

CROSBY WETLANDS

NARRATIVE REPORT

January-December 1966

CROSBY WATERFOWL PRODUCTION AREA MANAGEMENT OFFICE

Narrative Report

1966

Wetlands Manager - LeRoy W. Sowl

## TABLE OF CONTENTS

### I. GENERAL

A. Description of the Area . . . . .	1
B. Status of the Acquisition Program . . . . .	2
C. Weather Conditions . . . . .	3
D. Habitat Conditions . . . . .	4

### II. WILDLIFE

A. Migratory Birds	
1. Waterfowl . . . . .	7
2. Water and Marsh birds . . . . .	7
3. Shorebirds, gulls and terns . . . . .	11
4. Doves . . . . .	11
B. Upland Game Birds . . . . .	11
C. Other Birds	
1. Raptors . . . . .	12
2. Small birds . . . . .	12
3. Migrational notes . . . . .	12
D. Big Game Animals . . . . .	13
E. Fur Animals, Predators, Rodents, and Other Animals . . . . .	14
F. Rare, Endangered and Status Undetermined Species . . . . .	14
G. Fish . . . . .	14
H. Reptiles and Amphibians . . . . .	14
I. Disease . . . . .	14

### III. W.P.A. DEVELOPMENT AND MAINTENANCE

A. Physical Development . . . . .	15
B. Plantings Including Soil and Moisture Activity . . . . .	16
C. Cultivated Crops . . . . .	16
D. Collections and Receipts . . . . .	16
E. Control of Vegetation . . . . .	16
F. Fires . . . . .	17

### IV. RESOURCE MANAGEMENT

A. Grazing . . . . .	17
B. Haying . . . . .	17
C. Fur Harvest . . . . .	17

### V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Wildlife Management Studies . . . . .	20
B. Biological "Tinkering" . . . . .	20

V. EASEMENT ADMINISTRATION	20
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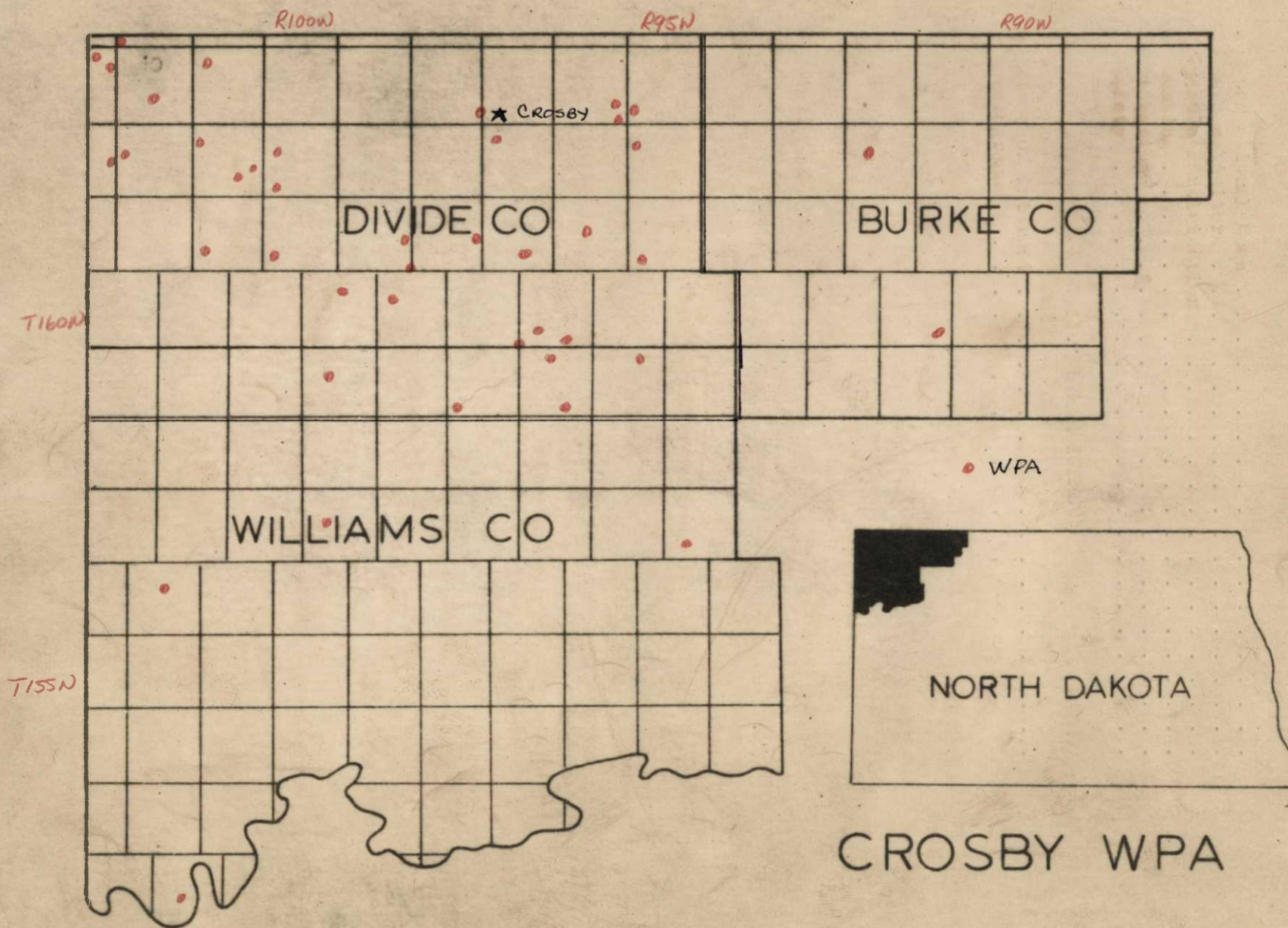
### VII. PUBLIC RELATIONS

