TAMARAC NATIONAL WILDLIFE REFUGE

ROCHERT, MINNEOSTA

ANNUAL NARRATIVE REPORT

Calendar Year 1985

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

REVIEW AND APPROVALS

TAMARAC NATIONAL WILDLIFE REFUGE

Rochert, Minnesota

ANNUAL NARRATIVE REPORT

Calendar Year 1985

Donald J. Walle 2/25/86 R. E. [illegible] 4/7/86

Refuge Manager Date Refuge Supervisor Review Date

Regional Office Approval Date

From left at bottom of stairs: Ondler, Cheap, Undlin, Deede
Winter, French, Walls, Brock, Bartosch

TAMARAC REFUGE PERSONNEL CY-85

1.	Darold T. Walls, Refuge Manager (EOD on 8/18/85)	GS-12	PFT
2.	Omer N. Swenson, Refuge Manager (Retired on 4/27/85)	GS-12	PFT
3.	Richard M. Birger, Assistant Refuge Manager (Transferred to Horicon NWR as project leader on 8/4/85)	GS-12	PFT
4.	Cyrus G. Brock, Forester	GS-11	PFT
5.	Theodore D. Ondler, Assistant Refuge Manager	GS-9	PFT
6.	Lowell C. Deede, Wildlife Biologist (EOD on 9/1/85)	GS-9	PFT
7.	Darrell L. Winter, Eng. Equipment Operator	WG-8	PFT
8.	Kathleen M. Cheap, Biological Technician	GS-5	PFT
9.	Vivian K. Sunram, Administrative Technician (Resigned on 5/10/85)	GS-5	PFT
10.	John D. French, Maintenance Worker	WG-5	PFT
11.	Renee F. Bartosch, Clerk/Typist (EOD on 8/19/85)	GS-3	PFT

OTHER REFUGE EMPLOYEES CY-85

MINNESOTA CONCENTRATED EMPLOYMENT PROGRAM EMPLOYEES (CEP)

Name	Start Date	Termination Date
Roy, Leo	02/04/84	03/22/85

MINNESOTA EMERGENCY EMPLOYMENT DEVELOPMENT ACT PROGRAM (MEED)

Name	Start Date	Termination Date
Bruhn, Donald	11/16/84	03/25/85
Bartosch, Renee	03/11/85	08/16/85
Undlin, Kent	05/28/85	11/22/85

Front Row, L-R: Atkins, Strom, Meader, Wokasch
Back Row, L-R: Inks, Wirth, Ziegler, Olich, Lindsay Lewica

YOUTH CONSERVATION CORPS (YCC)

STAFF

Name	Start Date	Termination Date
Lewica, John	06/12/85	08/16/85
Inks, Jeffrey	06/12/85	08/16/85

ENROLLEES

Name	Start Date	Termination Date
Atkins, Coleen	06/17/85	08/09/85
Lindsay, Scott	06/17/85	08/09/85
Meader, David	06/17/85	08/09/85
Olich, Nancy*	06/17/85	08/09/85
Strom, Craig	06/17/85	08/09/85
Wirth, Deanna	06/17/85	08/09/85
Wokasch, Colleen	06/17/85	08/09/85
Ziegler, Lee	06/17/85	08/09/85

*Youth Leader

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 above sea level.

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.

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

Historically, the refuge was a prized hunting, fishing, ricing and maple sugaring area for 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.

VOLUNTEER PROGRAM CY-85

Name	No. Hours Donated
Canham, Pat	4
Cook, Cathy	24
Delaney, Valerie	40
Fessenbecker, Dave	32
Fessenbecker, Nancy	44
Ford, Marilyn	20
Garrison, Amy	18
Garrison, Mike	18
Henke, Nancy	16
Husby, Duane	16
Husby, Reva	49
Januscheitis, Mary	19
Jensen, Bob	36
Kessler, Mary	20
Leitheiser, Charles	35
Nelson, Dick	32
Olson, Orvis	9
Spurbeck, Carol	15
Tobkin, Don	14
Zimmerman, Neil	15
Total:	476

TABLE OF CONTENTS

Page

G. WILDLIFE

H. PUBLIC USE

I. EQUIPMENT AND FACILITIES

Page

J. OTHER ITEMS

A. HIGHLIGHTS

Omer N. Swenson retired on April 27, 1985 after 23 years with the FWS. Omer was the project leader at Tamarac since 1972. (Section E.1)

The refuge/wildlife observation tower was closed to the public for safety reasons. (Section E.6)

The snowfall for November and December was 34 inches. Snow depths in the woods averaged 13-14 inches at the end of the year. There were 62" of snowfall in 1985, four feet of that total occurred in March and November. (Section B)

During an August storm the eagle nest on Flat Lake was destroyed by high winds. Because of its accessible location this nest has been viewed by many people. (Section G.2)

For the first time the White Earth Reservation firearms deer season preceded the opening of State deer season on the refuge. (Section H.8)

B. CLIMATIC CONDITIONS

Above normal precip and below normal temperatures characterized the year. Only January, February and October were below normal for preceipitation. Yearly precip totals were 11.74 inches above normal. Over five feet of snow fell, with four feet coming during March and November. Although temperatures for the spring months of March, April and May were above normal, temperatures for the remainder of the year were well below normal. November and December were the coldest, aveaging 10.0 and 9.5 degrees, respectively, below normal.

High winds blew down trees and flattened area cropfields on several occasions. It is believed that at least one tornado touched down near the site of the former Rice Lake cabin on September 5. Many large aspen, birch, oak and white pine trees were blown over and treetops were twisted off along a path through this area.

The first killing frost occurred on September 24. By November 9 the small wetlands were frozen and by the 14th all surface water on area lakes was frozen.

