year the new five-year Hayland Management Plan went into effect. Shurley Brown was the only bidder at $791 for all five years. As part of the agreement, the permittee will provide five round bales (700+ lbs each) free of charge to the refuge. The bales can be of lowest quality hay, otherwise, the rest of the harvest belongs to the permittee.

Shurley completed all of the work scheduled in the plan for this year except two items. He was unable to accomplish second hay cutting on the southern unit or to fall plow 35 acres due to wet weather. In retrospect, fall plowing should not have been considered and will not be included in future plans; 1985 was the only year fall plowing was scheduled. Approximately 444 tons of hay were harvested this year as compared to 315 in 1984.

9. **Fire Management**

No wildfires occurred on the refuge in 1985. In fact it was probably impossible to start any wildfire given the amount of wet weather and high water that inundated Michigan.

In February Fire Management Officer Kesel attended the annual Michigan Interagency Wildfire Prevention Team meeting at Grayling, Michigan. He was again appointed to the Board of Directors and is a member of the training committee. This team is instrumental in coordinating mutual aid agreements, fire prevention workshops and wildfire cause investigation.

A meeting with Michigan DNR forest fire Division Chief was held on April 2 to discuss our joint cooperative fire suppression agreement. A detailed review of this document took place. Both agencies agreed that this agreement was in order and necessary. It was also agreed that a
Joint State of Michigan and refuge burn on 160 acres was accomplished despite poor fire weather. Note fuel loadings which carried fire despite 60% humidity levels. Additional assistance was provided by the U.S. Forest Service from Hiawatha National Forest and the National Park Service from Pictured Rocks National Lakeshore.

Jack pine blow up on joint prescribed burn. Burn objectives are to create transitional openings for woodcock, cranes and sharptail grouse.
joint agency meeting to review our agreement will be held each spring prior to the fire season.

An eastern Upper Peninsula wildlife suppression meeting was held near Newberry, MI on March 11. Fire Management Officer Kesel gave an hour long presentation to approximately 100 firefighters. Attendees included the Regional Director and staff from the U.S. Forest Service, MI DNR personnel, National Park Service personnel, fire chiefs and firefighters association and MI State Police Fire Marshall personnel. Kesel critiqued a week long Wildfire Cause Investigation Course sponsored by the MI Interagency Wildfire Prevention Group which he attended in February. The Course was taught by instructors from the Federal Law Enforcement Training Center and the Minnesota Department of Natural Resources and was held in Grayling, MI. Kesel is a member of the Interagency Wildfire Cause Investigation Team for the eastern Upper Peninsula.

The refuge conducted only one prescribed burn in 1985. A joint MI DNR and refuge burn covering 170 acres in Compartment 2 was completed without incident. Personnel from the MI DNR, U.S. Forest Service and National Park Service assisted the refuge in execution of the burn. Burn objectives included improving woodcock and sharptail grouse habitat by removing conifers and creating transitional openings in existing aspen stands.

Additional scheduled spring burns were not accomplished because of the possibility of sandhill crane nest destruction or disturbance. Wet weather and high water prevented scheduled fall burns.

The refuge received two foam generation pumps in 1985. However, they arrived without slip-on tanks due to communication problems between the Regional Office and the Boise Interagency Fire Center. We hope to install this equipment on existing tanks prior to the 1986 fire season.

10. Pest Control

MCP-Araire (DOW) was applied to 10 acres of the Chicago Farm and to 12 acres of the Subheadquarters Farm at a rate of .25 pounds AE per acre. Target pest species included yellow rocket, lambs quarters and other broad leafed plants during reestablishment of legumes.

11. Water Rights

Nothing to Report
12. Wilderness and Special Areas

The 25,000 acre Seney National Wilderness Area including the Strangmoor Bog National Landmark was underwater much of 1985. Ground/surface water levels were as much as one foot above what is generally considered normal. Bog flanks which normally are almost dry by mid-August were at or above spring levels. High levels also caused a partial drowning out of two aspen stands located in the northeast and north central portions of the wilderness area. Aspen stands are the result of the 1976 wildfire which burned 36,000 plus acres of the refuge within the 76,300 acre perimeter of the fire.

It should be noted that Don Henson a local botanist has tentatively identified several endangered and rare arctic and northern prairie plants in and adjacent to the wilderness area. However, these are possibly endangered due to ATV trespass problems. Refuge Biologist Kesel twice encountered three-wheelers entering or leaving the wilderness area. In addition, while flying over the refuge on several occasions three-wheelers were seen in the interior of this area including the Strangmoor Bog National Landmark. ATV tracks remain for years altering bog drainage and possibly damaging endangered plants.

A bulldozer operated by Burton Brothers Company, a Mead Paper Company contractor, trespassed into the wilderness area while constructing a log decking area. The damaged area was brought to the attention of Mead Paper Company who agreed to seed grasses and plant conifers within the 20 by 75 foot area in the spring of 1986.

The refuge has six S.A.F. Research Natural Areas scattered throughout refuge Units 1 and 2. All three of the SAF Type 25 natural areas were infested with forest tent caterpillars which defoliated most of the stands understory and small portions of the overstory. The infestation was not serious, resulting in little or no permanent damage. Aspen and white birch continue to decline in density and vigor. There was an almost total lack of beechnuts when compared to the 1984 production.

The SAF 15 Red Pine Research Natural Area continues to lose its dominant and codominant trees on the west side of the Driggs River Road. A back fire used to fight the 1976 Seney Wildfire is responsible for this loss. Aspen regeneration, suckering, is taking place beneath the dead and dying red pine.

The SAF 23 Hemlock Research Natural Area is located in forest Compartment 1 and 2 one mile south of Highway M-28. Access to this site is difficult and as such was visited only once during 1985.
lack of hemlock regeneration is still a problem which in the long run may cause the loss of the stand type. The loss of yellow birch through succession is also occurring in the associated stand. Pink and yellow lady slippers were found in abundance especially along the unnamed creek that runs through the area.

The SAF Type 21 White Pine Research Natural Area is converting to a mixture of hardwoods, red pine and white pine within its understory. It appears that an increased amount of wind damage and terminal die-off occurred in the white pine dominants.

13. WPA Easement Monitoring

Nothing to Report
G. WILDLIFE

1. Wildlife Diversity

Wildlife objectives at the Seney National Wildlife Refuge are focused on maintaining wildlife diversity while obtaining optimum production through the manipulation of habitats.

2. Endangered Species

The refuge's two active eagles' nests produced one eaglet each. Jack Holt, an associate of Dr. Sergej Postupalsky, banded both eaglets. The B-1 Pool eaglet appeared to be approximately two weeks older than the C-2 Pool eaglet. Frequent observations of both nests lead us to believe that both birds reached flight stage. The peak population of eagles at the refuge reaches about 10 birds in April and August each year. First and second year juveniles are frequently seen on the refuge during spring and late summer. The refuge has two known inactive nests located on C-3 and E-1 Pools.

On August 21 an immature eagle was reported hanging upside down at Mud Creek. Dr. Richard Urbanek, Ohio State Cooperative Research Unit, climbed the white pine with assistance from refuge and volunteer personnel on the ground. Before the bird was freed, Richard could see that the leg that was caught was banded. We had hoped to capture the bird and send it to the Raptor Rehab. Center, since it had been hanging for over 24 hours, unfortunately it escaped. The bird seemed strong even through the leg was obviously injured.

A State of Michigan wildlife biologist observed two and possibly three timber wolves in the Stretz-Hickey deer yard located three miles west of the refuge during aerial deer census in February. A refuge trapper has noted wolf tracks adjacent to the wilderness area during the past two years.

A peregrine falcon was observed twice near the refuge headquarters during the last week in September. Falcon sightings in the area are becoming more common as an additional sighting was made in the Cooks area some 35 miles southeast of the refuge. Falcon sightings were also made on the refuge in 1982 and 1983.
3. **Waterfowl**

In 1985 it appears that a portion of the refuge giant Canada geese never left the refuge area. On January 30 Assistant Manager Hultman observed 25 geese in the Holland Ditch located one mile north of the refuge. The temperature at the time of observation was between -25 and -30 degrees. On February 12 the Refuge Biologist Kesel observed approximately 40 geese on the Fox River located approximately one mile east of the refuge. Refuge Manager Frickie noted that Canada geese had returned to open water areas behind his residence on March 10.

January through April of 1985 was considered slightly milder than normal. One must wonder if the refuge geese are no longer migratory, especially if some open water areas are available to them.

First goose broods were noted on May 10 two days after the first heavy black fly emergence. Consequently, a leucocytozoon parasite die-off began on May 26 and continued through June 19. An estimated 35 to 40 percent of the potential young-to-flight goose production was probably lost to this parasite. The 1985 production was 2.3 percent below the previous five year average of 314 young-to-flight (YTF).

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</tr>
<tr>
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<td>222</td>
</tr>
<tr>
<td>1982</td>
<td>118</td>
</tr>
<tr>
<td>1983</td>
<td>502</td>
</tr>
<tr>
<td>1984</td>
<td>428</td>
</tr>
<tr>
<td>1985</td>
<td>307</td>
</tr>
</tbody>
</table>

**MASTER PLAN GOAL 1,080 YOUNG-TO-FLIGHT**

The fall Canada goose population peaked at approximately 8,000 birds during the first week in October. This is approximately 33 percent below 1984 peak flight levels. A small number of white fronted (23) and blue and snow geese (10) visited the refuge during fall migration.

The refuge's summer tundra swan population rose to six birds in 1985. In past years, only one or two birds over summered at the refuge. Peak spring and fall numbers are low generally less than 50 birds each migration season. There has not been any recorded swan production on the refuge.
Refuge Biologist shows volunteer biologists and YCC personnel goose sexing and aging techniques. Volunteer biologists coordinated refuge banding operations during molt. YCC personnel set up traps and acted as drivers during goose drives.

GP
Black duck production declined slightly from 1984 levels to just below the 10 year average of 200 YTF. Special emphasis was given to identifying black duck nesting and brood habitat. A black duck workshop was held at the refuge in early May. (See Section C-5) Dr. Jerry Longcore, Patuxent WRC, provided the refuge staff with insights to black duck habitat values and brood census methodology. Brood count surveys were initiated in areas with known black duck production. However, efforts proved fruitless due to the refuge's large pools and woody vegetation.

Night-lighting of refuge pools was also tried on several occasions without success. Cool nights averaging 46 degrees probably kept broods under hens.

Ring-necked duck production and use increased for the first time since 1980. Pair and brood counts indicated that 1985 production exceeded NSSE production objectives by 6 percent. For the second consecutive year, nest searches were conducted in selected habitats. Search results also indicated increasing ring-necked production. Peak ring-necked duck numbers during the fall migration also increased in 1985.

<table>
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<tr>
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<td>AVERAGE:</td>
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Waterfowl nest boxes were checked in August by YCC crews. Hooded mergansers occupied a majority of successful boxes. Wood ducks were only successful in 10 percent of refuge nest boxes.
4. Marsh and Water Birds

The sandhill crane research project completed its first full funding year. (See Section D-5)

"Clyde Crane" models color coded bands which indicate year of birth, project and project location; note small band has radio transmitter attached.
The sandhill crane chick, who eventually became known as "Clyde", was abandoned by his parents. Research and refuge staff took him (?) under their wing throughout the summer. During this time, he was used as a guinea pig for trying different ways of attaching transmitters or to test if radio equipment was working. Several attempts were made to rejoin him with wild birds to no avail. We kept hoping he would fly away in fall but in late October Clyde was the only crane left on the refuge and perfectly content to "pick" around the maintenance area or office. Finally the Crane Research Team drove him to a Columbus, Ohio zoo where he went on to bigger and better things like appearing on the David Letterman Show.

