

TAMARAC NATIONAL WILDLIFE REFUGE

ROCHERT, MINNESOTA

ANNUAL NARRATIVE REPORT

Calendar Year 1984

NATIONAL WILDLIFE REFUGE SYSTEM
Fish and Wildlife Service

U.S. DEPARTMENT OF THE INTERIOR


REVIEW AND APPROVALS

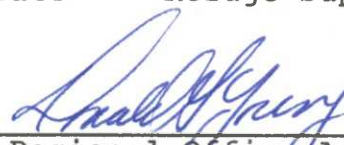
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Calendar Year 1984

<u></u>	<u>4/1/85</u>	<u></u>	<u>4/8/85</u>
Refuge Manager	Date	Refuge Supervisor Review	Date

<u></u>	<u>4/8/85</u>
Regional Office Approval	Date
Acting Assistant Regional Director	



L-R: Birger, Ondler, Bruhn, Brock, Winter,
Cheap, French and Swenson

TAMARAC REFUGE PERSONNEL CY-84

1. Omer N. Swenson, Refuge Manager	GS-12	PFT
2. Richard M. Birger, Asst. Refuge Manager	GS-12	PFT
3. Cyrus G. Brock, Forester	GS-11	PFT
4. Theodore D. Ondler, Asst. Refuge Manager	GS-9	PFT
5. Vivian K. Sunram, Administrative Tech.	GS-5	PFT
6. Kathy M. Cheap, Biological Tech. (Transferred from NOAA Fisheries, Beaufort, NC on 7/22/84)	GS-5	Perm. Seasonal
7. Norma E. Swan, Maintenance Worker (Resigned effective 2/21/84)	WG-5	PFT
8. John D. French, Maintenance Worker (EOD 4/1/84)	WG-5	PFT
9. Darrell L. Winter, Eng. Equip. Operator	WG-8	PFT
10. Wilbur D. Joy, Park Technician (Resigned effective 1/24/84)	GS-4	PPT
11. Jay F. Wolowitz, Biological Aid (7/22/84 to 9/28/84)	GS-3	TFT
12. Randy G. Finn, Laborer (6/25/84 to 11/2/84)	WG-1	TFT

OTHER REFUGE EMPLOYEES CY-84

MINNESOTA CONCENTRATED EMPLOYMENT PROGRAM EMPLOYEES (CEP)

<u>Name</u>	<u>Start Date</u>	<u>Termination Date</u>
French, John D.	03/19/84	03/30/84
Bruhn, Donald	08/06/84	11/23/84

SUMMER YOUTH EMPLOYMENT PROGRAM

<u>Name</u>	<u>Start Date</u>	<u>Termination Date</u>
Berger, Mark W.	06/11/84	08/01/84
Moberg, Michael A.	06/12/84	08/02/84

MINNESOTA EMERGENCY EMPLOYMENT DEVELOPMENT ACT PROGRAM (MEED)

<u>Name</u>	<u>Start Date</u>	<u>Termination Date</u>
French, John D.	*	03/16/84
Schultz, Kyle R.	*	03/09/84
Viste, Steve A.	*	03/22/84
Lehner, Trudy M.	01/03/84	06/14/84
Bruhn, Donald	03/20/84	04/25/84
	11/26/84	and **

*On at beginning of year

**Continued into 1985



1st Row, L-R: Nguyen, Lunder, Schmitz
 2nd Row, L-R: Olich, Carlson, Collins
 3rd Row, L-R: Koetter, Evans, Brock, Wick

YOUTH CONSERVATION CORPS (YCC)

STAFF

<u>NAME</u>	<u>START DATE</u>	<u>TERMINATION DATE</u>
Gigstead, Gill S. (Social Services Assistant)	06/13/84	08/14/84
Koetter, Mary A. (Social Services Assistant)	06/13/84	08/14/84

ENROLLEES

<u>Name</u>	<u>Start Date</u>	<u>Termination Date</u>
Brock, Laura	06/18/84	08/13/84
Carlson, Lee W.	06/18/84	08/13/84
Collins, Robert C.	06/18/84	08/13/84
Evans, Christopher D.	06/18/84	08/13/84
Lunder, Christine H.	06/18/84	08/10/84
Nguyen, Hao Anh	06/18/84	08/13/84
Olich, Nancy A.	06/18/84	08/13/84
Sachs, Todd G.	06/18/84	08/13/84
Schmitz, Brenda J.*	06/18/84	08/14/84
Wick, Lora M.	06/18/84	08/13/84

*Youth Leader

VOLUNTEER PROGRAM CY-84

<u>Name</u>	<u>No. Hours Donated</u>
Bergquist, Leonard	8
Bergquist, Ruth	9
Como, Paul	6
Cook, Kathy	34
Fessenbecker, Dave	25
Fessenbecker, Nancy	20
Ford, Marilyn	12
Garley, Jay	12
Gravalin, Harold	20
Gulson, Jim	32
Henke, Nancy	15
Husby, Duane	20
Husby, Reva	44
Jensen, Bob	24
Koetter, Mary	48
Leitheiser, Charles	33
Nelson, Dick	37
Olson, Orvis	21
Poindexter, Margaret	4
Tobkin, Donald	14
Zimmerman, Neil	10
Total:	<hr/> 444

INTRODUCTION

Tamarac National Wildlife Refuge lies in the glacial lake country of northwestern Minnesota in Becker County, about 18 miles northeast of Detroit Lakes (pop. 6,000) and 60 miles east of Fargo, ND. The refuge covers nearly 43,000 acres and was established in 1938 as a refuge and breeding ground for migratory birds and other wildlife.

Refuge weather is characterized by cool summers and long, cold winters. Temperatures range from -46 to 107 degrees. Average annual precipitation is 23 inches, with an average of 46 inches of snow each year. Refuge topography consists of forested, rolling hills interspersed with lakes, rivers, marshes and shrub swamps. Twenty-one lakes lie in the refuge. Three rivers flow within the refuge, while marshes and wooded potholes number several thousand. Elevations range from 1442 to 1710 feet.

Vegetation is diverse due to the refuge's location in the transition zone of the northern hardwood and coniferous forests. Sixty percent of the refuge is forested, consisting mainly of aspen, jack pine, red pine, balsam fir, paper birch, red and white oak, sugar maple and basswood. The Red River Valley prairie begins only about 10 miles west of Tamarac. Many refuge lakes and rivers contain abundant stands of wild rice, producing over a hundred tons of waterfowl food in most years. About two thousand acres of Tamarac is grassland remnants of early settler clearings or small farms present when the refuge was established.

Refuge wildlife is as varied as the habitat with nearly 240 species of birds recorded and 50 species of mammals. Bald eagles are relatively common with up to eleven active nests producing as many as 17 young in recent years. Moose are occasionally seen and on rare occasions, timber or gray wolves.

Historically, the refuge was a prized hunting, fishing, ricing and maple sugaring area for prehistoric and present day Indian tribes. The Sioux once controlled the area followed by the Chippewa. Today, the northern half of Tamarac lies within the original White Earth Chippewa Indian Reservation established in 1867.

At the turn of the century, the refuge's magnificent stands of red and white pine were exploited by logging companies. Settlers followed the loggers, although farming never achieved much prominence due to the thick forest, marginal soils and numerous wetlands.

Early refuge development was started by a CCC camp in the 1930's, and further enhanced in the 1960's by a Job Corps Center. Land acquisition in the southern one-third of Tamarac was not completed until the 1960's due to control of many lakes by politically powerful gun clubs.

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A. HIGHLIGHTS

Meetings and dialogue continue with the White Earth Band of Chippewa Indians. (Section E.7)

The wild rice harvest rebounded to near normal levels after last year's disaster. (Section F.2)

Forty-seven acres of native grasses were established. (Section F.4)

Bald eagle production remains very high. (Section G.2)

A fisheries inventory was conducted; this led to the drafting of a management plan. (Section G.11)

Waterfowl production and hunting activity were down from last year. (Sections G.3, H.8)

A major rehabilitation of the shop building was completed. (Section I.2)

B. CLIMATIC CONDITIONS

Long periods of dry weather, alternated with two very wet, rainy months seemed to be the mode of the year.

Precipitation totalled 23 inches, about two inches below normal. Snowfall was 13 inches at the beginning of the year with a total snowfall of nearly 18 inches January thru March making for better ruffed grouse wintering conditions than past years but slightly restricting refuge deer herd movements. Temperatures for January thru February averaged nearly twice as warm as normal with a high of 55 degrees recorded on February 22.

Spring brought near normal temperatures, but below normal precip, with March thru May totalling only three inches compared to the norm of six inches. Runoff from the winter snowcover kept refuge potholes in good condition and June brought nearly seven inches of rain, bringing water levels up more. A dry spell, July and August, totalled only two and one-half inches of rain compared to the norm of nearly seven and one-half inches. September continued one inch below normal with only 1.61 inches of rain. Ottertail River, the main waterway thru the refuge, was the lowest in years. Mid-October came with a rainy spell again lasting ten days for a total of over six and one-half inches, with three inches occurring in one day on the 15th.

The first killing frost occurred September 15, lakes froze over November 2 and the first measurable snowfall occurred November 15 with two inches.