A. Recreational Uses . . . . .	21
B. Refuge Visitors . . . . .	21
C. Refuge Participation . . . . .	21
D. Hunting . . . . .	22
E. Violations . . . . .	22
F. Safety . . . . .	22

#### VIII. OTHER ITEMS

A. Items of Interest . . . . .	23
B. Photographs . . . . .	5, 6, 18, 19, 24, and 25





## I. GENERAL

### A. Description of the Area

The Crosby Wetlands Office is located in the town of Crosby in extreme northwestern North Dakota. The manager is responsible for the administration and management of the small wetlands in Burke, Divide, and Williams Counties as well as Lake Zuhl Refuge. The area, at its extreme demensions, is 93 miles wide and 73 miles deep, encompassing some 4,524 square miles.

Topographically the area is roughly divisible into three units. Northern Burke and northeastern Divide Counties are in the drift prairie. South of the drift the Max or Altamont Moraine complex, from 15 to 30 miles wide, crosses the district on a southeast-northwest diagonal. There is an abrupt rise of 300 feet from the drift prairie to the crest of the moraine; in some places the gradient is as much as 200 feet per mile. South and west of the moraine lies the Missouri Slope. The moraine and this slope together form the Plateau du Coteau du Missouri (commonly the Coteau or Missouri Plateau). Geologically the basal strata, often deeply overlaid by a surface layer of glacial debris, is the Oligocene White River Formation.

Exclusive of the Des Lacs and Missouri River Valleys the area rises from an elevation 1,950 feet in extreme northeastern Burke County to 2,520 feet at Bull Butte west of Bonetrail in Williams County. This 670 foot rise is somewhat less than the general 10 feet per mile eastward slope of the Great Plains.

A small portion of the district lying east of the Des Lacs River Valley is in the Black (Chernozem) Soils Group area common to sub-humid grasslands. West of the river the soil belongs primarily to the Dark Brown (Chestnut) Soils Group characteristic of semi-arid grasslands. Regesals are common in the more broken terrain of the Coteau. An alkali claypan bottom extends much of the way from Bowbells, in eastern Burke County, to Crosby. In this bottom are WPA's with cyclic solenchak and solonetz soils.

The district is blanketed by the rain shadow of the Rocky Mountains which creates a semi-arid environment. The average annual rainfall varies from less than 14 inches in the west to slightly more than 15 inches in the east. At Crosby the mean annual precipitation is 14.22 inches of which almost 80% falls from May through September. Annual evaporation is 47 inches. There is a frost free growing season of 115 days.



The area is best suited to a grassland economy but because of the greater profit to be gained from growing cereal crops a large portion of the district is under cultivation.

The native vegetation is mixed prairie. The most common members of the short grass strata are: blue grama, Bouteloua gracilis; needle-leaf sedge, Carex stenophylla; and thread-leaf sedge, C. filifolia. The mid-grass dominants are usually drawn from: green needlegrass, Stipa viridula; needle - and - thread, S. comata; prairie junegrass, Koeleria cristata; and western wheatgrass, Agropyron smithii. On special soil or moisture sites dominants may include: Sandberg bluegrass, Poa secunda; fowl bluegrass, Poa palustris; Nuttall alkaligrass, Puccinella nuttalliana; and slender wheatgrass, Agropyron trachycaulum. Tall grass species are often found to be locally dominant as is little bluestem, Andropogon scoparius. The common upland plant association is Stipa-Bouteloua-Carex. Lowland associations are of several types but the main one is Puccinella-Poa. Forbs are diverse and abundant.

## B. Status of the Acquisition Program

### 1. Fee Title Program

Fee acquisition preceeded very well in Divide and Williams Counties this year and the acreage of Waterfowl Production Areas was doubled. One additional tract, a school section, was acquired in Burke County. By dint of much effort the acquisition staff was able to obtain approval of several other tracts from the Burke County Commissioners but they bogged down in the governor's office.

### 2. Easement Program

The fast pace of easement acquisition set last year lost momentum because of the increased interest in selling rather than leasing.

## FEE TITLE AND EASEMENT ACQUISITION STATUS

County	<u>FEE TITLE</u>			<u>EASEMENT</u>		
	No. Mgt. Units	Acres	*	No. Easements	Wetland Acres	Total Acres
Burke	2	756	*	157	13,291	70,847
Divide	33	5,581	*	206	16,934	100,633
Williams	9	3,199	*	29	1,959	13,603
			*			
Total	44	9,536	*	392	32,184	185,083

C. Weather ConditionsWEATHER DATA

<u>Month</u>	<u>Kenmare</u>	<u>Lestweed</u>	<u>Cresby</u>	<u>Williston</u>	<u>Average</u>
Precipitation					
January	.43	.23	.37	.42	.36
February	.27	.07	.14	.31	.20
March	.06	.01	.06	.01	.03
April	1.26	.54	1.50	.94	1.06
May	1.91	2.14	1.40	1.75	1.80
June	2.47	2.10	2.41	.92	1.98
July	2.17	3.02	1.50	1.92	2.15
August	3.31	3.45	3.07	1.80	2.91
September	.19	.72	.10	.40	.35
October	.28	.47	.80	.36	.48
November	.35	.05	.34	.30	.26
December	.34	.33	.30	.33	.33
Total	13.04	13.13	11.99	9.46	
Mean	15.46	15.37	14.22	13.70	
Deviation	-2.42	-2.24	-2.23	-4.24	