Common loon use appeared to increase slightly over 1984 levels. The State of Michigan feels that due to development around lakes, Upper Peninsula populations are falling. Loon production on the refuge has remained at a fairly stable level of 8 to 12 young-to-flight annually. Additional local mortality occurs when birds migrate to Lakes Superior and Michigan to feed where they become entangled in gill nets and drown.

The great blue heron rookery located 10 miles north of the refuge was severely damaged by spring wind storms. As a result, all production was lost and use of the refuge fell.

5. Shorebirds, Gulls, Terns and Allied Species

The refuge initiated the development of a shorebird census on refuge pools. The objectives of the 1985 efforts was to develop a species list and potential census methodology.

Problems encountered included the inability of staff members to correctly identify shorebirds especially during the late summer and fall migration and the large amount of time required to complete censuses.

An unusual sighting of a parasitic jaeger was made on C-3 Pool during May. These artic pelagic birds are very seldom seen on the nearby Great Lakes much less inland waters.

Through the efforts of the MI DNR and the Inland Steel Corporation the ring-billed gull numbers were greatly reduced from 1984 levels. The rookery located at Port Inland which is 23 miles south of the refuge was partially destroyed during the nesting season by Inland workers under MI DNR guidance.
Woodcock surveys were conducted on three routes including two located on the Seney NWR. These routes have been run annually since 1965.

---

**MALE WOODCOCK SINGING GROUNDS SURVEY**

<table>
<thead>
<tr>
<th>Year</th>
<th>Sub-headquarters Date</th>
<th>Sub-headquarters No.</th>
<th>Driggs River Date</th>
<th>Driggs River No.</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>5/21</td>
<td>1</td>
<td>5/15</td>
<td>38</td>
<td>39</td>
</tr>
<tr>
<td>1974</td>
<td>5/21</td>
<td>1</td>
<td>5/15</td>
<td>38</td>
<td>39</td>
</tr>
<tr>
<td>1975</td>
<td>5/19</td>
<td>0</td>
<td>5/20</td>
<td>42</td>
<td>42</td>
</tr>
<tr>
<td>1976</td>
<td>5/19</td>
<td>3</td>
<td>5/13</td>
<td>21</td>
<td>24</td>
</tr>
<tr>
<td>1977</td>
<td>5/13</td>
<td>0</td>
<td>5/12</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>1978</td>
<td>5/17</td>
<td>1</td>
<td>5/16</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>1979</td>
<td>5/14</td>
<td>2</td>
<td>5/15</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>1980</td>
<td>5/15</td>
<td>2</td>
<td>5/01</td>
<td>8</td>
<td>10</td>
</tr>
<tr>
<td>1981</td>
<td>5/18</td>
<td>0</td>
<td>5/19</td>
<td>11</td>
<td>11</td>
</tr>
<tr>
<td>1982</td>
<td>5/11</td>
<td>0</td>
<td>5/01</td>
<td>17</td>
<td>17</td>
</tr>
<tr>
<td>1983</td>
<td>5/01</td>
<td>1</td>
<td>5/03</td>
<td>21</td>
<td>22</td>
</tr>
<tr>
<td>1984</td>
<td>5/03</td>
<td>0</td>
<td>5/10</td>
<td>19</td>
<td>19</td>
</tr>
<tr>
<td>1985</td>
<td>5/01</td>
<td>0</td>
<td>5/03</td>
<td>10</td>
<td>10</td>
</tr>
</tbody>
</table>

The cold wet spring caused peenting counts to be lower than expected. The area adjacent to the Driggs River route was burned in early May which removed some of the aspen regeneration creating transitional openings which should improve woodcock habitat.

Woodcock bander Don Schultze located and banded three broods of woodcock along the Driggs River. This was the first year of a planned long-term banding effort by the refuge using volunteer banders.

Woodcock hunters reported seeing considerably fewer woodcock during the 1985 hunting season. This may be due to a wet summer and fall which kept birds dispersed through migration.

6. **Raptors**

Marsh hawks returned on March 27 followed by broad-winged hawks. These two raptors use the refuge heavily. Three goshawk nests were located on the refuge. Dr. Sergej Postupalsky banded two young in the most accessible nest.

Osprey use of the refuge continues to increase; however, efforts to locate a nest have proven fruitless. A bald eagle was observed stealing a northern pike from an osprey during May. Competition between these two species may be the reason osprey do not nest on the refuge.
This rehabilitated snowy owl was released at T-2 West by Special Agent Luccino in June.
7. Other Migratory Birds

The Audubon Christmas Bird Count was conducted on December 30 by the Refuge Biologist. Deep snows limiting access to the regular census area and a lack of participants greatly reduced the number of species and individuals censused. A total of 14 species and 78 individuals were counted on approximately 35 percent of the normal census area.

A rare sighting of a scissor-tailed flycatcher was observed at the refuge visitor center during October. A previous sighting of this bird was made near the refuge in 1972 by Dr. Larry Walkenshaw. This species is seldom seen north of Nebraska and Iowa.

A bird nesting survey was completed by Park Technician Greg Petersen on the Pine River and Driggs River Nature Trails and picnic areas as well as the headquarters complex. Greg also assisted Dave Evers who was collecting information for the Michigan Breeding Bird Atlas. Sections of the refuge were included in this survey and results will be available next year.

8. Game Animals

In cooperation with the MI DNR, the refuge conducted its annual bear census. The census is conducted along a 20 mile route with bait sites placed at 1/2 mile intervals. As a result of this census, it is estimated that approximately 65 bears inhabit the refuge. This is approximately five animals less than the estimated 70 animals censused in 1984. Heavy hunting pressures adjacent to the refuge appear to have reduced the average age structure of bears inhabiting the refuge and adjacent lands.

At least one bear was legally harvested by hunters along the refuge's south boundary. Two additional bears were known to have been harvested illegally. The use of bait and dogs is prohibited on the refuge but bear hunting is permitted according to State seasons.
Black bear cub killed by .22 caliber bullet was found on the refuge along the Driggs River Road.

Timber harvesters found this dead black bear cub along the Driggs River Road in Compartment 15. The cub was sent to the MI Rose Lake Wildlife Pathology Laboratory for analysis. Cause of death was determined to be from a .22 caliber bullet.

Whitetail deer numbers increased over 1984 levels. A moderate, late winter kept deer loosely yarded until mid-April when yard break-out occurred. The first fawns were noted on June 5 with twins commonly observed on the refuge.

Hunters harvested fewer deer in 1985 than in 1984. It was estimated that 39 bucks were harvested during the firearms deer season. An additional eight deer were harvested by bow hunters who complained about seeing fewer bucks than in previous years. Poor antler development appeared to be common in 1985.

A heavy snow storm following Thanksgiving closed the refuge to most traffic. Additional snowfall in early December sent deer south off the refuge to deep wintering yards at Gulliver, Lakefield and Manistique.
As of December 30, the deer winter severity index (WSI) was 23 points above the 10 year average levels and 26 points above 1984 levels. Higher numbers indicate a more severe winter. Research done at the MI DNR deer research station located near the refuge indicates that when the WSI reaches 120 points fawn mortality becomes severe and does begin to absorb at least one fetus. The spring WSI total for 1985 reached 111 points.

Refuge Biologist Kesel assisted the MI DNR in gathering deer physical data. He examined a total of 61 deer including 21 deer taken from the refuge.

### DEER OBSERVED PER FIELD MAN-HOUR
BY REFUGE STAFF
JULY, AUGUST, SEPTEMBER

<table>
<thead>
<tr>
<th>Year</th>
<th>Field</th>
<th>Bucks No. /hrs.</th>
<th>Does No. /hrs.</th>
<th>Fawns No. /hrs.</th>
<th>Unknown No. /hrs.</th>
<th>Total No. /hrs.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1973</td>
<td>588</td>
<td>25 0.04</td>
<td>139 0.24</td>
<td>89 0.15</td>
<td>52 0.09</td>
<td>305 0.52</td>
</tr>
<tr>
<td>1974</td>
<td>355</td>
<td>23 0.06</td>
<td>117 0.33</td>
<td>78 0.22</td>
<td>80 0.22</td>
<td>298 0.84</td>
</tr>
<tr>
<td>1975</td>
<td>232</td>
<td>9 0.04</td>
<td>50 0.20</td>
<td>14 0.06</td>
<td>64 0.27</td>
<td>136 0.58</td>
</tr>
<tr>
<td>1976</td>
<td>275</td>
<td>4 0.01</td>
<td>41 0.15</td>
<td>21 0.08</td>
<td>49 0.18</td>
<td>114 0.42</td>
</tr>
<tr>
<td>1977</td>
<td>353</td>
<td>18 0.05</td>
<td>80 0.23</td>
<td>51 0.14</td>
<td>43 0.12</td>
<td>192 0.54</td>
</tr>
<tr>
<td>1978</td>
<td>228</td>
<td>22 0.10</td>
<td>88 0.39</td>
<td>83 0.36</td>
<td>162 0.71</td>
<td>349 0.50</td>
</tr>
<tr>
<td>1979*</td>
<td>948</td>
<td>22 0.02</td>
<td>140 0.15</td>
<td>101 0.11</td>
<td>38 0.04</td>
<td>301 0.32</td>
</tr>
<tr>
<td>1980</td>
<td>328</td>
<td>27 0.08</td>
<td>138 0.42</td>
<td>82 0.25</td>
<td>16 0.05</td>
<td>263 0.80</td>
</tr>
<tr>
<td>1981</td>
<td>647</td>
<td>50 0.08</td>
<td>141 0.22</td>
<td>36 0.05</td>
<td>80 0.12</td>
<td>307 0.47</td>
</tr>
<tr>
<td>1982</td>
<td>816</td>
<td>10 0.01</td>
<td>125 0.15</td>
<td>40 0.05</td>
<td>37 0.04</td>
<td>196 0.24</td>
</tr>
<tr>
<td>1983</td>
<td>702</td>
<td>14 0.02</td>
<td>91 0.13</td>
<td>32 0.05</td>
<td>29 0.04</td>
<td>166 0.23</td>
</tr>
<tr>
<td>1984**</td>
<td>1368</td>
<td>48 0.04</td>
<td>211 0.07</td>
<td>82 0.06</td>
<td>102 0.07</td>
<td>443 0.32</td>
</tr>
<tr>
<td>1985</td>
<td>3062</td>
<td>37 0.01</td>
<td>300 0.10</td>
<td>109 0.04</td>
<td>38 0.01</td>
<td>484 0.16</td>
</tr>
</tbody>
</table>

*on-site inspection of new water control structures accounted for many "Field Man-Hours." Although these hours were unproductive in spotting deer, they were included in calculations, therefore lowering the deer/hour figure.

**sandhill crane researchers accounted for approximately 40% of the total "Man-Hours." These hours generally occurred at or near dawn or dusk, therefore raising the total deer/hour figures.
9. **Marine Mammals**

Nothing to Report

10. **Other Resident Wildlife**

The annual predator census was conducted to ascertain coyote, fox and raccoon populations. Predator populations especially coyotes appear to have a direct affect on Canada goose recruitment. The 1985 census was the first survey since the refuge initiated its long-term trapping program. According to the 1985 census, little or no change occurred in predator numbers when compared to 1983 and 1984 levels. Fox numbers have declined slightly and bobcat numbers appear to be rising to new highs. Bobcat tracks were fairly uncommon prior to 1983; however, refuge staff and trappers have reported seeing more cat tracks in recent years. It should be noted that the refuge has poor bobcat habitat.

