

WAUBAY NATIONAL WILDLIFE REFUGE
Waubay, South Dakota

ANNUAL NARRATIVE REPORT
Calendar Year 1979

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



AA
PO

From Left to Right: Johnson, Okroi, Waddel, Kurtenbach, Smith, Henning, and Watters

1. Robert R. Johnson - Refuge Manager, GS-11-PFT
2. Harvey O. Smith - Ass't. Refuge Manager, GS-9-PFT
3. William J. Kurtenbach - Ass't. Refuge Manager, GS-5-PPT-50 wk. appt.
4. Dennis D. Okroi - Adm. Clerk, GS-5-PPT-39 hr. wk. appt.
5. Linda L. Watters - Wildlife Biologist, GS-5-PFT
(Promotion from Biological Aid, GS-4, 6/3/79)
6. Garner R. Waddel - Maintenance Worker, WG-6-PPT-50 wk. appt.
7. Edmund R. Henning - Maintenance Worker-WG-6-PPT-Seasonal-4/8/79 to
9/28/79 (Retired 9/28/79)
8. Richard Dolney (NMI) - Biological Aid-GS-3-Temporary
EOD 4/8/79-Terminated 9/28/79
9. Dennis P. Dargata - Biological Aid-GS-3-Temporary
EOD 4/8/79-Resigned 7/28/79
10. Emil J. Gruba - Biological Aid-GS-3-Temporary
EOD 4/8/79-Terminated 9/28/79

REVIEW AND APPROVALS

Robert N. Johnson 1-29-80 Rollin Siegfried 7/12/80
Submitted by (date) Area Office (date)

WAUBAY NATIONAL WILDLIFE REFUGE James S. Wilson 7/14/80
Refuge Regional Office (date)

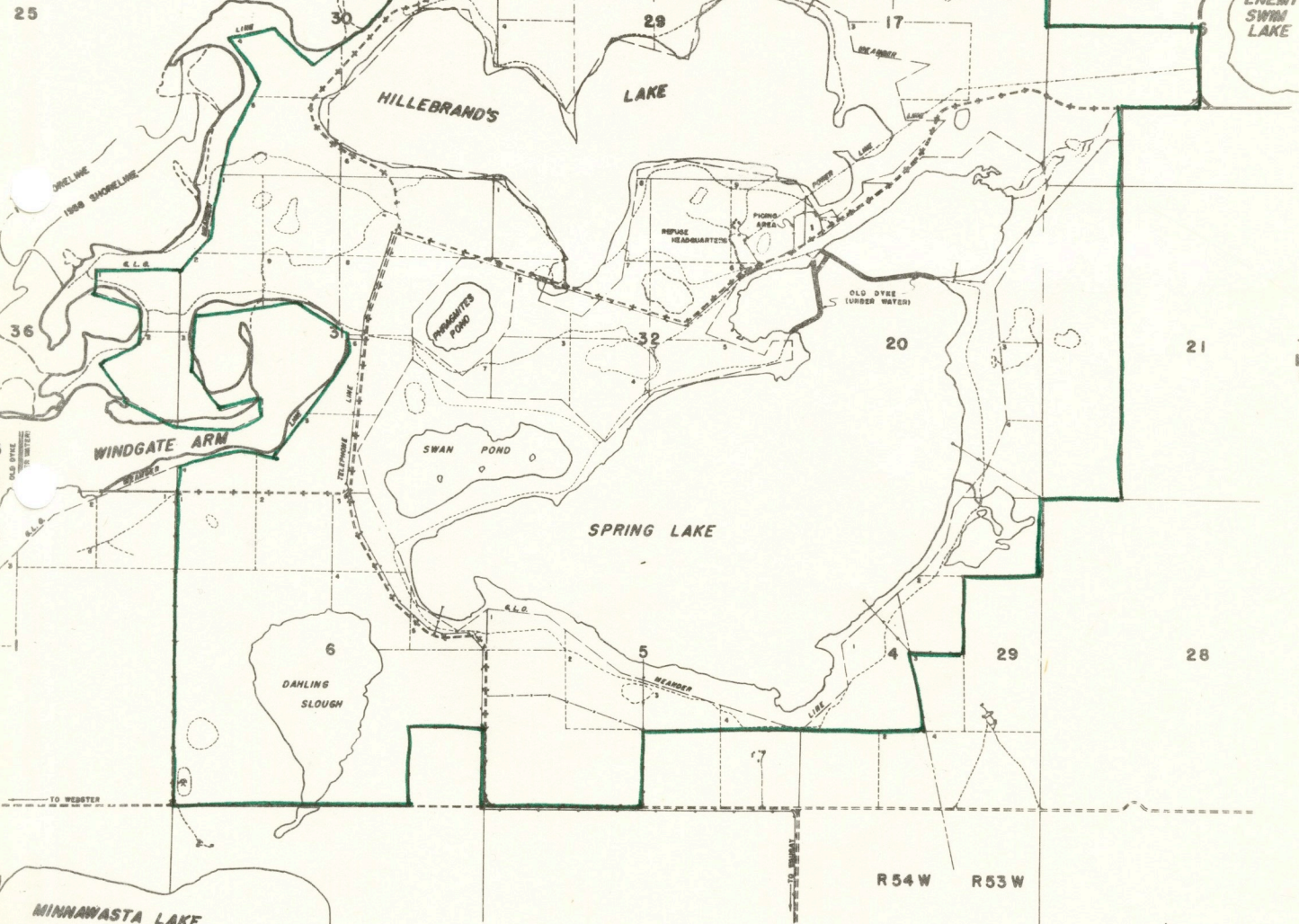
UNITED STATES DEPARTMENT OF THE INTERIOR
BUREAU OF SPORT FISHERIES AND WILDLIFE
WAUBAY NATIONAL WILDLIFE REFUGE
DAY COUNTY, SOUTH DAKOTA