1985 TEMPERATURE DATA

MONTH	AVERAGE TEMPERATURE	NORMAL	DEPARTURE	MAXIMUM	MINUMUM
January	5.9	3.4	+2.2	35	-32
February	9.6	12.3	-2.7	48	-33
March	32.2	23.0	+9.2	55	5
April	47.6	40.9	+6.7	86	18
May	59.4	54.9	+4.5	84	35
June	59.0	63.5	-4.5	83	34
July	67.2	68.4	-1.2	91	42
August	60.5	66.4	-5.9	82	40
September	53.5	55.9	-2.4	77	25
October	44.1	45.2	-1.1	65	11
November	17.6	27.6	-10.0	55	-16
December	1.8	11.3	-9.5	34	-23

*15 year period 1970-1984

1985 PRECIPITATION DATA

MONTH	PRECIPITATION	NORMAL*	DEPARTURE	SNOWFALL
January	0.27	0.75	-0.48	3"
February	0.13	0.50	-0.37	4"
March	2.22	1.09	+1.13	21"
April	3.47	2.04	+1.43	--
May	8.03	2.62	+5.41	--
June	5.30	4.42	+0.88	--
July	4.28	3.86	+0.42	--
August	5.37	3.51	+1.86	--
September	3.27	2.65	+0.62	--
October	1.29	1.93	-0.64	--
November	1.99	0.82	+1.17	27"
December	0.96	0.65	+0.31	7"

*35 year period 1950-1984

C. LAND ACQUISITION

1. Fee Title

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

D. PLANNING

2. Management Planning

A draft Fisheries Management Plan was submitted to the RO in April. The plan covers future fish management and leeching on refuge lakes. The goal is to obtain a tri-party agreement between the State of Minnesota, the White Earth Band and the Service.

A Search and Rescue Plan was submitted to the RO in February. The goal of the plan is to provide for safe recreational experience on the refuge.

4. Compliance with Environmental and Cultural Resource Mandates

A special use permit was issued for a state archeological investigation for the proposed upgrading of County Road #29. This field investigation was followed by a site inspection by the Regional Historian of the FWS.

5. Research and Investigation

A study of the composition and structure of a maple-basswood-elm forest at the onset of Dutch-elm disease is being conducted in the research natural area located on the north side of North Tamarac Lake. Ecologists rarely have had the opportunity to study the forest dynamics which result when a co-dominate tree, in this case elm, is removed from a forest by natural means.

The study area will be rechecked once every five years over a 25 to 30 year time frame. No disturbance is to be done to the site and no material is to be removed from the site. The study is being conducted by Professor John L. Vankat, Department of Botany, Miami University, Oxford, Ohio.

E. ADMINISTRATION

1. Personnel

Personnel changes/actions during the year included:

a. Omer N. Swenson, Project Leader retired on April 27, 1985 after 23 years of service with the Federal Government, including 13 years at Tamarac NWR.

b. Vivian K. Sunram, Administrative Technician, resigned on May 10, 1985.

c. Darold T. Walls entered on duty on August 18, 1985 as Project Leader. Darold's most refent assignment was Project Leader at J. Clark Salyer NWR at Upham, North Dakota.

d. Richard M. Birger transferred to Horicon NWR in Mayville, Wisconsin on August 4, 1985 to assume duties of Project Leader.

e. Renee F. Bartosch entered on duty on August 19, 1985 as Clerk/Typist.

f. Lowell C. Deede entered on duty on September 1, 1985 as Wildlife Biologist. Lowell transferred from Desoto NWR at Missouri Valley, Iowa.

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

YEAR	PFT	PPT*	TFT	TOTAL
1981	5(1190)	3(174)	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(94)	2(179)	9(1964)
1985	7(1710)	1(120)	4(360)**	14(2280)

*Includes career seasonal positions.
**Includes TFT converted to PFT (Bartosch and French).

2. Youth Programs

This past summer (June-August) an eight week non-resident YCC program was administered by the refuge staff. This program employed two group leaders and eight enrollees (four girls and four boys). Enrollee selection was by 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 installing one Class "A" gate, ten Class "B" gates, banding site preparation and maintenance of water control structures and culverts. Minor projects included trail maintenance, litter and trash removal and a loon/grebe survey.

First aid training was provided for YCC enrollees during the second day of the program. Tamarac YCC also received water and boat safety training at Many Point Boy Scout Camp. No lost time accidents occurred during the YCC program. One youth contacted swimmer's itch while cleaning culverts. This youth was assigned to other work and the other employees were cautioned to minimize contact with water and rinse with soap and water after contact. 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

The Detroit Lakes office of the Minnesota Department of Economic Services (Employment Service) provided four people for refuge projects at no cost to the government. A total of 335 days of labor were used for beaver dam removal, trail maintenance, routine maintenance and clerical assistance. Names and terms of employment are listed under refuge staffing at the beginning of this report. There are two people on permanent staff (John French and Renee Bartosch) that initially worked on the refuge under one of the Minnesota Employment programs.

4. Volunteer Program

Tamarac had 20 volunteers during 1985 with a total of 476 hours donated. This is contrasted to 21 volunteers in 1984 with 448 hours donated. Most of our volunteers are recruited by other volunteers. We had seven new volunteers this year.

Volunteers were between the ages of 31 and 60 with 11 women and 9 men participating. Almost all of the volunteer hours were used at the visitor center from mid-May through mid-November. Additional volunteer hours involved waterfowl banding.

A daily work schedule was maintained for the entire period which enabled volunteers to find their own substitutes. Most volunteers worked two days each month. On the weekends from September to mid-November the visitor center was staffed entirely by volunteers.

In September a potluck dinner was held at the visitor center for the refuge volunteers and their spouses. A certificate of appreciation was presented to each volunteer.

5. Funding

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

	1981	1982	1983	1984	1985
1210	145,000	145,000	175,000	----	----
1220	26,000	25,000	25,000	----	----
1240	30,000	30,000	30,000	----	----
1260	----	----	----	236,000	266,350
1400 (1480)	700	700	800	----	750
1994	4,100	2,200	----	----	----
6860	27,000	28,000	32,000	32,000	32,000
Supplemental Allocation	----	----	11,000	13,000	----
Total O & M	232,800	230,950	273,800	281,000	293,700

Special Funding

	1981	1982	1983	1984	1985
BLHP	56,684	661,000	43,747	11,010	----
ARMMS	----	----	----	116,000	33,300
Grand Total	289,484	2,291,950	317,547	408,010	327,000

ARMMS funding in FY 85 was utilized for vehicle replacement (7,000), riprap work at Chippewa and Rice Lake controls (3,000), gate replacement (3,000), repainting the 6-staff (1,000), rehab Sugarbush boat landing (10,000) and Egg Lake Trail rehab (6,300).

6. Safety

Only two accidents occurred during 1985. One occurred when a YCC enrollee contacted swimmer's itch. The other involved a back sprain while an employee was unloading corn at a banding site.