## Temperature

	Max.	Min.	Max.	Min.	Max.	Min.	Max.	Min.
January	28	-38	27	-43	27	-39	35	-40
February	38	-39	35	-30	36	-27	41	-25
March	75	-8	73	-14	76	-2	75	0
April	64	9	63	16	66	12	70	11
May	86	15	85	19	96	25	90	25
June	94	36	90	33	93	40	99	35
July	99	46	94	43	100	48	107	50
August	95	38	90	35	95	40	97	38
September	91	28	90	28	95	30	97	28
October	81	11	80	9	83	14	81	17
November	45	-5	45	-11	46	-11	52	-6
December	42	-18	40	-19	44	-16	48	-19

Precipitation for the year was below the mean for all stations, ranging from 14.6% below at Lestweed Refuge to a deficit of 30.9% at Sleulin Field, Williston. August was the only month where large amounts of above normal rainfall were received. Cool, damp weather hampered seeding operations until very late in May. Winter arrived two weeks early catching part of the flax crop still in the



fields.

#### D. Habitat Conditions

##### 1. Water

Water conditions were very good early in the breeding season and all of the better areas held good water levels well into August. Thereafter most water areas shrunk very rapidly. Even then many of the areas not directly dependent on precipitation held up well. Most of the ducks produced were able to fly before the dropping water levels created any disastrous situations. However, there was a considerable amount of overland movement of duck broods which indicates that many Class III and IV wetlands probably dried up just a little too quickly.

##### 2. Food and Cover

Some of the earliest maturing cereal crops were short on moisture during the critical period when they were heading out. This caused the grain to be shriveled and undersized. Other plants maturing during this same period may have been affected in a similar manner. Aquatic plants produced an excellent crop of vegetable food and seeds. Supplies of all other types of food were at least adequate.

Growing conditions were generally good and vegetation on the moister sites was lush.

Grasslands - Growth of range vegetation was usually good. However, on the drier sites growth of the taller warm season species was rather poor. Most of the previously overgrazed ranges are recovering and beginning to supply good nesting cover. This is due in a large part to the increased amount of the various bluegrasses on abused grasslands. The less palatable and more hardy native species are also making a quick recovery.

Cropped lands - Growth on new grass seedings was excellent and they are providing outstanding cover. The alfalfa in the seedings produced luxuriant growth. There are many small places in every field which escaped seeding and thus offer excellent landing spots. Summer fallowing can be delayed on our areas and where this has been done it seems to have provided much used nesting cover.

Marshes - The growth of vegetation on all wetland sites was excellent.

## II. WILDLIFE

Soo Grade WPA - North Dakota (2b) - Divide County

Cover was lush on the moister sites and legume cover was very dense.

These pondweed slicks testify to the fact that growth of aquatics was very good.





Green Lake WPA - Fred Bruun (18) - Williams County

These photographs were taken almost at the same spot almost a year apart. The cover is much improved. Only blue grama and sun sedge have recovered so far. The scale in the lower picture is a willet nest.





## A. Migratory Birds

### 1. Waterfowl - (Anseriformes)

The first waterfowl began to appear on March 16. These early arrivals were greeted by a severe snow storm which virtually halted any further migration until April 7. On April 11, the main flight began arriving.

The collection of waterfowl production data on WPA's was limited this year because of the necessity of obtaining complete coverage of Lake Zahl Refuge in a year when the main lake was full of water.

Pair counts were obtained from the See Grade WPA (Divide 2b) in accordance with the instructions contained in "Waterfowl Breeding Populations and Production Surveys". The data obtained in counts on May 13, and May 27, is summarized in Table I (p.8) and Table II (p.9). Production data is summarized in Table III (p.10). The area is a half section containing a mean wetland acreage of 34 acres. It is not an average WPA for this district but ranks as one of the best. For this reason the data obtained will represent better than average production for 1966.

There was no definite pattern to the fall migration. The ducks in the area just gradually disappeared. This took place over a period of some nine weeks, from the first of September to the first of November.

During the summer two tracts on Beaver Lake in Burke County were added to this district. With these acquisitions this district obtained a prime goose area. The marshes to the east of Beaver Lake are heavily used by migrating geese: Canadas, little Canadas, whitefronts, and a few blues and snows. The value of this marsh as a rest area would increase if a way could be found to reduce the continuous harassment that the geese are subjected to during the hunting season.

During the last week of July and the first two weeks of August large numbers of immature ducks were found in Crosby. Day and night people called about or brought in ducks to be "saved". There were also those who gathered up ducklings for pets. It was finally necessary to issue a news release discouraging any further molesting of duck breeds.

### 2. Water and marsh birds - (Gaviiformes, Ciconiiformes, Gruiformes, Colymbiformes, and Pelicaniformes)

Coot, rails, and cranes - The coot is a much more common



TABLE I

## PAIR COUNT DATA

See Grade WPA - (Divide 2B)

Sample No.	1a	1b	1c	1d	2a	2b	2c	3a	3b	3c	4a	9	10	15	17	20	21	Total	Sample
Mallard				1						1				1				3	2
Gadwall		4			4			1			1		1	3		1		15	10
Widgeon											1							1	1
Greenwing		1			1													2	2
Bluewing	2	3			3			1	1		5	1		1			2	19	15
Shoveler		1		1	1									1	2			6	3
Pintail				1			2	1			2							6	6
Dabblers	2	9	0	3	9	0	2	3	1	1	9	1	1	6	2	1	2	52	39
Redhead			4					1										5	5
Canvasback			2															2	2
L. Scaup			3															3	3
Ruddy			4															4	4
Divers	0	0	13	0	0	0	0	1	0	0	0	0	0	0	0	0	0	14	14
Total	2	9	13	3	9	0	2	4	1	1	9	1	1	6	2	1	2	66	53

The sample coverage corresponds to breed count coverage - all samples through 4a.

