

TEWAUKON NATIONAL WILDLIFE REFUGE
CAYUGA, NORTH DAKOTA



DGP

ANNUAL NARRATIVE REPORT
Calendar Year 1979

NATIONAL WILDLIFE REFUGE SYSTEM
FISH AND WILDLIFE SERVICE
U.S. DEPARTMENT OF THE INTERIOR



POTTER HOFFMAN HOFLEN BUSCHING
 SCHULER HOFLEN SWB

Personnel

- | | |
|------------------------------------------------------|-------------|
| 1. David G. Potter, Refuge Manager | GS-11, PFT |
| EOD 9-9-79 from Mark Twain NWR, Illinois | |
| 2. Forrest W. Cameron, Refuge Manager. | GS-11, PFT |
| Transferred 6-2-79 to Ruby Lake NWR, Nevada | |
| 3. Christ R. Schuler, Biological Technician. | GS-07, PFT |
| 4. Scott W. Busching, Biological Technician. | GS-05, PPT |
| 5. Barbara E. Hoflen, Refuge Clerk | GS-05, PPT |
| 6. Ahrlin G. Hoffman, Maintenance Helper | WG-05, PPT |
| 7. Robert W. Hoflen, Maintenance Helper. | WG-05, Temp |

Seasonal Appointments

- | | |
|------------------------------------------------|-------|
| 1. Arvid W. Anderson, Biological Aid | GS-04 |
| (5-28-79 through 8-25-79) | |
| 2. Timothy L. Sirek, Biological Aid. | GS-04 |
| (5-28-79 through 8-25-79) | |

Review and Approvals

David G. Potter 2/19/80
 Submitted By Date

 Area Office Date

Tewaukon N. W. R.
 Refuge

 Regional Office Date

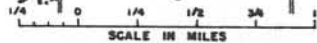
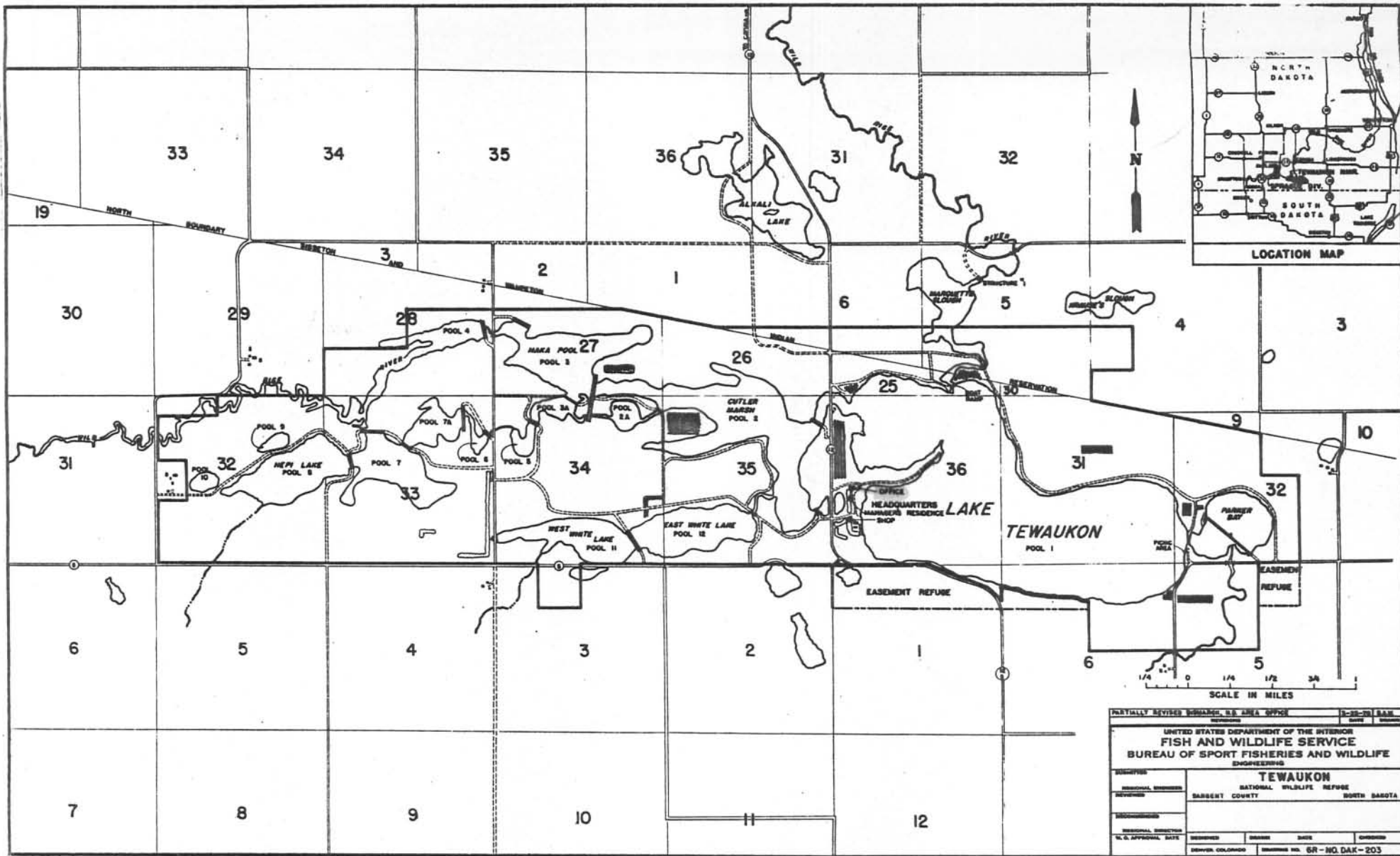


SWB

"Mister Hoffman"

Ahrlin G. Hoffman, affectionately known as "Mister Hoffman", retired on November 3rd after coming on board in 1965. Mr. Hoffman has witnessed the coming and going of many personnel here and has participated greatly in the growth of this refuge and district. His knowledge of refuge operations has been instrumental in the effective and smooth conduct of activities on this station and being a one-time area farmer, has been a more than effective public relations asset. His charm and wit will be missed around the headquarters and in a humble attempt to show our appreciation, we dedicate this narrative report to him.