Muskrat numbers appear to be increasing. Rat houses were fairly uncommon on the refuge prior to 1983; however, 61 houses were counted in Units 1 and 2 during October.

Beaver numbers appear to have stabilized at what is considered high levels. Trappers reported catching more barren females than usual during late season trapping which may forecast a decline in numbers. The refuge has, in general, lost its aspen resources to softwoods. The decline in aspen stocks should forecast a decline in beaver numbers. It is not uncommon to see red and jack pine trees along pools and dikes cut down by hungry beaver in late winter. Pine is generally considered to be a starvation food for beaver. The numerous pools created by beaver especially in refuge Unit 3 are considered an important component of black and wood duck habitat.

Two moose were sighted on the refuge in 1985. A large bull was sighted by the sandhill crane researchers in the Marsh-Ducey Creek area during early June and a cow was sighted by the refuge biologist in the western end of C-2 Pool during July.

Sharp-tailed grouse lek counts were up slightly from 1984 levels. Twenty-one leks were surveyed of which 17 were active. Brush encroachment on dancing and nesting sites continues to reduce numbers of birds. In 1955 the refuge had three active prairie chicken leks and 53 sharp-tailed grouse leks. The lack of fire and habitat management practices has caused the decline in bird numbers.

Ruffed grouse numbers rose dramatically in refuge Unit 1. An upswing in their cycle appears to be in progress. The lack of an aspen resource will keep ruffed grouse and woodcock numbers far below previous high levels experienced in the 1960's.
11. Fisheries Resources

A creel census was conducted during the first two weeks in July along C-3 Pool and Unit 1 fishing route. Only seven northern pike were checked by volunteer biologists. As in past years, the creel census indicates that less than one percent of the available fish stocks are being harvested by sportfishermen annually. Water level manipulations designed to benefit waterfowl and shorebirds during summer months certainly do not benefit fishery resources. Trout fishermen using the Driggs River reported poor catches which they felt was due to high water levels from frequent rains. An 18¾ inch brook trout was caught on the Creighton River in the refuge's wilderness area during September.

12. Wildlife Propagation and Stocking

Nothing to Report

13. Surplus Animal Disposal

Nothing to Report

14. Scientific Collections

Nothing to Report

15. Animal Control

Nothing to Report

16. Marking and Banding

Two hundred and seventeen giant Canada geese were drive-trapped or rocket netted and banded in 1985. Banding was coordinated by Volunteer Biologist Brad (Pete) Peterson. Refuge staff, volunteers, sandhill crane researchers and YCC crews assisted in this effort. Analysis of 1984 returns received in the spring of 1985 show that a large percentage of the refuge's goose flock probably did not leave Michigan during the winters of 1983/1984 and 1984/1985. January and February returns come primarily from southwest Lower Michigan.

Efforts to band black ducks were unproductive. Traps constructed according to successful designs developed at Shiawassee NWR failed to capture blacks; however, they did capture wood ducks, blue-winged teal and mallards.
Despite the best efforts of the Refuge Biologist, only one black duck was trapped. However, a good number of wood ducks, mallards and blue-winged teal were caught and banded.

JAK
In 1985 the refuge initiated woodcock banding using a volunteer with a pointing dog. Volunteer bander Don Schultze agreed to try banding on the refuge during May. He is working under the State of Michigan DNR banding permit. He has banded woodcock in Michigan's Lower Peninsula for three years prior to coming to the refuge. Due to time constraints, he spent only seven hours searching for broods. However, he was able to locate three broods totaling nine chicks which were banded. He plans to return in 1986 with help and expand his efforts.

17. Disease Prevention and Control

Leucocytozoonosis appeared to be a significant instrument of Canada goose gosling mortality in 1985. The black fly vector appeared in significant numbers on May 8 resulting in an estimated 35 to 40 percent loss in production. The refuge has not had a 100 percent loss of production since 1979.
H. PUBLIC USE

1. General

In spite of a generally cool, wet spring and summer, the entire Upper Peninsula experienced a marked increase in tourism according to Chamber of Commerce surveys and traffic counts at the International Bridge, Sault St. Marie and the Mackinac Bridge. A 34 percent increase in refuge visits in 1985 lent support to these observations, with almost 92,400 visits recorded. The majority of this increase, 20 percent was realized on our self-guided auto tour.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Visits</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>92,400</td>
</tr>
<tr>
<td>1984</td>
<td>69,000</td>
</tr>
<tr>
<td>1983</td>
<td>61,000</td>
</tr>
<tr>
<td>1982</td>
<td>88,000</td>
</tr>
<tr>
<td>1981</td>
<td>77,000</td>
</tr>
</tbody>
</table>

Over 75 percent of Seney's visits were for interpretation and non-consumptive recreation. Over 60 percent of our visitors are from Michigan; however, 44 other states were also represented and the following countries:

- Canada
- Puerto Rico
- Brazil
- Korea
- England
- France
- Belgium
- Germany
- Poland
- Sweden
- Denmark
- Iceland
- Netherlands
- Holland
- Switzerland
- Australia
- Thailand
- Japan
- China
- Saudi Arabia

We were fortunate that Greg Petersen returned this year as Park Technician and that Elizabeth (Betsy) Beneke, Cooperative Student, was assigned to Seney. Between the two of them, they provided excellent coverage and supervision of visitor center activities from mid-May to October.

A total of 23 news releases were issued during the year on subjects ranging from visitor center and YCC programs to rescued eagles. Several radio and one television interview were conducted regarding refuge programs. Channel 6 from Marquette did three segments on the refuge, visitor center and sandhill crane research.
Refuge staff members again attended several meetings during the year concerning tourism in the eastern Upper Peninsula. Several slides and narrative input were lent to the Tri-County Tourism Project which developed a narrated video and slide presentation on attractions in this area. This program was used to train and educate businessmen and summer employees to all major attractions in this area. It was also used at the Mackinac Bridge Tourist Information Center.

Several refuge publications underwent some minor revisions in 1985 including changes regarding the visitor center, auto tour and fishing. Because of the marked increase in public use this year, we ran out of the Visitor Information Sheets and auto tour guides about mid season. A local company reproduced the Visitor Information Sheet; however, we again ran out in late September. The public was requested to recycle the auto tour guides and compliance was excellent which was good since the order did not come in from the Regional Office until mid-September.

This year 44 duck stamps were sold to mostly non-hunters.

<table>
<thead>
<tr>
<th>YEAR</th>
<th>NO. SOLD</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>44</td>
</tr>
<tr>
<td>1984</td>
<td>42</td>
</tr>
<tr>
<td>1983</td>
<td>5</td>
</tr>
</tbody>
</table>

Nineteen eighty-five brought with it the 50th Anniversary of the Seney NWR. An open house was held at the visitor center on October 13 with volunteers providing refreshments and assistance in greeting the visitors.
Special invitations were sent to alumni staff and State representatives. The daughter and granddaughter of Seney's first refuge manager, C.S. Johnson attended. Other ol' time notables were Elizabeth "Betty" Beard Losey, Biologist and George Orlich, Maintenance Worker. Betty donated slides she took from the late 1940's to the early 1950's when she worked on the refuge as a biologist. She also recounted several interesting stories of the "old days" when female biologists were not the norm.
Betty Beard Losey and husband. One of her duties involved sitting in tree blinds censusing and observing waterfowl behavior. A job she still remembers as being one of the best. She also did a great deal of work on feather molting and food analysis of waterfowl.
George Orlich began his career with the CCC program and was here at the start of the refuge working on construction projects. He became the refuge mechanic and retired in 1973.

Several photographic displays depicting life at Seney over the past years were arranged by Betsy Beneke and volunteer Christine Peters. The day was an enjoyable affair and credit must be given to Betsy Beneke who organized the whole affair.

2. Outdoor Classrooms - Students
   Nothing to Report

3. Outdoor Classrooms - Teachers
   Nothing to Report

4. Interpretive Foot Trails
   Approximately 5,200 persons used the refuge's two interpretive foot trails in 1985. Both trails, totaling about 2.5 miles, were brushed and chipped by YCC crews and interpretive signs were replaced as needed.

5. Interpretive Tour Routes
   The seven mile, self-guided Marshland Wildlife Drive was open from May 15 to October 15 in 1985 which was one month earlier than in 1984. Nearly 37,800 persons took the tour almost 20,000 more than last year. The earlier opening was an experiment to allow visitors the opportunity to view migrating waterfowl and other birds. There was concern and still is as to what effects the traffic might have on goose broods. Goose broods heavily use the dikes and roads and careless drivers sometimes break up broods at times when they are highly susceptible to predators. The visiting public really enjoyed the early opening since most of our early visitors are avid birders from all over the country. It was decided at the end of the season that we would compromise and open the auto tour route in 1986 on June 1. The new pamphlet stresses that care be taken in passing and disturbing broods. Also, more effort will be made to keep the dikes mowed so goslings can easily escape to the waters edge. Keeping the dikes mowed will also create additional grazing areas. This opening will coincide with our fishing opening of June 1.
6. **Interpretive Exhibits/Demonstrations**

The visitor center was open seven days per week 8 a.m. to 4:30 p.m. from May 15 through October 15. Visitation was 23,900 persons, a four percent increase over 1984. Center visits are the most accurate public use figures on the refuge since personnel on information duty tally each person. Wildlife films from the refuge's collection were shown on the hour or by request with a different film scheduled each week.

![Visitor center parking lot during a busy day.](image)

Because of $20,500 ARMMS project several improvements and additions were made or are planned to be accomplished in CY 1986. This year the following were accomplished or purchased:

- new self-threading 16mm projector
- new spotting scope for auto tour route
- new parabolic microphone and recorder
- refurbished two 16mm projectors
- new tape deck and tapes for sound system
- "Wild Refuge" for film library
- humming bird feeder
-replaced cibachrome transparencies in "Refuge" display
-replaced several thermopane windows
-replaced four door closures
-new venetion blinds
-new carpet for main room and theater
-painted interior
-remodeled area between information desk and bookstore,
punched a hole in the wall and installed a security curtain
which will make it easier for one person to man booth and bookstore

Monies were obligated for the following projects:

- installation of carpet
- new bathroom floors and entryway floor
- replace photographs in theater
- replace water management display
- replace text for eagle display
- remodel theater area
- replace several waterfowl and an owl mount

The winter wildlife film series was again held at the visitor center
each Thursday evening from January 17 to March 7. This was the 12th
consecutive year of the program and a welcome event for the rather
remote local communities. Total attendance at the films was 543 as
compared to 705 in 1984. Reasons for this decline were primarily due
to the weather. For three consecutive Thursdays, we experienced either
heavy snow, fog or an ice storm. We also had one less showing in 1985.

As part of the observation of National Wildlife Week, 60 wildlife
packets were sent to local schools and six presentations were given
to various groups. In addition refuge staff in conjunction with
the National Park Service, Pictured Rocks National Lakeshore
developed a presentation for the Munising Centennial/Wildlife Day
on March 23. Approximately 400 people attended these programs.

Betsy Beneke did an excellent job in organizing our National Hunting
and Fishing Day events which were held on September 28. There were
displays or demonstrations on trapping, shell re-loading, fisheries
equipment and the Eastern U.P. Chapter of Whitetails Unlimited. A
scheduled film fest with guest speakers was also offered.

A poster contest was held for the children from the Germfask Elementary
School and a fishing contest was also held for children ages 6 to 12.
Prizes, which were donated by area businesses, were given and winners
announced in the local newspapers. Each child received a copy of the
newsrelease and photographs. All in all, it was a very successful day
with 356 people participating as compared to 100 in 1984.
Fishing wasn't great but these three winners were pleased. Largest fish caught was a 27" northern pike.