1984 TEMPERATURE DATA

<u>MONTH</u>	<u>AVERAGE TEMPERATURE</u>	<u>NORMAL*</u>	<u>DEPARTURE</u>	<u>MAXIMUM</u>	<u>MINIMUM</u>
January	8.00	4.17	+ 3.83	40	-29
February	23.79	11.58	+12.21	55	-22
March	21.06	23.1	- 2.04	51	-23
April	45.37	40.65	+ 4.72	68	20
May	53.66	55.04	- 1.38	84	23
June	65.13	63.42	+ 1.71	85	38
July	68.92	68.4	+ .52	89	40
August	70.56	66.1	+ 4.46	96	38
September	52.35	56.1	- 3.75	89	21
October	48.00	45.01	+ 2.99	75	11
November	28.18	27.59	- .59	56	2
December	11.10	11.27	- .17	47	-19

*14 year period 1970-1983

1984 PRECIPITATION DATA

<u>MONTH</u>	<u>PRECIPITATION</u>	<u>NORMAL*</u>	<u>DEPARTURE</u>	<u>SNOWFALL</u>
January	.30	.76	- .46	7.50
February	.55	.50	+ .05	2.25
March	.45	1.11	- .66	7.50
April	1.66	2.05	- .39	.50
May	.86	2.67	- 1.81	0
June	6.85	4.35	+ 2.50	0
July	1.00	3.96	- 2.96	0
August	1.55	3.57	- 2.02	0
September	1.61	2.68	- 1.07	0
October	6.75	1.79	+ 4.96	0
November	.20	.84	- .64	2.0
December	.83	.64	+ .19	5.0
Totals	22.61	24.92	- 2.31	24.75

*34 year period 1950-1983

C. LAND ACQUISITION

1. Fee Title

Acquisition of the refuge is complete except for three parcels totalling less than 40 acres of Indian Trust Lands.

D. PLANNING

1. Master Planning

The Tamarac Master Plan has been complete since 1979. In 1984 four amendments were submitted to the Regional Office.

On July 13, 1984, an amendment was proposed which permitted small game hunting on all areas of the refuge except the signed closed areas. This was approved on October 17, 1984.

In late June an amendment adding the North Country Scenic Trail to the Master Plan was proposed. This was approved on November 23, 1984.

Another amendment proposed on June 28, 1984, changed the wording of the Master Plan to permit the Service, after consultation with the Minnesota Department of Natural Resources, the White Earth Band and the public to open or close easily distinguishable portions of the refuge to waterfowl and migratory game bird hunting as long as the total area open does not exceed 40% of the total refuge. This was approved on November 23, 1984.

A final amendment proposed on July 6, 1984, dealt with White Earth Band reserved treaty rights. "Such rights will be given special consideration in the implementation of all facets of this Master Plan. Consultation with the White Earth Reservation Tribal Council will be ongoing, and every effort will be made to accommodate legitimate requests of the Band's governing body while continuing to conform to the primary purposes for which the refuge was established." This amendment was approved on November 23, 1984.

2. Management Planning

The Tamarac National Wildlife Refuge Management Plan, Parts I and II, were submitted to the Regional Office on June 28, 1984. Part III will be written in 1985.

3. Public Participation

The local chapter of the Izaak Walton League of America hosted a Second Annual Public Forum on September 27, 1984, in Detroit Lakes. These forums have become an annual update on the past year's activities on the refuge and a look ahead. This year's

forum was also used to inform the public of likely changes involving an early deer hunting season for White Earth Band members on the reservation portion of the refuge. Unfortunately very few, less than 15, members of the public showed up. This is in contrast to 1983, which had approximately 70 participants.

In addition, several meetings were held with members of the White Earth Band on a variety of topics pertaining to tribal members' use of natural resources on the refuge.

4. Compliance with Environmental and Cultural Resource Mandates

In compliance with the National Historic Preservation Act, an archeological investigation was performed at the Sugarbush Access site. Ms. Christina Harrison of Archeological Research Services, Minneapolis, MN, did the field work in August of 1984. She was assisted by Kathy Cheap and Jay Wolowitz of the Tamarac staff. The final report was delivered January 10, 1985.

The findings will have a significant influence on the final design of the parking area.

E. ADMINISTRATION

1. Personnel

Personnel changes/actions during the year included:

- a. Refuge Maintenance Worker Norm Swan resigned on February 21, 1984.
- b. John D. French entered on duty as Refuge Maintenance Worker on April 1, 1984.
- c. Kathleen M. Cheap entered on duty as a Biological tech (GS-5) on July 22, 1984. The appointment is a career seasonal position of eight months annually running from April 1 to November 30 each year.
- d. Randy Finn was employed as a Laborer (TFT) during the June 25, 1984 to November 2, 1984 period.
- e. Refuge Forester Brock spent about 25 days assisting Sherburne and Rice Lake NWR's with revisions of their Forest Management Plans and management programs.
- f. Jay Wolowitz entered on duty as a Biological Aid (TFT) on July 22, 1984. Appointment ended on September 28, 1984.

The following displays the staffing at Tamarac for the last five years:

YEAR	PFT	PPT*	TFT	TOTAL
1980	6(1120)	2(474)	2(400)	10(1994)
1981	5(1190)	3(714)	3(200)	11(2104)
1982	5(1280)	3(679)	1(85)	9(2044)
1983	8(2040)	1(80)	2(45)	11(2165)
1984	7(1690)	1(95)	2(179)**	9(1964)

*Includes career seasonal positions.

**Includes TFT converted to PFT (French).

Parenthesis indicate mandays.

Manpower available to accomplish our management programs has decreased from 2,454 mandays in 1979 to 1,964 in 1984; a decrease of almost 20%. The outlook for FY-1985 is even worse with a projected work force of 1,820 mandays.

2. Youth Programs

This past summer (June-August) an eight week nonresident YCC program was administered by the refuge staff. This program employed two group leaders and ten enrollees (five girls and five boys). Enrollee selection was by a random drawing conducted by the State Employment Service. Their names and term of appointment can be found under refuge staffing at the beginning of the narrative.

Major projects accomplished by the YCC program included installation of new refuge signs, construction of five Class "B" gates, banding site preparation, and repainting the fire danger status sign. Minor projects included trail maintenance, maintenance of water control structures and culverts, loon and grebe survey and general facility maintenance.

The environmental impacts and effects were discussed prior to starting each new project. In addition to daily environmental awareness the YCC crew toured the Minnesota Department of Natural Resources (DNR) fish hatchery at Lake Sallie and the Minnesota DNR Wildlife Management Area at Hubbel Pond.

3. Other Manpower Programs

Excellent cooperation was again enjoyed from the programs of the Detroit Lakes office of the Minnesota Department of Economic Services (Employment Service). During 1984, we employed a total of 2.2 manyears of "freebees". These were divided as follows between programs:

CETA - two persons for a total of 76 mandays

MEED - six persons for a total of 407 mandays

Summer Youth - two persons for a total of 90 mandays

These employees assisted refuge staff with boundary posting and clearing, beaver dam removal, snow removal, firewood cutting, office work and routine refuge maintenance. We have been fortunate in getting willing and capable workers. Names and terms of service are listed at the beginning of this report.

4. Volunteer Program

Tamarac had 21 volunteers during 1984 with a total of 448 hours contributed. No recruitment efforts were conducted in 1984 since most of last year's volunteers returned. Seven new volunteers were enlisted through word-of-mouth advertising.

Once again, the majority of the volunteers were between the ages of 31 and 60 with eight women and thirteen men participating. The major work effort by the volunteers was coverage of information duties at the visitor center from mid-May through October. Additional volunteer work contributed included general maintenance and waterfowl banding.

A schedule was set up for each day of the entire period so volunteers and staff know who was working and when. Most volunteers worked two or three days each month. On the weekends in September and October, the visitor center was staffed entirely by volunteers.

In August, an appreciation potluck picnic was held for all volunteers and spouses at the refuge manager's residence. Certificates of appreciation were presented to each new volunteer.

5. Funding

The following table displays operations and maintenance funding for the past five years:

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
1210	153,000	145,000	145,000	175,000	---
1220	27,000	26,000	25,000	25,000	---
1240	35,000	30,000	30,000	30,000	---
1260	---	---	---	---	236,000
1400	700	700	750	800	---
1994	---	4,100	2,200	---	---
6820 (6860)	27,000	27,000	28,000	32,000	32,000
Supplemental Allocation	---	---	---	11,000	13,000
Total O&M	242,700	232,800	230,950	273,800	281,000

Special Funding

	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>
BLHP	758,245	56,684	661,000	43,747	11,010
ARMMS	---	---	---	---	116,000
Grand Total	<u>1,000,945</u>	<u>289,484</u>	<u>2,291,950</u>	<u>317,547</u>	<u>408,010</u>

Fiscal year 1985 was a most confusing year. The original budget or annual work plan (AWP) was revised six times during the year by the Regional Office. After nearly twenty years as a project leader, FY 1983 and 1984 were the first years the writer has not been able to live within original budget allocations. This was due to fund manipulations and/or staffing changes mandated by the Regional Office.

Under Special Funding, the BLHP amount (\$11,010) was a carry-over from the Office/Visitor Center project funded in FY 1980. Most of these monies were redistributed by the RO. ARRM's funding in FY 1984 was utilized for shop rehabilitation (\$100,000), signs (\$8,000) and Sugarbush Access (\$8,000).

6. Safety

There have been four reported accidents at Tamarac during CY-84.