TABLE II

## PAIR SUMMARY

See Grade WPA - (Divide 2B)

SPECIES	NUMBER		PERCENT OF		RANK	
	Total	Sample	Total	Sample	Total	Sample
Mallard	3	2	4.5	3.8	7	8
Gadwall	15	10	22.7	18.7	2	2
Widgeon	1	1	1.5	1.9	11	11
Greenwing	2	2	3.0	3.8	9	8
Bluewing	19	15	28.8	28.4	1	1
Shoveler	6	3	9.1	5.7	3	6
Pintail	6	6	9.1	11.3	3	3
TOTAL DABBLERS	52	39				
Redhead	5	5	7.6	9.4	5	4
Canvasback	2	2	3.0	3.8	9	8
L. Scaup	3	3	4.5	5.7	7	6
Ruddy	4	4	6.0	7.6	6	5
TOTAL DIVERS	14	14				
TOTAL DUCKS	66	53				

TABLE III

## PRODUCTION DATA

See Grade WPA - (Divide 2B)

SPECIES	PAIRS SAMPLED	BROODS NO. YOUNG		AVERAGE BROOD SIZE
Mallard	2	1	5	5.0
Gadwall	10	7	45	6.4
Widgeon	1	2	5	2.5
Greenwing	2	-	-	-
Bluewing	15	3	17	5.7
Shoveler	3	2	11	5.5
Pintail	6	2	12	6.0
Redhead	5	3	10	3.3
Canvasback	2	1	5	5.0
L. Scaup	3	-	-	-
Ruddy	4	-	-	-
TOTALS	53	21	110	

Average Breed Size 5.0

Calculated productivity rate	40%
Projected production	132
Pairs/shore mile	30.4
Pairs/wetland acre	2
Young/adult	2
Young/wetland acre	4



breeder on almost all of the WPA's than is any single species of duck. This results, no doubt, from their adaptability. Seras are the only other members of this family which are ever common enough to be noted.

There were no verified whooping crane sightings this year but several reports were again received during the spring migrational period. Just prior to the anticipated spring migration a news release with drawings of a whooping crane both feeding and in flight was issued. This uncovered mere recollections of past observations. Sandhill cranes were not observed passing through the area in great numbers like they were the previous year.

Herons and bitterns - Black-crowned night herons were again common and appeared to be quite widespread. Great blue herons and American bitterns were also seen on different occasions.

Grebes - The large colony of eared grebes was again evident at the Carlson WPA. Horned grebes and pied-billed grebes were also common. Western grebes were noted to be breeders on several areas for the first time this year.

Pelicans and cormorants - White pelicans and double-crested cormorants were observed only in the vicinity of Lake Zahl Refuge and between there and Medicine Lake Refuge.

### 3. Shorebirds, gulls, and terns - (Charadriiformes)

Shorebirds - Far and away the most common of the nesting shorebirds was the Wilson's phalarope. This bird was abundant on every area with wet meadow habitat. Killdeer, western willets, and American avocets were also common nesters. Upland plover were also observed rather often.

Among the more common migrants were: marbled godwits, greater yellowlegs, common snipe, Baird's sandpipers, and black-bellied plover.

Gulls and terns - Franklin's and ring-billed gulls and black terns were common throughout the area.

### 4. Doves - (Columbiformes)

Mourning doves were locally concentrated but over the district as a whole they were not very common.

## B. Upland Game Birds (Galliformes)

Pheasants were again most common along the Montana Line.

They were generally not very common on WPA's. Over the district grey partridge and sharp-tailed grouse were locally abundant. This was especially apparent during the deer season when the grouse were driven out of the soil bank fields.

### C. Other Birds

#### 1. Raptors - (Falconiformes) and (Strigiformes)

Eagles - Migrating golden eagles were generally very uncommon during the past year. Not one single observation was made during the present winter.

Falcons, buteos, accipters, and harriers - Red-tailed, rough-legged, and marsh hawks were observed regularly. Melanistic rough-legs were very common, more so than those with 'normal' plumage. Sparrow hawks were the most common migrants.

Owls - Short-eared owls were very common during the breeding season, much more so than in the past two years. Burrowing owls were scattered nesters but were seen quite regularly. No snowy owls made winter visits to the area, probably for the same reason that the golden eagles did not. If the rather drastic increase in mice and voles was as apparent in the north as it was here they had no reason to come south.

#### 2. Small birds - (Passeriformes, etc.)

Shrikes were common throughout the district. In spite of the ranges given in the bird books those which were here during the breeding season all appeared to have the finely barred breasts of northern shrikes.

Lark buntings were very common along the edge of the Coteau during the summer. The fact that they were always most numerous along a narrow band on both sides of the face of the moraine was very noticable.

The commonest wintering birds in the country were snow buntings while Bohemian waxwings were common in town. A nestling waxwing was found during the summer so these birds are evidently year around residents.