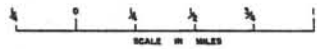
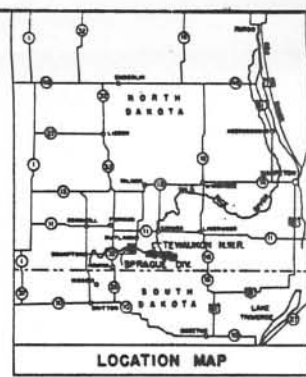
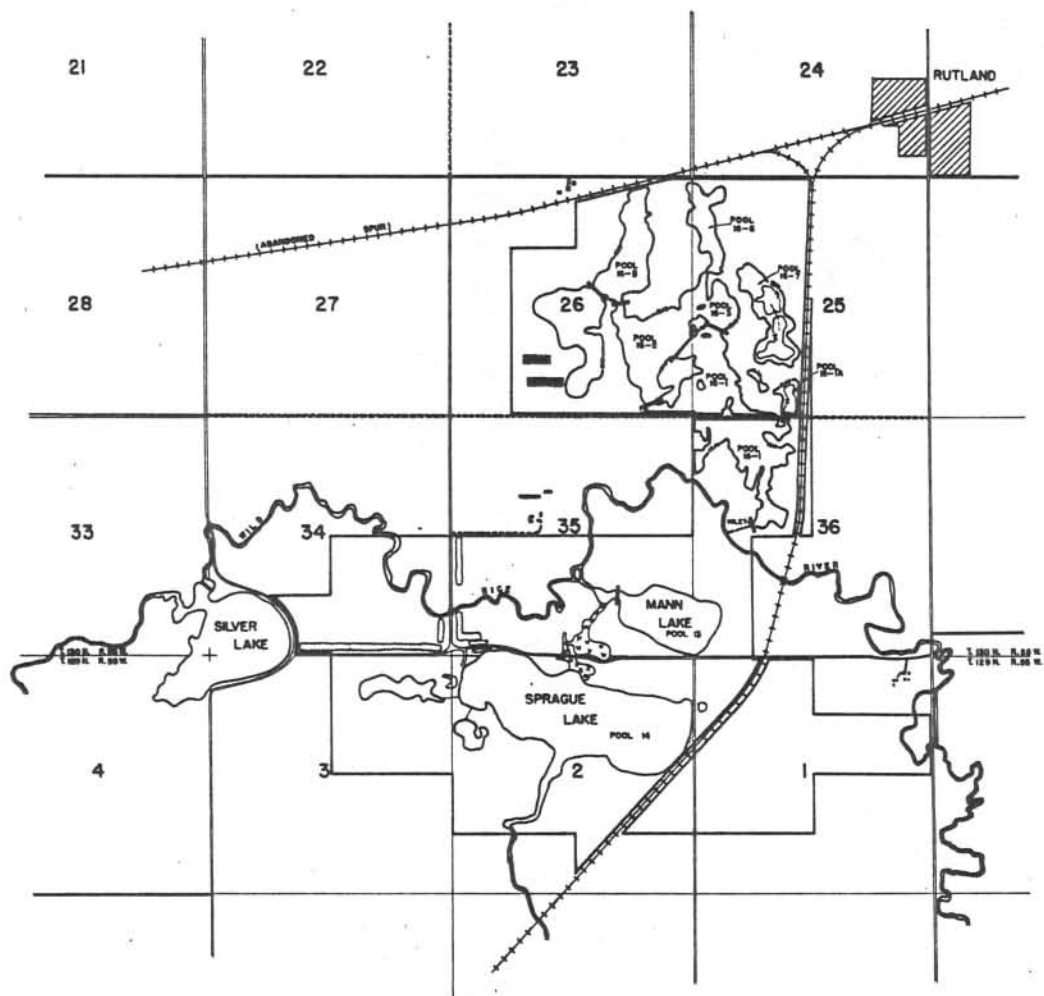
Ahrlin plans to remain in Rutland and catch up on lots of fishing with buddies on the Sheyenne River. However, he promises to continue to visit the refuge from time to time and bring out his homemade bread. We expect that when he sees the smoke from the first spring burn, he'll show up to join in the action.



PARTIALLY REVISED SURVIVAL, U.S. AREA OFFICE 10-20-20 5AM
 UNITED STATES DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
 BUREAU OF SPORT FISHERIES AND WILDLIFE ENGINEERING

TEWAKON	
NATIONAL WILDLIFE REFUGE	
SARGENT COUNTY NORTH DAKOTA	
DESIGNER:	
PERSONNEL ENGINEER:	
ENGINEER:	
PERSONNEL SUPERVISOR:	
U.S. APPROVAL DATE:	DESIGNED BY: DATE CHECKED BY:
DESIGNER: COLONEL ENGINEER NO. 6R-ND DAK-203	

WATER RESOURCES DIVISION



PROJECT NO.	DATE	REVISIONS	DATE
UNITED STATES DEPARTMENT OF THE INTERIOR FISH AND WILDLIFE SERVICE ENGINEERING			
PROJECT TITLE	DATE	PROJECT NO.	DATE
TEWAUKON NATIONAL WILDLIFE REFUGE		NORTH DAKOTA	
PROJECT LOCATION	DATE	PROJECT NO.	DATE
SARBERT COUNTY, NORTH DAKOTA		SPRAGUE LAKE DIVISION	
PROJECT NO.	DATE	PROJECT NO.	DATE
SARBERT COUNTY, NORTH DAKOTA		SPRAGUE LAKE DIVISION	

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I. General

A. Introduction

Tewaukon Refuge is located five miles south of Cayuga in the southeastern corner of North Dakota. The refuge encompasses 8,444 acres which serve as a major migration stop for waterfowl and a duck production area. There are 26 water management pools totalling 2,919 acres and 137 acres of natural wetlands within the refuge.

Three easement refuges to control hunting and trapping are also under our management. Wild Rice in Sargent County totals 778.8 acres; Lake Elsie in Richland County totals 634.7 acres and Storm Lake in Sargent County totals 728.3 acres. All are closed to hunting to provide waterfowl rest areas.

B. Climatic and Habitat Conditions

The official weather station near Forman, 10 miles west of headquarters, recorded 18.24 inches of rain in 1979 compared to the average of 20 inches. The winter months were severe with 16 inches of snow on the ground the end of January, 22 inches in late February and 12 inches of snow remaining the last of March. Snow turned to rain in April and continued in generally above average amounts into early August (1.65 inches on August 4) before shutting down. September through December was generally drier and much warmer than average with only two cold snow storm periods occurring, November 10 - 12 and December 15 - 17.

Due to good carry-over water conditions and the above average amount of snow and rain, all wetlands generally were in excellent condition. Waterfowl nesting consequently shifted noticeably from refuge water to the more dispersed WPA, easement or private wetlands.

Deer, pheasants, huns (gray partridge) and other resident wildlife species experienced a third tough winter and their numbers dipped accordingly. Refuge and larger WPA's again served as the major deer wintering ground in the area. The very mild fall period kept these species well dispersed and will be very favorable to population increases if it continues.

The heavy snow cover caused the expected winter kill of perch, northern pike, walleye, bullheads and carp in Lake Tewaukon and Sprague Lake. Fish populations were just rebuilding from the 1977 winter kill and fishing was getting good. Fishing was slow all summer and by December 1979 only a few 3 to 5 pound northernns were being caught.

C. Land Acquisition

Nothing to report.

D. System Status

Tewaukon Refuge personnel are charged with management of Tewaukon National Wildlife Refuge; Tewaukon Wetland Management District including Ransom, Sargent and Richland Counties; and Wild Rice, Storm Lake and Lake Elsie Easement Refuges.