Other Safety Related Items:

02/05/85 - Safety meeting and film on electricity.
02/11/85 - Safety meeting and film on vehicles.
05/13/85 - Safety meeting and film on tractor safety.
06/17/85 - The lookout fire tower was closed to the public. A six foot chain link fence was erected around the base of the tower and the first set of steps were removed.
06/18/85 - Twelve hazardous waste containers were removed from the refuge under the guidance of the Minnesota Pollution Control Agency.
07/12/85 - YCC enrollee contacted swimmer's itch.
08/15/85 - Ondler sustained back injury while lifting.
09/16/85 - Safety meeting and film on driving attitudes.
09/30/85 - Safety meeting and film on winter driving techniques.
10/07/85 - Safety meeting and film on alcohol related accidents and seat belts.
10/21/85 - Safety meeting and film on hydroplanning.
10/31/85 - Station safety committee meeting.
11/04/85 - The Regional Safety and Occupational Health Manager, Earl Markwell, conducted a safety inspection at the station.
12/04/85 - Safety meeting and film on safe driving.

7. Technical Assistance

Numerous meetings with the White Earth Conservation Department (WECD) were held during the year. Coordination efforts involved fisheries, wild rice, hunting, trapping and leeching programs.

Forester Brock conferred several times with the Minnesota Department of Natural Resources regarding timber management and joint fire suppression.

Assistance was provided to USGS by taking weekly readings at a gauge on the Ottertail River.

F. HABITAT MANAGEMENT

2. Wetlands

Tamarac Refuge has 21,063 wetland acres. Eight impoundments are used to manipulate waterfowl production and feeding habitat. One important wetland plant species is wild rice. One 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.

During January approximately 30 acres of willow and alder were removed from four wooded potholes. The purpose of the pilot effort was to increase waterfowl use on these areas. Many potholes have been invaded by woody vegetation. Spring pair counts indicated an increase in waterfowl use on these four potholes.

The wetland habitat conditions at the beginning of the year were good. No potholes were found to be dry. Approximately 75% of potholes were in excellent condition (greater than 80% of capacity).

The snowpack for the first three months of the year varied between 5 and 10 inches. A total of 21 inches of snow fell in March but quickly melted due to warm temperature.

Water levels exceeded approved levels throughout the year. Rapid runoff, higher than average preceipitation and a high beaver population made it difficult to keep the water at desired levels.

Much of our wetland management involved the removal of beaver deposited materials at structures and culverts in order to regulate water levels. "Beaver debris" was removed by hand and with a backhoe. It also was necessary to blow several dams to facilitate proper flow of water.

An aerial survey of the wild rice beds was flown in mid-August. Rice production on the refuge ranged from poor to excellent. South Chippewa, Little Flat and North Chippewa Lakes provided excellent rice crops. Big Flat and Blackbird Lakes had poor rice production.

Since 1954 some ricers have voluntarily weighed their harvest. This practice was discontinued in 1985 due to poor compliance and invalid data.

The White Earth Reservation biology department again harvested rice on North Tamarac Lake with an airboat. This mechanical harvest yeilded approximately 1,000 pounds of green rice. This is contrasted to 11,100 pounds harvested in 1984. Rice harvested with the airboat is used to seed off-refuge reservation lakes.

Installation of stoplogs at control structure.

KMC 1985

High water levels created problems for man and beast.
KMC 1985

3. Forests

Small clear cuts of two to four acres each were made by firewood cutters in designated forest compartments throughout the refuge. This resulted in off-site red oak, aspen and brich being cut from sandy sites on the north half of the refuge and maple, elm, ash, aspen and birch cut from heavier soil sites on the south half of the refuge. In the southern portion of the refuge selective cuts and clear cuts of hardwood species were contiguous to each other in an attempt to see if the resulting diversity of regrowth would be more desirable to wildlife than if these cuts had not been contiguous.

The sawlog and pulp hardwood markets were very strong throughout the year, the jackpine market improved and the aspen market remained weak. It is expected that new approaches in aspen marketing will result in doubling the aspen acreage that will be cut in 1986 versus 1985. Cutting statistics were as follows:

Species	No. of Sites	No. Permittees	Acres	Revenue
Aspen	10	10	82	$4479.63
Conifers	2	2	16	$1371.93
Hardwoods	16	46	54	$1971.50
	28	58	152	$7823.06

Red and white pine seedlings were planted on the west side of Big Flat Lake and south of South Twin and South Tamarac Lakes. Five hundred seedlings of each species were planted. The long range goal of these plantings is to improve eagle habitat.

a. Assistance to Other Refuges

On site assistance to the forest management activities at Rice Lake and Sherburne Refuges was decreased greatly in 1985 because of budget cuts in travel funds.

4. Croplands

The primary objective of cropland management is to convert the former, deterioriated agricultural fields to a cover type more valuable to waterfowl production.

Cooperative framing has been used to seed DNC with a nurse crop or to summer fallow selected fields for weed control and prepare an adequate seed bed for warm season native grass establishment. One cooperative farming agreement, totaling 71 acres was in effect. Ten acres were summer fallowed and 61 acres were seeded to an oats nurse crop/DNC mixture by the cooperator. The DNC mixture consisted of 4 pounds of alfalfa, 1 pound of yellow blossom sweet clover, 3 pounds of tall wheat grass and 1 pound of switchgrass per acre. The summer fallow field was not properly prepared and is not ready for 1986 seeding. In addition to the summer fallow field, the refuge received about 150 bushels of oats from 12 harvested acres for its share of the CFA. (It seems that the cooperator took advantage of the high turn over in staff personnel experienced this year). For his share, the cooperator harvested about 1500 bushels of oats from the remaining 59 acres.

Although this was to be the last year of cooperative farming, many refuge fields lack quality nesting cover. Force account farming and/or well-supervised cooperative farming are still tools that may be used to restore these poor cover areas to higher quality grasslands. Burning will be used as well.