#### 3. Migrational notes

The following is a list of first observations:

3/16 American Merganser	3/17 Western Meadowlark
Mallard	Marsh Hawk
Pintail	Crow
Canada Goose	

3/23	Song Sparrow	5/3	Common Snipe Franklin's Gull
4/7	American Widgeon Whistling Swan	5/5	Burrowing Owl
4/11	Gadwall Green-winged Teal Shoveler Redhead Canvasback Lesser Scaup Redwing (m)	5/7	Tree Swallow
4/12	Robin	5/8	Grasshopper Sparrow
4/13	Killdeer	5/9	Wilson's Phalarope
4/18	Goldeneye	5/12	Sora Rusty Blackbird White-crowned Sparrow
4/20	Ring-billed Gull Short-eared Owl Common Grackle	5/13	Blue-winged Teal Myrtle Warbler
4/21	Chestnut-collared Longspur Ring-necked Duck	5/16	Baird's Sandpiper Cliff Swallow Olive-backed Thrush Brown-headed Cowbird Savannah Sparrow Black Tern Lark Bunting
4/22	American Coot	5/17	Western Grebe Pied-billed Grebe White Pelican American Bittern Barn Swallow
4/26	Yellow-headed Blackbird		
4/29	Marbled Godwit		
5/2	Buddy Duck Eared Grebe Horned Grebe Great Blue Heron Bufflehead Greater Yellowlegs Willet	5/18	Mourning Dove
		5/24	Western Kingbird Black-bellied Plover
		5/25	Baltimore Oriole
5/3	American Avocet	5/28	Eastern Kingbird Upland Plover

#### D. Big Game Animals

White-tailed deer were present on all of the WPA's. The type of areas chosen for duck production seem to be ideally suited for deer range as well.

One band of pronghorns makes regular use of the Writing Rock WPA.



## E. Fur Animals, Predators, Rodents, and Other Animals

Furbearers - Here and there across the district small muskrat colonies have begun to reappear. With continued favorable water conditions the number of muskrats should increase. Their ability to open up dense stands of emergent vegetation will be appreciated. Mink were observed for the first time in at least three years and this was no doubt related to the spreading muskrats.

Predators - The extremely good price paid for fox pelts last winter was quite effective in reducing fox numbers. They increased rapidly during the summer but not quickly enough that upland game was not benefited by their low numbers. The large proportion of young animals in the population evidently was responsible for the fact that hunters were able to reduce the number around very quickly when fall came.

Reports of coyotes being sighted were more numerous. There also were persistent reports of cougar in the vicinity of some of the WPA's in the Fortuna area.

Rodents - With the fox facing hard times the rodents have evidently been on easy street. There was a very marked increase in numbers of mice and voles during the past summer. White-tailed jackrabbits were considerably more evident this past fall than they have been. Even cotton-tailed rabbits put in an appearance around windbreaks and aspen groves during the year.

## F. Rare, Endangered and Status Undetermined Species

See the comment on whooping cranes in section II-B-2 (p.11).

## G. Fish

Nothing to report.

## H. Reptiles and Amphibians

A Plains Spadefoot, Scaphiopus bombifrons, was found during a hunting patrol at Beaver Lake. This manager also collected one near Souris several years ago. It would certainly seem that their range is broader than generally realized.

## I. Disease

Rareness was not a virtue of rabid skunks during the late fall.



At the beginning of the year sick animals were quite common in Burke County and across the Montana line in Sheridan County but by mid-summer they were reported from everywhere. Most of the animals observed appeared to be healthy.

The December issue of North Dakota Outdoors carried a story on the cestode, Echinococcus multilocularis, which detailed its potential danger to humans. This parasite, which has been established as infesting a portion of the fox population in west central North Dakota, is capable of causing considerable damage to the human liver. The article was meant to calm the nerves of those people who were aware of research on this subject. What it actually accomplished was to throw a scare into a large segment of the hunters within the state. There was at least one case locally in which a deer was discarded because it had been transported with a fox carcass.

### III. W.P.A. DEVELOPMENT AND MAINTENANCE

#### A. Physical Development

Boundary fencing for the protection of grasslands and new grass seedings was completed on the Carlson, Brightwater Lake, and Twin Lakes WPA's and a mile of fence was constructed on the Soo Grade WPA. ✓

#### ✓ Soo Grade WPA (Divide Tract: North Dakota(2b))

320 rods of fence were constructed on contract for a total cost of \$830.

#### ✓ Carlson WPA (Divide Tract: Adolph Carlson (24))

480 rods of fence were constructed on contract for a total cost of \$1,205.

#### ✓ Brightwater Lake WPA (Divide Tracts: N.Dak. (2), Albert B. Anderson (10a), and Marvin Kopang (16))

1,294 rods of fence were constructed on contract for a total cost of \$3,300.

#### ✓ Twin Lakes WPA (Williams Tract: North Dakota (2))

720 rods of fence were constructed on contract for a total cost of \$1,855.

There was a total of 8.8 miles of fence constructed at an average cost of \$820.00/mile.

## B. Plantings Including Soil and Moisture Activity

### 1. Aquatics and marsh plants

Nothing to report.

### 2. Trees and shrubs

A food and cover patch was planted on the Louis Miller Tract. This planting contained 1,212 small trees and shrubs in 10 rows totaling 6,270 feet in length. The trees were provided and planted by the Divide County Soil Conservation District at a cost of \$151.20 (\$2.40/100 feet of row).

### 3. Grasslands

No croplands were seeded to native grasses in 1966. Every effort was blocked by unfavorable weather conditions or equipment failure. The two areas scheduled for seeding, the Carlson and Myhra WPA's, head the list for 1967.

## C. Cultivated Crops

One cooperative farming agreement was issued. It covered the Myhra WPA. The permittee took 100% of the crop in return for seeding the area. The cropping was:

Barley	37 acres
Wheat	20 acres
Summer fallow	43.5 acres

Other areas were summer fallowed but not cropped.

## D. Collections and Receipts

### 1. Seed or other propagules

Nothing to report.

### 2. Specimens

Nothing to report.

### 3. Building disposal

The only building scheduled for disposal was pressed into service for grass seed storage.