1. Objectives

Primary management objectives are waterfowl production by providing optimum nesting habitat and waterfowl maintenance by providing protection and food for fall and spring concentrations of ducks and geese. Some secondary objectives need revision. Most of the objective levels shown for outputs in the program scheduling documents need revision. Most public use objective levels are too high, while wildlife objective levels are too low. Under BLHP high priority continues to be placed on marsh and cover development and replacement or restoration of facilities and equipment.

2. Funding

The Tewaukon National Wildlife Refuge and Tewaukon Wetland Management District budgets are handled as one. A summary is:

	FY-78		FY-79		FY-80	
	O&M	Cyclic Maint.	O&M	Cyclic Maint.	O&M	Cyclic Maint.
1210	\$66,000	\$13,000	\$112,800	\$16,900	\$104,000	\$25,000
1220	3,000	--	1,000	1,200	--	--
1240	4,000	1,000	4,000	1,000	10,000	--
Sub-Total	\$73,000	\$14,000	\$117,800	\$19,100	\$114,000	\$25,000
TOTAL BDGT.	\$87,000		\$136,900		\$139,000	
BLHP	\$27,000		\$154,000		\$123,000	
STAFF	2 PFT, 2 PPT 3 seasonal		2 PFT, 2 PPT 4 seasonal		2 PFT, 2 PPT 4 seasonal	

A summary for all BLHP projects is:

PROJECT	FY	PDW	AVAILABLE	USED BY REFUGE
Dump Truck	77	# 7	\$ 15,000	\$14,980
Residence Replacement	78	#13	\$ 45,000	\$55,540
Boundary Fence Const.	78	# 8	40,000	29,355
Oil Storage Building	78	# 6	4,000	3,916
Horseshoe Slough Marsh	78	# 5	35,000	22,651
Carryover PDW #5	79	# 5	\$ 5,200	\$ 5,200
Water Mgmt. - WPA	79	#12	33,000	33,000
Dense Nesting Cover	79	# 9	51,000	45,477
HQ Dvlpmt - Shop	79	# 1	70,000	80,100
Carryover from FY-79 (used for garage and Horseshoe Slough Dike)	80	# 5	\$ 7,775	\$ 7,775
Grassland Mgmt & Rehab	80	#10	\$110,000	
HQ Landscaping & Sewer Sys	80	# 1	13,000	

II. Construction and Maintenance

A. Construction

1979 was a busy year with three major BLHP projects underway. A summary of the various on-going or new projects is:

PDW #5 - Marsh Development - Horseshoe Slough (FY-78) \$35,000

The contract was awarded to Mettler Construction Company for \$22,651.36 on October 24, 1978 with 60 days for completion. On November 13th, winter shut them down. Work resumed July 10 and continued in fits-and-starts providing refuge personnel much aggravation. The contractors literally had hearing problems, were very disorganized and didn't seem to know how to go about the job. The contract was completed September 15 and all in all we received a good product; much of the slopes were flatter than required so that we received heavier dikes than were contracted. The project includes three large dikes, two smaller dikes, four 36" CMP structures and will impound 250 surface acres and 750 acre feet in seven pools. All dikes were seeded down to reed canary grass; barrow pits were seeded to native grasses except that some areas were too dried out to be seeded. An additional small dike with flap gate structure was built in November by local contractor, DarWayne Crandall at a cost of \$912 and \$1393 for the culvert and gate. This dike was required to keep our water from backing onto a neighbor's field. The flap gate should provide for drainage off the private fields; pumping will be required in years of high water levels on the refuge side of the dike.

This dike was necessary because the neighboring landowner refused to sell the quarter section of land which juts deeply into the refuge lands.



View to SW of 3 new dikes, roads and nesting island in Horseshoe Slough Development.

SWB

With all dike work completed, a two mile long central service road with side spurs to the various structures was staked out, graded in as necessary and gravelled by contract. Cost was approximately \$4,000. This road will provide the access necessary in wet years to allow manipulation of the structures and pumping off the neighbor's land -- a necessity due to his antagonistic attitude.

Two finishing touches remain. Concrete planks made by the Langdon YACC Camp will be used to set up three pump stations for a tractor driven crissafuli for flooding small wetlands and to remove any water we impound on the neighbor's land. More important, a large pump station at the Wild Rice River will be set up using a new 100 HP diesel engine received from surplus and a pump yet to be purchased. The engine and pump will be portable to move in and use in dry years when the river does not naturally flood into Horseshoe Slough.

PDW #13 - Residence Replacement(FY-78 Project) \$45,000
 Viking Homes of Bismarck got the contract for \$55,450 and notice to proceed in October 1978 with 180 days for completion. Delays with a sub-contractor slowed work that fall and all work from pouring of the basement on was completed this year.

The house is well built despite the usual minor problems with new construction; it was accepted in September.

At year's end, two problems have yet to be corrected - the electric hot water boiler (very suitable for later conversion to solar) occasionally failed to automatically switch on when the temperature dropped. The electrical sub-contractor found that a relay was defective. Also the furnace is very slow to heat the house - four hours to go from 62° to 68°. We are working on this problem.



Manager's former residence

FWC



New Residence

DGP

The house was located in an opening in the shelter belt about 40 yards south of the office, 300 yards north of the maintenance area and 75 yards west of Lake Tewaukon. Landscaping funds have been budgeted but existing trees already screen the house well from the wind and the office-shop areas. The building was sited very well, all factors considered.

Many finishing details to establish a residence have been accomplished by the crew including putting in the yard, TV antenna, concrete back landing, installing storm windows and insulating the hot water heater and lines. A big job accomplished by a hard working crew blessed with good fall weather was the erection of a two-car detached garage on a cement slab next to the house; the cost for all materials was \$3,527. Work was done force account and all that remains is to stain the garage and pour the walks. The garage was finished on a Thursday and the first snow storm hit the following Monday.

PDW #1 Headquarters Development (Shop) FY-79 Project \$70,000
Blatter Construction Company, Lidgerwood, ND got the contract for \$75,624.58 and notice to proceed on July 17 with 180 days for completion. The building was a 40' x 50' insulated metal with vehicle hoist, reinforced concrete and rail section for tracked equipment, heavy-duty air compressor, three overhead forced air heaters, office and lavatory with shower. Work proceeded smoothly with the below listed work change orders:

- | | |
|--------------------------------------------------------------------------------|----------------|
| (a) Install five 4,000 watt heat tapes
in floor over washed sand bed | \$2,750 |
| (b) Install additional 4" insulation in walls | 1,343 - 7 days |
| (c) Install normal insulation over office
and lavatory (ommitted in specs.) | 96 |
| (d) Install welding exhaust fan and hose
system (ommitted in specs.) | 450 |
| (e) Upgrade quality of shower | 100 |

The building was "final inspected" on January 31, 1980 with no significant corrections needed. We are happy with this fine shop where a man can do good maintenance work on a frozen winter day - a definite change from the old shop stalls. Our thanks to John Blatter and crew, our BLHP Coordinator Merle Bennett, Construction Representative Don Van Asperen and Engineers Denis Blue] and Rich Booker for a smooth job. Biological Technician Scott Busching did an outstanding job studying and interpreting specs., making daily inspections, getting decisions made on day-to-day questions and working with everyone involved.