Poster contest winners
The evening guided tours ran from June 15 to September 11 every Wednesday and Saturday evening. Twenty-six tours were conducted in 1985 as compared to 34 in 1984, with 578 vs 475 persons respectively participating. These tours are becoming increasingly popular and as a result more difficult to run with large groups and large motor homes. (See picture on Page 71) The tours last two to three hours and focus on refuge management programs and wildlife observation.

The System 70-portable duck stamp display was set up for one week this fall in the Manistique Post Office and at the Marquette Mall. Arrangements were made to show the film, "Duck Stamp Story" to postal workers in several towns next summer. The Seney Information Booth was set up at the two-day meeting of the U.P. Tourism and Economic Development Conference held in November in Marquette.

7. Other Interpretive Programs

Several off-refuge programs were given in 1985 including presentations to nursing homes, senior citizens, mentally handicapped and school groups. Manpower shortages forced us to reduce this service. However, in an effort to meet local needs we began a system of loaning films and a projector to local groups. One person was trained from each institution on how to run a projector. Now these facilities call when they want to schedule a movie, pick up the projector and film and return them the next day.

The educational packets "Project Wild" and "The Class Project" are currently circulating throughout the local school districts.

8. Hunting

Approximately 85,000 acres of the refuge are open to hunting, with deer and ruffed grouse hunting drawing the most visits. Complete regulations can be found on the hunting map at the back of the report.

Hunting season opened September 15 in refuge Area B (33,000 acres) for sharp-tail and ruffed grouse, woodcock and snipe. Ruffed grouse populations are finally on the increase. Hunter visits were estimated at 180 for the two month season.

Archery deer season opened in Area B on October 1. Hunting pressure, as in past years, was light. The entire refuge hunt area was open during the late bow season in December. However, heavy snow storms beginning around Thanksgiving left all interior portions of the refuge inaccessible except by foot. An estimated eight deer were taken during both seasons on the refuge.
Research has shown the coyote to be a significant predator of Canada geese. A refuge trapping program began in 1983 has not reduced coyote numbers, but has changed predator search patterns. A spring animal removal program would probably be more efficient at removing problem animals.

Refuge Trapper Mark Spencer with a large spring beaver. Mark is a Board member of the National Trappers Association.
The 15-day bucks only firearms deer season opened November 15 in refuge Areas A and B (85,000 acres). Car counts the first Saturday of the season indicated use was similar to last year's with about 250 hunters turning out. There was an estimated season total of 1,620 hunter-visits. There were 34 registered camps; one more than last year. Total deer harvest was estimated at 39, down one from last year. This is truly an "estimate" because there are no check stations and no mandatory reporting procedures. Deer numbers were as good or better than previous years. Due to budget constraints, the MI DNR did not operate the check station at the old subheadquarters site.

Muzzleloader deer hunting on the refuge ran from December 6 through December 15. Use was cut in half as compared to last year with only 100 visits estimated. Heavy snow accumulations caused this decline. No reported deer were taken.

Bear hunting was permitted from September 10 through October 31 in refuge Area B. Relatively few hunters (70 estimated visits) pursue bear on the refuge due to regulations prohibiting the use of dogs or bait. One 60 pound bear was reported and total harvest was estimated at five. Several law enforcement cases were made. (See Section H.17)

Waterfowl season opened September 28 in the Upper Peninsula. Waterfowl hunting is not permitted on the refuge. However, hunters pass-shoot geese on certain boundaries. Pressure in the surrounding area appeared to be down slightly.

9. **Fishing**

All refuge pools were open to ice fishing January 1 through February 28. Fishing pressure ranged from non-existent to extremely light for two reasons: (1) the refuge does not plow most access trails due to costs; and (2) the northern pike don't seem to bite in the winter on the refuge. An estimated 55 visits were made.

Summer fishing was a different story. The season on main pools opened July 1 and closed September 30. The late opening is designed to minimize disturbance to broods of Canada geese which use refuge dikes. Fishing success this year was similar to last year ranging from moderate to poor. Several pools were again in drawdown for management purposes or structure repair, even so a few 10 pound northern pike were reportedly caught.
10. **Trapping**

The objective of the refuge's trapping program is to use trapping as a management tool in an effort to reduce predation impacts on waterfowl production.

The refuge trapping program was established in 1984. The bid system was used to select trappers for a three-year period. At present six of the seven refuge trapping units are under permit until April, 1987. One unit in the wilderness area was not sold.

Compliance with refuge trapping regulations has, in general, been good. However, Unit 1 trappers are an exception. (See Sec. H-17)

According to trappers' reports and predator censuses, we are failing to impact predators as stated in our program objectives. Predator population levels have not been reduced. It appears, however, that there may have been a disruption of predator search patterns. Coyotes in particular are beginning to avoid roads and dikes around pools. In order to have a maximum impact on coyotes, raccoon and foxes, a spring predator removal effort would have to be made.

Analysis of trapping efforts will be made in 1987 in order to ascertain if the program objectives have been achieved.

11. **Wildlife Observation**

Thousands of people come to the Seney National Wildlife Refuge to see one thing—Canada Geese—and no one goes away disappointed. This year we had some special visitors. During the spring a very accommodating white fronted goose set up temporary residence in the visitor center parking lot to the great joy and excitement of our spring birders. Throughout the summer a tundra swan could be viewed from our auto tour route along with many shorebirds since two of our major pools were in drawdown. In early fall, several visitors saw a black backed three-toed woodpecker in the visitor center area. But the most exciting observation occurred on October 12 when an immature scissor-tailed flycatcher was spotted feeding and perching on the trees around the visitor center. Its presence created a great fervor among refuge staff and about 10 visitors. Our 50th Anniversary was held the next day, but unfortunately the stray had wondered on. Other sightings of an immature scissor-tail were called in at this time.

Other species of major interest and commonly seen, during 1985 were bald eagles (one of the two active nests is along the Marshland Wildlife Drive), sandhill cranes, common loons, ducks of various types, beaver and deer. Bear, otter and barred owls were occasionally seen.

12. **Other Wildlife Oriented Recreation**

Camping was again permitted during the firearms deer season with 34 camps
registered at headquarters. The "deer camp" is a strong tradition in the northwoods and on the refuge as well. Camps are permitted only west of the Driggs River and outside of the wilderness area. No problems were encountered.

Many deer camps are elaborate structures and quite snug, comfortably housing three to six people. Camps such as this might have gas lights and cook stove, wood stove and in some cases running water.
An estimated 800 canoeists used the refuge during 1985. Canoeing is limited mainly to the Manistique River which flows through several miles of the refuge's southeast boundary. Two canoe rental businesses are located in the nearby town of Germfask. The Driggs and Creighton Rivers, and Walsh Creek and Ditch are also open to canoeing but beaver dams, deadfalls and stream-side brush preclude their use by most canoeists.

Cross country skiing was permitted throughout the refuge. Most skiers used the marked trails near headquarters where parking is provided. Use was light totaling about 110 visits for January through March and December. No trail grooming is done.

13. Camping (non-wildlife)

Nothing to Report

14. Picnicking

The Wigwam and Driggs picnic areas received a combined visitation of 16,027. The Wigwam site (about one mile from headquarters) received heavy use due to the adjacent Show Pools, while the Driggs site was used primarily as a rest area along the heavily travelled Highway M-28. Information boards at each site were updated during the year.

15. Off-Road Vehicling

Three-wheeler use in the wilderness area continues to be a problem. The area is vast and difficult to patrol by vehicle or foot neither of which is effective in apprehending three-wheelers. Any ideas? (We've already though of putting in a requisition for a helicopter.)

16. Other Non-Wildlife Oriented Recreation

We had an extremely poor blueberry crop this year. An estimated 50 persons made short attempts to find this fruit. Several people spent time picking cranberries, but by far mushroom hunters were the most successful.
### Law Enforcement

The vastness of the refuge makes detection and apprehension very difficult without spending a great deal of time. The following is a summary of law enforcement efforts this year.

<table>
<thead>
<tr>
<th>Violations &amp; Number</th>
<th>Disposition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>General trespass:</strong></td>
<td>written warning</td>
</tr>
<tr>
<td>-canoe on pools - 2</td>
<td>verbal warning</td>
</tr>
<tr>
<td>-climb tower - 3</td>
<td>written warning</td>
</tr>
<tr>
<td>Illegal camping - 1</td>
<td>$25 - 2; pending - 1</td>
</tr>
<tr>
<td>Under influence of alcohol - 3</td>
<td>$25</td>
</tr>
<tr>
<td>Three-wheeler on refuge - 1</td>
<td>citations issued by State troopers</td>
</tr>
<tr>
<td>Operating under influence/vehicle accident</td>
<td></td>
</tr>
<tr>
<td>Trapping:</td>
<td>$50; pending</td>
</tr>
<tr>
<td>-unattended trap - 2</td>
<td>verbal warning</td>
</tr>
<tr>
<td>-trap too close to beaver house - 1</td>
<td>pending *</td>
</tr>
<tr>
<td>Illegal deer kill - 1</td>
<td>written warning - restitution will be made to restore area pending</td>
</tr>
<tr>
<td>Trespass in wilderness area:</td>
<td></td>
</tr>
<tr>
<td>-heavy equipment/vegetative damage (See Sec. F-12)</td>
<td></td>
</tr>
<tr>
<td>-POV to carry bait - 1</td>
<td>$150 - 1; pending - 2</td>
</tr>
<tr>
<td>Hunting bear over bait - 3</td>
<td></td>
</tr>
<tr>
<td>No hunter orange - 3</td>
<td></td>
</tr>
<tr>
<td>No back tag - 1</td>
<td></td>
</tr>
<tr>
<td>Hunting without license - 1</td>
<td></td>
</tr>
<tr>
<td>Hunting from a tree stand - 1</td>
<td></td>
</tr>
<tr>
<td>Litter - 2</td>
<td></td>
</tr>
</tbody>
</table>

*case turned over to State CO
The most interesting case involved four men who set up bear bait sites a few weeks before season in the wilderness area. Only three in this group were apprehended of which one was hunting over bait, from a tree stand and no license or hunter orange. His brother stated that he was also the one who drove the bait into the site. The fourth man in this group had shot a bear the day before. The gut pile was found about 20 feet from the bait site. Another hunter not affiliated with this group who was also hunting over bait stated he had helped drag the bear and could identify the man. After several telephone interviews, the investigation was handed over to the Special Agent but budget constraints prohibited further investigation from that office.
Vehicle tracks in wilderness area. Bags in center contain litter and some bait from all six sites.
18. Cooperating Associations

The Lake States Interpretive Association (LSIA) outlet at the refuge visitor center increased its sales by almost 42 percent over last year. A total of 86 items were available. Final receipt tallies amounted to $13,260. According to the LSIA chairman, Seney's sales represented 28 percent of their gross sales from all outlets.

<table>
<thead>
<tr>
<th>Year</th>
<th>Total Sales</th>
</tr>
</thead>
<tbody>
<tr>
<td>1985</td>
<td>$13,260</td>
</tr>
<tr>
<td>1984</td>
<td>$ 9,367</td>
</tr>
<tr>
<td>1983</td>
<td>$ 5,867</td>
</tr>
<tr>
<td>1982</td>
<td>$ 7,941</td>
</tr>
<tr>
<td>1981</td>
<td>$ 8,527</td>
</tr>
</tbody>
</table>

Twelve new items were added in the form of posters, field guides and wildlife coloring books. Twenty-three items were discontinued, primarily hard cover books and posters that didn't move.