On January 17, 1984, Norma E. Swan (driver) and Kyle Schultz (passenger) were returning from a work assignment with a load of firewood. While negotiating a curve on the Egg Lake Trail the truck skidded off the trail and hit a tree. Driver and passenger sustained slight injury but no lost time. The truck was a total loss. All staff were reminded of driving according to existing conditions.

On May 1, 1984, Cy Brock received injury to the top of his head while entering the four-foot, eight-inch door into the O/VC furnace room. Brock received a lacerated forehead, one day of lost time. The preferred solution would be to enlarge the door; due to design constraints we are left with exercising constant caution when filling the wood supply.

On June 27, 1984, Lee Carlson (YCC enrollee) hit his knee with the teeth of a handsaw he was carrying. The wound was superficial, no lost time. Enrollees and YCC staff were cautioned about proper transport of tools.

On July 6, 1984, Lora Wick (YCC enrollee) contacted poison ivy; one day of lost time. Enrollees and YCC staff were again reminded about working near the plant.

An Administrative Review was conducted on May 11, 1984, by Barbara Milne, RO-PM. Part of that review covered several safety items; all were found to be in proper order.

OTHER SAFETY RELATED ITEMS

January. Safety meeting and film on rabies was attended by refuge staff and MEED employees. A chainsaw safety course was given to all MEED employees; all points outlined in 24AM5, Regional Release 24-28 were discussed; safety equipment was demonstrated; safety foot covers were ordered.

February Safety meeting and film on home fire hazards was attended by refuge staff and MEED employees. All station fire extinguishers were inspected. Cable gate warning devices, as per RO-SA recommendations were purchased and installed.

March Safety meeting and film on maintaining clean and neat work areas was attended by refuge staff and MEED employees. All refuge fire fighting equipment was checked and prepared for the spring season.

April The slide/cassette show "Heimlich Maneuver" was reviewed by refuge staff and MEED employees. All fire extinguishers were inspected. At an orientation meeting for refuge volunteers the station safety plan was discussed.

May Safety meeting and film on farm tractor safety was viewed by staff. The White truck-tractor was inspected as per a factory recall.

June Safety meeting and film on rescue breathing was viewed by staff. YCC staff and enrollees received eight hours of American Red Cross first-aid training along with a discussion of safety practices during their first week of orientation.

July Safety meeting and film on industrial safety was viewed by staff, YCC and MEED. The D-4 dozer and 933 loader had new ROPS installed.

August Safety meeting and film on the importance of eye protection was viewed by staff, YCC and MEED. The required "step test" for staff fire fighters was administered by the local ambulance service; all who participated passed except one individual who missed the minimum score by one point.

September Safety meeting and film on driving attitude was viewed by staff. Winter and French attended the Equipment Operator's Training session at Agassiz NWR.

- October Safety meeting and film on driving tactics was viewed by staff. Pennington Welding was contracted to certify ROPS for the D-8, forklift and Ferret (see Section I.). Cheap was provided a chainsaw safety orientation by Brock. Stoplog racks were installed at most water control structures to prevent falls and save backs. The safety committee met to review the year and make plans for the next.
- November Safety meeting and film on falling and other hazards was viewed by staff. "Buckle Up!" signs were installed at the fuel pumps.
- December Safety meeting and film on the use of seatbelts was viewed by staff. Weather checked fuel pump hoses were replaced. Minimum temperatures for outside work were discussed with the crew. Decisions will be made on a day by day basis.

7. Technical Assistance

Numerous meetings with White Earth Conservation Department (WECD) were held during the year. In addition to coordination of ongoing refuge/reservation problems assistance was given in an identical deer collaring study.



Eric Nelson WAB-Bemidji, demonstrates a self collaring deer snare to WECD staff.

Birger

February 1984

On March 15, 1984, a meeting was held at the refuge as part of the continuing dialogue between the Service and the White Earth Band. Present were Darrel Wadena, President of the Reservation Tribal Council, Norrel Wallace, Minnesota Wetlands Management Supervisor, Dick Toltzmann, RF-1 Supervisor, staff members of Tamarac NWR and White Earth Conservation Department. Many new and long term problems were discussed.

During the year Project Leader Swenson was appointed to an advisory board of the Detroit Lakes Area Vocational Technical Institute asked to develop a curriculum for training young Native Americans to work in fisheries and wildlife management. This appointment resulted in several meetings during the year.

Forester Brock conferred several times with the Becker County Forester and MNDNR Forestry regarding timber management near the refuge.

Assistance was given to a United States Geological Survey crew in the installation and monthly reading of a flow meter on the Ottertail River.

F. HABITAT MANAGEMENT

2. Wetlands

Tamarac Refuge has 21 lakes within it's boundaries, seven lakes on the periphery of the refuge, over 3,000 potholes and 2,600 acres of intermittent marsh. The primary purpose of the impoundments is to create a maximum acreage of water-fowl production and feeding habitat. The wetland plant species of prime management concern is wild rice. The main objective of water level management on Tamarac is to move water from spring runoff and summer rains through the refuge without causing rapid and/or extreme fluctuations in pool or lake levels that would damage wild rice.

In general the wetland habitat conditions at the beginning of the year were good. Only 2% of the refuge potholes were dry. Approximately 76% of the refuge potholes had good to excellent water levels (-50% filled to capacity).

A good snowpack (18" - January to March) contributed to refuge lake levels being slightly above approved levels in early 1984. Water levels dropped steadily until June when 6.85 inches of rain fell. Most pools were at or near approved levels through the month of September. During October 6.75 inches of rain caused an overall rise in pool levels. At the end of the year most pools were slightly above approved levels.

During six weeks, from mid-May to the end of June the diesel pump on South Tamarac was operated for a total of over 1,000 hours. The purpose of this effort was to bring the level of South Tamarac down to approved levels and improve the conditions for submergent and emergent aquatic vegetation. The pump suffered a major mechanical failure and the effort ended.

The perennial battle with the beaver was waged throughout 1984. On two occasions a private contractor used a backhoe to open plugged control structures and culverts. Staff and YCC work crews expended many hours of hand labor removing sticks and mud from the refuge structures. Three dams were removed with explosives after freeze-up to facilitate spring water movement.

A local flight service was used to check the rice crop during mid-August. The crop appeared to be spotty with some good beds and others on the poor side. The annual drawing for ricing permits was held at the White Earth Community Center on August 16th. Seventy permits were initially issued and a list of alternates was selected. Ricing commenced on August 24th and most ricers had quit ricing by mid-September. The rice harvest (by traditional methods) for the year was considered average when compared to rice harvests over the past thirty years. A total of 40,185 pounds were harvested.

In addition, the White Earth Conservation Department once again harvested rice on Tamarac NWR with an airboat. In six days of harvesting they reported taking 11,000 pounds from North Tamarac Lake.

The following is a summary of the wild rice harvests for 1983 and 1984.

1983/1984 Rice Harvest Summary

<u>Lake</u>	<u>POUNDS HARVESTED</u>		<u>LBS./BOAT</u>		<u>BOAT DAYS</u>		<u>NO. PERMITS</u>	
	<u>1984</u>	<u>1983</u>	<u>1984</u>	<u>1983</u>	<u>1984</u>	<u>1983</u>	<u>1984</u>	<u>1983</u>
N. Chippewa	750	521	68	47	11	12	13	12
S. Chippewa	5,364	563	112	43	48	12	18	12
Rice	4,093	*	146	*	28	*	7	0
Carmen/Two Island	500	*	125	*	4	*	4	3
Flat-Cabin Point	1,600	*	123	*	13	*	4	3
Flat-West	4,000	*	114	*	35	*	7	0
Little Flat	11,754	*	141	*	83	*	21	5
Lost	3,000	730	136	56	22	13	6	8
Blackbird	9,124	*	132	*	69	*	15	0
Totals	40,185	1,814	1,097	4	313	37	95	43

*No attempt made to rice or no rice harvested

3. Forests

The number of forested acres modified by cutting increased, the number of seedlings planted decreased and the disease level for elm and birch remained about the same for 1984 compared with 1983.

This year firewood cutting was concentrated on clear-cutting small acreages (two to four acres each) of maple in large stands of upland hardwoods located on the south half of the refuge. The goal was to stimulate regrowth in hardwood sites where the understory was almost nonexistent. During the previous four to five years, dying scrub red oak was removed from mixed (red and white) oak stands to stimulate regrowth also. This cutting was done mainly on the north half of the refuge. Good deer use resulted from this effort.

- Sites of five to twenty-five acres each of aspen were clear-cut from the north, east and south portion of the refuge. Aspen sales were promoted vigorously and some beneficial results were noted. A salvage operation for diseased elm and birch trees was conducted but at a reduced pace compared to the 1983 level.

The hardwood and firewood market was very strong throughout the year while the aspen market strengthened at the beginning and end of the year and was weak during the summer.

Approximately 50 permittees paid \$1,729.00 to cut 608 cords of firewood. This resulted in approximately 44 acres of maple and birch being cut from 13 different locations. An additional ten permittees paid \$7,648.00 to cut 2,851 cords of aspen cordwood and some hardwood sawlogs from 303 acres.

About 500 red and white pine seedlings were planted on the west side of North Tamarac Lake, the same number on the north side of Dry Lake and a similar amount on the west side of Johnson Lake. The long range goal is to improve eagle habitat.