## E. Control of Vegetation

Because of the wet conditions on the Carlson WPA the weeds were completely matured before they could be turned under. The pigweeds were so sturdy that they could not be handled by any available machinery. They were sprayed with 2,4-D and then left to deteriorate for several days. After that it was possible to work them down reasonably well.

A small patch of leafy spurge on the Soo Grade WPA was sprayed with Tordon 22K at the close of the growing season. All of the plants in the patch appeared to be hard hit by the time the first killing frost occurred.

The new tree planting was sprayed with Simazene 80W just prior to the fall freezeup.

Results from the Tordon and Simazene projects will not be known until next summer.

#### F. Fires

Nothing to report.

### IV. RESOURCE MANAGEMENT

#### A. Grazing

The Soo Grade WPA was scheduled to be opened to grazing during the past grazing season but was not. The potential permittee sold his cattle in a huff when he found out that he could not put them on the area in April. The WPA was not harmed by giving the grass another year of rest.

The range conditions on the other WPA's large enough to make grazing them practical have not yet improved sufficiently to allow this use.

The following series of photographs, pages 18 and 19, have much to say re the continuing argument over the effects of grazing on areas intended for waterfowl production.

#### B. Haying

Nothing to report.

#### C. Fur Harvest

Since the Bureau chooses not to regulate this use there is no available information on the subject.



State Slough WPA - Eilevf Andreasson (246) - Divide County

Does grazing influence wetlands?

This area is surrounded by agricultural land, there is no indication that it has been grazed in many years. The emergent vegetation is dense and badly needs management directed at thinning it.

Max Steininger (36) - Divide County

This area is basically very similar to the one above. The difference has resulted from drastic overgrazing. Not only has the upland vegetation been effected but so have the emergent aquatics.

Of the two wetlands the ducks seem to prefer the lower one, obviously though there is no cover for nesting.





Soo Grade WPA - North Dakota (2b) - Divide County

This wetland is divided by an old rail grade. The side in the upper picture has been under moderate grazing pressure. The side shown in the lower has been ungrazed for several years.

The ungrazed side with its dense stand of softstem and matted grass is not preferred by nesting ducks. They prefer the side where the softstem has been thinned and the grass growth is unhampered by dead vegetation.





## V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

### A. Wildlife Management Studies

Nothing to report.

### B. Biological "Tinkering"

#### 1. Grazing and marsh succession

This little project is concerned with seeking out and photographically recording situations where grazing has obviously altered overall cover composition of a wetland area. Eventually, it is hoped, the acquired series will give direction to a formal investigation. The most eloquent comparisons obtained so far can be found on the two preceeding pages.

#### 2. Composition of range plant communities

This past summer was spent in preparation for this project. An herbarium was started which presently consists only of the more common warm season species. A binocular microscope was acquired to facilitate plant identification. Additionally the manager availed himself of every opportunity to work with SCS range technicians in field work pertaining to range evaluation. The preliminary sampling of representative range plant communities will be started in 1967.

#### 3. Reclaiming sodbound tree plantings with Simazene

This project was carried out on Lake Zahl Refuge and is reported in that narrative.

## V. EASEMENT ADMINISTRATION

The easements in Divide and Williams Counties were checked from the air in late December. A total of 14 apparent violations were noted for further ground checking. The aerial check of Burke County and the ground checking could not be completed before the first heavy snowfall. It should be possible to complete the inspection in the spring.

It will always be necessary to rely on late season checks because of the lateness of the burning season in this area. The spring check is unsuitable for checking burning.



Interest in our easement program has cooled considerably in the past year. The reasons for this are not yet clear.

## VII. PUBLIC RELATIONS

### A. Recreational Uses

The estimated day use for all WPA's was:

Hunting	3,000
Miscellaneous	<u>500</u>
Total	3,500

Recreational use other than hunting is limited because of the low population density of the area.

Use consisted of watching the ducks in the spring, picking chokecherries, and collecting plant material for winter bouquets.

Several attempts were made to acquire WPA's which would lend themselves to development as demonstration areas. The Sven Palm Tract was obtained on a marsh which will be developed as a demonstration area when acquisition is complete.

### B. Refuge Visitors

Personnel from the Minot Area Acquisition Office were frequent visitors, other visitors were:

1/12	N. Peabody	BSFW, Lostwood Refuge	Assistance
5/2-3	H. Cosby	SCS, Minot, N.D.	Range Survey
7/8	H. Cosby	" " "	" "
	N. Peabody	BSFW, Lostwood Refuge	" "
7/5-6	M. Hammond	BSFW, Upham, N.D.	Bio. Problems
8/24	E. Smith	BSFW, R.O.	Inspection
9/2-3	W. McClure	BSFW, Bismark	Law Enforcement
9/3	R. Kupper	NDGF, Ray, N.D.	" "
9/7	J. Winship	BSFW, R.O.	Aerial Photography
11/18	R. Fries	BSFW, Snake Creek R.	Pick up seed

### C. Refuge Participation

The manager participated in the following meetings:

1/24-28 Regional Conference BSFW at Minneapolis

2/2	County Commissioners) M. Ackerman, C. Eng.)	ROW Permits
2/15	County Commissioners) M. Ackerman, C. Eng.) R. Freeman, NDHD )	Drainage Mitigation
3/31- 4/1	NPWRC, Jamestown	Wetlands Workshop
4/14-15	NPWRC, Jamestown	Wetlands Workshop
6/27- 7/1	Metigoshe Scout Res.	Scout Camp
7/19	Lostwood Refuge	SCS Range Workshop
9/12	W. Yeager, NDHD	ROW Inspection
8/23	B. Nelson Twp. ) C. Herberg Board )	Inspection of fence site on township line
9/15	Fortuna AFS, Rod and Gun Club	Hunting Regulations
9/20	Divide County Auditor	Revenue Sharing
9/24	Williams County Aud.	Revenue Sharing
9/24	L. Lutz, Williams Co. Sheriff	WPA Encroachments
10/11	Crosby Kiwanis	Progress of Acquisition

#### D. Hunting

Hunting pressure was relatively light on the WPA's in this district because of the low, about 34,500 people in 4,525 square miles, population density. Nevertheless, local hunters are rapidly learning that these WPA's are outstanding hunting areas. They are particularly good deer and upland game areas.