R 54 W R 53 W

WAUBAY LAKE

25

ENEMY SWIM LAKE



T 123 N

21

SPRING LAKE

28

R 54 W R 53 W

FIFTH PRINCIPAL MERIDIAN

R 55 W R 54 W



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I. GENERAL

A. Introduction

The Waubay National Wildlife Refuge is geographically located in the Coteau Des Prairie of northeast Day County, South Dakota. Although the refuge is small in size, encompassing 4,650 acres, its diversity of habitat attracts and supports an abundance of wildlife most of the year. About one-half of the area is wetlands in the form of two large, shallow prairie lakes and numerous small potholes. The balance includes natural oak forest and mostly native prairie grassland which gives appropriate dimension to the Sioux Indian word "Waubay", -meaning a nesting place for birds.

B. Climate and Habitat Conditions

The winter of 1978-79 was extremely cold. Temperatures fell below zero a total of 25 days in January with snow cover remaining over a foot in early April. The last snow fell on May 9th, the last spring frost occurred three days later, and unusually cool temperatures continued throughout the entire summer. Thermometers registered into the 90's only four days in 1979 and even fell into the low 40's during August.

Precipitation through August measured at 16.45 inches, down 3.35 inches from the same time a year ago. Only 2.47 more inches were recorded the rest of the year, resulting in a very dry autumn and the total yearly precipitation level of 18.92 inches falling considerably below last year's 22.07 inches and the 20 year average of 21.23 inches.

The abundant rainfall during spring and summer helped provide good nesting and brood-rearing habitat for waterfowl. Vegetation, both in the marshes and on upland area was excellent, and even the smaller wetlands still contained water well in September.

The past two winters were abnormally severe ones, but so far, the winter of 1979-80 has been extremely mild. The first autumn frost occurred on October 4, but December's temperatures averaged 37^o, even got up to 51^o on the 19th, and at year's end there was still no snow cover on the ground. If this kind of weather continues, winter wildlife food and cover conditions will be the best in years.