Summary of Acres Treated

<u>Species</u>	<u>No. of Sites</u>	<u>Acres</u>
Aspen	12	166
Elm/Birch	3	86
Other Hardwoods	16	85
Conifers	2	10
<u>Totals</u>	<u>33</u>	<u>347</u>



Managing upland habitat for wildlife - shearing
aspen and birch.

Birger

January 1984



On-site inspection of tamarack sale.

Birger

July 1984

a. Assistance to Other Refuges

Refuge Forester Brock in his role as Area Forester assisted Sherburne Refuge in preparing their Forest Management Plan for submission to RO for approval. Forest management efforts were concentrated in preparing and supervising sales for management and thinning of pine plantations and wind screens.

A Forest Management Plan was prepared for Rice Lake Refuge and approved by the Regional Office. A continuous forest inventory system was also implemented. One hardwood sale was prepared and several others completed during the year.

A total of nearly 30 mandays of forestry management assistance were provided to the Sherburne and Rice Lake refuges during the year.

4. Croplands

The primary objective of cropland management remains the same; the conversion of deteriorated former agricultural fields to a cover type more valuable to waterfowl production requiring minimal maintenance.

A single cooperative farming agreement was in effect which totalled only 71 acres, a 35% decrease from 1983. Ten acres were summer fallowed. Sixty-one acres were seeded to small grain (oats). The refuge share amounted to the oats harvested from 12 acres used in the waterfowl banding program.

Next year (1985) will be the last year of cooperative farming, all croplands remaining will be planted to DNC with a small grain nurse crop.

In keeping with current policy and according to the Cropland Conversion Plan some former fields which did not meet criteria for retention as nesting cover will be allowed to revert to woodland habitat.

5. Grasslands

A total of 47 acres in five units were planted to native grass seed with the cooperation of the Detroit Lakes Wetland Management District (DLWMD). The units had been summer fallowed in 1982 and 1983. On June 23, 1984, they were ground sprayed with Roundup at .63 qts. per four gallons water per acre by DLWMD personnel and equipment. Planting was accomplished using DLWMD drills and force account labor.

<u>Species</u>	<u>Variety</u>	<u>Seeds/Sq.Ft.</u>	<u>PLS/Ac.</u>
Switch	NDG-965-98	8.90	1.00
Indian	Local Harvest	1.20	0.30
Big Blue Stem	Local Harvest	11.28	2.97
Little Blue Stem	Local Harvest	0.59	0.10
Side Oats Gramma	Pierre & Killdeer	1.21	0.11
Green Needle	LoDorm	2.20	0.54
Western Wheat	Rosanna	1.17	0.47
Slender Wheat	Unknown	1.65	0.46
Drop Seed	Local Harvest	1.21	0.11
Blue Gramma	South Dakota Origin	0.56	0.03
		<u>29.97</u>	<u>6.09</u>

On July 20, 1984, an application of 2,4D at one pint per eight gallons water per acre was applied on an as-needed basis to reduce competition from broadleaved plants. This was done by DLWMD personnel and equipment.

The growing season was fair to poor marked by little precipitation and long spells of dry, windy weather. The young grasses were difficult to detect by the end of the season except for the side oats gramma which appeared to have done well enough to have set seed in a few cases.

9. Fire Management

a. Prescribed Burning

A total of 208 acres of grasslands, 93 acres of swamps and five acres of brush were scheduled for burning under the station's 1984 Burning Plan. One-hundred thirty-four acres of grassland, 30 acres of swamp and five acres of brush were burned.

A total of 100 man-hours were expended on the six prescribed burns that were accomplished. The average cost for burning was less than \$8.00/acre. The following chart shows some additional burning parameters.

1984 PRESCRIBED BURNING ACCOMPLISHMENTS

<u>Burn Unit</u>	<u>Location</u>	<u>Acres</u>	<u>Crew Size</u>	<u>Date</u>
13-B	Dike Road	20	5	4-23-84
17-E	Hopstead Fields	65	6	5-10-84
18-A	West Boundary	8	4	4-20-84
18-B	West Boundary	41	6	4-20 & 23-84
39	East of 6-Stall	30	6	4-19-84
40	Blk. Bird Tr.-Blk. Bd. Lk.	5	3	5-9-84

Once again natural and boom sprayer wet-line firebreaks were used to contain the prescribed burns. Generally, a five-foot strip is mowed around the burn site prior to wetting the strip and burning the site. Two to three times as much retardant must be used if a mowed strip is not put around the perimeter of the burn site. This method is like vintage wine, it improves each year. See Section I.4.

b. Wildfires

No wildfires were detected on the refuge during 1984.

c. Other

We are still waiting for our all-terrain vehicle with a pumper. When this unit arrives we will be able to cope with marsh fires in a much safer manner.

10. Pest Control

Pest control during 1984 consisted mainly of brush control and Gypsy moth trapping. Brush control consisted of broad-casting Tordon beads in the center portion of several islands during the fall of 1983. The results noted in 1984 were that much of the brush was dead and that some grass had returned and that some grass had resulted from seed spread on the island. Plans are to burn the grass and remaining brush periodically to produce a healthy stand of grass.

The refuge once again assisted the U.S. Forest Service in a Gypsy moth survey. Traps were placed at Cotton Lake and East Tamarac Lake accesses. No Gypsy moths were caught in any of the four traps.

12. Wilderness and Special Areas

The designated wilderness area consists of 2,115 acres in the northwest corner of the refuge and three islands, 65 acres, in North Tamarac Lake.

No wildfires occurred on either wilderness or natural research areas during 1984. Public use was limited mainly to hunters and a few environmental education groups.

G. WILDLIFE

1. Wildlife Diversity

Tamarac has an ongoing management plan of maintaining diversity of wildlife by maintaining diversity of habitat. Forestry activities are aimed at promoting new growth by selective cutting, as well as maintaining mature forest communities

on the refuge. Lake and marsh water levels are closely monitored and managed to promote the production of wild rice for wildlife needs. Clearings are maintained through controlled burning and areas have been seeded with native prairie grass species to develop native grassland habitat.

2. Endangered and Threatened Species

a. Bald Eagles

In cooperation with the Minnesota Department of Natural Resources Non-game Program, the refuge participated in the National Wildlife Federation's midwinter bald eagle survey. The survey was conducted on January 6 between 10 AM and 3 PM but no eagles were seen on the refuge during this period. From mid-December to late February, eagles are generally absent from the refuge. The first eagle of 1984 was seen on February 22 and the last on December 31.

The annual aerial census of bald eagle nests was flown on April 4. During this survey, 11 active nests were found. One nest was located in a large aspen while all others were built in white pine. Females were on the nests at all sites and a total of 13 adult eagles were seen on the flight. An additional flight was flown on June 29 to determine nest success. Nine of the nests contained young birds from one-third to almost fully grown with a total of 16 young seen. One nest had been appropriated by an osprey and observers could not locate the one nest which had been built in a mature aspen. It is believed that the nest was lost in May due to a blowdown of the nest tree. Although the loss of this nest is an isolated incident, it could be indicative of the importance of white pine to the nesting success of Tamarac's bald eagles.

The following table illustrates bald eagle production at the refuge for the past six years.

<u>Nesting Season</u>	<u>No. Active Nests</u>	<u>No. Young Produced</u>
1984	11	16
1983	8	13
1982	9	17
1981	8	8
1980	5	8
1979	3	3

b. Eastern Timber Wolf

One sighting of a timber wolf was made on the refuge on April 24.

3. Waterfowl

The first sightings of geese and ducks were on March 26th. The spring peak population was recorded on May 25th. The spring migration peak included 250 Canada geese and 5,800 ducks.

Breeding pair counts on refuge potholes, lakes and rivers were conducted between mid-May and the first week of June. A large percentage (75%) of the refuge potholes had good water levels (greater than 50% filled to capacity). Refuge potholes accounted for 44% of the breeding pairs and production; lakes-49% and rivers-2%.

Total production was estimated to be 4,500 ducks and 414 Canada geese. Mallards, wood ducks and blue-winged teal accounted for 94% of the total duck production (mallard-46%, wood duck-21%, blue-winged teal-26%).

Contrasting the population of breeding pairs to a near record high in 1981 most species of ducks decreased in numbers. Total duck pairs were down 30%. Mallard pairs (-12%), blue-winged teal pairs (-40%), wood duck pairs (-43%), ring-necked duck pairs (-25%), and hooded mergansers (+300%). However, Canada goose production actually increased 175% over 1981 levels.

During late August the blue-winged teal population started to build. The fall peak population occurred around October 5th when there were 37,700 birds present on the refuge. Worth noting was the presence of large numbers of lesser scaup on Pine Lake during the last two weeks of October. By the end of October the whistling swans had moved through the area. By the 2nd of November "freeze-up" had occurred.

4. Marsh and Water Birds

A new active great blue heron rookery was found during the aerial eagle nesting survey. Thirty to thirty-five nests were spotted in a tamarack swamp north of Pine Lake. This makes two known heron rookeries on the refuge.

Tamarac's YCC crew conducted a loon and grebe production survey during July. Twenty-six lakes were surveyed with the following results:

<u>Species</u>	<u>No. Adults</u>	<u>No. Young</u>
Common loon	55	13
Pied-billed grebe	31	20
Red-necked grebe	7	20
Horned grebe	2	1

Throughout the summer, double-crested cormorants and flocks of white pelicans were common on the refuge. There were also several sightings of green-backed heron on the refuge.