5. Grasslands

The Detroit Lakes Wetland Management District (DL WMD), provided grass seed and a Truax drill to seed 15 acres in two fields. One six-acre 1984 seeding was reseeded because of poor germination. On May 24 the nine acre field was sprayed with Roundup at 1.5 quarts in eight gallons of water/acre by DL WMD personnel. The following seed mixture was used:

Species	Variety	Seeds/Sq. Ft.	PLD/AC.
Switchgrass	NDG-965-98	16.02	1.80
Indiangrass	'83 Local Harvest	1.48	.37
Big Blue Stem	'83 Local Harvest	13.60	3.85
Little Blue Stem	'83 Local Harvest	.71	.12
Sideoats Grama	Pierre & Killdeer	2.51	.57
Green Needlegrass	Lodorm	6.35	1.55
Western Wheatgrass	Rosanna	1.42	.57
Slender Wheatgrass	----------	1.98	.55
Prairie Dropseed	'83 Local Harvest	1.54	.14
Blue Grama	South Dakota Origin	.62	.03
		46.23	9.28

9. Fire Management

a. Prescribed Burning

A total of 387 acres of grass, 269 acres of swamp, 65 acres of brush and 19 acres potholes were scheduled for burning under the 1985 Burning Plan. Fifty-eight acres of grassland and 304 acres of swamp were burned.

A total of 74 man-hours were expended on the seven prescribed burns that were accomplished. The average cost for burning was three dollars per acre. The following chart shows some additional burning parameters.

BURN UNIT	LOCATION	ACRES	CREW SIZE	DATE
2C	North Chippewa Field	13	3	4/19/85
16	Chippewa Field	45	5	4/19/85
23	Buffalo River Marsh	200	4	4/03/85
1	Lost Lake Trail	1	3	4/04/85
2	Lost Lake Trail	1	3	4/04/85
8	Lost Lake Trail	2	3	4/04/85
41	Dike Road-Both Sides	20	2	4/04/85
42	South Chippewa/Blackbird Marsh	80	5	4/05/85

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.

b. Wildfires

No wildfires were detected on the refuge during 1985.

10. Pest Control

The refuge assisted the U.S. Forest Service in a gypsy moth survey. Traps were placed in two high vehicle use locations on the refuge. No gypsy moths were caught in any of the four traps.

DL WMD personnel applied 2,4-D to control broad leaf weeds on 36 acres of 1984 native grass seedings.

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 1985. Public use was limited mainly to hunters and a few environmental education groups (see D.5).

G. WILDLIFE

1. Wildlife Diversity

Diversity of wildlife is maintained at Tamarac by continuing to promote diversity in habitat. Forestry activities are aimed at promoting new growth by selectively cutting some mature hardwood forest communities and clear cutting some aspen and birch sites. Water levels on the refuge's lakes and marshes are closely monitored and managed to promote production of quality waterfowl food plants. Clearings and grasslands are maintained by burning and seeding with native grass species.

2. Endangered and Threatened Species

In co-operation with the Minnesota Department of Natural Resources (Non-game Program) the Tamarac staff participated in the National Wildlife Federation's mid-winter bald eagle survey on January 6 between 10 AM and 3 PM. No eagles were seen

during the survey. Bald eagles generally leave the refuge by mid-December and return in February. The first eagle of the year was spotted on February 22 and the last during mid-November.

An aerial survey of nesting bald eagles was conducted on April 1. Nine active nests were found on the refuge at this time. A second flight to determine production was flown July 1. Ten eaglets were seen from the air and ground checks revealed four additional young which brought the 1985 production 10 to 14. At the time of the second flight, the eaglets were quite large and some may have already left the nest. Next year, we plan to fly the production flight earlier to insure that the young will be on the nests at the time of the survey.

The following table shows bald eagle production at the refuge for the past 5 years:

Nesting Season	# Active Nests	# Young Produced
1985	9	14
1984	11	16
1983	8	13
1982	9	17
1981	8	8

In August, a strong windstorm blew down one of the oldest eagle nests on the refuge. Refuge records show that this nest had been active since the early 1950's and was one of our best producing nests. The two eaglets hatched on the nest this year were fledged at the time of the blowdown, so no loss of chicks occurred. This nest was easily seen by refuge visitors, making it a favorite observation spot for school groups and eagle-watchers. Since the tree was not damaged in the storm, we hope that the nest will be rebuilt and continue to provide an excellent opportunity for the public to see nesting bald eagles.

3. Waterfowl

The first waterfowl began to return to the refuge in late March. Wood ducks, mallards and common mergansers were the first arrivals.

Pair counts were conducted from May 14 to June 7 on refuge potholes, lakes and streams. Water levels were very high this year with 75% of the potholes filled to greater than 80% capacity. Total pair counts, however, were down, showing a 37% decrease from 1984. Blue-winged teal numbers showed the greatest loss (-50%), with Canada geese (-42%), mallards (-35%) and wood ducks (-33%) also showing substantial reductions in breeding populations on the refuge. In contrast, ring-necked ducks exhibited an increase of 37% over 1984 numbers. Total production of ducks was estimated at 2856 and geese at 240. Mallards accounted for 46.9% of the production, wood ducks 22.7%, blue-winged teal 17.5% and ring-necked ducks 12.9%.

Fall migration began early this year. Wood ducks and teal peaked in mid-September while total waterfowl numbers continued to rise until early October. On October 10 diver numbers peaked with 21,300 (primarily ring-necks and scaup) on refuge waters. The highest number of Canada geese (900) were found on the refuge in the first week of October. From mid-October to mid-November we kept waiting for the "northern flight" that never came. Lack of "weather" and abundant unharvested grain to the north probably kept birds from moving south to the refuge. The birds finally began moving about the third week of November which coincided with freeze-up conditions on the refuge lakes; few birds stopped at the refuge.

Tamarac staff assisted the MN DNR in two waterfowl projects. The weights of hunter-killed lesser scaup were taken for a state wide research project and several of the refuge lakes were evaluated as possible release sites for mated pairs of trumpeter swans.

4. Marsh and Waterbirds

The annual loon and grebe survey was conducted on 18 refuge lakes July 23-25 by the YCC crew, crew leaders and biological technician. Canoe, motorized boat and ground counts were made. Sixty-six loons (53 adults, 13 young), 17 red-necked grebes (8 adults, 9 young), 5 horned grebes (3 adults, 2 young) and 3 adult pied-billed grebes were seen on this count.

5. Shorebirds, Gulls, Terns and Allied Species

A nesting colony of Forester's terns were found on South Tamarac Lake. Black terns were also nesting in the area.

6. Raptors

A young osprey was brought to the refuge in late August. It was taken to the Raptor Research and Rehabilitation Program at the University of Minnesota, St. Paul, where it was diagnosed as having avian malaria. The bird was in very poor condition and died a few days later.