Fig. 1, Headquarters DNC Field - Okroi in the foreground.
 RRJ-6-79, Exp. 19, 7/79

C. Land Acquisition

Nothing to report.

D. Systems Status

1. Objectives

Major revision of the refuge objectives was performed in 1973 with minor revisions made periodically including several in 1979. Revisions are necessary to reflect reality and to accomodate policy changes.

For the most part, 1979 wildlife outputs fared well in meeting refuge objectives. Although waterfowl production amounted to only 70% of the established objective, waterfowl maintenance exceeded the established objective by 29%. Apparently the mild autumn weather which extended into December, contributed to exceeding the waterfowl maintenance objective.

While consumptive wildlife recreation outputs (deer hunting) exceeded the refuge objective, many non-consumptive recreation activities were pretty much on target. These include sightseeing, walking the nature trail and using the observation tower.

2. Funding

Waubay NWR and Waubay WMD receive funding as one unit. Approximately 70% of funding provides for WMD management while 30% is used for refuge operations. Table I illustrates station funding.

Table I. Station Funding From 1975 Through 1979.

Fiscal Year	Target or Allotment	BLHP Funds	Rehab. Funds	Total M/D Worked	Salary Cost
1979	153,700	62,544		1956	112,661
1978	134,000	61,900	**16,000	1978	104,834
1977	*109,142	58,000	**15,000	1480	77,116
1976	99,246			1689	81,855
1975	102,300			2032	86,550

* \$8,000 additional for Refuge Manager (trainee) position.

** Obtained from BLHP funds.

With salary costs amounting to approximately 75% of the station allotment, little remains to provide for management costs and maintaining equipment and facilities at Service Standards. Additional funds through BLHP have, however, provided some relief. BLHP funds did provide for some habitat management costs and purchase of badly needed equipment.

II. CONSTRUCTION AND MAINTENANCE

A. Construction

No construction occurred during 1979. However, new equipment acquired included a ten foot John Deere offset disk, an International 1086 farm tractor, and three four-wheel drive pickups.

B. Maintenance

In addition to routine custodial maintenance, minor accomplishments included painting the six stall garage, office, and recreation area picnic tables, installing a new submersible pump in the headquarters well and replacing two storm doors at headquarters buildings.

With notification that the BLHP project to upgrade the refuge headquarters had been cancelled, future maintenance will have to be greatly increased to upgrade facilities to Service Standards.

C. Wildfires

One wildfire on November 24, burned approximately seven acres of upland cover between Phragmites Pond and the Waubay-Grenville road. A carelessly discarded cigarette by a deer hunter is suspected to be the cause. The fire was extinguished by the Waubay Fire Department at a cost of \$248.