6. Raptors

Six species of hawks, six species of owls and one falcon are known to nest on Tamarac. No formal nesting survey of raptors other than bald eagles was conducted in 1984 but it was noted that one of the bald eagle nests had been taken over by an osprey which raised at least one young at this site (see Sec. G.2.a for bald eagle nesting success). Based on sightings, the most common resident species were broad-winged hawks, red-tailed hawks, American kestrels, Cooper's hawks, barred owls, great-horned owls, northern harriers and turkey vultures. A rough-legged hawk and northern saw-whet owl were two of the more unusual sightings on the refuge.

A young great horned owl which had been caught in a leg-hold trap was brought to the refuge. One leg had been badly damaged and after the bird was given food and liquids it was taken to a local veterinarian for treatment and rehabilitation.



Injured owl prior to treatment by local veterinarian (the owl is on the left).

Cheap

August 1984

7. Other Migratory Birds

Refuge personnel participated in the North American Woodcock Singing-Ground Survey on May 2 and 4.

Refuge sightings of unusual or rare birds during 1984 included Northern oriole, cedar waxwings, Eastern bluebird, scarlet tanager, gray jay and pine siskins.

8. Game Mammals

White-tailed Deer

The pellet survey began this year on April 10 and was completed on April 20, 1984. This was almost a month later than last year but more in line with the phenology of past years. This past winter could not be considered an "open winter" as the one in 1982-83. The Weather Severity Index used by the Minnesota Department of Natural Resources reached 114 at Park Rapids (40 miles east of the refuge). This was in contrast to a high of 68 for the previous winter. A cumulative WSI of 125 is considered critical to deer survivability.

A total of 104 staff hours was spent actually on the survey, walking 29.3 miles. As in past years assistance from the Detroit Lakes Wetland Management District Office was used, amounting to three mandays of survey work. In keeping with past policy, an attempt was made to have crews consist of one person familiar with the particular course and one newcomer. This insures continuity and cuts down on travel time to and from the starting points.

The gross data and pellets per plot this year indicates a slight rise in use of the "best habitat" (Brown Stratum) and the "worse habitat" (Red Stratum). The "second best habitat" (Green Stratum) declined 40% while the "third best" (Blue Stratum) declined 18%. Overall the pellets per plot declined 23%.

The data was analyzed by the Minnesota DNR and resulted in an estimated spring (prefawn) population of 46.7 deer/sq. mi., down 25% from 62.5 deer/sq.mi. in 1983. A cover letter from Mark Lenarz, Wildlife Biologist Forest Wildlife Populations and Research Group, Minnesota DNR, Grand Rapids, MN said in part, "...decrease is due, in part, to the harsh winter we experienced. The major cause of this decrease is probably due to the high harvest in and around the refuge in the 1983 season. The reported harvest on both White Earth Reservation and Tamarac NWR were up slightly (2% and 6% respectively) but the harvest from the kill block south of the refuge was up over 60% from the 1982 harvest. This implies that the winter population on Tamarac is probably migratory and living off the refuge during other seasons..."

Other data taken during the Pellet Survey: one moose pellet group was found, down from five in 1983; one dead deer was found versus five in 1983; ruffed grouse roosts were the same as last year (16), and one grouse was flushed as opposed to four in 1983. It may be wishful thinking, but perhaps this indicates the bottom of the grouse cycle?

Moose

There were four separate sightings of moose on the refuge this year. Moose pellet groups were found on only one of the deer pellet transects. The total number of moose on the refuge is not known, but based on the number of sightings, we estimate that the population is less than a dozen animals. Moose hunting is not permitted on the refuge.

Black bear

Black bear were sighted periodically throughout the year by the staff and refuge visitors. For the first time (July 84) the refuge participated in the Minnesota Department of Natural Resources (DNR) bear bait post route. The purpose of the census is to provide an index to bear density and population trends. Fifty baits were set out at 0.5 mile intervals and checked exactly one week later. Six of the sites were positively identified as having been visited by bear. Tracks, claw marks, paw prints, scats or hair are used in confirming the presence of a bear. Bear hunting is not permitted on the refuge.

Other

For the second consecutive year the refuge participated in the Minnesota DNR's scent post survey. Three 2.7 mile routes were run in mid-September. The most common visitor at the scent post sites were raccoon (4), squirrel (3), skunk (2), dog (2), deer (1), cat (1), bear (1), and fisher (1).

10. Other Resident Wildlife

On April 23, the refuge conducted a ruffed grouse drumming census in cooperation with the Minnesota Department of Natural Resources' Forest Wildlife Populations and Research Group.

Ruffed grouse are definitely in the low end of the cycle. The Central Hardwoods Zone of Minnesota which includes Tamarac indicated a decrease in drumming males of 37% from 1983. Hope that the cycle has "bottomed out" is evidenced by an increase of 67% in the Northwest Zone and stable levels in the remainder of the state. Also, Tamarac's limited sample of two routes indicated an increase of more than 100%. Summer sightings of broods on the refuge also increased over 1983.

11. Fisheries Resources

Fishery Assistance Biologist H. Bolton conducted comprehensive fishery surveys on Flat, Lost, Pine, South Chippewa, Tamarac and Wauboose lakes in July. Water quality tests for alkalinity and hardness indicated satisfactory conditions for production of game fish in all lakes tested. Gill nets and trap nets were used to sample fish populations.



Hannibal Bolton, FA Biologist, on Pine Lake.
Birger August 1984



Test netting on Flat Lake.
Birger August 1984

Biologist Bolton's comments concerning fish populations are summarized below:

- a. Flat Lake - A shallow winterkill lake that has abundant growths of submergent and emergent aquatic plants. The fish population is unsatisfactory with black bullheads and green sunfish accounting for 90 percent of the total number and 41 percent of the total weight.
- b. Lost Lake - The unsatisfactory fishery consists primarily of 3.0" to 8.0" black bullheads. One 46 inch northern pike that weighed 22 lbs. was collected.
- c. Pine Lake - A shallow winterkill lake. Sampling produced 131 walleye averaging .7 lbs. and 34 black bullhead with an average weight of .7 lb. See Section H.9 for comments on public fishing success.
- d. South Chippewa Lake - Contains dense aquatic plant growth throughout the lake which makes recreational boating and sport fishing difficult. The population includes several sport fish species but abundance is low. Northern pike and yellow perch were the most common sportfish.
- e. Tamarac Lake - Periodic winterkills occur during years of extremely cold temperatures combined with above average snow depths. All fish collected had good body condition with bluegill in particular being in

above average condition. Fifty-six percent of all fish sampled were classed as catchable size. Northern pike, largemouth bass, walleye, bluegill and pumpkin-seed sunfish, black crappies, yellow perch and black, brown and yellow bullhead were collected.

- f. Wauboose Lake - Has a good black crappie population with 63 percent 8.0 inches or greater in length. The northern pike population is classed as satisfactory with walleyes present but not in significant numbers probably due to poor spawning success.

A Draft Fishery Management Plan was submitted to RO in January, 1984. It was generously criticized by Fishery Assistance, Solicitor's Office and Refuges in the RO. At least the end result is positive - we got some surveys and recommendations from Fisheries Assistance. A revised draft will be submitted in FY-85.

No winterkill was observed in refuge lakes this year. No stocking or fish rescue work was carried out by the Minnesota DNR and no fish were stocked in FY-1984.

15. Animal Control

Predator (raccoon) use of the duck banding sites was a problem. The services of a professional trapper were contracted to reduce the number of predators in these areas. By the conclusion of the pre-season duck banding a total of fifty raccoons and four skunks were removed from three banding sites.

Beaver continue to cause problems in managing water levels by damming culverts and control structures. Due to low fur prices, permittee trappers expended little effort to remove beaver during the 1983 fall season. As a result, arrangements were made with the White Earth Conservation Department to have an expert Indian trapper (Dave Annette) remove beaver from problem areas in the spring of 1984. The trapping season was still open. Mr. Annette removed 97 beaver in a period of about three weeks. In addition, 12 beaver were removed from problem areas by refuge personnel during the summer.

16. Marking and Banding

The refuge conducted two marking and banding projects during 1984. One was concerned with the annual migratory waterfowl banding effort and the other was a refuge study of white-tailed deer movements.

a. Waterfowl

The waterfowl banding effort began in mid-July with the baiting of the selected trapping sites and terminated September 30 when all banding was stopped and the traps removed. Capture

methods included rocket nets, walk-in and swim-in traps. Although we had good initial response to the corn baited stations, by mid-August, very few birds were feeding at the sites. We attributed this partly to the good crop of wild rice produced on the refuge this year which provided good feed for waterfowl away from the trap sites. Predators were also a major problem at bait stations. Fifty raccoons and skunks were removed from the three banding areas to decrease disturbance and depredation. Only two ducks were lost to predators but several doves and other small birds were taken from the traps by predators.

The preseason waterfowl quota for Tamarac NWR was set at 400 mallards (100 of each age and sex) and 100 wood ducks (25 of each age and sex). The results are summarized in the following table.