A young great horned owl which had an unfortunate encounter with a skunk was also brought to the refuge. It had been partially blinded by the spray and was in a weakened state. After 48 hours of shelter and food outside the headquarters building it was released.

Refuge clerk Bartosch holds G.H. Owl which tangled with a skunk.

KMC 1985

7. Other Migratory Birds

On May 17 and 20, refuge staff participated in the annual North American woodcock singing ground survey. The number of peenting birds heard was an increase over last years count which agreed with a general increase in the state's breeding population indices.

8. Game Mammals

White-tailed Deer

The deer pellet survey was conducted from April 11 through April 18th. This is approximately the same time frame as it was conducted in 1984.

Pellet count data was analyzed by the MN DNR and resulted in an estimated spring (pre-fawn) population of 36.5 deer/mi^2. This is a 22% decrease from the 1984 population of 46.7 deer/mi^2. Average pellets per course decreased in all strata. Data concerning the Tamarac deer herd was used in a white-tailed deer population model by Pat Karnes, Minnesota DNR big game biologist. The model indicated that the decline in the herd is largely the result of deer hunting. Although the deer population has been declining, the number of animals removed by the hunt has remained relatively constant. Based on the model there is no relationship between the winter severity index and deer populations, indicating that Tamarac is not a significant wintering area for deer from the surrounding area.

Approximately 83 staff days were actually spent on the survey. Personnel from the DL WMD contributed 3 staff days of survey work.

Other data gathered during the pellet survey: no moose pellet groups were found, down from one in 1984; three dead deer were found compared to one in 1984; no grouse pellet groups were found (16 in 1984), two grouse were flushed (1 flushed in 1984).

Moose

There were several sightings of what appeared to be the same moose, in the vicinity of the Tamarac dike road. 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 upon sightings and sign there are probably less than six animals. Moose hunting is not permitted on the refuge.

Black Bear

Black bear were sighted periodically during the year by refuge staff and visitors. This year was the second year of participation in the MN DNR bear bait station census. The purpose of the census is to provide an index of bear density and population trends. Only three of the sites were visited by bears as compared to six in 1984. Tracks, claw marks, paw prints, scats or hair are used to confirm a bear visit. Bear hunting is not permitted on the refuge.

River Otter

There appears to be a stable population of river otter on the refuge. Otter were sighted by staff members and visitors throughout the year. The trapping of otter is not permitted on the refuge.

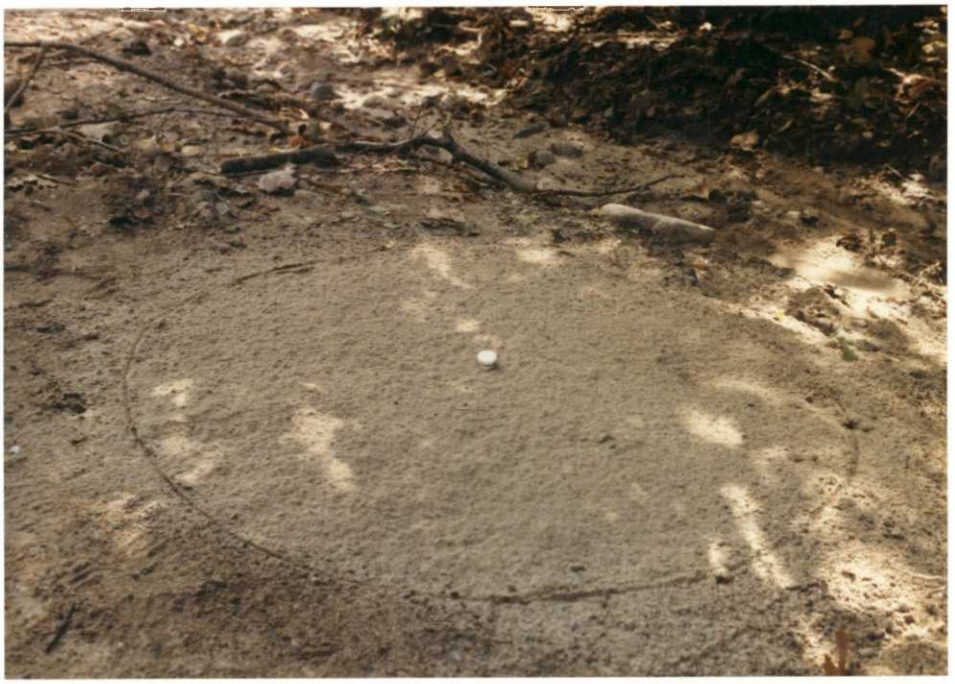
Other

For the third consecutive year the refuge participated in the MN DNR scent post

survey. Three 2.7 mile routes were run in mid-September. The most common visitors at the scent post sites were coyote (2), skunk (2), deer (2), dog (1) and mink (1).

There was one sighting of a bobcat on the refuge this year.

It appears that the refuge coyote population has increased dramatically. Sightings by refuge staff and visitors were common.



Predator Scent Post Station
KMC 1985

10. Other Resident Wildlife

On May 1st and 2md, the refuge conducted a ruffed grouse drumming cnesus in cooperation with the MN DNR Forest Wildlife Populations and Research Group. It appears that the ruffed grouse population cycle has bottomed out and is now on the rebound. Drumming counts on the refuge were lower than in 1984. However, the Central Hardwoods Zone which includes Tamarac increased by 20% this year.

Grouse populations werehampered by a very wet nesting season. Low populations were reflected in poor hunting success this past fall.

11. Fisheries Resources

Fish populations on the refuge were surveyed in 1984 by Fisheries Assistance Biologist, Hanibal Bolton. A draft fisheries management plan was prepared in 1984 and is still undergoing revisions.

No winterkill was observed in refuge lakes this year.

Approximately 84,000 2" walleye fingerlings were stocked in three refuge lakes by the National Fish Hatchery at Valley City, North Dakota. The following lakes received fish:

Pine - 60,000, Wauboose Lake - 13,000 and Lost Lake - 11,000.

12. Wildlife Propogation and Stocking

See discussion above under Fisheries Resources.

15. Animal Control

Predator (raccoon) use of duck banding sites was not a major problem this year. This wasn't a big problem because use of swim-in and walk-in duck traps was minimal. Only one raccoon was removed during the banding season.