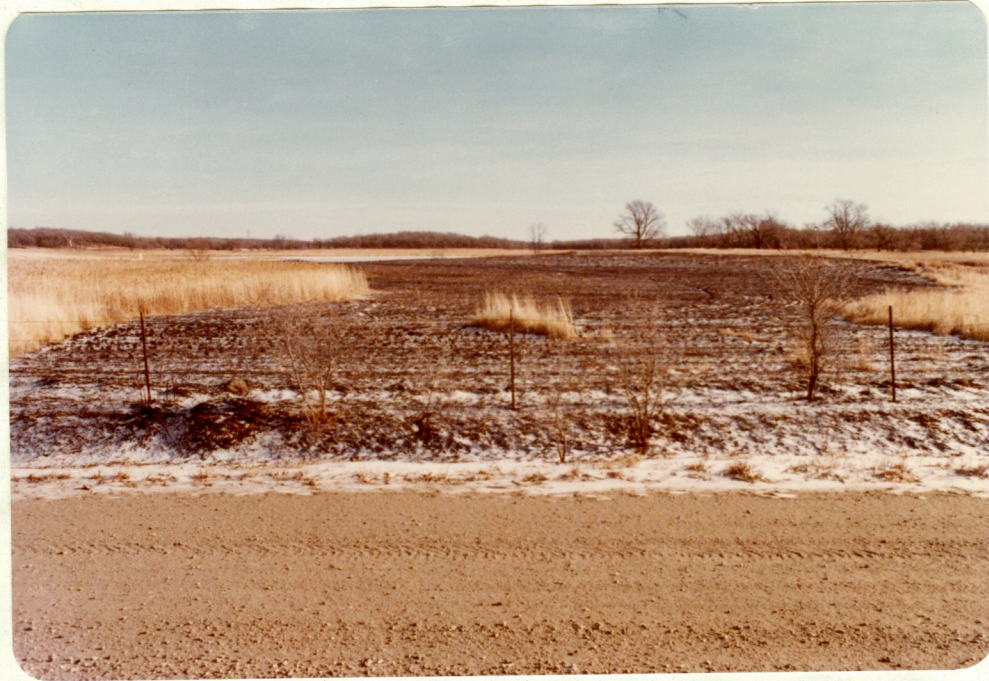


Fig. 2, Aftermath - Phragmites Pond Wildfire - Waubay Refuge
HOS-16-79, Exp. 14, 11/79

III. HABITAT MANAGEMENT

A. Croplands

Refuge farming operations involved 212 acres with 177 acres accomplished by cooperative farming agreements and 35 acres by force account. Crops included rye, alfalfa, oats, barley, and millet.



Fig. 3. Excellent Millet Crop - Refuge Unit A-5
HOS-6-79, Exp. 10, 8/79

Yields were good with oats, rye, and barley produced 60, 50, and 40 bushels per acre respectively. The refuge share which is left unharvested was well utilized by both resident and migratory wildlife.



Fig. 4. Snow Geese On Barley Field - Waubay Refuge
LLW-79, Exp. 23, 10/79

B. Grasslands

As in the past two years, no haying or grazing was allowed on the refuge. Haying or grazing will be only used as grassland management tools.

Approximately 55 acres were sprayed with 2,4-D for control of noxious weeds. Sow and Canada Thistle, Wormwood Sage, and Creeping Jenny were the target species.

Robel measurements were taken on 4 old DNC stands and 4 native prairie fields this past May. Average density of the DNC was 1.4 dm and average height was 6.3 dm while the native prairie measured .75 dm and 4.2 dm respectively.

One of the DNC fields, approximately 30 acres, was summer fallowed and planted to native grass in October. The planting was performed with a Nesbit grass drill at a seeding rate of seven pounds per acres. The seeding mixture consisted of 3 pounds of Switchgrass, 2 pounds of Western Wheatgrass, 1 pound of Big Bluestem, and 1 pound of Indiangrass. Hopefully, this planting will produce high quality nesting cover which will require only minimal management.

Blake Smith, Range Ecologist for Region 6, was here May 30th to give instructions on determining range site conditions for the preparation of the refuge Native Grassland Management Plan. So far, 4 sites on the refuge, totalling approximately 95 acres have been inventoried with results ranging from poor to good. The remaining sites are scheduled to be inventoried in 1980.



Fig. 5. Prairie Scene - Waubay Refuge
RJ-KC-3-79, Exp. 13, 8/79

C. Wetlands

With adequate spring and summer precipitation to maintain fairly stable water levels on refuge wetlands, no pumping to manipulate levels was necessary. Many of the refuge smaller wetlands are located near large bodies of water which does allow for pumping when necessary. Waubay Lake did receive inflows throughout the summer from Pickerel Lake. However, many of the refuge smaller wetlands dried up due to the lack of autumn precipitation.