#### E. Violations

No violators were apprehended.

#### F. Safety

The manager sat in on safety meetings with other organizations whenever possible.

There have been no accidents at this station since it was staffed. There have been 945 days without a lost time accident.

#### VIII. OTHER ITEMS

##### A. Items of Interest

A Minot State College coed, Diane Christianson, was employed as a clerk typist during the summer vacation. She kept the manager busy getting caught up on the backlog of paperwork.

The manager is active in Scouting, Legion, Junior Rifle Club, and Jaycees. There is not the slightest doubt that the time spent working in these organizations has helped develop valuable contacts. In this farming community the duck is a 'varmit'. Personal contact does much to overcome the distrust of varment lovers.

##### B. Photographs

The included photographs were taken by the manager.

Submitted:

February 20, 1967

By:

*LeRoy W. Sowl*  
LeRoy W. Sowl  
Wetlands Manager

Date Approved:

2-23-67

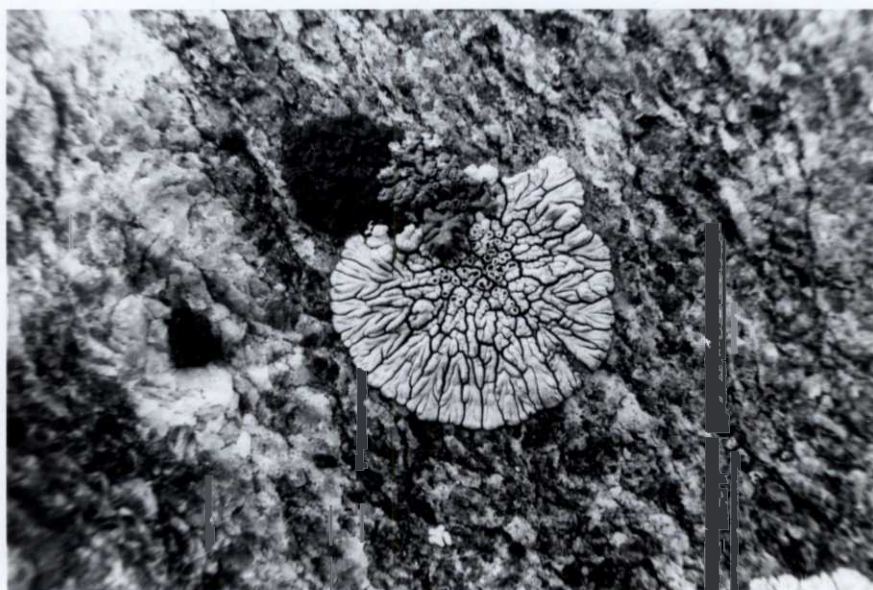
Approved By :

*Edward J. Smith*

Wetland Manager, LeRoy W. Sowl

This ultra closeup of three lichens was taken with a Pentax H3v with its standard 50mm lens mounted on a reverse adapter.





These unusual soil polygons were found on a saline upland northeast of Westby. Their origin is not yet determined. It appears that the grass growth which outlines each polygon is on a narrow area from which much of the salt has been leached. But why the difference in drainage? The soil appears to have a much different texture in the grass strip than it has within the polygon.





DISEASE

Refuge Crosby Wetlands Office Year 1967

Botulism

Period of outbreak \_\_\_\_\_

Period of heaviest losses \_\_\_\_\_

Losses:

	Actual Count	Estimated
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl	_____	_____
(b) Shorebirds	_____	_____
(c) Other	_____	_____

Areas affected (location and approximate acreage) \_\_\_\_\_

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.) \_\_\_\_\_

Condition of vegetation and invertebrate life \_\_\_\_\_

Remarks \_\_\_\_\_

Lead Poisoning or other Disease

Kind of disease Rabies

Species affected Striped Skunk

Number Affected Species	Actual Count	Estimated
_____	_____	<u>10%</u>
_____	_____	_____
_____	_____	_____

Number Recovered \_\_\_\_\_

Number lost \_\_\_\_\_

Source of infection \_\_\_\_\_

Water conditions \_\_\_\_\_

Food conditions \_\_\_\_\_

Remarks \_\_\_\_\_



3-1758  
Form NR-8  
(Rev. Jan. 1956)

Fish and Wildlife Service Branch of Wildlife Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Crosby Wetlands Office County Divide State North Dakota

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
	Acres	Bu./Tons	Harvested Acres	Bu./Tons	Unharvested Acres	Bu./Tons			
Barley Wheat Summer Fallow	37 20 43.5	555 340					37 20 43.5		37 20 43.5
								Fallow Ag. Land.	43.5

No. of Permittees: Agricultural Operations 1 Haying Operations 0 Grazing Operations 0

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	Grazing	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle				
				2. Other				
				1. Total Refuge Acreage Under Cultivation				
Hay - Wild				2. Acreage Cultivated as Service Operation				

DIRECTIONS FOR PREPARING FORM NR--8'  
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops Specify the acreage kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting

Total Refuge Acreage Under Cultivation Report total land area devoted to agricultural purposes during the year.