At the end of the year, a proposal was submitted to LSIA to cover the cost of purchasing four new 16mm wildlife films and the cost of mounting a black bear cub for the visitor center; total value $1,370.00. Stations hosting LSIA outlets are eligible for grants totalling up to 10 percent of gross sales.

19. Concessions

Nothing to Report
I. EQUIPMENT AND FACILITIES

1. New Construction

   Nothing to Report

2. Rehabilitation

   Since ARMMS funding of $80,000 was an inadequate amount to complete remodeling of the refuge office, invitations to bid were written up in three phases with Phase I including the remodeling of the three-car garage into offices; Phase II includes outside siding; and Phase III involves remodeling existing offices.

   A design for the complete remodeling of the refuge automotive shop was finished by the same architectural firm, GBKB Associates of Marquette, Michigan that designed the office. There is $62,000 in construction funding for this project. It too is inadequate so contracts to bid will only include safety features and remodeling the bathroom. Bid openings for both the shop and office are scheduled for early next year.

   Seney received a major face lift by means of several large and small ARMMS projects in 1985.

   Visitor Center Parking Lot ($3,000 force account). Approximately 725 cubic yards of fill were placed and shaped in a barrow ditch to the east side of the entrance road to the visitor center. The fill was compacted and a one foot layer of gravel placed on top. Monies were obligated to asphalt the area next spring. This improvement will: (1) allow for safe access to the visitor center parking lot especially by large units; (2) increase parking space; and (3) lessen traffic conflicts between vehicles using the auto tour route.

   Visitor Center Rehabilitation ($20,500 force account). See Section H-6 for details on how money was spent.
Drew McDermott, RO Engineering, taking measurements for landscaping project that will not only beautify the visitor center area but supply food for song birds and hopefully a sidewalk barrier to the geese.

BB

Drew McDermott spent a great deal of time in the field, the office and on the phone ordering, pricing, lending support and guidance on this project and several others. In summary, we owe him a big thanks.

Water Control Structure Rehabilitation (large ARMMS $50,000 and small ARMMS $2,700). Seney was allocated $22,700 to spend force account from these two projects. About 1,500 linear feet of galvenized steel channel and 9,000 board feet of wolmanized lumber were ordered for 10 different water control structures. This year channels and new stop logs were placed on Marsh Creek, A, F and E structures and cement patching was also completed. Delta Creek, J to I, I, C to B, B to A and C-2 will be done when pools are in scheduled drawdown or when major maintenance requires.
New corrugated steel sheets, J and side seals and stainless steel cable were purchased to replace the radial gates at Upper Goose Pen water control structure. These will be installed next year.

About $4,000 of wolmanized lumber was purchased along with hardware to replace B-A bridge. This will be installed next year also.

A Delta 12 inch radial and 10 inch table saw as well as a Milwaukee rotary hammer and assorted bits were also purchased with these monies to accomplish the work.

Regional Office Engineers kept $30,000 in a job order for contract work to repair a leak beneath the J to I Pool structure. Bids were opened September 10 with the low bid awarded to Hardman Construction, Inc. for $41,596. The difference was covered through Regional Office funding.
Dike Maintenance, Rehabilitation and Side Mower ($28,000 force account). With this ARMMS project we were able to rehabilitate the following sites:

1. A-2 Dike by shaping, topsoil, seed, lime, mulch and rip-rap on approximately 1.03 acres
2. A-2 Structure by additional rip-rapping
3. M-2 Dike by topsoil, seed, lime, mulch, rip-rap on about .5 acres
4. A-1 Structure by lift station repair, shaping, topsoil, seed and rip-rap
5. C-2 Structure by additional rip-rapping
6. Riverside Dike using mulch, seed and posts on approximately 3.2 acres
7. 60 miles of dike were mowed and several areas top-dressed
Some of the salary cost for four temporary wage grade laborers came from this project. In addition, a Bush Hog SH-60 and GT-42 mower and blades were purchased along with two heavy duty ATV trailers and two brush saws.

Canada Goose Nesting Island Rehabilitation ($38,000). Original intent of this project was to reconstruct a total of 30 Canada goose nesting islands in portions of H, I, J, F and E Pools. However, contracting delays postponed opening of bids until August 1 and on-site construction until August 26. As a result, we considered ourselves very fortunate to have 22 islands completed, all of which are located in F Pool. Construction of these islands was completed on September 25 even with unusually wet weather during August. This September 25 date did not allow enough time for our temporary laborers to complete topsoil placement on five islands since they had to be terminated September 30. We hope to complete these islands in 1986. As it was, if it had not been for the ingenuity of Lawrence Zellar, Automotive Worker, we would not have top-dressed as many islands as we did. He designed and built a hydraulic "dump box" from materials on station and installed it in the refuge's Thiokol.

About $12,000 of this project was job ordered through Engineering for contract work, the remainder was force account.

Boardwalk ($3,000 force account). The original plans of this project would have cost about $10,000. Since only $3,000 was appropriated we are no longer getting a boardwalk but instead an overlook platform. At least this was the last word from the Regional Office. Plans are being held up by Safety and Engineering even though all materials have been purchased. It is a case of the cart before the horse. Money had to be spent before the fiscal year end. Plans and an equipment list were thrown together and now they are being scrutinized.

3. Major Maintenance

As on any large refuge, general maintenance work was continual to maintain equipment, buildings, water control structures, signs, electrical systems, plumbing systems and the like. Several miles of refuge roads were graded during fall. All refuge vehicles received regular maintenance. During the winter months, snow removal was almost a daily routine.
During February and March new signs were placed on the wilderness area boundary from Highway M-28 to C-2 Pool. Only a third of the area remains to be signed. The boundary that needs signing is "internal" that is between refuge lands and wilderness refuge lands. Closed area signs were replaced around Lower Goose Pen.

A small ARMMS project, electrical inspection for $2,000, resulted in a State certified electrical inspector completing an inspection of all buildings on the refuge. For the most part, the electrical service was found in good condition; however, five recommendations were made. All recommendations were followed and problems corrected.

Another small ARMMS project, gravel for $2,700, allowed for the purchase of 320 cubic yards of gravel for general road maintenance.

The following is a summary of Quarters Maintenance.

Quarters #1 (Refuge Manager). Only minor repairs were necessary throughout the year although we are in the second year of attempting to replace the furnace. Many delays at the Regional Office has held up this project. The old furnace has been unreliable and has been repaired many times over the past few years by refuge maintenance staff. Break down of this furnace could result in a major mess and expense. Water pipes are in the ceiling of this house.

Quarters #6 (Student Cabin). The water heater was replaced and miscellaneous kitchen utensils were purchased.

Quarters #11 (Log Cabin)
- shower attachment installed
- stainless steel kitchen sink purchased
- five mattresses and pads
- silverware and miscellaneous kitchen items
- kitchen/bathroom linoleum purchased
- ash shovel and bucket

Quarters #136 (Assn't Refuge Manager)
-carpet two bedrooms
-new kitchen and entry way tiled floor
-stainless steel kitchen sink
-interior completely painted
-living room drapes
-smoke alarm replaced
-two storm doors
-TV transformer booster
4. Equipment Utilization and Replacement

The following pieces of equipment required repairs during the year:

-1984 Mako 22 foot boat had several factory defects in the fiber glass which were repaired; the depth finder was returned several times for proper installation and repair. During this process the installer drilled holes in the bottom hull which leaked water. The gas vent also had to be rerouted to allow gas flowage.

-670 A Grader needed a new water pump, manufacturer replaced some safety devices in the controls to prevent vehicle from starting in gear.

-800 Ford Dump Truck received about $500 worth of repairs after a fire damaged two tires, air hoses, brake cams, lights, mud flaps, and a great deal of wiring (See Sec. E-6 for details).

-4X4 Chevy Truck used for snowplowing needed new transmission in February and again in December.

New equipment purchased in 1985 include:

-Delta 12 inch radial arm saw with blades $1,050
-Delta 10 inch circular table saw with blades $1,012
-Tire changing cage $350
-Milwaukee rotary hammer, 1½ inch heavy duty with assorted shanks $1,033
-Craftsman power hammer kit and loads $85
-Bush Hog side mower, rotary cutter, SH-60 $2,997
-Bush Hog rotary mower for use with ATV, GT-42 $828
-ATV trailer, heavy duty, dump tilt box with slide out tailgate $225 each (2)
-Jonsereed brush saw with blades, RS-45 (2) $49 each
-Lawn Boy lawn mower $425
-Matco tool boxes, 146 lbs and 222 lbs. $ 1,299
-Bell and Howell, 16mm self-feeding projector $764
-Baush and Lomb Discoverer Telescope and adaptors $274
-Realistic cassette player and adapter $102
-Water expansion pump system (2) $3,700 each
-Truck, Dodge Ram, cargo 4X4, 3/4 ton (FY 84 monies) $8,978

All of the above items were purchased through ARMMS monies except the lawn mower which was purchased with quarters funds and the water expansion pumps purchased by the Regional Office with fire monies. The 4X4 Dodge was purchased by FY 84 end of the year funds.
5. **Communications Systems**

Nothing to Report.

6. **Computer Systems**

Nothing to Report.

7. **Energy Conservation**

Forty cords of hardwood in eight foot lengths were purchased on bid for use in heating the refuge shops. Michigan workfare personnel assigned to Seney NWR buck and split the wood. Each year we burn about 15 to 20 cords.

8. **Other**

The old CCC barracks was donated to the Historical Society. This was one of two barracks left in the State that was still complete and in excellent condition. Volunteers, some of whom remembered working during the CCC days at Seney, helped disassemble and move the building to Newberry. The building is now used as a museum filled with memorabilia of the CCC days. A bronze plaque states that the building was donated by the Fish and Wildlife Service.

By mid-July the old CCC barracks was completely relocated at its new home in Newberry. It was kind of sad to see the old building leave Seney, but we were happy that its new owners are using it to keep alive the memories of a historical program that meant so much to our national resources then and now.
A cooperative venture by the U.S. Forest Service, National Park Service and the Fish and Wildlife Service in the U.P. resulted in the installation of a highway information sign at Sault Ste. Marie, Michigan. Our share of the cost was $300.00.

A major effort was made to "clean house" of equipment and materials that were no longer needed on station or were no longer functional. A three and a half page "Report of Available Property List" was sent in to the Regional Office. Many of these items had been included on survey lists in 1984. Over 100 items were transferred, sold, destroyed or denoted. One scrap sale in May went to the highest bidder for $301.00. One vehicle, IHC 4X4 pick-up truck, went for $1,428.00.

Another scrap sale is planned for next spring and we still have some cleaning house to do but a major "dent" was accomplished.
1. Cooperative Programs
   Nothing to Report

2. Other Economic Uses
   Nothing to Report

3. Items of Interest
   Automotive Worker Lawrence Zellar received a $500 cash/special achievement award for his work as an instructor for the heavy equipment operator training.

   Assistant Manager Don Hultman received a well deserved $500 cash/special achievement award for his work in the absence of a primary assistant manager and for his planning efforts for the Iron River Fish Hatchery.

   Don Frickie, Refuge Manager, received a $500 cash/special achievement award for improved public relations at Seney NWR.

   The 1985 refuge revenue sharing checks totaled $55,581 and represented 74 percent of the full entitled amount. Checks were mailed in February to six townships.

   Artist Jack Van Hoesen, Montana, spent a day on the refuge taking photographs and sketching.

   The late Karl F. Logler stopped in for about an hour on July 16 to chat about his times at Seney and to look the old place over.