Beaver continue to plug culverts and control structures and remain a problem in managing water levels. A considerable effort was made to remove beaver at specific problem areas. The refuge modified the trapping program to increase the pressure on beaver. Until fur prices increase or someone decides they are good to eat, our battle with the beaver will be perennial.

We responded to two seperate beaver complaints from refuge neighbors. The problems were not on refuge land. In the first case we cleaned out a State owned structure and in the second we found a trapper who was willing to remove the problem beaver.

16. Marking and Banding

a. Waterfowl

Baiting of sites for waterfowl trapping and banding began in mid-July. Corn was used at both the rocket net and the swim-in trap sites. Good results were obtained at the rocket net site with mallards but the swim-in trap proved unsuccessful. Although there were sufficient birds at the swim-in trap site, they were not attracted to the bait as at the other site.

The pre-season quota was set at 400 mallards (100 of each age and sex class) and 100 wood ducks (25 of each age and sex class). The following table summaries the banding results for 1985.

1985 Waterfowl Banding Summary

Mallard

	AHYM	AHYF	HYM	HYF	TOTAL
Quota	100	100	100	100	400
No. Banded	95	98	83	100	376
Percent Quota	95	98	83	100	94

Wood Duck

	AHYM	AHYF	HYM	HYF	TOTAL
Quota	25	25	25	25	100
No. Banded	1	1	1	1	4
Percent Quota	4	4	4	4	4

In addition to the 376 mallards and 4 wood ducks, one adult drake black duck was banded.

A reporter from the local newspaper was present for one morning's rocket net "shot". The result was a full page photo and article about the refuge banding program.

H. PUBLIC USE

1. General

Total numbers of public use activities on Tamarac decreased in 1985. This was primarily due to a decrease in the number of ricing days on the refuge and a decrease in waterfowl hunting pressure. There were increases in the areas of interpretation and warm water fishing.

ACTIVITY	NUMBER OF VISITS		
	CY-1983	CY-1984	CY-1985
Interpretation	9,635	11,092	14,736
EE	250	1,737	1,110
Hunting/Trapping	8,667	12,305	5,740
Fishing	5,990	8,545	12,135
Ricing/Wild Food/Firewood	980	30,414	2,870
Camping (in conjunction with EE, Interpretation)	34	10	20
Picnicking (Wildlife/Wildlands oriented)	630	520	810
Wildlife/Wildlands Observation	4,367	4,608	6,150
Total	30,553	69,231	43,571

ACTIVITY	NUMBER OF OUTPUTS		
	CY-1983	CY-1984	CY-1985
Public Inquiries	600	800	1,215
Newsreleases/Media Interviews	28	16	14
Personal Appearances	12	6	3
Professional Services	14	10	12
Exhibits (off-refuge)	2	1	2

A total of 14 newsreleases and/or interviews on various refuge programs were recorded in 1985. The refuge continues to get good coverage through the efforts of the local outdoor columnist.

2. Outdoor Classrooms-Students

The level of EE or outdoor classroom visits decreased slightly during the past year. Bio-tech Cheap provided assistance to most of the school groups that visited the refuge.

Groups of school children enjoyed their visits to the refuge.
KMC 1985

3. Outdoor Classrooms-Teachers

No teacher workshops were held this year.

4. Interpretative Foot Trails

The refuge has two designated hiking trails, as well as several other trails which are used for hiking. YCC crews cleared deadfalls from the designated hiking trails during June.

5. Interpretative Tour Route

The ten-mile Blackbird Auto Tour Route was open from mid-May through mid-December in 1985. Approximately 3,650 persons used the tour which interprets management practices, area ecology and history. Bald eagles, deer, loons and waterfowl are commonly observed along the tour route.

6. Interpretative Exhibits/Demonstrations

a. On-refuge

The visitor center was used by over 7,600 persons in 1985. This is a slight increase over the previous year. As usual 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 through mid-November the weekend hours were from noon to 4:00 PM.

During the summer months the visitor center was staffed by volunteers on weekday afternoons and by volunteers and the Assistant Manager on weekends.

Wildlife films were shown on the weekends during the summer months. A new film

was shown each weekend. The refuge's six projector slide show was shown on request during weekday and weekend operation.

A total of 34 different schools, colleges and Service groups used Tamarac for interpretative field trips. Most groups received an over-view 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 months.

b. Off-refuge

National Wildlife Week packets were distributed to twelve area schools and the National Wildlife Federation slide/tape presentation was available for loan. Individual presentations were not made at area schools this year due to a staffing shortage and high turn over rate of staff members at this time of the year.

The DL WMD and Tamarac Refuge again combined their resources in staffing an information booth at the Becker County Fair in August.

Interim Project Leader, Richard Birger, coordinated all aspects of the FWS exhibit at the Boy Scouts of America, National Jamboree. The jamboree, which was held at Fort A.P. Hill in Virginia, marked the 75th anniversary of the Boy Scouts of America.

8. Hunting

The hunting program for the general public was not changed during 1985. However, a significant change occurred in the WEB firearms deer hunt. For the first time the reservation deer season on the refuge preceded the state firearm season. Inclusive dates are listed under big game hunting.

a. Small Game Hunting

Small game hunting visits totaled 640 in 1985, which was about the same amount of hunting pressure as 1984. Ruffed grouse hunting interest is high but hunter success was very low. Very few hunters pursue squirrels and snowshoe hare. Squirrel populations in hardwood stands are high but the population of snowshoe hare appears to be low.

b. Waterfowl Hunting

The number of waterfowl hunting visits decreased to about half of the 1984 level (1,525 visits in 1985). The duck season was opened on October 5th, which is a departure from the traditional October 1st "opener". Hunter success was fair to good during the first week of the season (2.2 birds/hunter on the opening weekend) but dropped off dramatically as the season progressed. By seasons' end on November 13th all but the largest lakes were frozen.

c. Other Migratory Bird Hunting

Tamarac was opened to the hunting of rails, snipe and woodcock for the first time in 1983. To date, no hunters have been observed in pursuit of rails or snipe. Very few hunters pursue woodcock. The few woodcock that are harvested are usually a by-product of grouse hunting. Hunting seasons for these birds was in accordance with established state seasons in those portions of the refuge open to waterfowl hunting.

d. Big Game Hunting

Deer hunting on Tamarac, like other hunting seasons is in accordance with State regulations (for non-Indians). The bow and arrow season opened on September 14th and closed December 8th. A total of 375 bow hunter visits were recorded for 1985. Three known archery kills were made on the refuge this year. The known archery harvest increased 300% over 1984.