D. Forest Lands

Dutch Elm Disease has started to claim its first refuge trees. Confirmed to be present on the refuge in 1978, the first dead elm trees were apparent this year. The outlook is bleak for several thousand elms in the refuge woods.



Fig. 6. One Of The First Victims Of Dutch Elm Disease
 RJ-KC-3-79, Exp. 1, 8/79

E. Other Habitats

Nothing to report.

F. Wilderness And Special Areas

Nothing to report.

G. Easements For Waterfowl Management

Nothing to report.

IV. WILDLIFE

A. Endangered And/Or Threatened Species

Nothing to report.

B. Migratory Birds

1. Waterfowl

For the first time since 1976, the Northeast South Dakota Giant Canada goose flock increased its numbers. According to the South Dakota Game, Fish and Parks census, total indicated pairs increased by 30% from 305 in 1978 to 437 in 1979, while the total fall population rose 15% from 2,443 birds in 1978 to 2,871 in 1979.

In a reverse trend over the past 2 years, the Canada goose breeding pair population on the refuge increased in 1979. After beginning to arrive on March 21, 18 pair of geese nested at Waubay this year, an increase of 28% from the 13 pair in 1978. Production also rose from 36 young hatched in 1978 to 82 in 1979, the greatest number hatched on the refuge since 1973 when 97 young were produced. As usual, most nesting sites chosen by the geese were from among the 50 or so artificial nesting structures available to them on the refuge.

Canada goose numbers peaked around the 2,000 level in mid-October with approximately 1/3 of those visiting the refuge belonging to the smaller race. Snow and Blue geese also moved through during the migration with upwards of 3,000 present on the refuge at the end of October. These figures show an increase of 47% and 33% respectively over last year's estimates. Most of the birds had departed by the second week in November after the water began freezing over, but due to several warming spells and intermittent thawing, small groups of Canadian geese remained on the refuge until December 12, when wintery weather moved them southward.

Continued excellent water and vegetation conditions for the second year in a row provided widespread availability of nesting sites for waterfowl throughout the district. So, although there was an overall increase in duck production in northeastern South Dakota, production on the refuge itself declined slightly (13%) from 1978. Of the 1,428 ducks produced at Waubay, Blue-winged Teal, Gadwalls, and Mallards accounted for 72% of the total, with two Canvasback broods observed on the refuge - the first since 1973. Coot numbers also rose another 5% up to 1,325 birds this year.

Table 2. Population Trends For NESD Resident Goose Flock* (Branta canadensis maxima)

Year	NESD Spring Count Total Birds	NESD Indicated Pairs	Fall Count - Total Birds (Mid-August Count)	Indicated Pairs Refuge ***	% Change In Indicated Pairs From Previous Yr.
1979	912	437	2,871	18	+28
1978	586	305	2,443	13	-19
1977	859	377	2,761	16	+31
1976	779	400	3,354	11	-08
1975	803	390	2,824	12	-20
1974	662	381	2,423	15	+07
1973**	414	249	1,944	14	+14

* All counts made by SD Game, Fish, and Parks.

** Due to pioneering, coverage of the survey area was increased in 1973.

*** Count made by refuge personnel.

Table 3. Refuge Duck Production.

Year	Projected Pairs	Projected Broods	Productivity	Average Brood Size	Produced
1979	1,319	207	.16	6.9	1,428
1978	635	263	.41	6.3	1,657
1977	222	102	.46	5.1	520
1976	357	222	.62	5.1	1,130
1975	462	293	.63	7.7	2,256
1974	910	276	.20	6.4	1,708
1973	787	362	.46	5.7	1,482
1972	457	130	.27	6.6	858

2. Marsh And Water Birds

The widespread abundance of water most of the summer made it unnecessary for marsh and water birds to seek out the greater concentrations of water such as are found at Waubay. Therefore, for the most part, total numbers of birds on the refuge were down from 1978. The only noticeable increases were Pied-billed Grebes, especially during the fall migration, and Common Egrets. Once listed as a rare visitor, the Common Egret is now a familiar sight on the refuge with numbers often reaching into the 20's during late summer.