   Ken Black, retired Regional Director of Region 4, stopped in with his wife for a few hours on October 17.

   U.S. Senator Carl Levin, Michigan, and his aide Dave Anthony met briefly with refuge staff on May 29 and left via our auto tour route. Mr. Anthony made a return visit on July 2.
4. Credits

M. Anderson: A; C; D-1, 3, 5; E-1, 2, 3, 4, 6, 8; F-8; G-4; H-1-9, 11-19, I, J and coordinated writing of narrative

J. Kesel: D-2, 4, 5, 6; E-7; F-1-7, 9-13; G-1-17; H-10

D. Kesel: B, E-5 and typing and assembly

Refuge Manager Frickie reviewed and edited the entire report.

Dr. Ted Bookhout, Ohio Cooperative Wildlife Research Unit, wrote (D)Planning, Section 5 "Nesting and Movements of Sandhill Cranes at Seney NWR" and "Yellow Rail Study" reports.
K. FEEDBACK

Thank you for the ARMMS money. This funding helped make our jobs extremely rewarding this year. However, a great deal of frustration and confusion is still associated with the process, IPW to completed work. This frustration and confusion is not only experienced in the field but also in the Regional Office in Engineering, Contracting and General Services and any other office involved. I get the distinct impression that this problem could be eliminated if communications improved between these offices. As time passes if we stick with this system(?) and have no major revisions or reorganizations to the IPW funding process, the process should run more smoothly.

One year ARMMS funding is often a sink or swim situation that is inflexible to the problems associated with personnel transfers and the problems a remote station has to deal with regarding on-site estimates, soliciting bids and purchasing equipment.

MMA

The uniforms have improved tremendously for females. Also prompt delivery from the vendor, R & R Uniform, was impressive. The dark brown color of our cold weather coats is almost impossible to keep clean - tan was much better. However, it is wonderful to have a cold weather coat that actually fits women instead of the too large men's sizes only.

MMA & DJK
HARBOR ISLAND NATIONAL WILDLIFE REFUGE

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

The Harbor Island National Wildlife Refuge is located one mile north of Drummond Island, Michigan and 3.5 miles south of the U.S.-Canadian (Ontario) border in Potagannissing Bay on Lake Huron. This refuge is comprised of a single island totalling 695 acres.

Refuge designation came as the result of a purchase from The Nature Conservancy on December 14, 1983. The refuge was purchased as part of the Unique Ecosystem Program, waterfowl production area, and is administered as a satellite refuge of the Seney National Wildlife Refuge located 117 miles to the east.

Habitats included on this island consist of balsam/cedar lowlands and oak uplands. Soils consist of shallow organics or sands over dolomitic rock. A summer residence is located on the southwest tip of the island.
A. HIGHLIGHTS

The Harbor Island National Wildlife Refuge (NWR) was opened for hunting in accordance with State of Michigan laws and commission orders.

B. CLIMATIC CONDITIONS

Harbor Island NWR's climate is typical of northern Great Lakes islands with winter temperatures reaching -30 degrees and summer highs in the mid to upper 70 degree range. Annual snowfall averages 200 plus inches per year.

C. LAND ACQUISITION

Nothing to Report

D. PLANNING

1. Master Plan
   Nothing to Report

2. Management Plan
   Nothing to Report

3. Public Participation
   Nothing to Report

4. Compliance with Environmental and Cultural Resource Mandates

   An environmental assessment and a hunting plan was approved on January 29, 1985 by the Regional Director. The plan provides for the opening of the refuge to hunting according to State of Michigan law and Michigan Department of Natural Resources (DNR) commission orders.
5. Research and Investigations

Nothing to Report.

6. Other

Nothing to Report

E. ADMINISTRATION

1. Personnel

Mr. and Mrs. Ledy were again used as volunteer refuge caretakers from May until late October. They occupied the refuge house located on the southwest end of the island. This is the second year that they have assisted in maintaining the refuge. The Ledy's also acted as caretakers on Harbor Island for The Nature Conservancy prior to the island being purchased by the U.S. Fish and Wildlife Service.

2. Youth Programs

through

8. Other

Nothing to Report

F. HABITAT MANAGEMENT

1. General

Volunteer Forester Craig Allen conducted a vegetation survey during the first week in July. From this survey, he documented and reported what appears to be a lack of reproduction of some key plant and forest species such as oak, ground hemlock and aspen due to the over browsing by whitetail deer. Mr. Allen also completed an accurate cover map which will aid in the management of this new refuge.
Only unpalatable plants and fungi are left from heavy deer browsing.

This park like stand of oak-maple is the result of very high deer numbers which eliminate almost all regeneration.
2. **Wetlands**
   through

13. **WPA Easement Monitoring**
   Nothing to Report

G. **WILDLIFE**

1. **Wildlife Diversity**
   through

4. **Marsh and Water Birds**
   Nothing to Report

5. **Shorebirds, Gulls, Terns and Allied Species**
   A rare visit by six white pelicans was noted by the refuge staff during the month of June. A common loon nest was located by the refuge biologist during the annual spring deer survey in May. Loons, in general, have not nested on Harbor Island and adjacent islands since the mid to late 1960's.

6. **Raptors**
   During late June and early July, a biological survey was conducted by Volunteer Biologist Brad Stermer. Three active raptor nests were found. A broad-winged hawk nest with three young in the nest was located adjacent to Harbor Bay and recently used goshawk and sharpshin hawk nests with young perched nearby were also noted.
This nest of broad-wing hawks was one of three active nests located during the 1985 biological survey.
7. Other Migratory Birds

Nothing to Report

8. Game Mammals

A deer pellet survey was conducted using two transects established in 1983. It was determined that the 695 acre refuge had a peak fall population of approximately 60 whitetail deer. This is a 140 percent increase over 1984 population levels. An unusually heavy mast (acorn) crop brought deer to Harbor Island from surrounding islands. Harbor Island is an established rutting area for deer of the Potagannissing Bay archipelago.

9. Marine Mammals

through

17. Disease Prevention and Control

Nothing to Report

H. PUBLIC USE

1. General

Harbor Island NWR has a sheltered bay which is used by boaters for fishing, water skiing and as an overnight anchorage for sail boats. The bay is part of Lake Huron and does not come under the jurisdiction of the Fish and Wildlife Service. Refuge caretakers logged approximately 125 sail boats using the bay during June, July and August.

In addition, the island has one of two sand beaches in Potagannissing Bay suitable for swimming. Heaviest use occurs during August when Lake Huron water temperatures approach 70°.

2. Outdoor Classrooms

through

7. Other Interpretive Programs

Nothing to Report
8. **Hunting**

The newly opened hunting program on Harbor Island NWR began on September 15 with the opening of woodcock and ruffed grouse hunting. Hunting pressure was very light or non-existent due to low numbers of grouse and woodcock.

October 1 saw the opening of deer archery season; but only one confirmed deer, a six point buck, was taken by archers. The firearm deer season was a different story. Six persistent hunters took four bucks including a nice 13 point buck. The 13 pointer was aged by Refuge Biologist Kesel and found to be 6.5 years of age.

Deer began leaving the island during the first week in December as snow reached 1.5 feet in depth. It should be noted that some deer apparently wintered on the island during the 1984/1985 winter-spring period.

9. **Fishing**

through

19. **Concessions**

Nothing to Report

I. **EQUIPMENT AND FACILITIES**

1. **New Construction**

through

7. **Energy Conservation**

Nothing to Report

8. **Other**

The refuge house is in need of major maintenance. The outside deck support pillars and beams are badly rotted. The outside natural wood finish should also be stained. It was recommended by the Refuge Manager and Division 1 Supervisor that we report the property as excess to save maintenance and utility costs. Decision as to how and when the house will be disposed of is pending.
The refuge dock is also in need of major repair. Due to unusually high water levels the dock was submerged during all of 1985. Rotted cribbing and decking should be replaced in order to make the dock safe. An IPW was submitted to Division 1 for repairs.

Refuge's submerged dock with temporary boardwalk. Note the beaver lodge which is attached to dock in 12 feet of water. Great Lakes water levels are at record elevations and are expected to continue to rise.

JAK
J. OTHER ITEMS

1. Cooperative Programs

through

3. Items of Interest

Nothing to Report

4. Credits

Refuge Biologist Kesel wrote the Harbor Island NWR narrative. Refuge Manager Frickie reviewed and edited the report.

K. FEEDBACK

SEE SENEY NWR NARRATIVE SECTION ALSO

Harbor Island NWR is managed as a satellite of the Seney National Wildlife Refuge. As such, it sometimes does not get the attention it deserves and depends on the budget and available personnel from Seney. Having at least its own identifiable travel budget would help to insure proper attention.
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K. FEEDBACK 8
INTRODUCTION

The Huron Islands National Wildlife Refuge is located 5 kilometers off the south shore of Lake Superior and 30 kilometers east of the Keweenaw Peninsula. The refuge is comprised of eight islands totaling 147 acres, and is administered as a satellite refuge of the Seney National Wildlife Refuge. Refuge designation came in Executive Order 7795 on January 21, 1938. The islands were designated as Wilderness by the Omnibus Wilderness Act of 1970 (P.L. 91-504).

A lighthouse was built on West Huron Island in 1868 and is listed in the National Register of Historic Places. Four other buildings are present. All buildings are located on an 11-acre parcel which comes under the primary jurisdiction of the U.S. Coast Guard.

Habitat of this unmanned refuge varies from a sparse covering of red pines and white birch with ground vegetation to barren granite with scattered lichen growth. The refuge was established for the protection of migratory birds; namely a large nesting colony of herring gulls.
A. HIGHLIGHTS

Confirmed use of the islands by bald eagles was observed during the August biological survey. The probability of nest reestablishment is high.

B. CLIMATIC CONDITIONS

The weather on the islands can best be described as cold and damp with ice persisting along their shorelines until the first of June. Sudden and fierce Lake Superior storms frequent the area during spring and fall.

C. LAND ACQUISITIONS

Nothing to Report

D. PLANNING

Nothing to Report

E. ADMINISTRATION

1. Personnel

   through

3. Other Manpower Program

   Nothing to Report

4. Volunteer Program

   Volunteer Biologists John Kanter and Brad (Pete) Peterson conducted a week long biological survey of the islands during the first week in September. They and their provisions were transported to the
islands by refuge staff in the Mako 22-foot boat. Regional Aircraft 15 checked on our biologists twice and the Huron Mountain Club Security had been notified of the expedition. Also, our biologists had a 16-foot Boston Whaler at their disposal and plenty of provisions.

5. Funding

There is no specific funding for Huron Islands NWR. Money and personnel for Huron Islands work comes from the Seney National Wildlife Refuge on an "as available" basis. As a result, Huron Islands is visited only one or two times a year and sometimes not at all. With anticipated financial and personnel cutbacks, management of Huron Islands NWR will consist of an occasional custodial visit or quick survey at best.

6. Safety

The 22-foot Mako boat purchased in 1984 with ARMMS funds has proven to be an excellent boat for this area. It helps assure safe transportation to and from the islands in an area known for cold, violent storms. Rock cliffs on the islands and adjacent Lake Superior shoreline make dependable watercraft an absolute requirement.

7. Technical Assistance

Nothing to Report

8. Other

The U.S. Coast Guard maintains primary jurisdiction over 11 acres of the refuge and the Fish and Wildlife Service has secondary jurisdiction on this 11 acres. The purpose of the Coast Guard is to operate and maintain the automatic lighthouse on West Huron Island. Several other buildings also remain from the era when this was a manned Coast Guard station. Most of these buildings have greatly deteriorated and have been severely vandalized.
In 1984 the Coast Guard with concurrence from the Fish and Wildlife Service, issued a permit to a private party to restore and maintain these buildings which have historic value.