Fine, new shop nearing completion.

SWB

PDW #9 - Dense Nesting Cover Management (FY-79 Project) \$45,447
 A mix of purchases were made to enhance our grassland management efforts. A summary is: DNC seed - \$5,274; E-Z Sort Biological Cards - \$157; Equipment trailer and hook-up - \$3,749; aerial photos - \$439; tables - \$243; gasoline - \$788; compact pickup - \$4,367; 4x4 one-ton pickup - \$8,358; wheeled tractor with bucket - \$19,395; and maintenance worker part salary - \$2,677. The heavy truck and fifth wheel trailer will allow safe and efficient transport of tractors and other equipment between work sites. The heavy truck will also be fitted with a fire pumper system (FY-80 BLHP) for spraying and prescribed burning.



5th wheel trailer for use with new 1-ton truck

SWB

PDW #12 - Water Management WPA (FY-79 Project) \$33,000
 As above, a mix of purchases were made to enhance our management efforts. A summary is: Engineering charge - \$4,000; shop contract overage - \$16,000; shop change orders - \$4,000; two biological aids for resource inventory - \$5,051; nesting islands - \$1,945; screw gate - \$655; salaries - \$1,350.

Carryover PDW #5 - CMP Extensions (FY-78 Project) \$ 5,200
 Engineering drawings for the Horseshoe Slough Development risers showed them to be too short. Total cost for the extensions was \$2,200. The remaining \$3,000 was used by engineering for costs unknown to us.

Fiscal Year 1980 projects on which we have made progress are:

Carryover PDW #13 - Garage and Dike (FY-79 Project) \$ 7,775
 With the many projects on-going, these funds were used for work needed but not previously planned in earlier projects. The new residence required a garage - \$3,528; storm windows - \$495; fire place screen - \$31 and main room rods and drapes - \$802.

A dike and structure was needed to protect a neighbor's property from the Horseshoe Slough Development - \$2,305.

Specifications for the new shop were in error by requiring only 3" of insulation in the walls - inadequate on a typical winter of -15° and 20 mph wind. Four inches were added using the remaining \$600 in this project (total additional insulation cost was \$1,343).

PDW #1 - Headquarters Landscaping and Sewer System (FY-79) \$13,000
 Tree moving was initiated to repair breaks and lengthen the shelter belt protecting the office and residence, cost \$200. The contractor was laid off the job when the cost versus job being performed was evaluated. A newly purchased Service tree planting truck will be used this spring or fall.

The sewer for the new shop was completed, cost - \$1,525.

PDW #10 - Grassland Management and Rehab. (FY-79) \$110,000
 Initial purchases for equipment needed under this effort were a backhoe - est., \$7,900; side mower - \$1,394 and fire pumper complete with tank, hoses and nozzels (for new one-ton truck) which is in the bid stage, estimated cost - \$9,000. Additional projects planned under this heading include fencing supplies, seed purchase, herbicide spraying to promote grasses, dowpon for cattail control, grassland drill, flood water retention dikes and structures and culverts.



This was a FY-77 BLHP purchase. We received it 2-7-79. SWB

B. Maintenance

Boundary posting and entrance signs were checked and re-worked as necessary. Public information displays were worked up for the three display boards. Road-sides were mowed as required by law.



Extensions were required on the Horseshoe Slough riser board structures. SWB

Dams 3, 3A, 5 and 8 were rehabilitated and screw gate structures on Dams 3, 3A and 8 were replaced in the central marsh area. Muskrat burrows had severely damaged the dikes and age had taken it's toll on the structures. As usual, several field rock piles were cleaned up and used as riprap around the structures. While the marsh was dry, approximately 22 nesting islands were bulldozed up in the Maka Pool using our rejuvenated D-6 Dozer.



An overhauled, rejuvenated D-6 back from the Diesel Department, North Dakota State School of Scient. SWB
 Various repairs were made on the heavy equipment as below:

<u>EQUIPMENT</u>	<u>REPAIRS</u>	<u>COST</u>
Lowboy Tractor (Army 6x6)	Seat and canvas top	\$ 50
Dragline	Brake Linings	150
D-6 Dozer	Overhaul (NDSSS)	3,570
D-6 Dozer	Flywheel and other parts	842
Lowboy Trailer	Professional welding	796
Road grader	Miscellaneous parts	250
Ford tractor	starter	199

The Motorola radio system ordered last year was installed this spring including a 180' tower and a base station placed north of the office. The crew experienced much aggravation and dissatisfaction working with the local (Fargo) Motorola dealer. When the warranty period is over, dealers in Bismarck or Aberdeen, SD will be contacted.

The radio system never did work up to par but did receive well the daily traffic from refuges from Florida to New Jersey. Their transmissions often came in better than ours from 50 - 60 miles away. In early November, one of the outriggers was bent, probably by the now deceased pelican found below the tower. The system went dead in early January 1980; an average type blizzard knocked off two of the outriggers and apparently did other damage to totally stop communications.

The Langdon YACC Camp poured 150 concrete planks (Size 6" x 14" x 8') for our use as boat launching ramps and as pump sites. Cost for materials was \$1,258. They made up two loads for the new Arrowwood lowboy transport.

Clean-up of three house sites was tackled. The Susag house, Sprague Lake unit was sold in 1977; the mess remaining was burned in April and bulldozed clean. The manager's old house was sold to Mr. Herb Marquette for \$502.50, the yellow garage to Mrs. Anna Garland for \$140 and the white garage to Mr. Bill Anderson for \$201.76. The site was dozed clean and seeded in November. The clerk's residence was sold to Mr. Jerry Brown for \$241 and the garage for \$111. A torn up house shell remains to be burned next spring after the adjacent three spruce trees are moved; they are too nice to be burned up.

C. Wildfire

Nothing to report.

III. Habitat Management

A. Croplands

Ten permittees farmed a total of 1838 acres during 1979. A summary sheet explaining the farming program follows on page 12. Included in this 1838 acres was 239 acres Dense Nesting Cover (DNC) seeding with wheat nurse crop and 120 acres breakout.

The refuge crop share was all left standing as corn (110 acres), wheat (26 acres), barley (152 acres), rye (105 acres) and millet (25 acres). Standing grain was heavily utilized in the fall by mallards, snow and blue geese and Canada geese.