3-1759  
Form NR-9  
(April 1946)

COLLECTIONS AND RECEIPTS OF PLANTING STOCK  
(Seeds, rootstocks, trees, shrubs)

Refuge Crosby Wetlands Office Year 1946

Species	Collections				Receipts		Total Amounts on Hand	Amount Surplus
	Amount	Date or Period of Collection	Method	Unit Cost	Amount	Source		
NONE								

3-1979 (NR-12)  
(9/63)

Bureau of Sport Fisheries and Wildlife

Refuge

Crosby Wetlands Office

ANNUAL REPORT OF PESTICIDE APPLICATION

Proposal Number

Reporting Year

1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
10/15	Misc. weeds in tree rows	Divide Tract 34	3	Simazone	4 # a.i.	1½ #/acre	Water 20g/acre	Ground Sprayer
9/27	Leafy Spurge	Divide Tract 2b	1/40	Tordon	1½ oz. a.i.	4 #/acre	Water 10g/acre	Hand Sprayer
8/19	Pigweed	Divide Tract 24	40	2,4-D	6 gal. a.i.	1¼ pt./acre	Water 1g/acre	Spray Coupe

10. Summary of results (continue on reverse side, if necessary)

The 2,4-D application was succesful. The other applications were post growing season.



## HABITAT CONDITION - ANNUAL SUMMARY

County	Unit	Acres	Dates Checked	Water Conditions	Upland Habitat Conditions	Waterfowl Observed	Land Use	Management Plan
Burke	Jessen	160.00	7/8 (2) <sup>1)</sup>	Good	Fair	35d	Non	NC
	Beaver Lake	596.13	10/1 (2)	Good	Fair	250g, 500d	Non	No
Divide	See Grade	320.00	5/27 (F)	Full	Good	150d	Non	PP
	Anderson	160.00	8/10	Good	V Good	60d(63)	Non	PP
	Anderson	160.00	7/12	Good	V Good	100d(73)	Non	PP
	Brightwater Lake	312.31	7/12(F)	Good	V Good	800d(66)	Non	PP
	C. Bjorgen	60.00	6/16 (4)	Full	Good	35d	Range	PP
			8/30	Fair		130d		
	Writing Rock	215.00	9/3 (2)	Poor	Good	120d	Non	PP
	Bjorgen Lake	70.00	7/27 (3)	Good	Fair	15d	Non	PP
	Loucks	160.00	7/6 (F)	Full	V Good	40d(24)	Non	PP
	Fagerland	50.00	7/17 (4)	Good	Good	5d(15)	Non	PP
	Musta Lake	104.07	7/17 (3)	Good	Good	30d	Non	PP
	Wildrose Marsh	703.93	7/5 (3)	Good	Good	Dense veg.	Non	PP
	Rosenvold	52.64	4/20 (1)	Full	V Good		Non	PP
	Carlson	160.00	3/16 (F)	Full	Good	40g, 3d	Fallow	PP
			7/27	Good		500d(75)		
	North Lake	115.51	8/30(4)	Good	Good	450d	Non	PP
	Boundary	109.47	7/27 (4)	Good	Good	55d	Non	NC
	Miller	38.17	5/14 (7)	Full	Good	40d	Fallow	PP
	Myhra	160.00	5/14 (8)	Good	Good	35d	Crop	PP
	Steininger	316.16	5/3 (4)	Full	Good	75d	Crop	PP
	La Bounty	80.00	4/20 (1)	Full	Good		Non	PP
	Hamlet	319.47	7/5 (5)	Good	Good	30d(part)	Non	PP
	Fenster	160.00	7/5 (5)	Good	Good	Dense veg.	Crop	PP
	Hattel	72.50	9/3 (4)	Good	Good	500d	Non	PP

1) No of visits, 10 or more listed as frequent  
Only most indicative visit or visits listed.

NR 13 (cont.)

## HABITAT CONDITION \* ANNUAL SURVEY

<u>County</u>	<u>Unit</u>	<u>Acres</u>	<u>Dates Checked</u>	<u>Water Conditions</u>	<u>Upland Habitat Conditions</u>	<u>Waterfowl Observed</u>	<u>Land Use</u>	<u>Management Plan</u>
Divide	Lindell	200.00	7/26 (5)	Good	Good	Dense veg.	Non	NC
	Palm	17.08	8/9 (F)	Good	Good	35d(21)	Non	NC
	Cecil Wigness	134.34	9/3 (1)	Good	Good	250d	Range	NC
	Alkabo	157.50						NC
	State Slough	305.86	7/14 (F)	Good	Good	200d	Non	NC
	Norman Lake	160.00	4/20 (2)	Full	Good		Crop	NC
	Cyrus Wigness	130.00	9/3 (1)	Fair	Good	120d	Crop	No
	Ray Wigness	152.00	9/3 (3)	Good	Good	75d	Crop	NC
	Drawbond	145.00					Non	No
	Haugen	160.12					Crop	No
	Thompson	80.00	4/21 (1)	Good	Good		Range	No
Williams	Twin Lakes	240.00	5/2 (F)	Good	Good	40d	Non	PP
	Alamo	200.00	4/21 (1)	Fair	Good		Non	NC
	Hanson	64.50		Fair	Good		Non	NC
	Hapip	89.09	9/20 (2)	Good	Good	30d	Non	NC
	Green Lake	211.90	7/5 (4)	Good	Good	135d	Non	NC
	Tioga Marsh	79.00	10/4 (1)	Good	Good	85d	Non	NC
	Missouri Bottoms	124.00	4/22 (3)	Good	Good	Dense veg.	Non	NC
	Big Meadows	2,029.92	7/5	Good	V Good	125(part)	Hay	NC
	Spangrud	160.00	10/4	Fair	Good		Crop	No