Vandalism and trespass still remain a problem. Some Fish and Wildlife Service signs were destroyed or removed in 1985 and camping and littering were fairly common. A portion (although probably a small portion) of these problems come from a lack of understanding by the public of the regulations for the refuge and wilderness area. In 1986 an attempt will be made to post regulations at mainland launching sites and to repost the islands. Contact will also be made with the Coast Guard and private permit holder in an attempt to minimize problems.

F. HABITAT MANAGEMENT

Nothing to Report

G. WILDLIFE

1. Wildlife Diversity

Nothing to Report

2. Endangered and/or Threatened Species

The return of the bald eagles to the Huron Islands NWR was the highlight of 1985. During the third week in August, four eagles including two immatures were observed using Lighthouse and East Huron Islands. The immatures were sighted near an old nest site. Eagles were also observed using the refuge during the first week of September by volunteer biologists conducting a biological survey of the refuge. Prior to 1983 eagles nested regularly on East Huron Island.

3. Waterfowl

Old squaw and red breasted mergansers use the islands as a feeding area. However, commercial and Indian fishermen also place gill nets in the area. On September 5, Refuge Biologist Kesel observed Indian fishermen
lifting a gill net 100 yards northeast of East Huron Island. Included with their catch of lake trout were two old squaw, four common loons and three double-crested cormorants in their 1/4 mile of gill nets.

4. Marsh and Water Birds

A June aerial census of the refuge indicated that only 14 great blue heron nests were present. In 1984 it was estimated that a total of 30 nests were located on Cattle, East Huron and Lighthouse Islands. We assume that high spring winds were the major cause of this decline.

5. Shorebirds, Gulls, Terns and Allied Species

Double-crested cormorants nested on Gull and adjacent Rock Islands. An aerial census indicated that approximately 13 nests were present in early June.

Herring gulls are the most common nester on the Huron Island NWR.

6. Raptors

Merlins were observed using the islands on two occasions in August and in September. There is a high probability that they nested on Lighthouse Island.

7. Other Migratory Birds

through

17. Disease Prevention and Control

Nothing to Report

H. PUBLIC USE

1. General

Public use on the Huron Islands NWR is considerably higher than first assumed. During a biological survey of the islands, volunteer biologists logged 27 visitors during the Labor Day weekend. The numbers at first glance are not high until you consider the location is five miles out in Lake Superior.
Illegal campsite on Lighthouse Island. This was constructed using material vandalized from the U.S. Coast Guard building.

JAK

Old commercial fishing shelter used during the period between 1930 and 1970. This is the only harbor of refuge from Lake Superior storms for 15 miles. Water depth 30 feet from shore is 90 feet.

JAK
Confusion by the public as to what public use activities are allowed on this National Wildlife Refuge and Wilderness Area continues. (See E.8)

2. Outdoor Classrooms - Students
   through

19. Concessions
   Nothing to Report

I. EQUIPMENT AND FACILITIES
   Nothing to Report

J. OTHER ITEMS

1. Cooperative Programs
   Nothing to Report

2. Other Economic Uses
   Nothing to Report

3. Items of Interest
   Nothing to Report

4. Credits
   Jim Kesel: A; B; C; D; E-1-4, 6; F, G, H, I, J, K
   Don Frickie: E-5, 6, 7, 8; reviewed and edited the narrative
   Deb Kesel: typing of narrative
K. FEEDBACK

Without adequate funding and travel ceiling, only an occasional cursory visit can be made using Seney National Wildlife Refuge funding.

At the present time, the Seney NWR staff is unable to make regular visits to the Huron Islands. It should be Fish and Wildlife Service policy that every refuge be allocated its own funding and travel ceilings. This would help assure the resource protection and management that is necessary.

See Feedback Section for the Seney National Wildlife Refuge also.
WILDLIFE AND MANAGEMENT

Eighty years ago the forests of Michigan's Upper Peninsula echoed to the ring of the Lumberman's axe. The pleasant sound of honking Canada geese has since been added at Seney National Wildlife Refuge. The welcome accompaniment is a result of inducing Canadas to nest on refuge lands. This has been a major wildlife management achievement of the U.S. Fish and Wildlife Service working in harmony with other conservation organizations.

The response of wildlife to habitat restoration at Seney has been better than anticipated. The success of the Canada goose as a nesting species is a fine example of this response. In January 1936, Henry Wallace, a resident of Detroit, gave the refuge a flock of 332 captive-bred Canada geese. The pinioned birds were placed in a 440-acre goose pasture, and the best conditions possible were provided through control of water levels and nesting habitat. Goslings reared by this captive breeding flock migrated to southern wintering grounds, as do other wild Canada geese.

These first Seney-reared birds returned the following and subsequent springs, to breed, nest and produce more goslings. The cycle continued and the Canada goose was definitely established as a nesting species by 1944. Although goose numbers fluctuate annually, the present flock is large enough to provide a valuable addition to Upper Michigan wildlife.

Seney also provides a stopping place for migrating ducks and other geese each fall. Heavy snow and ice formation hasten the final departure of all toward southern wintering grounds.

Geese, Canadas plus snows and blues, are not the only migratory waterfowl that have been attracted to Seney. The refuge is within the nesting range of several species of ducks. The mallard and black duck are the most prolific nesters followed by ring-necks, and common and hooded mergansers. Other ducks that nest at Seney in lesser numbers are blue-winged teal and wood ducks.

Other birds such as sandhill cranes, bald eagles, sharp-tailed grouse and piliated woodpeckers find Seney equally attractive. In all, over 200 species are found, offering a wide variety for those interested in birds.

Beaver, or their work products, are easily found. Trapping is carried on as necessary to keep these and other predatory animals within the carrying capacity of the habitat. Other mammals found on the refuge include white-tailed deer, black bear, otter, coyote, fox, mink, muskrat, bobcat and an occasional wolf.

An intensive Forest Management Program involving timber cutting to improve wildlife habitat is conducted on the refuge. Sprouting and reproductive growth of new trees increases cover and places an available food supply in reach of game animals such as white-tailed deer.

Farming is conducted on about 250 of the 450 acres of refuge land currently designated as cropland. Crops are grown to provide supplemental food for wildlife including Canada geese, sandhill cranes, deer and bear. In addition, these openings are utilized by sharp-tailed grouse for their mating and nesting activities.

Refuge receipts from trapping, timber removal and other economic uses benefit the local community. Schoolcraft County annually receives three-fourths of 1 percent of the current value of the land or 25 percent of the net receipts, whichever is greater, to be used for schools and roads. The return of some 96,000 acres to a more natural and productive condition under controlled management benefits wildlife, as well as the people of Michigan and the general public.

RECREATION

VISITOR CENTER Refuge recreational program activity begins at the Visitor Center located at Refuge Headquarters. The building is open from mid-May through September 30, and a receptionist is on duty during the summer months. Dioramas, exhibits and environmental information are displayed. During the summer months, movie and slide shows are presented in the auditorium.

AUTO TOURS The Marshland Wildlife Drive is a seven mile self-guiding auto tour. It is open from late June through September 15 during daylight hours. Guide leaflets are available at the Visitor Center.

NATURE TRAIL A 1.4 mile nature trail around one of the smaller pools is open for hiking. The trail begins at the Visitor Center and completes a loop ending back at the Visitor Center.

PICNICKING There are two picnic areas on the refuge. Both areas are open from Memorial Day through October. Tables, fireplaces, water pumps and toilets are available. Locations are shown on the leaflet map.

FISHING Certain selected refuge pools are open during the year. Fishermen may obtain current regulations and open pool locations at the Refuge Headquarters.

HUNTING Portions of the refuge are open to deer, bear, and small game hunting in season. Hunting regulations and maps may be obtained from the Refuge Headquarters.
Seney National Wildlife Refuge

Seney National Wildlife Refuge was established in 1935 for the protection and production of waterfowl and other wildlife species. The refuge is in the Great Manistique Swamp which is characterized by open marshes with immense areas of rushes and sedges. Here and there in the vast marshes are shallow pools of clear, cold water and sandy knolls and ridges that support stands of mature red pine that survived the day when Michigan led the Nation in Lumber production. The great timber-cutting period began about 1870, and by 1890 the Upper Peninsula was nearly stripped of its pine forests.

Often fires were deliberately set to clear away the debris of past lumbering operations and to make way for new attempts. These uncontrolled fires burned the humus to the sandy substratum and killed the seeds that would have produced a new forest. After the fires burned out, but before nature could restore the area, Seney was exploited by a land development company that drained acre after acre of soil unsuited for agriculture. The reclaimed acreage was sold through extravagant promises of agricultural productivity, but the buyer-farmers soon learned that crops of sufficient size to provide a livelihood could not be grown. One by one they left the area, and the exploited lands reverted to the State for taxes.

In 1934 the Michigan Conservation Department recommended to the Federal Government that the Seney area be developed for wildlife. This proposal was accepted and a National Wildlife Refuge was established the following year.

Physical development and restoration of the refuge's 95,455 acres began soon after establishment. An intricate system of dikes, water control structures, ditches and roads was built. This system now impounds over 7,000 acres of open water in 21 major pools. Much of the construction work was done by emergency agencies, such as the Civilian Conservation Corps, to relieve unemployment in the 1930's.
Refuge headquarters is located on Highway M-77 approximately 3 miles north of Germfask, Michigan. Correspondence should be addressed to: Refuge Manager, Seney National Wildlife Refuge, Seney, Michigan 49883. Local lodging accommodations and services are available in Germfask and Seney. Additional facilities can be found within 35 miles at Newberry, Manistique and Munising.

As the Nation's principal conservation agency, the Department of the Interior has responsibility for most of our nationally owned public lands and water resources, protecting our fish and wildlife, preserving the environmental and cultural values of our national parks and historical places, and providing for the enjoyment of life through outdoor recreation. The Department assesses our energy and mineral resources and works to assure that their development is in the best interests of all our people. The Department also has a major responsibility for American Indian reservation communities and for people who live in island territories under U.S. administration.
Seney and Huron Island Wilderness Areas
Michigan
What is "Wilderness"?

Each of us has our own idea of what wilderness means and our own way to fill our need for wilderness and wild things.

To the veteran backpacker, wilderness may be represented by a bighorn sheep grazing in the high country. To the urban youth, wilderness may be thought of as an evening walk through a city park.

In 1964, the Federal government acknowledged Thoreau's dictum that "In wildness is the preservation of the world." The Wilderness Act of 1964 required that every roadless area of 5,000 acres or more and every roadless island within the National Wildlife Refuge System be evaluated for possible designation as a Wilderness Area to be preserved for all time.

On October 23, 1970, Congress conferred wilderness status on 25,150 acres of the Seney National Wildlife Refuge and the eight islands comprising the 147-acre Huron Islands National Wildlife Refuge.

Administered by the U.S. Fish and Wildlife Service of the Department of the Interior, the Seney and Huron Islands Wilderness Areas shall remain undeveloped and be subject to management practices in keeping with their wilderness character.

Seney National Wildlife Refuge Wilderness Area

Although it appears wild to the untrained eye, most of the 95,500 acres of the Seney National Wildlife Refuge are carefully managed to provide quality habitat for a diversity of wildlife species.

But like the timber wolf it harbors, Seney has an untamed spirit—a 25,000 acre Wilderness Area the public seldom sees.