REFUGE COOPERATIVE FARMING SUMMARY

	CORN		OATS		WHEAT		BARLEY		RYE		DNC/WHEAT		MILLET		SOYBEANS		BREAKOUT
	P	R	P	R	P	R	P	R	P	R	P	R	P	R	P	R	
PERMITTEE																	
Banish, A.	14	22			44	0											
Breker, C.	28	20			105	0	8	27	0	37					26	0	30
Breker, M.																	40
Freeman, L.			30	0	49	16											
Glarum, R.	0	24			73	0	0	21	22	9	57	9					
Hoistad, Q.	0	7			111	10	6	24					16	0			
Kiefer, D.	0	30			223	0	0	28	9	49							
Lee, T.			68	0	51	0			0	10	0	33	34	25			
Nickeson, E.					25	0	0	25					25	0			
Silseth, O.	77	7	17	0			0	27			91	49					50
1838 total acres farmed	119	110	115	0	681	26	14	152	31	105	148	91	75	25	26	0	
	229		115		707		166		136		239		100		26		120

P - Permittee share

R - Refuge share

B. Grasslands

1. Prescribed Burning

Five tracts totalling approximately 90 acres were burned between May 4 - 24 to encourage the native grasses and discourage exotic, cool season grasses. A generally wet spring greatly aided regrowth and improved native grass stands resulted. The good stand of big bluestem on the slope in the picture on the front page resulted from one of these burns. Nine other sites were planned but burns were not accomplished; they'll be rescheduled in 1980.



Prescribed burns of grasslands and pothole marshes were very successful. SWB

2. Haying

There were no requests for haying this year. It was a good grass growing year; also, it seems that there are fewer cattle being raised in the area than in the past.

3. Grazing

There was no grazing on the refuge this year.

4. Pesticides

Refuge personnel sprayed Tordon 22K on scattered patches of leafy spurge totalling about 20 acres in June and early July. About 90% of the spurge grows on the refuge east of County Road 12 (headquarters road). Spurge spraying is pretty much just a holding action to keep it from spreading.

Simazine was applied to 53,823 linear feet of shelterbelts that were planted in 1977, 1978 and 1979 to control grasses. Mr. Scott Phillips, Havana, did the spraying at a cost of \$552.50.

C. Wetlands

Experience has shown that the best waterfowl management of the larger, deeper pools is to imitate nature's way and drop the water levels occasionally. The prime villain is, by far, the carp. We have found that getting water levels at the two to three foot deep stage by either gravity flow or pumping allows the next winter to kill off the carp - much more effective than mechanical control screens or chemical control. This pattern has produced excellent results in past years on Mann Lake, Hepi Lake, East White, West White, Krause Slough and Parker Bay.

The rotting carp promote growth of invertebrates which are very attractive to duck broods. Lack of carp allows sago and other beneficial aquatic food plants to prosper.

Cattail take-overs may occur and have to be addressed by deeper flooding for a few years. To date, this has not occurred. The White Lakes had cattail problems before they were drawn down and mechanically controlled; they are in excellent shape now. The other four lakes listed are nearly all open and could use some cattails.

Lake Tewaukon (Pool 1): Operating level is 1148.5 and it froze one foot low in fall 1978. Spring brought a flood type runoff and the lake peaked at 1149.56 on April 24. Requests were received to hold it higher to attempt to slow downstream flooding. But this wasn't done because of the severe refuge bank (some in private land) and road damage which would have resulted coupled with the negligible impact this would have had on downstream, drainage spawned flood levels.

The lake stopped flowing over Dam 1 on May 8 at 1148.36 and slowly dropped from evaporation thereafter. Year's end freeze-up level was 1147.0.

This big lake is managed primarily as a fishing area - intense local pressure keeps us reminded of their interests. But waterfowl benefits do accrue as a rafting area. Over 100,000 gulls also raft on it each fall.

Parker Bay (East end Lake Tewaukon): The Bay received only local, limited runoff due to being maintained closed off from the Lake. Shifting from fish to ducks, levels were allowed to drop via evaporation to produce a brood lake - which did occur quite nicely.

Fair sago growth occurred and divers made fine use of it also. Target depth is two to three feet to freeze out carp. More cattails would be beneficial also. A lower water gauge needs to be installed.

Cutler's Marsh (Pool 2): The marsh flood peaked at 1156.3 on May 8. It was held at normal pool until September. Levels were then lowered to approximately 1149.0' for carp control and waterfowl use but early enough so the muskrats could recover. A lower water gauge should be installed.

Maka Pool (Pool 3): Peak flood levels were 1155.6 from which the pool was dried for island construction. It was dry by mid-June.

Pools 3A and 5: Same as Maka Pool except that dike and control structure repair was accomplished.

Pool 4: Highest level was 1155.8 in April. Normal levels were maintained. A heavy cattail growth is a problem.

Pool 6 and 7: Normal operating depths were maintained. Pool 7A was dry as it has been kept the last several years.

Hepi Lake (Pool 8): Peak levels occurred on April 22 at 1149.9 from which the structure released water to 1148.7 on May 8. Levels dropped by evaporation to an estimated four to five feet deep; a good bed of sago occurred and canvasback and other divers made good use of it in the fall.

Pool 9: No water control possible. This pool is just a nice pothole.

Pool 10: We can flood this pool deeply from Hepi Lake but feel shallow, two to three foot levels are better for waterfowl. Hence it was kept closed off, received only local runoff and remained relatively shallow.

West and East White Lakes (Pools 11 - 12): The Lakes were manipulated extensively and very successfully in 1978. Conditions were near perfect with heavy brood use, no carp and a good cattail-water interspersion. For the second year in a row, no water was turned in from Cutler's Marsh.

Sprague Lake: This large lake is our second and only other fishing lake. We have no control of it's levels; it just fills up and floods north into the Wild Rice River. Due to the good water year, it stayed high all summer.

A gauge is needed which will withstand the ice. Bio. Tech. Schuler's idea of a gauge set in a vertical perforated culvert connected to the edge of the Lake by a permeable trench full of rock will be pursued.

Mann Lake: Continuing the 1978 start on converting from a fishing lake to a duck brood lake, a fine winter kill was noted from last fall's low water. After ice out, the surface looked almost like cream from the well decomposed fish. Invertebrate populations boomed and so did brood use - excellent brood numbers. Summer levels were allowed to drop by evaporation. A gauge is needed; December water depths were estimated as two to three feet.

Horseshoe Slough: Dike 1 again was kept closed to keep out Wild Rice River flood waters so the major dike construction could be finished. All seven ponds were dried as quickly as possible and the work was completed this summer. Next year we need good flows down the Wild Rice to give us the 650 to 750 acre feet desired over 250 surface acres.

D. Forestlands

A 15 row shelter belt planting was made through the Soil Conservation Service north of Lake Tewaukon totalling 12,480 feet by 227 feet wide, 4.3 acres. A second planting of 10 rows was made southeast of Hepi Lake totalling 5,410 feet by 155 feet wide, 1.9 acres. Species in these plantings are green ash, dogwood, buffalo berry, honeysuckle, red cedar, caragana, chokecherry, Siberian crabapple and honey locust. Cost was \$1,264.