1984 Waterfowl Banding Summary

Mallard

	<u>AHYM</u>	<u>AHYF</u>	<u>HYM</u>	<u>HYF</u>	<u>TOTAL</u>
Quota	100	100	100	100	400
No. Banded	7	14	36	49	106
Percent Quota	7	14	36	49	27

Wood Duck

	<u>AHYM</u>	<u>AHYF</u>	<u>HYM</u>	<u>HYF</u>	<u>TOTAL</u>
Quota	25	25	25	25	100
No. Banded	15	21	37	15	88
Percent Quota	60	84	148	60	88

In addition to mallard and wood duck, a total of four redheads and four blue-winged teal were banded.

b. Deer Collaring

An informal study of deer movement on and off the refuge was experimented with in 1982 and 1983, begun in earnest in 1984.

The purpose is to develop a modifier to the model used by the Minnesota Department of Natural Resources in which spring pellet counts are used to determine populations and set harvest parameters.

The premise is that the unusually high populations predicted by the model are based on a herd that only spends a portion of the year, winter, on the refuge. By noting movements of collared deer we will determine if this is occurring and to what degree.

In 1984 we set up 50 snares along boundary trails during January

and February using a modification of an automatic device developed by Verme (JWM, Vo. 26, No. 4, October 1962). By the end of February all collars had disappeared, apparently accounting for 50 "catches". When the snow disappeared three collars were found unattached. By the deer hunting season we felt we had 47 collared deer. Public notification has been by several press releases, public meeting and television feature. Several deer were sighted by the staff during the summer and three were reported by the public, all but one on the refuge. The off refuge sighting was about two miles west near Little Round Lake.

During the hunting season only two deer with collars were reported - both taken on the refuge, less than a mile from where the snares had been set.



Automatic tagging device
Birger February 1984

We intend to continue these efforts with an additional number of snares this winter, hoping for better results next season.

H. PUBLIC USE

1. General

At first glance it appears that there were major increases in public use activities during 1984. An improved wild rice

crop resulted in a substantial increase in the wild rice harvesting visits. Interpretation, hunting, trapping and fishing accounted for other increases in public use. Environmental education visits increased because more school groups are visiting the refuge. It is anticipated that public use on the refuge will continue to show moderate increases in the next several years in line with projected area population growth and increased public awareness of the refuge.

Following is a summary of refuge visits and program information outputs for the period 1982-1984.

<u>ACTIVITY</u>	<u>NUMBER OF VISITS</u>		
	<u>CY-1982</u>	<u>CY-1983</u>	<u>CY-1984</u>
Interpretation	10,016	9,635	11,092
EE	131	250	1,737
Hunting/Trapping	7,415	8,667	12,305
Fishing	4,416	5,990	8,545
Ricing/Wild Foods/Firewood	1,616	980	30,414
Camping (in conjunction with EE, Interpretation)	70	34	10
Picnicking (Wildlife/Wildlands oriented)	745	630	520
Wildlife/Wildlands Observation	3,450	4,367	4,608
Total	27,859	30,553	69,231

<u>ACTIVITY</u>	<u>NUMBER OF OUTPUTS</u>		
	<u>CY-1982</u>	<u>CY-1983</u>	<u>CY-1984</u>
Public Inquiries	825	600	880
Newsreleases/Media Interviews	34	28	16
Personal Appearances	9	12	6
Professional Services	18	14	10
Exhibits (off-refuge)	1	2	1

On September 27th a public meeting was held at the Area Vocational Technician School. The purpose of the meeting was to discuss the past year's management activities and the 1985 early deer season for tribal members. The area to be open would be the portion of refuge which is included in the White Earth Indian Reservation. Only a small number of people attended the meeting. This issue may prove to be controversial during the coming year.

2. Outdoor Classrooms - Students

The level of EE or Outdoor Classroom visits increased significantly during the past year. Word of our presence and the op-

portunities available here seems to be getting around.

3. Outdoor Classrooms - Teachers

No teacher workshops were held in line with current de-emphasis of the outdoor classroom function at Tamarac.

4. Interpretative Foot Trail

Interpretative signs were installed at the trail-heads on two of the designated hiking trails.

5. Interpretative Tour Route

The ten-mile Blackbird Auto Tour Route was open from mid-May through November in 1984. About 2,260 persons used the tour which interprets management practices, area ecology and history. Deer, loons, waterfowl, bald eagles are commonly observed along the tour route.

6. Interpretative Exhibits/Demonstrations

a. On-refuge

The visitor center was used by nearly 7,500 persons in 1984, up by 1,500 over 1983. The visitors were from many states and foreign countries.

The center is open from 7:30 AM to 4:00 PM, Monday - Friday, throughout the year. Summer weekend hours (mid-May through Labor Day) were from 9:00 AM to 5:00 PM and during September and October the weekend hours were from noon until 4:00 PM. During the summer months the visitor center was staffed by volunteers on weekday afternoons and by volunteers and Assistant Manager Ondler during the weekends.

A wildlife film series was held during the summer months with a new film shown each weekend. Many of the center visitors were "regulars" who came to see the film. The refuge's six-projector slide show was shown on request during weekday and weekend operation.

A total of 48 different school, college and Service groups used Tamarac for interpretative field trips. Most groups received an overview of refuge management from a staff member at the visitor center before pursuing self-guided activities on the refuge. The Many Point Boy Scout Camp again used the refuge for environmental education and Merit Badge work. Groups of 50 scouts visited the refuge bi-weekly throughout the summer.

A Twin Valley, Minnesota artist, Gene Lysaker donated a limited edition print (1 of 250) "Many Point Loons" to the refuge. The print has been framed and is now displayed in the visitor center.

b. Off refuge

During March, Assistant Manager Ondler visited six elementary schools in Detroit Lakes during National Wildlife Week talking with over 500 5th and 6th grade students. In addition wildlife week packets were distributed to elementary school teachers in the area.

The Detroit Lakes WMD and Tamarac NWR combined their resources in manning an information booth at the Becker County Fair in August.

8. Hunting

No changes were made in the hunting programs during 1984. Significant changes in 1983 resulted in larger areas open to public hunting. The increase in size of the "open areas" has not resulted in any significant problems.

a. Small Game Hunting

Small game hunting visits totaled 640 in 1984, nearly double the number of visits that occurred in 1983. A probable explanation for the increased hunter use is that the ruffed grouse cycle appears to be on the upswing. Hunters reported more flushes than they had seen in recent years. Hunter interest in squirrels and snowshoe hare is very low. Squirrel populations remain high but the population of snowshoe hare appears to be down from last year.

b. Waterfowl Hunting

The level of waterfowl hunting visits increased slightly over 1983 levels (approximately 3,000 visits in 1984). The waterfowl season opened with classic "bluebird" weather on September 29th. Hunter success was down from last year: of the hunters checked the average was 1.4 ducks in contrast with 2.2 last year. There was an early influx of birds with the fall peak occurring around October 5th. Included in the migrants were approximately 5,000 mallards, the most noted in the past 11 years.

There was a large migration of lesser scaup into the area on or about October 20th. These birds provided excellent hunting on Pine Lake, with many limits being taken.

The season ended early with all but the largest lakes frozen on November 2nd. There was no open water left on the refuge by November 5th.

Overall, it was a fair to poor season, with the hunters taking fewer birds (1.8 birds/hunter vs. 2.3 in 1983).

c. Other Migratory Bird Hunting

Tamarac was opened to the hunting of rails, snipe and woodcock for the first time in 1983. Like last year, no hunters were observed hunting for rails or snipe. Only a few hunters harvested woodcock and this is generally a by-product of grouse hunting. The seasons for these birds was in accordance with established state seasons with hunting only in the area of the refuge open to waterfowl hunting.

d. Big Game Hunting

Tamarac's bow deer season opened September 15th and closed December 9th. A total of 375 bow hunter visits were recorded for 1984. The number of bow hunters was down by 50% from 1983. No known archery deer kills were made on the refuge this year. The reason for the decline in bow hunting on the refuge is not known, perhaps other areas were more attractive or offered better chances at a trophy.

The refuge's firearm deer season was held November 3-12 in conjunction with the state season for Zone 2. The entire refuge, except for about 2,000 acres of closed area around buildings, was open for bucks only and antlerless deer by permit. Eight hundred antlerless permits were allocated to the general public through the state's computer drawing.

The White Earth Indian Reservation firearms deer season, on the reservation portion of the refuge ran from November 3 through December 2, 1984. The reservation bow season ran from September 8 through December 2nd, and the reservation black powder season was from October 1 through December 2nd. Reservation seasons included only the reservation portion of the refuge. Reservation licensed deer hunters could harvest a deer of either sex.

An aerial survey conducted on opening day of the state firearms deer season showed 400 cars or about 1,050 hunters; down about 17% from 1983. Total hunter visits were 3,200 down 24% from 1983.

Following is a summary of the 1982 through 1984 firearms deer seasons on the refuge:

	<u>1984</u>	<u>1983</u>	<u>1982</u>
State Kill (1.)	511	477	433
White Earth Kill (2.)	66	62	56
Total Kill on Tamarac	577	539	489
Total Number of Hunters (3.)	1,050	1,271	1,150
Success Rate (4.)	55%	42%	43%
Sex Ratio (5.)			
Adult Males	30%	34%	39%
Adult Females	40%	38%	40%
Fawn Males	15%	15%	12%
Fawn Females	15%	13%	9%

ASSUMPTIONS:

- (1.) State kill based on actual number recorded by MN DNR Area Game Manager for Becker, Mahnomen and Norman counties check stations for Kill Block #251, Tamarac NWR, +8.8% for the remainder of Zone 2 check stations.
- (2.) White Earth kill estimate = 13% of State kill.
- (3.) Total number of hunters = Opening day car count multiplied by 2.6.
- (4.) Success rate = Total kill divided by total number of hunters.
- (5.) Sex ratio percentage from information in Assumption 1.