HISTORY

Centuries ago, the lands of the Seney Wilderness Area were overlain with sand in an extinct glacial lake bed. The sand from the lake bed was blown into dunes which, in time, became covered with trees and brush to form a necklace of islands in the midst of a vast bog. Today, most of the Seney Wilderness Area is characterized by these "string bogs". They are characteristic of the 9,500 acre Strangmoor Bog Registered National Landmark.

The bogs’ unique habitat supports such uncommon life forms as the carnivorous pitcher plant. The remainder of the Wilderness Area still boasts the giant stumps of white pines logged before the turn-of-the-century. After many years of lumbering and burning, the fragrant pine forests have been succeeded by growths of aspen and jackpine.

WILDLIFE

The Seney Wilderness Area today is managed for its two most important tenants: the endangered eastern timber wolf and the bald eagle. In addition to common species such as deer, fox, mink and muskrat, the Wilderness Area is home to moose, black bear and coyote. Bird species include waterfowl such as the black duck, mallard, American wigeon and wood duck. Spruce, ruffed and sharp-tailed grouse, and numerous songbirds also dwell within the Wilderness Area.

Huron Islands National Wildlife Refuge Wilderness Area

The beacon of Lighthouse Island gleams into the northern Michigan night from its lonely vantage point in Lake Superior. Lighthouse Island, or West Huron, is the second largest of eight islands comprising the Huron Islands National Wildlife Refuge. Despite their small size, totalling only 147 acres, the remoteness and primitive quality of these islands have earned them the designation of a Wilderness Area.

Sarracenia purpurea L.
The Pitcher Plant is a characteristic plant of the Strangmoor Bogs.
Lighthouse Island reveals signs of human habitation. Abandoned in 1972 when the lighthouse was automated, the beacon has deterred sailors from the treacherous rocks since 1877. Today, it has a place in the National Register of Historic Places.

Only Lighthouse Island is open to the public for hiking and nature study, by daily permit.

Gnarled red and white pine, white birch and white cedar cling precariously to the islands' wave-worn surfaces. The granite faces of the Huron Islands are marred by deep cuts left like dueling scars from ancient glaciers.

The Huron Islands once supported a variety of wildlife including bald eagles, deer, coyotes and raccoon. But today, the desolate rocks have been forsaken by the larger birds and animals. The islands have become an important nesting ground for herring gulls, who share their rocky outcroppings with snowshoe hare, deer mouse, ravens and numerous smaller birds.

Special Regulations for Use of Wilderness Areas

**SENEY WILDERNESS AREA:**
1. Open to hiking and nature study from August 1 through March 14 during daylight hours only. Registration at Refuge Headquarters required for the period August 1 through September 14.
2. Open to small game hunting September 15 through February 28, and to deer hunting November 15 through February 30.
3. Camping prohibited except by Special Use Permit to biologists, botanists, or other persons in conjunction with approved studies. Primitive type camping only when permitted.

**HURON ISLANDS WILDERNESS AREA:**
1. Only West Huron Island (Lighthouse Island) open to public, during daylight hours, for hiking and nature study. Registration at refuge headquarters required.
2. All remaining islands closed to public, except by Special Use Permit to biologists, botanists, or other qualified persons in conjunction with approved studies. Exceptions are emergency landings by boats in distress.
3. Camping is prohibited on all islands, except that bonafide biologists, botanists and other qualified applicants may be permitted prescribed primitive-type camping only on West Huron Island (Lighthouse Island) by Special Use Permit, in conjunction with approved studies.

**LOCATION**

Seney Wilderness Area is in the northwest quadrant of the Seney National Wildlife Refuge in Michigan's Upper Peninsula. Refuge headquarters is off Highway M-77 near the villages of Seney and Germfask. Refuge headquarters is approximately 80 miles northwest of the Mackinac Bridge.

The Huron Islands Wilderness Area is three miles off the south shore of Lake Superior, approximately 40 miles east of Houghton, Michigan.

**INFORMATION**

Additional information may be obtained by writing Refuge Manager, Seney National Wildlife Refuge, Seney, Michigan 49883. Local lodging accommodations and services are available in Germfask and Seney. Additional facilities can be found within 35 miles at Newberry, Manistique and Munising.
Lighthouse Island reveals signs of human habitation. Abandoned in 1972 when the lighthouse was automated, the beacon has deterred sailors from the treacherous rocks since 1877. Today, it has a place in the National Register of Historic Places.

Only Lighthouse Island is open to the public for hiking and nature study, by daily permit.

Gnarled red and white pine, white birch and white cedar cling precariously to the islands’ wave-worn surfaces. The granite faces of the Huron Islands are marred by deep cuts left like dueling scars from ancient glaciers.

The Huron Islands once supported a variety of wildlife including bald eagles, deer, coyotes and raccoon. But today, the desolate rocks have been forsaken by the larger birds and animals. The islands have become an important nesting ground for herring gulls, who share their rocky outcroppings with snowshoe hare, deer mouse, ravens and numerous smaller birds.
Although its primary purpose is the management of wildlife and its habitat, Seney National Wildlife Refuge offers a variety of wildlife-oriented recreational and educational opportunities. The refuge’s office and visitor center complex, the starting point for many activities, is located off Highway M-77, about five miles south of Seney, Michigan and about two miles north of Germfask, Michigan.

**Visitor Center**
Visitor center is open 8 a.m. to 4:30 p.m. seven days a week from May 15 to September 30. Exhibits explain refuge history, ecology, wildlife and management; while a different wildlife film is featured each week with daily showings on the hour. Refuge volunteers or staff are on-duty to answer questions and orient visitors. A small bookstore offers an array of natural history publications.

**Wildlife Viewing**
The careful observer will find a wide variety of wildlife at Seney. Over 200 species of birds and nearly 50 species of mammals have been recorded. Except for Canada geese which have become accustomed to people around headquarters, the wildlife is truly "wild," and as such easily missed by casual observation. Timing for wildlife viewing is of utmost importance. Spring, late summer and fall are best, while early morning and evening hours are when most species are active.

**Drives**
The seven-mile Marshland Wildlife Drive begins near the visitor center and is open daylight hours from May 15 to October 15. This self-guided tour features numbered stops keyed to a leaflet available at the visitor center or drive beginning. In recent years, an active bald eagle nest has been clearly visible on the route. Regular evening guided tours led by trained staff are sometimes offered during the summer months depending on yearly budget and personnel levels. Availability of the tours is announced through area media or visitors may call the refuge office for tour status.

**Hiking**
Two looped nature trails are available, offering an intimate look at refuge habitat, plants and wildlife. The 1.4 mile Pine Ridge Nature Trail begins just outside the visitor center, while the 1.0 mile Driggs River Nature Trail begins at the Driggs Picnic area off Highway M-28 8 miles west of Seney, Michigan.
Rest Areas  Rest areas complete with tables, fireplaces, toilets and water pumps are available. The "Wigwams" rest area is located a half mile north of the headquarters on M-77, while the "Driggs" rest area is 8 miles west of Seney on M-28. Use is limited to daylight hours with no overnight camping or parking allowed. Hiking trails lead from each area.

Hunting & Fishing  Limited hunting and fishing is allowed during certain seasons. Current year regulations and maps are available at the visitor center or refuge office.

Berrypicking  Much of the refuge is open to the picking of morel mushrooms, blueberries and other wild foods and fruits.

Canoeing  Boats and canoes are prohibited on refuge pools. However, canoeing is allowed on the Driggs, Manistique and Creighton Rivers and Walsh Creek. Use is limited to daylight hours with no overnight camping permitted.

Winter Rec.  Cross-country skiing and snowshoeing is permitted throughout the refuge during winter months. Skiing along the Marshland Wildlife Drive and Pine Ridge Nature Trail is most popular with parking provided at the visitor center. No grooming of trails is done. All refuge pools are open to ice fishing from January through February.

General Regulations
- Use of refuge limited to daylight hours. No camping or overnight parking allowed.
- Fires permitted ONLY at rest area fireplaces.
- Possession or discharge of firearms or other weapons prohibited except during established hunting seasons.
- Dogs and other pets must be kept on a leash at all times.
- Vehicles are allowed only on refuge roads and trails where gates are open. No off-road vehicles of ANY kind are allowed.
- The disturbance, injury or collection of any plant or animal is prohibited.

For more information, write or call:
SENNEY NATIONAL WILDLIFE REFUGE
SENNEY, MICHIGAN
49883
(906) 586-9851
8 A.M. TO 4:30 P.M.
Without adequate funding and travel ceiling, only an occasional cursory visit can be made using Seney National Wildlife Refuge funding.

At the present time, the Seney NWR staff is unable to make regular visits to the Huron Islands. It should be Fish and Wildlife Service policy that every refuge be allocated its own funding and travel ceilings. This would help assure the resource protection and management that is necessary.

See Feedback Section for the Seney National Wildlife Refuge also.
Special Conditions

- All state regulations are in effect and will be enforced.
- Species not listed below may NOT be taken.
- Use of dogs for bear is prohibited. Dogs permitted for upland game.
- Vehicles allowed only on main refuge roads and trails where gates are open. No off-road travel allowed with ANY motorized vehicles. All-terrain vehicles and snowmobiles are not permitted on the refuge.
- Camping permitted only west of the Driggs River during the state firearms deer season, except in designated Wilderness Area. Permit required—get at headquarters.
- Baiting for bear or any other species (including deer) is prohibited.
- Only portable tree stands are permitted and must be removed after each day's hunt.
- Injuries or accidents must be reported immediately to Refuge Headquarters, Seney National Wildlife Refuge, Seney, Michigan 49883 Phone: 586-9851
Fishing on Seney National Wildlife Refuge is permitted in accordance with all applicable State regulations and refuge special regulations listed below.

Since Seney's primary function is the production and support of Canada geese and other waterfowl, open fishing areas and seasons are selected to minimize disturbance of these species of wildlife. All wildlife has the right-of-way, and this is especially true of geese using the dikes. Breaking up a brood of geese is often fatal for those goslings separated from adults.

Species

POOLS: Northern pike, yellow perch, brown bullhead, sunfish

RIVERS/STREAMS: Northern pike, walleye, yellow perch, brook and brown trout, bass

Special Regulations

- Boats, canoes and other flotation devices are NOT permitted on refuge pools and ditches.

- Non-motorized watercraft permitted on the Creighton and Driggs Rivers, and Walsh Ditch and Creek. Motor use permitted on the Manistique River.

- No size limit on northern pike in pools. Live bait or artificial lures may be used.

- Vehicles allowed only on main refuge roads and trails where gates are open. No off-road travel allowed with ANY motorized vehicle. You may park anywhere the road width permits passing by other vehicles. Beware of soft shoulders and steep banks.

- Fishing permitted during daylight hours only.

- Camping and fires are NOT permitted on the refuge.

- Dispose of fishing line properly. Monofilament line left lying on the ground or in the water will entangle and kill fish and wildlife.

Open Areas & Dates

SUMMER/FALL: Fishing is permitted on the refuge from June 1 to September 30 on certain pools. See map on reverse side.

ICE FISHING: Ice fishing is permitted on all refuge pools from January 1 thru February 28. Shanties may be used on all pools except F Pool, and must be removed no later than March 15. Most roads and trails are not maintained during winter months. NO snowmobiles or all-terrain vehicles are permitted.
FISHING MAP

SENEY NATIONAL WILDLIFE REFUGE

LEGEND

- Fishing
- Restrooms
- Picnic Area
- Parking

- June 1 - Sept 30
- Labor Day - Sept 30
- State Seasons
- Closed

SCALE MILES

- Surfaced Road
- Unimproved Roads
- Drainage Ditch
- Refuge Boundary

All Pools - ICE FISHING Jan 1-Feb 28