The numbers of White Pelicans and Double-crested Cormorants nesting on the South Waubay Lake rookery island dropped considerably this past summer. A census on the island in late June revealed a total of 221 pelican nests with 70 eggs and 206 young, and 129 cormorant nests with 78 eggs and 85 young. Estimated production of 241 pelicans showed a 51% decrease from 1978 while an estimated 124 young cormorants indicated a 68% decrease. One reason for the reduced numbers on the rookery island may have been that large concentrations of birds were nesting at other sites in the district.

3. Shorebirds, Gulls, Terns, And Allied Species

For the fourth year, the refuge participated in the International Cooperative Shorebird Survey. Nine surveys, approximately 10 days apart, were made on Swan Pond from mid-July to the end of October. The most common of the 7 species observed included Killdeer and Lesser Yellowlegs with the total number of shorebirds peaking at about 55 the end of July. This is the second year in a row that numbers have continued to decline on the refuge.

Along with pelicans and cormorants, Ring-billed Gulls also nest on the South Waubay Lake rookery island. This year, 11 nests with 25 eggs and 104 young out of the nest were tallied, with estimated production of 116 young showing a 28% decrease from 1978.

4. Raptors

A total of 19 nest sites were checked on the refuge this year, including 2 new nests. Five nests proved to have been used and out of which were produced 3 Great Horned Owls and 1 Red-tailed Hawk. Three more nests were utilized this year than last, but 1 fewer young was produced.



Fig. 7. Young Great Horned Owl - Waubay Refuge
LLW-1-79, Exp. 2, 6/79

Only 3 Golden Eagles were observed visiting the refuge this year - 1 immature in March, 1 adult in April, and 1 adult in November. Red-tailed and Marsh hawks were again plentiful, as were Kestrels, but Swainson's Hawks appeared scarce for the most part. Although no nest was discovered, 4 young Marsh Hawks were seen regularly on the refuge during the latter part of the summer, always in the same area. It is quite possible they could have been produced on the refuge.

A young Red-tailed Hawk, unable to adequately fend for itself, was found by a South Dakota Conservation Officer and turned over to the refuge. The hawk was subsequently transported and donated to the Great Plains Zoo in Sioux Falls, SD.

A large assortment of "dickey birds" annually visit the refuge during the summer months, and occasionally one is able to see a species that occurs only rarely or accidentally. Two birds that are listed as rare visitors to Waubay, Rough-winged Swallows and a Palm Warbler, were seen in April and May, respectively.

Two accidental visitors, a Cardinal and several Purple Finches, made use of the refuge bird feeders in December. And there was one new sighting made this year - a LeConte's Sparrow was observed on the refuge in early May.

Birds and bird watchers alike failed to make much of an appearance for the Audubon Christmas Bird Count held on December 15. During the cold, overcast, and windy day, 18 species and 136 individual birds were observed on and around the refuge with unusual sightings of Purple Finches, Common Grackle, and one Cardinal. Last year, with better weather conditions and more participants, 28 species and 1,056 birds - an all-time record, were recorded.

C. Mammals And Non-Migratory Birds And Others

1. Game Mammals

The annual pre-hunt deer spotlight count turned out to be the worst since the survey was started in 1966. A check over approximately 20 miles of refuge roads and trails turned up only 22 deer, an average of 1.1 deer per mile. This is even lower than the 1.95 deer per mile in 1973 and way below the all-time high of 8.8 deer per mile seen in 1977.

2. Other Mammals

For the first time since 1975, muskrat houses were again seen on the refuge. Two were observed on Spring Lake early in the year, and more probably exist now but can't be seen due to the standing vegetation.

Both the Hillebrand's Lake and east refuge beaver colonies proved active this year. The east refuge colony maintains a tri-level dam system around a spring, it is not uncommon to see beaver swimming along the shore of Hillebrand's Lake all through the summer.