Golden willow starts were purchased June 21 from the Soil Conservation Service at \$.35 each and were planted at random in a low, wet area approximately 300 yards west of the Quarters #1 site. 240 trees were planted with the objective of forming a natural shelter belt type cover area.

E. Other Habitat

Large, circular 700 pound size bales were made from the wildlife share of refuge and Palensky-Wyum-Kaske WPA's millet crops. The bales contained the seed heads as well as the straw and were placed in the lee of brush or trees on the refuge, Wollitz WPA (3 bales) and Palensky-Wyum-Kaske WPA's (4 bales) to provide winter feed for deer, pheasants, huns, rabbits and small birds. Since they are nearly six feet tall they will extend above the snow and should last three to five years. Despite the mild winter, at year's end pheasant, deer and small birds were making good use of many of these bales.



Millet bales were placed in protected sites and were readily utilized by deer, pheasants and small birds. SWB

F. Wilderness and Special Areas

The only special area is an old Indian cemetery with several stone markers still standing. It is located immediately south of the office between the shop and new residence along the west edge of Lake Tewaukon. Relatives of those buried there still live in the area and visited the graves this summer. We keep the area mowed.

G. Easements for Waterfowl Management

The Wild Rice easement refuge taken in 1936 is 778.8 acres and is located immediately west of Cayuga, continues to be a concern. We have no land management rights and nearly all the "refuge" is fall plowed crop land. A heavily travelled county road crosses this area and having blue goose signs posting open expanses of black earth is a confusing and poor image to the public, not to mention wildlife. Since a rubble dam washed out several (20?) years ago, it has been a narrow river channel with the only redeeming habitat being a narrow belt of willow trees and grass growing along the meandering channel. Most, if not all, of the wetlands have been drained. Refuge status doesn't particularly enhance the small amount of riparian habitat remaining.

This easement refuge has been proposed for dropping but this will be a long-term process because it will require Congressional action. The Area Office is assembling a "drop list" of all out-

dated easements for submission up the line. We are considering various ways to remedy the very poor public information the existing posting conveys.

The other two easement refuges, Lake Elsie (643.7 acres) and Storm Lake (728.3 acres plus 1.7 acres fee title), continue to function as good waterfowl resting areas. Management efforts were confined to an occasional visit and posting maintenance.

The refuge also benefits from two additional tracts of land under easement immediately adjacent to our boundary south of headquarters and southeast of Parker Bay (see refuge map following Table of Contents). The easements are closed to hunting. The crops grown on them by the owners fit in well with and compliment our management.

IV. Wildlife

A. Endangered and/or Threatened Species

Bald eagles migrate through this area and several singles are usually observed each fall. They often are surveilling the waterfowl flocks for dinner. Peak numbers were four on November 6.

B. Migratory Birds

1. Waterfowl

The cold and snow held all waterfowl south late so that by March 30 the refuge population was only five mallards compared to 2,000 mallards; 1,600 pintail; 250 snows and 200 Canada geese in 1978. Then in April the migration opened up and the birds apparently passed right on over. Geese peaked at 250 snows and 120 Canadas compared to 1978 peaks of 1,000 and 800. Ducks peaked in May at 2,200 mallards; 900 pintail; 2,500 blue-winged teal and 800 redheads compared to April 1978 peaks of 5,000 mallards; 2,000 pintail; 2,200 blue-winged teal and 1,000 redhead.

Water conditions were favorable throughout our area and production for most species was up substantially (50%) in the wetland district (three counties). Dispersal of breeding birds throughout the many attractive areas apparently resulted in the nearly 50% reduction in production observed on the refuge.

The below table compares 1975 to 1979 production.

Estimated Duck Production on Tewaukon NWR

Species	1979	1978	1977*	1976	1975
Coot	268	1280	2500	1240	1000
Mallard	488	700	2470	1209	762
Gadwall	146	460	1120	707	504
Pintail	101	400	500	281	198
Green-wing teal	26	5	7	10	12
Blue-wing teal	714	1400	916	2708	1134
Wigeon	19	20	35	25	--
Shoveler	133	155	466	236	90
Wood duck	72	--	110	--	54
Redhead	74	430	576	200	132
Ring-necked	--	5	--	--	--
Canvasback	24	30	21	30	--
Lesser Scaup	135	6	--	--	36
Ruddy	265	130	305	206	162
TOTALS	2197	3741	6526	5612	3084

*1977 was a very dry year - few wetlands around country so ducks concentrated on refuge.

Geese do not nest on the refuge, however, for the second straight year a pair successfully brought off a brood on an island in Alkali Slough, State Management land north of us.

To try to establish a breeding Canada goose flock two transplants were made. On June 6, 13 yearlings were provided by the State, banded with standard and green and white leg bands and released. On August 8, a local giant Canada goose propagator, Mr. Richard Holm of Abercrombie, gave 39 birds to the State which were released here August 8 - nine yearlings and thirty juveniles all with standard and green bands. Over 30 newly constructed nesting islands are available on Maka Pool and Horseshoe Slough.

These Canada's were still reasonably un-wary at the start of the hunting season, September 28, and were leaving the refuge regularly. The refuge was closed to waterfowl hunting but a local area closure was prohibited as a stipulation of the deal by the State. At year's end only two of them have been reported shot. A pair has remained through December generally near a farm south of the refuge and have used a spring hole in the ice on Alkali Slough. We are keeping our fingers crossed.



Canada geese being released in Cutler's Marsh. SWB

The fall migration was an average affair, quite similar to 1978. Snow geese were down slightly at 40,000 while mallards were up some at 50,000 peak. An early November storm moved them out early so total use was down.

Of note was a large increase in diver peak and total use. Canvasback peak went up from 200 in 1978 to 5,500 and Lesser Scaup peaked at 13,500 compared to 5,000 in 1978. Excellent sago beds in Hepi Lake and fair stands in Parker Bay probably were major factors as the birds chiefly used these areas.

Literally the swan song of the fall migration was the all night hooting and partying of the whistling swans in Culter Marsh. They peaked at 300 on November 2, very similar to last year.

2. Marsh and Water Birds

Numbers of these populations were average except that white pelicans were down in the summer from 300 birds to 100 birds and double-crested cormorants were down from 350 birds to 157 birds. Drainage of many of the refuge marshes for repair work may have been a significant factor in this decline.

During the fall migration a flight of 225 cormorants was counted flying by the office from Cutler's Marsh to Lake Tewaukon.

3. Shorebirds, Gulls, Terns and Allied Species

Nothing unusual was noted with these species except that the great raft of gulls roosting on Lake Tewaukon during the fall migration was down significantly this year. Even so, the far away raft of white birds still gave the appearance of ice floes out on the blue lake. Franklin gulls peaked at 95,000 on September 15 compared to 115,000 in 1978. Ring-billed gulls remained the same as last year at 20,000 peak on October 5. Being ground observations, these numbers represent only an educated guess of actual numbers.

4. Raptors

Nothing unusual was noted. Eagles migrate through each fall with four balds and four goldens observed this year - same as 1978.