In summary , it appears that 17% fewer hunters took 7% more deer than in 1983 and that the percentage of fawns in the take is increasing.

9. Fishing

Four refuge lakes are open to fishing from the opening of the state season in May through Labor Day. Two additional lakes, North Tamarac and Pine, are open year round in accordance with the state seasons.

Fishing visits were up with 8,545 visits recorded in 1984 compared with 5,790 visits recorded in 1983. The increase in fishing visitation was largely due to the opening of Pine Lake in December of 1983. Pine Lake had previously been used as a walleye rearing area by the Minnesota Department of Natural Resources (DNR). Pine Lake was opened to fishing due to fears of a complete winterkill due to heavy early snow cover. By the end of the year the oldest year class of walleyes being taken weighed close to a pound and a half. Granted these fish are nowhere near "braggin' size" but they sure taste good. Over 200 fishermen were counted on several weekend days on Pine Lake.

North Tamarac continues to provide good open water and ice fishing for the refuge visitors. The lake is well known for the size of it's sunfish and crappies.

10. Trapping

Only enrolled members of the White Earth Band, Minnesota Chipewewa Tribe are permitted by terms of the "Collier Agreement" to trap on the refuge. Prior to each season trappers are selected by drawing conducted by the Reservation Conservation Department.

In 1984, as in several past years, a spring season was held on beaver. One trapper was successful in removing 97 "problem beaver".

Seven permittees were selected to trap during the 1984 fall/winter trapping season. Their fur harvest data has not been received. Based on past harvests, the trappers efforts are concentrated on muskrat, raccoon, mink, fox and coyote.

11. Wildlife Observation

White-tailed deer, bald eagles, waterfowl and songbirds continued to be species with the most visitor appeal.

The Flat Lake eagle nest is a major attraction for refuge visitors. The nest can be viewed from an observation point set a quarter mile away.

Approximately 4,600 visits for wildlife/wildlands observation were recorded in 1984.

12. Other Wildlife Oriented Recreation

a. Camping

Only ten camping visits were recorded in 1984, less than half of the 1983 level. Only educational groups may camp on the refuge in support of EE or interpretative studies. Camping is regulated by special use permit and confined to a designated location in a clearing just north of Pine Lake.

b. Ricing

Wild rice harvesting is permitted by members of the White Earth Indian Reservation. Ninety-five permits were issued for ricing on the refuge lakes. Approximately 320 visits were made in 1984, with an estimated 40,185 pounds of rice harvested by traditional methods. Complete ricing details can be found in Section F.2.

c. 4-H Trail Ride

During mid-May a member of the Detroit Lakes Wetlands staff conducted a wildlife oriented trail ride. The participants were 50 youth in the Becker County 4-H horse club.

d. Cross-country Skiing

Good snow conditions attracted about 300 persons for skiing during January and February. Cross-country continues to be a popular winter activity on the refuge. During late fall the ski trail around Pine Lake was cleared of deadfalls and the ski trail signs were maintained.

13. Camping

General camping is not allowed on Tamarac except as noted in Section H.12.

14. Picnicking

Picnicking visits totaled 520 in 1984, as compared to 630 in 1983. Fireplaces were removed from Blackbird Lake and along the Ottertail River near the Indian graves in an effort to de-emphasize picnicking and lessen required maintenance. Damaged fireplaces were replaced with concrete fire-rings at the Chippewa picnic area. Picnicking is considered wild-life and/or wildlands oriented since it is most often a part of some other fish or wildlife related activity on the refuge.

17. Law Enforcement

The refuge's law enforcement effort is directed towards reducing public use violations during the summer months and detection of wildlife violations during the hunting seasons.

Violations for 1984 are summarized below:

<u>Violation</u>	<u>No.</u>	<u>Fines</u>	<u>Court</u>	<u>Pending</u>
Fishing in Closed Area	1	\$50	U.S. Magistrate	
Fishing w/o License	4	\$176	State	
Hunt Waterfowl with Unplugged Shotgun	2	\$100	U.S. Magistrate	
Over Limit Wood Ducks	2	\$125	U.S. Magistrate	1
Possession of Lead Shotshells While Hunting Migratory Waterfowl	5	\$375	U.S. Magistrate	
Alter Migratory Waterfowl Stamp	1	\$100	U.S. Magistrate	
Hunt Migratory Waterfowl w/Invalid Federal Waterfowl Stamp	1	\$50	U.S. Magistrate	
Hunt Waterfowl in Closed Area & Invalid State and Federal "duck" Stamps	2	\$200	U.S. Magistrate	
Possession of Controlled Substance	1	\$100	U.S. Magistrate	
Hunt Big Game w/o Red/Blaze Orange	1	\$55	State	
Hunting Big Game in Closed Area	1	\$110	State	
Hunt Big Game w/o License in Possession	1	\$11	State	

<u>Violation</u>	<u>No.</u>	<u>Fines</u>	<u>Court</u>	<u>Pending</u>
Transport Loaded Fire-arm in Vehicle	1	\$55	U.S. Magistrate	
Lend Big Game License to Another	1	\$110	State	
Lead Shot in Steel Shot Zone, Uncased Loaded Gun and Unplugged Shotgun	1	\$50	U.S. Magistrate	
Unauthorized Use of Motor Vehicle on NWR	1	\$50	U.S. Magistrate	
Fishing w/More Than Two Lines	1	\$55	State	
Unauthorized Removal of Government Property	1	\$100	U.S. Magistrate	
Removal of Plants (trees) from NWR	1	\$50	U.S. Magistrate	
Totals	29	\$1,922		1

18. Cooperating associations

The initial contacts were made for a cooperating association to establish a retail sales outlet at the refuge visitor center.

EQUIPMENT AND FACILITIES

2. Rehabilitation

Several rehabilitation and/or ARMMs projects were completed during the year. Comments concerning each project follows.

a. Shop Rehab

The former service building which a few years ago housed the office, a single heated shop stall and three cold storage stalls was remodeled into a functional, energy efficient vehicle maintenance, welding and woodworking facility.

Budgeted as a major ARMMs project at \$58,000, low bid came in at \$96,057 and was awarded to Bristlin Construction of Detroit Lakes, MN. A supplemental allocation of \$42,000 was added to available funding. With a few minor change orders final cost was \$98,987. Plans were prepared by a private architectural firm at a cost of \$3,600.

Two inches of styrofoam and cedar siding were added to the concrete block walls. Smaller, triple glazed windows and insulated overhead doors were added. A three-way wood, electric and oil heating system provides an efficient system. Heated oil and grease storage was also provided.



Refuge shop - Pre ARMMS rehab. Note the heavy wood overhead doors and large single glazed windows.
Birger July 1984



Post ARMMS rehab with insulated overhead doors, smaller triple glazed windows and 2" of foam insulation and siding over the concrete block.
Birger November 1984

2. Rehabilitation

b. Signs

The refuge informational and directional sign rehabilitation project was finally completed at a cost of \$8,113 for signs, posts and brackets. Erection was accomplished as a YCC project. The first half of this project was completed several years ago. With a few minor exceptions, refuge signs now meet Refuge System Standards.

c. Sugarbush Access

The access and approaches at the north end of Tamrac Lake were improved with a concrete ramp and grading to greatly reduce erosion at the site. Relocation and enlargement of the parking area was delayed due to the need for an archeological survey. Most of the materials were purchased; the archeological survey was completed so completion of the parking areas is planned for FY 1985 by force account.

The concrete ramp was constructed with refuge personnel preparing a base of 6" - 9" of Class 5 base gravel and 4' x 12' by 6" thick precast hog barn slatted floor sections. After preparation of the base, the vendors boom truck placed an 80 foot ramp in less than four hours.

d. Gates

Five Class B gates were constructed to replace cable gates on several major trails; gates were replaced at Egg Lake Trail (2), Ogemash, River Road and Lost Lake trails.

A theft problem involving the chains supporting the cross member of these gates surfaced this year. Chains were stolen at five gates. The chains were replaced with cable and a turnbuckle for adjustment.

e. Boundary Posting

After several years of effort by refuge staff, YACC, YCC and other manpower personnel, refuge boundary reposting was completed. Treated wood posts, a renewable resource, were used to replace a conglomeration of steel fence posts, several types of metal sign posts, wood posts and trees. Posting 99 miles of exterior boundary and both sides of the many public roads at one tenth mile intervals in forested terrain becomes a major project.

3. Major Maintenance

In July an unused section of township road in the southwest corner of the refuge was turned over to the refuge. This

section, approximately 3/4 mile, was graded and brought up to standard as a refuge interior trail.

A section of the Lost Lake Trail was reclaimed and brought up to Service standard. This half-mile stretch was from the Lost Lake Control to the Ogemash Trail.

4. Equipment Utilization

In January an Arnold Tractor Company Ferret and trailer was received on transfer from the Fergus Falls Wetland Management District.