The State firearms deer season was held from November 9th-17th for Zone 2, area 251. The entire refuge with the exception of about 2,000 acres is open for bucks only and antlerless deer by permit. Eight hundred antlerless permits were allocated to the general public.

The WEB firearms deer season (which includes the reservation portion of the refuge) ran from October 21st-November 2nd and either sex from November 3rd through December 8th. The reservation primitive hunt (black powder and archery) ran from September 14th to December 8th. Primitive weapon hunters were allowed to harvest either sex.

The aerial survey conducted on the opening day of the State firearms deer season showed 360 cars or about 940 hunters; down about 11% from 1984. Total hunter visits were 2,800, down 12% from 1984.

Following is a summary of the 1982 through 1985 firearms deer seasons on the refuge:

	1985	1984	1983	1982
State Harvest (1)	451	511	477	433
WEB Harvest (2)	59	66	62	56
Total Harvest on Refuge	510	577	539	489
Total Number of Hunters (3)	936	1,050	1,271	1,150
Success Rate (4)	54%	55%	42%	43%
Sex Ratio (5)				
Adult Males	38%	30%	34%	39%
Adult Females	41%	40%	38%	40%
Fawn Males	10%	15%	15%	12%
Fawn Females	10%	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.

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 State seasons.

Fishing use increased, with 12,135 visits recorded for 1985 compared to 8,545 in 1984. Most of the fishing use is on North Tamarac and Pine Lakes. Pine was used as a walleye rearing area up until 1983. Walleyes on Pine Lake run 1½ to 2 pounds. North Tamarac has good populations of game fish and is well known for the size of its sunfish and crappies. Both of these lakes are heavily fished during all seasons of the year.

10. Trapping

The refuge trapping program was modified in 1985. Previously, only WEB members were permitted to trap on the refuge. In an effort to select trappers who were interested in concentrating on beaver the permits were offered for "beaver only" or "other furbearers". Initially the trappers were selected by a drawing conducted by the Reservation Conservation Department. Seven "other furbearers" and four "beaver only" permits were issued to tribal members. Three additional "beaver only" permits were issued to non-Indians. The estimated fur harvest for the 1984-85 season was muskrats-357, beaver-160, raccoon-57 and mink-57 (this is based upon fur trapping reports projected from a 28% return). Fur harvest data for the 1985-86 season is not yet available.

11. Wildlife Observation

A large portion of the refuge visitors come to see wildlife. White-tailed deer, bald eagles, waterfowl and song birds are the species with the most visitor appeal.

Approximately 6,900 visits for wildlife/wildlands observation were recorded for 1985.

12. Other Wildlife Oriented Recreation

a. Camping

A total of 20 camping visits were recorded for 1985. This is a 100% increase over 1984. The camping visits were made by a Boy Scout troop and Camp Fire group. The only groups that are allowed to camp on the refuge are those which have an EE or interpretative purpose for their outing. 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 WEB. One hundred and six permittees and their helpers harvested rice by the traditional method on the refuge. No estimate of the rice harvested was made this year. Ricers sold their unprocessed rice for 70 to 80 cents/pound. Additional information on ricing can be found in Section F.2.

c. Cross-country Skiing

Good snow depths during the first month and last two months of the year resulted in an increase in cross-country skiing use. There were 575 cross-country skiing visits recorded for 1985 compared with 300 in 1984.

d. Other Wildlife Oriented Recreation

There were a total of 300 people who specifically visited the refuge to photograph wildlife.

13. Camping

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

14. Picnicking

Picnicking visits totaled 810 compared to 520 in 1984. Most of the picnicking that occurrs on the refuge is counted as wildlife and/or wildlands oriented because it is done in conjunction with some other fish or wildlife related activity.

The construction of permanent stands or blinds is prohibited on the refuge. Biologist Deede prepares to remove one of many.

KMC 1985

17. Law Enforcement

The law enforcement effort on Tamarac generally involves public use contacts during the summer months and detection of wildlife violations during the hunting seasons. Violations for 1985 are summarized below:

Violation	No.	Fines	Court
Angle w/o license	4	198.00	State
Operate Unregistered Watercraft	4	110.00	State
Angle w/2 lines (Open Water)	1	55.00	State
Exceed daily limit of walleyes (59 over)	1	770.00	State
Theft of Government Property	1	200.00	U.S. Magistrate
Possession of lead shotshells while hunting formigratory waterfowl in a Steel Shot Zone	1	50.00	U.S. Magistrate
Uncased loaded firearm in a motor vehicle	2	110.00	State
Refuge Tresspass (Hunt in closed area)*	1	50.00	
Totals	16	1,587.00	

*One deer seized as evidence and turned over to the State of Minnesota.

Three items from 1985 warrant further discussion. The first involved an indiv-

idual who had purchased a trailer house/building at the old Job Corps site. This individual was stopped on a refuge road while in the process of transporting a pickup load of martin houses. Subsequently it was discovered that $500 of gate parts were missing from the Job Corps area. An investigation by Special Agent John Decker led to the recovery of the missing gate parts and prosecution for theft of government property in the U.S. Magistrates' court.

A second case involved a tip received by a refuge officer. Several fishermen reported an individual who was fishing Pine Lake for the third time that day. The subject had supposedly taken two limits of walleyed pike and transported them to some point off the refuge. The informants provided vehicle description, boat and vehicle license numbers and descriptions of the subject and his two children. While waiting for the subject at the boat landing, Minnesota State Conservation Officer, Brian Gray was called via radio for assistance. The subject had 22 walleyes when he landed his boat. An additional 43 walleyes were seized from the subject's cabin at a nearby lake. After first going through an evidentiary hearing on the fish seized at the subject's cabin, the subject pled guilty and paid a $770 fine in Becker County District Court.

The third item involved the theft of a limited edition print from the exhibit area of the visitor center. The print, valued at $700, was on loan to the refuge by a member of the staff. The theft, which was investigated by the Becker County Sheriff's Department, remains unsolved.

18. Cooperating Associations

Plans were made with the Midwest Interpretive Association to open a retail-sales outlet at the Visitor Center. An initial list of environmental education and interpretive books and posters was developed for the outlet and plans were discussed to modify the Visitor Center's information desk area to accomodate the sales area.