Last year's high fur prices apparently had a reducing influence in the number of Red Fox on the refuge last winter. Only 1 young and a couple adults were observed throughout the year.

For the first time in many years coyotes were observed in the vicinity of the refuge. A local resident trapped a female approximately 5 miles from the south-west refuge boundary.

Jackrabbits again seemed plentiful along with the unending supply of pocket gophers and ground squirrels, Long-tailed Weasels were also present in unusually large numbers this year.

3. Resident Birds

On this year's pheasant cock call count, not one single bird was heard. Refuge personnel reported sightings of only half a dozen birds throughout the year, and numbers throughout the county appear to be lower than usual.

Gray or Hungarian Partridges seem to be holding steady populations at about 30 birds.

Four Sharp-tailed Grouse made an appearance on the refuge in February. This was the second year in a row Sharp-tails have been observed at Waubay since the last sighting in 1962.

4. Other Animal Life

The Leopard Frog population has steadily increased over the last 2 years, thanks to improved water conditions after a drought in the mid-70's.

V. INTERPRETATION AND RECREATION

A. Information And Intrepretation

1. On-Refuge

Refuge staff presented slide talks and conducted tours for approximately 125 people this year. Those present represented groups from 2 area schools, 1 Girl Scout troop, the local YCC group, and the staff of the Ne-So-Dak Luthern Bible Camp.

2. Off-Refuge

Major efforts by the refuge to present an information program to the public are carried out during National Wildlife Week. During the week of March 18th, Smith and Watters showed films and gave talks to approximately 1,600 students and faculty members at 9 different schools in 5 counties.

The new refuge leaflets were received this year. The leaflet provides the public with information regarding the refuge. Hopefully, this leaflet will provide visitors with a much clearer picture of Waubay NWR.

Firearm and archery deer hunting comprise the only consumptive wildlife oriented recreation on the refuge. This year the State issued 800 firearm licenses for Day County, which includes the refuge. Of the 800 licenses issued, 500 were for any deer. The remaining were buck only. The 9 day firearm season began on November 24th with an estimated 100 hunters on the refuge during the opening day. As in past years, about 90% of the hunting pressure on the refuge occurred on opening weekend and then continued light throughout the rest of the week. The total harvest included 19 bucks and 7 does, totalling 26 - a 10% decrease from last year's 29 and the fewest number of deer harvested since 1970. The largest buck tipped the scales at 177 pounds.



Fig. 8. Our First Deer - Waubay Refuge
LLW-79, Exp. 19, 11/79

Hunting pressure during the following 29 day archery season was extremely light with only 5 hunters challenging the elements. As in the years past, no deer were harvested by archers.

Fourteen news releases were issued. They covered personnel changes (2), new refuge leaflets, refuge public use (2), National Wildlife Week, Canada goose nesting population, rookery island census, fall migration of Snow geese, Refuge deer census, Refuge deer hunting seasons (2), and the Christmas Bird Count (2).

B. Recreation

1. Wildlife Oriented

A total of 26,471 visits were made and 8,256 hours were spent on the refuge this year for people to engage in wildlife oriented recreation activities, principally wildlife observation and deer hunting. Over 4,000 people climbed the observation tower, about 690 utilized the picnic area, and over 21,000 drove through the refuge for the main purpose of sight-seeing and bird watching. These figures indicate a decrease over last year's totals of 29,502 visits and 10,544 activity hours.

2. Non-Wildlife Oriented

Overall visitation for non-wildlife oriented purposes rose 22% from 1978. A picnic area and hiking trail are open to the public for daylight use from May 1 through Labor Day, with visitors requested to register at the headquarters. In 1979, 2,750 people used the picnic area and 5,220 walked the nature trail, as compared to 1,355 and 4,839, respectively, last year.