A lady living in Rutland, Mrs. Nora Sjothun, raised a great-horned owl which fell from a nest in her yard, until it finally got too hard to manage. Refuge personnel read of the owl in the paper and invited her to drop it off in the refuge which she did in August. Since then, "Hootie" has been an interesting study for visitors, refuge people and Potter's kids as he/she? feathers out and, hopefully, learns to hunt. At year's end, he was being supplied with road kills but only when he got very insistant.



Great-horned owl raised by local citizen and released here in August.

SWB

5. Other Migratory Birds

A chronology of first spring observations is:

<u>Siting</u>	<u>Date</u>	<u>Observer</u>
Golden Eagle	1-11-79	Busching
Crows (2)	3-01-79	B. Hoflen
Canada geese (11)	3-12-79	B. Hoflen
Mallards (5)	3-12-79	B. Hoflen
Dove	3-18-79	Cameron
Kestrel	3-20-79	Cameron
Red-winged Blackbirds (100+)	3-22-79	Cameron
Blue-jay (3)	3-24-79	B. Hoflen
Killdeer	3-28-79	Schuler
Snow geese (150)	4-03-79	Cameron
Kingfisher	4-07-79	Cameron
Coot	4-11-79	Cameron
Great blue heron (2)	4-11-79	Schuler
Marbled godwit	4-12-79	Busching
Upland plover	4-12-79	Schuler
Pelicans (50)	4-13-79	Cameron
Pied-billed grebe	4-19-79	Schuler
Willet	4-27-79	Cameron
Western grebe	5-03-79	Busching
Scarlet tanager	5-22-79	Schuler
Pintail brood (Kasper's WPA)	6-11-79	Schuler
Snowy Egret	6-18-79	Busching

The mild fall and winter resulted in a few robins, flickers, red-winged blackbirds and meadow larks remaining in the area right through year's end.

C. Mammals and Non-Migratory Birds and Others

1. Game Mammals

A third hard winter depressed local deer populations significantly. An aerial census January 25 counted 287 deer on the refuge or adjacent State management area (compared to our ground estimates of 150). Since we have 99% of the heavy winter cover in the area, winter deer numbers vary inversely with weather severity.

The large number of deer cleaned up the crops, got into neighbor's hay and did some damage to shelter belts. But, like 1978, complaints were negligible because no one wanted to see the deer starve. Eight 30 bushel pickup loads of refuge corn were scattered for deer and resident birds.



Deer browse damage by headquarters area.

SWB

Judging from the poor local hunting season, fall deer numbers were down from previous years.

2. Other Mammals

High fur prices caused a great interest in trapping. Relative to this pressure and the three hard winters, populations of these species seem to be reasonably high. With good water conditions muskrat, beaver and mink are increasing. Fox, skunk and weasel populations seem to be holding steady. Raccoon and rabbits are way down with disease suspected in both groups - distemper in the raccoons.

Our predator control trapping program attracted seven qualified trappers (must be over 18 and experienced) but only four put in to draw for the five units. They were Quentin Hoistad, Urban Hoistad, Darwin Brakke and Louie Gaukler. Winter storms cut the 1978 season very short while the mild 1979 weather allowed a long, successful trapping effort. We issued the permits to take advantage of a new state season for spring trapping raccoon until March 31, 1980.

Muskrats were again closed to trapping to keep their population high to rapidly repopulate the center marsh pools which had been drained for maintenance. Beaver were opened to limited harvest of the six colonies to reduce significant damage occurring: burrowing in a narrow gravel road grade at Sprague Lake, dropping many large hardwoods on the peninsula and taking a neighbor's, Roy Glarum, corn from fields adjacent to the Wild Rice River.

Trapping results for the entire refuge was:

SPECIES	1979	1978	1977	TOTALS
Fox	16	10	8	34
Mink	24	25	-	49
Skunk	59	6	-	65
Raccoon	31	14	10	55
Weasel	2*	4	-	6
Beaver	22	-	-	22
Muskrat	2*	-	-	2
Badger	3*	-	-	3
TOTALS	159	59	18	236

*accidental

3. Resident Birds

Populations of these birds are very low. The third hard winter depressed them and reproduction must have been low, possibly from the wet spring. The fall population of pheasants and huns was way down.

About 250 bushels of refuge corn was spread to help some of these birds survive. Again, willows and phragmites east of Parker Bay was a major wintering area. The Horseshoe Slough area seemed to have brought through more birds than average also.

For the first time in his 18 years at the refuge, Biological Technician Schuler observed a prairie chicken November 13 on the refuge, near the road north of the manager's old house. Schuler also saw a pair of chickens November 28 north of the refuge on the State management area.

Three sharptailed grouse were observed January 29 north of the office near the County Road #12 big culvert. They were seen off and on in the area all year.

4. Other Animal Life

The high local interest in Lake Tewaukon as a fishing lake spurred on several efforts to re-stock after the severe winter kill. The Geneseo Sportsmen's Club stocked an estimated 25,000 two to five inch perch; 5,000 small crappie and a few bluegills seined from Lake Elsie on April 29, 1979. On May 2 they added another 17,000 perch. Lake Tewaukon hasn't had a history of perch overpopulation like Lake Elsie for some unknown reason.

The Valley City National Fish Hatchery supplied 1,020,000 walleye fry on 27th of May; 75,000 northern pike on June 6 and 100,000 walleye on July 3. At year's end the fishing continued very slow but northernns up to seven pounds were reported from the few persistant ice fishermen. If we just don't winter kill over the next couple years; fishing should be excellent.

No commercial carp fishing was attempted. The very poor 1978 catch and 1979 winter kill may have discouraged Mr. Grasteit.

The first tiger salamander of the year was spotted in the road April 19 just south of the manager's old house.

V. Interpretation and Recreation

A. Information and Interpretation

1. On-Refuge

It was a very slow year for tours or visitors. In August, Busching and Hoflen conducted a tour for a 4-H group from Veblen, SD. A group of Rutland Girl Scouts and Fargo Audubon Club members toured the area in late October and November.

2. Off-Refuge

Press releases were mailed out routinely dealing with Refuge programs or wildlife information. The local papers in Milnor, Lidgerwood and Hankinson all printed them without editing and at least three other papers used them occasionally. This effort is being expanded into a once or twice monthly column under our established heading as shown on the next page.

Cameron, Busching and/or Potter routinely visited local sportsmen's clubs in Hankinson, Geneseo, Rutland and Cogswell to discuss refuge "current events". (In January 1980, contacts were expanded with excellent initial results to the Fort Ransom Club and the Englevale Rod and Gun Club, both in Ransom County.)

Busching was assigned duty on the newly formed Area public involvement task force and served ably. This new effort is aimed at setting and coordinating the Area wide major effort to get the Service view point accross. Initiated by the new Area Manager, this effort may get our small wetlands acquisition effort back on track.