I. EQUIPMENT AND FACILITIES

1. New Construction

a. Sugarbush Access

A new public parking lot was constructed at the north end of North Tamarac Lake. The parking lot will be completed in 1986. Total cost was $10,000, funded under a small ARMM's project.

b. Radio Fire Tower

As a safety feature, a new cyclone fence was constructed around the base of the tower to restrict public use.

2. Rehabilitation

a. Refuge Roads

Two thousand yards of gravel were used in spot repairing various sections of roads. At the same time eight new 18" X 30' culverts were placed in these roads to improve water flow and decrease the road damage that normally results during spring run off.

b. Control Structure Riprap

Two hundred yards of 6" plus rock was purchased to riprap Rice Lake and South Chippewa control structures. The project was completed at Rice Lake before freeze-up. Beacuse the D-2 broke down, no work was completed at South Chippewa. Work was scheduled under a small ARMM's project at a cost of $3,000.

Riprap used to stablize shoreline downstream from Mitchell Dam.
KMC 1985

c. Painting of Structures

The exterior of the 6-stall and interior of Quarters 13 rec eived a new coat of paint.

3. Major Maintenance

a. Engine Repair

The fork-lift and AMC Concord engines were overhauled.

b. ROPS

ROPS were installed on the refuge fork-lift, Ferret ATV and D-8.

6. Energy Conservation

Two complete auxilary standby hydronic systems consisting of outdoor heat transfer units, heat coils and cabinets and an L-P bulk tank were installed at the refuge office. New Johnson Control thermostats were installed in the exhibit area and auditorium. In addition, an insulated duck liner was installed in the warm air plenum from the wood furnace mechanical room to the mechanical room in the staff office area.

The hydronic system will serve as a back-up unit to the present electric heating system, while the insulated duck liner will improve the heat transfer characteristics of the wood heat system.

7. Other

The post office building/trailers at the old job corps site were sold by competitive bid and removed from the area. A major effort for 1986 will be to remove all structures from the job corps site.

J. OTHER ITEMS

1. Cooperative Programs

Program-Cooperator	Refuge Contribution
Midwinter Eagle Census - NWF, MN DNR	Staff Time
Woodcock Singing Count - 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 - MN DNR	Staff Time
Deer Hunt Check Station - MN DNR	Staff Time
Ruffed Grouse Drumming - MN DNR	Staff Time
Predator Scent Post Survey - MN DNR	Staff Time
Bear Bait Station Survey - MN DNR	Staff Time
Law Enforcement - MN DNR, WECD	Staff Time
Cooperative Fire Suppression - MN DNR	Staff Time
Fall Waterfowl Migration - MN DNR	Staff Time

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

2. Items of Interest

a. Incentive Awards

John French and Darrell Winter received special achievement awards for constructing a specialized piece of equipment that reduces manpower needs and increases safety during prescrived burns. They converted two surplus crop sprayers into wetline sprayers which spray 400 gallons of water and wetting agent in a short period of time. This has proven to be more cost effective than a plowed firebreak or blacklines.

John French and Darrell Winter receive special achievement awards.
KMC 1985

b. Training and Workshops

Employee	Training	Hours
Birger, Richard M.	LE Refresher Course	40
Brock, Cyrus G.	Regional Pesticide Applicators Workshop	8
Cheap, Kathleen	1985 Woodcock Wingbee	40
	Basic Fire Training	24
	Basic Refuge Management Training Academy	160
Deede, Lowell C.	LE Refresher Course	40
Ondler, Theodore D.	Regional Pesticide Applicators Workshop	8
	LE Refresher Course	40
Sunram, Vivian K.	Administrative Workshop	20
	Effective Listening and Memory Development	16
Walls, Darold T.	LE Refresher Course	40
Winter, Darrell L.	Hydro Axe Training	16
	Regional Pesticide Applicators Workshop	8

c. Revenue Sharing

Nothing to report. Revenue sharing checks have not been received for 1985.

CREDITS

Refuge Manager Walls prepared Sections I. 1,2,3,6,7 and feedback as well as editing the report.

Assistant Manager Ondler prepared Sections A; C; D.2-5:E.1-4,6,7; F.2; G.8, 11,12,15; H.1-17 and feedback.

Forester Brock prepared Sections D.5; F.3,9,10,12; I.2,7 and feedback.

Wildlife Biologist Deede prepared Sections B; F.4-8; J.1 and feedback.

Biological Technician Cheap prepared Sections G.1-7,10,16 and narrative photos.

Clerk/Typist Bartosch prepared Section E.5, credits, typed and assembled the entire report.

K. FEEDBACK

Worn-out vehicles, radios, hand-me-down typewriters and other office equipment have been readily accepted at Tamarac for years. If the staff and particularly the refuge clerk could not laugh at the situation that developed using broken down, out-dated office equipment, some tense moments during "Narrative Production" could have resulted in.... Our copy machine is good for starting fires (literally), and the word processor is so antiquated, the repairman does not want to come out to fix it. The narrative will be late, and the product, even though it may not look top notch, in no way represents the efforts and determination that were necessary to over come the adversaries at hand.

In addition to the office equipment, the vehicle fleet, radio communication system, firefighting and snow removal equipment all have maladies that could use major transfusions of dollars to correct. IPW's have been submitted and will continue to be submitted to correct deficiencies. We are encouraged by the recent attitude of the RO for scheduling funding for 1987 to beef-up our firefighting equipment and radio communication system. However, we've got a long way to go in order to meet safety standards and "catch-up" with other refuges which took full advantage of the transfusion from BLHP.

Last but not least, there is a "ton of habitat" work which needs attention at Tamarac. We aren't getting the job done for our ducks, deer, grouse and other wildlife. Eleven thousand acres of aspen stands (7,000 acres which are mature trees), thousands of acres of mature jack pine, old farm fields saturated with poor quality brome, Kentucky bluegrass, quack and brush, an outdated water management program which promotes wild rice rather than drawdown, moist soil plants and waterfowl production,...drained wetlands which have never been restored,...and the list goes on and on.

We will be at the drawing board during the comming year with new approaches and ideas for better habitat management. We realize that no single refuge is insulated from Gramm-Rudman-Hollings. However, it is hoped that when the dollars are parceled out, Tamarac is not written off and is still considered a viable part of the refuge system.