C. Enforcement

Although the vast majority of the refuge visitors observe the refuge regulations, an occasional violation is committed. Vandalism this year amounted to damage to the windows of the observation tower, recreation area parking barrier posts, cutting and attempting to take firewood within the recreation area, and during the absence of the refuge manager on the night of December 1, someone drove on the headquarters lawn damaging the lawn sprinkler system.

During the night of August 20, someone hung a dead immature Canada goose on the Refuge Headquarters entrance sign. An autopsy revealed that the goose had been killed by an air gun pellet. The reasons for killing and placing the bird on the sign are as of yet unknown.

Table 4 illustrates the results of law enforcement activities on and immediately surrounding the refuge.

Table 4. 1979 Results of Law Enforcement Activities.

Violation	# Cases	Action Taken	Disposition
*Uncased Firearm	3	3 FOC's Issued	Forfeited Collateral-CC***
*Uncased Firearm (Juvenile)	1	Referred to Special Agent	_____
No License	2	2 FOC's Issued	Forfeited Collateral-CC
Unplugged Gun (Juvenile)	1	Referred to State Authorities	_____
No License (Juvenile)	2	Referred to State Authorities	_____
No Life Jacket	1	Referred to State Authorities	_____
Hunting Over Bait	1	8 FOC's Issued	Cases Pending
Excess of Daily Bag Limit	1	8 FOC's Issued	Cases Pending
*Speeding	1	**FOC Issued	Unknown
*Narcotic Possession	1	** Referred to State Authorities	Unknown
*Failure To Check Refuge Harvested Deer	1	**FOC Issued	Forfeited Collateral-CC

*Violation occurred on Refuge.

**FOC issued and handled by Special Agent James Klett.

***CC - Case Closed.

VI. OTHER ITEMS

A. Field Investigations

Robel measurements of a refuge DNC field were provided to Ken Higgins of the Northern Prairie Wildlife Research Center in Jamestown, ND. Mr. Higgins is currently working on projects dealing with DNC longevity and manipulation practices.

B. Cooperative Programs

The Lake Traverse Youth Conservation Corps performed approximately 325 man-hours of work on the refuge doing such things as painting picnic tables and headquarters buildings, salvaging fence materials and litter control on the refuge roads and recreation areas.



Fig. 9. YCC Salvaging Fencing Materials - Waubay Refuge
HOS-6-79, Exp. 12, 8/79

C. Items of Interest

1. The following training was completed:

<u>Type</u>	<u>Personnel</u>
Refuge Academy	Watters
Law Enforcement (Glynco, GA)	Kurtenbach, Okroi
Defensive Drivers Training	Watters
Commercial Pesticide Applicators	Kurtenbach, Watters
Public Relations Workshop	Smith
Administrative Workshop	Kurtenbach
NPWRC Seminar (Breeding Dabbling Duck Response to Habitat Manipulation)	Johnson

2. Maintenance Worker Edmund Henning retired on September 28, after 17 years of part-time service. Mr. Henning started his career with the refuge as a part-time laborer in 1957.

Dennis Dargatz, part-time biological aid since 1969, resigned on July 25, to enter the mink ranching business.

The expertise and dedication of both these employees will be difficult to replace.

3. A proposed community rural water system called the WEB project is being organized within Day County. The refuge has paid a \$35 good intention fee to be included within the planning and feasibility study of the project. The project proposes to deliver high quality water from the Missouri River to those areas which have water of poor quality.

4. Credits:

Kurtenbach - Sections II, III, and VI
 Watters - Sections IV, and V
 Smith - Section I
 Okroi - Typing
 Johnson - Editing

D. Safety

Safety meetings are held monthly under the general supervision of an annually rotating Safety Chairman. Along with discussions on safety related problems, a safety oriented film is shown and discussed.

No accidents occurred this year which resulted in a loss of working time. Station record is now at 382 days without a lost-time accident.