During the year five refuge vehicles received minor body work and paint repair at the Detroit Lakes Area Vo-Tech School, in addition they performed repair to the diesel motor used to power the South Tamarac pump. This motor had been burned by vandals, and although the diesel motor class was able to patch it enough to run this summer it will need to be replaced.

During the year our talented crew of maintenance people converted two crop sprayers picked up surplus into prescribed burning equipment. When towed behind our tractors we can lay down up to 400 gallons of water and wetting agent in short order. This has proven to be a much better method than a plowed firebreak for burning grassed areas. Each unit has a gang of nozzels foreward and behind each wheel, each controlled by a valve.



Wetline Sprayer

Birger

July 1984



Wetline sprayers with their builder (D. Winter).
Birger July 1984

A new fire plow was received this year for fighting fires on brush and timber.

In October a welder was hired to certify ROPS on the D-8, forklift and second Ferret. All went well except for the D-8, which during the test suffered two cracks in the housing covering the final drive.



Birger D-8 on test stand.

October 1984

In subsequent communication the contractor, Ed Pennington Welding, admitted to misreading the applicable OSHA standards and actually tried to pull three times the required weight. Not even a Cat can stand up to 96,000 pounds of pressure.

7. Energy Conservation

A significant energy savings will be realized from the shop rehab project. See Section I.2a. We now have ample winter work space using less energy to heat the whole building than it formerly cost to heat one-third of it.

The heating system at the O/VC is another matter. Several problems have surfaced that will need correction.

a. Programmable Thermostats - Two have been replaced, one unit has been replaced twice. The stat installed when the building was constructed were evidently the cheapest available. To complicate matters, the manufacturer is out of business. Thank goodness, Johnson Controls makes a unit that is compatible with the sophisticated system we have. The other two stats will need to be replaced soon.

b. Wood Heat Loss - Wood heat from the furnace room must pass through 110 feet of underground transite duct before being distributed in the office wing. In several weeks of temperature checks, we verified that nearly 50% of the heat leaving the wood furnace room was lost before reaching the office wing mechanical room. Calculations by Regional Office Engineering confirmed that we were indeed losing about 128,000 BTU's per hour into our underground "heat sink". Plans are being developed to insulate the transite duct. Calculations indicate that 90 percent of this loss can be eliminated by insulation.

c. Electric Company - Our four electric furnaces have the capability of placing a 85 KVA (85,000 watts/hour) load on the lines if all are on at the same time. Since we are on the very end of the line this causes serious problems for the electricity supplier (Wild Rice Electric Coop). If their demand exceeds their allocation, added charges result from their wholesale supplier.

As a result the Coop is trying to reduce loads during peak demand periods (6-9 AM and 5-9 PM). This winter our electric furnaces will be on off-peak - to be controlled a maximum of two - four hour periods per day during high demand periods. Our thermostats are now programmed to utilize available power during off-peak demand hours by "super heating" the building during the 2 to 6 AM period. A saving of 2.2¢ per kilowatt is the incentive. Long term plans are to provide automatic gas or oil backup so electric heat can be turned off by the company for longer periods (24 to 48 hours). Regional Office Engineers are working on designing such a back up system along with the duct insulation previously discussed.

J. OTHER ITEMS1. Cooperative Programsa. Manpower Programs

Programs involving MEED, CEP, YCC, volunteers are described elsewhere in this narrative; see Section E.1.

b. White Earth Chippewa Indian Reservation

Cooperation with the Reservation Tribal Council is an ongoing occurrence, specific instances are cited throughout this narrative.

c. Other Cooperative Programs

<u>Program - Cooperator</u>	<u>Refuge Contribution</u>
Midwinter Eagle Census - NWF, MNDNR	Staff Time
Song Bird Census - MOU	Staff Time
Woodcock Singing Count - FWS	Staff Time
Steel Shot Program - FWS	Staff Time
Official Weather Station - NOAA	Staff Time
Snowpack and Water Content - NOAA	Staff Time
River Gauge Monitoring - USGS	Staff Time
Prairie Chicken Census - FWS	Staff Time
Deer Pellet Count - MNDNR	Staff Time
Deer Track Count - MNDNR	Staff Time
Deer Hunt Check Station - MNDNR	Staff Time
Ruffed Grouse Drumming - MNDNR	Staff Time
Predator Scent Post Survey - MNDNR	Staff Time
Bear Bait Station Survey - MNDNR	Staff Time
Walleye Rearing - MNDNR	Refuge Waters
Law Enforcement - MNDNR, WECD	Staff Time
Cooperative Fire Suppression - MNDNR	Staff Time
Fall Waterfowl Migration - MNDNR	Staff Time

NWF - National Wildlife Federation
 MOU - Minnesota Ornithologists Union
 FWS - U.S. Fish and Wildlife Service
 NOAA - National Oceanic and Atmospheric Administration
 USGS - U.S. Geological Survey
 MNDNR - Minnesota Department of Natural Resources
 WECD - White Earth Conservation Department

2. Items of Interest

a. Training and Workshops

<u>Employee</u>	<u>Training</u>	<u>Hours</u>
Birger, Richard M.	TWS Workshop	16
	Administrative Workshop	40
	LE Refresher & Pistol Qual.	40
	Red Cross First Aid	8
	Marsh Management Workshop	40
	Waterfowl & Wetland Mgmt.	32
Bröck, Cyrus G.	Fire & Resource Mgmt.	80
	TWS Workshop	16
	Pesticide Workshop	4
	CIFIDC Training	24
French, John D.	Fire Fighting, S-130, S-190	16
	Red Cross First Aid	8
	Equipment Operator's Training	40
Ondler, Theodore D.	TWS Workshop	16
	Pesticide Workshop	4
	LE Refresher & Pistol Qual.	40
Sunram, Vivian K.	TWS Workshop	16
	PAY-PERS Workshop	12
Swenson, Omer N.	TWS Workshop	16
	LE Refresher & Pistol Qual.	40
	Pre-Retirement Workshop	24
	Instructor-Advanced Refuge Manager's Training	
Winter, Darrell L.	Pesticide Workshop	8
	Equipment Operator's Training	40

b. Revenue Sharing

Tamarac Refuge contributed \$41,896 (a decrease of \$12,479) to Becker County. The Detroit Lakes Wetland Management District contributed \$37,160 for a total of \$79,056 of revenue sharing funds from Fish and Wildlife Service lands in Becker County.

3. Credits

Refuge Manager Swenson prepared Sections E.1,3,5, I.2,7,K.a. and edited the entire report.

Assistant Manager Birger prepared Sections A, C, D, E.6,7, F.4,5, G.8, I.3,4, J.

Assistant Manager Ondler prepared Sections E.2,4, F.1,2,11, G.3,15, H.

Biological Technician Cheap prepared Sectons G.1,2,4,6,7,10,16.

Forēster Brock prepared Sections F.3,9,10.

Administrative Technician Sunram prepared Section B and K.b. as well as assisted in typing and assembly.

MEED employee Renee Bartosch typed and assembled the entire report.

K. FEEDBACK

- a. During the years since the feedback section became a part of the annual narrative, it has most often been used to air gripes and frustrations that we have with the system or the way it operates. It seems so much easier to find fault and complain than to write about something that goes right. I have probably been more guilty than most.

For a change, I thought someone ought to say something positive. In spite of all the frustrations and bitches we have, let's face it, most of us are doing exactly the kind of work we like to do. Very few of us would change professions, even for considerably more money. So let's struggle through this difficult time of fiscal restraint, staffing shortages and all the rest. It can only get better.

- b. The above feedback was the summation of nearly 23 years of Federal Service by a man who has done much for the enhancement and the preservation of a rapidly disappearing inheritance. He has experienced the frustrations of "bureaucracy", "red tape", you name it, that seems to be a fact of life when dealing with a democratic government. He's been the target of special interest groups who focus their attention on one small fact and base their whole argument on that fact, failing to see all the components, that when put together compose the theme of what our mission is all about. He's been the target of local hunters, refuge neighbors, some of whose land had to be condemned by the Federal Government in order to complete the refuge.

In recent years he's been the mediator between the FWS, the State DNR and the White Earth Band of Chippewa Indians. Half of the refuge lies within the original boundaries of the White Earth Reservation. He's been instrumental in beginning the process of compromise between these three entities; working together for a common purpose rather than each separately trying to achieve their own goals. As we all know, that's not an easy task when dealing with human emotions.

Omer is retiring as of April 26, 1985. This is the last narrative that he will edit and contribute to.

We're going to miss him here at Tamarac; and we think those of you who worked with him at one time or another will always remember that tough Norwegian with the "Ole and Lena" jokes. We now salute him for a job well done and wish him the best in this new phase of his life, hoping he'll pay us a visit now and then.

The Tamarac Staff

Note by Sunram

This narrative was put into a machine called a "Xerox 800 Electronic Typing System". This machine was a hand-me-down from our Regional Office. At the time we received it, I was thrilled at the prospect of getting into "modern technology" at last. Little did I know, "being from the sticks", that this machine is as out-of-date in modern technology as the Model T is to the Porsche. I could swear that the machine has a mind of it's own. Thank goodness for a lady recently hired thru the local State Employment Service, Renee (MEED). After taking a short night course on her own on computers she was able to figure out this machine and pound out this report. I had, been fighting with it for several weeks.

So if this narrative is coming out late and has some errors, so be it. Now that we've learned how to put out a report of this size in this machine, it should enable us to figure out any other computer you've got out there.