U.S. FISH & WILDLIFE SERVICE

Tewaukon



Refuge Notes

By Dave Potter, manager

REFUGE TRAPPING RESULTS

Before the season this fall, trappers interested in working the Tewaukon National Wildlife Refuge were invited to submit an application to be included in the public drawing. Eight individuals expressed interest but it turned out only four of them were available to trap the five refuge units. Since trapping is used not as a recreational activity but as a duck predator reduction technique, only experienced trappers over age 18 were allowed to apply for the drawing.

The four men trapping the refuge this year were Louie Gaukler, Quentin Hoistad, Urban Hoistad and Darwin Brakke. The trapping season experienced generally favorable weather and results were good.

A summary of their results is: Tewaukon Unit (refuge east of County Road 12) - 8 fox, 11 mink, 10 racoon, 14 skunk, 12 beaver, 2 badger, and 2 weasels.

Hepi Lake - Cutler Marsh Units - 5 fox, 10 mink, 12 racoon, 18 skunk and 5 beaver.

South Sprague Lake Unit - 2 fox, 2 mink, 8 racoon, 14 skunk, 5 beaver and 1 badger.

North Sprague Lake Unit (no water) - 1 fox, 1 mink, 1 racoon and 13 skunk.

Total animals removed from the refuge were: 16 fox, 24 mink, 31 racoon, 59 skunk, 22 beaver, 3 badger and 2 weasels.

The center refuge marshes were dried out this summer to allow repair of the dikes and construction of nesting islands. In order to have a good supply of muskrats left on the remaining wetlands to move in and repopulate these formerly dried up areas, no muskrat trapping was permitted this season.

Beaver were opened to trapping this fall to reduce the population and reduce the damage occurring. Animals were burrowing into the road grade northwest of Sprague Lake, were dropping many large hardwood trees on the Lake Tewaukon peninsula and were heavily using a neighbor's corn field next to the Wild Rice River. Care was taken not to trap any of the six beaver colonies too hard so that there are some animals remaining at or near each location.

Experienced trappers who are interested in putting in for the drawing next year should contact the refuge office four to six weeks before muskrat season opens.

Also ran in Sargent Co. Teller & Lidgerwood
"Monitor"

B. Recreation

1. Wildlife Oriented

Due to the low human population in this rural area, the vast majority of refuge public use is archery deer hunting or fishing. Use by hikers, birders or photographers occurs but is very low.

Beautiful mild fall weather capped a very smooth, quiet and successful refuge archery deer season. Like last year, the refuge west of County Road 12 was opened and there were no permit or check-in restrictions. Opening day, November 19, brought a large crowd estimated at 80 hunters who took 16 deer, a 20% success rate. The season continued through December 31 and the "vital" statistics were estimated at 32 deer bagged in 362 visits and 2,030 activity hours. Best deer checked was a 4-point buck. We feel this hunt adds up to the nebulous definition of "quality".

Ice fishing was the bulk of the fishing this year but was slow, especially in December when only one or two houses appeared on Sprague Lake and Lake Tewaukon. Earlier, in January 1979, fishing was good and 29 houses "sprouted" on Sprague and 24 houses showed up on Tewaukon. But by mid-January high winds, low temperatures and poor catches combined to bring use to near zero. It stayed this way the rest of the year.

2. Non-Wildlife Oriented

Nothing to report.

C. Enforcement

As was with the district this year, large concentrations of hunters were not found, consequently reducing the need for constant patrolling. This year's nice fall weather brought many archers to the prairies in search of the illusive white-tail, but no enforcement problems were experienced.

A radio operating on State Law Enforcement frequency was purchased to allow us to maintain constant contact with the State warden and Sheriff's office.

Nine large and living trees were sawed off and removed from the refuge, apparently for fire wood; however, no persons were apprehended. In other unsolved episodes, three spruce trees were stolen in the spirit of Christmas.

Busching, Schuler and Potter all qualified with the Service revolver prior to the hunting season.

Below is a listing of cases written on the refuge for 1979:

<u>VIOLATION</u>	<u>FOC/COURT</u>	<u>FINE</u>
Refuge Trespass (2 cases)	FOC	\$ 25 each
Hunting on Refuge (2 cases)	FOC	\$100 each
Take Migratory Bird with unplugged gun	FOC	\$50
Hunting on Refuge (2 cases)	Juvenile	Probation for each

VI. Other Items

A. Field Investigation

Nothing to report.

B. Cooperative Programs

A Special Use Permit was issued in 1978 to Professor Eville Gorham, Department of Ecology and Behavioral Biology, University of Minnesota, for the purpose of collection and analysis of atmospheric precipitation. The study is to determine the amount of calcium, phosphorus, pH level, etc., that is in our rainfalls, air and snow. A collection site is maintained here and at two locations in Minnesota. The title of the study is "The Chemical Composition of Atmospheric Precipitation" with special reference to the role of windblown dust in neutralizing acid precipitation. The refuge commitment is to collect, prepare and mail wet and dry sampling buckets and report malfunction of collectors.

The refuge portion of the study was completed in November. As yet we have not received any results or conclusions from this work.

C. Items of Interest

1. Training

There was no formal training this year.

2. Administration

Hoflen attended the Area Administrative Workshop. Cameron or Potter attended Area Project Leader's Meetings. Busching attended a Public Affairs Task Force Meeting and a Project Leader's Meeting.

Manager Cameron succumbed to the lure of sage brush and mountains moving west as refuge manager of Ruby Lake NWR, Elko Nevada on June 1. Valley City Wetlands Manager, Lloyd Jones, served as acting project leader until David Potter transferred in September 17 from the assistant manager slot, Mark Twain NWR Complex, Quincy, Illinois.

Clerk Hoflen delivered a healthy, strapping baby boy, William Roger, on April 19. She was promoted to GS-5 on July 15.

Biological Technician Busching was converted to this position on August 12 from a Maintenance Helper, WG-5 job.

Maintenance Helper Ahrlin G. Hoffman closed out his 18 year Service career with retirement on November 3. His wealth of knowledge and steady hand about the Refuge and District will be missed. However, he comes out to visit regularly.

The old 3M monster that served as a copier was retired. We were very happy to receive an efficient Xerox Model 2600 copier with capability to copy aerial photos. Cost was \$3939.

3. Shared Revenue Payments

The short-fall in these payments continues to be a problem that critics of the wetlands program such as hostile county commissioners use regularly to blast the Service. Payments this year were less than 50% of "normal". And, it is hard to rebut. Hopefully, a solution to this problem is on track for 1980.

Payment to Sargent County under PL 88-523, Revenue Sharing Act, was \$9,990 compared to \$10,501.34 last year and \$14,971.81 in 1977. This payment covers both the refuge and WPA's in Sargent County.

4. Credits

Potter wrote this report drawing liberally from previous narratives, records and the Crew's memory. Except, Busching wrote the law enforcement section. Hoflen's quality typing job speaks for itself.

D. Safety

No accidents occurred this year. Formal or informal safety discussions were held regularly.

We had no lost time accidents this year.