

**A STUDY TO EVALUATE  
WATERFOWL PRODUCTION ON  
GRASSLAND EASEMENTS AND A CONTIGUOUS  
WATERFOWL PRODUCTION AREA LOCATED IN  
MCPHERSON COUNTY, SOUTH DAKOTA**

Sand Lake Wetland Management District  
1994



## INTRODUCTION

Grassland easements have been a part of the U. S. Fish and Wildlife Service Habitat Preservation Program in Region 6 since 1991. The objectives of the grassland easement program are:

1. To improve and protect the water quality of wetlands by reducing soil erosion and the use of agricultural chemicals and fertilizers on surrounding uplands,
2. To improve upland nesting habitat for all ground nesting birds, particularly waterfowl, and enhance nesting success on private lands,
3. To perpetuate upland cover established by the U. S. Department of Agriculture Waterbank and Conservation Reserve Programs on highly erodible soils, and
4. To provide an alternative to the purchase of uplands in fee title, thus maintaining land in private ownership.

Since the inception of the grassland easement program, almost \$6.7 million have been spent within the Sand Lake Wetland Management District alone. A total of 143,711 acres of grassland is now protected in perpetuity in this 8 county district (Figures 1 & 2).

With the popularity of this program, and the amount of acquisition dollars being spent on grassland easements, it is important to ascertain the importance of these grassland areas to waterfowl and other migratory birds. During the 1993 nesting season, a study was initiated to document waterfowl nest success and other migratory bird use on grassland easement areas within the Sand Lake WMD. This study was continued during the 1994 nesting season, and plans are to collect information again during 1995.





**Figure 1.** More and more grassland is being broken and converted to cropland every year. This farmland is just across the road from the grassland easement study area, in McPherson County, South Dakota.



**Figure 2.** The grassland easement program insures that permanent grass cover remains on the land. This grassland is within the grassland easement study area, in McPherson County, South Dakota.



## PROCEDURE

During 1993 and 1994, 571 acres of private pasture protected with grassland easements, and 147 acres of Waterfowl Production Area adjoining the easement were included in this study (Figure 3). The easement study area included land in T125N, R69W, Sec 4, NE 1/4 & S 1/2 and Sec 5, SE 1/4, in McPherson County, South Dakota. The WPA study area included approximately the south half of the Charley/Harley WPA, also located in McPherson County. An additional 203 acres of private pasture protected by a grassland easement was included in the study during 1994. This easement is located in T126N, R69W, Sec 22, SE 1/4 & Sec 27, N 1/2 NE 1/4 (Figure 3). These areas, except for pasture #6, were nest dragged twice during 1993 and three times during 1994 to locate waterfowl nests.

Two 4-wheeled ATV's, with a single chain drag were used for this operation. The occurrence of other migratory birds, and sharp-tailed grouse was also noted. Waterfowl nests were monitored to note the success of the nests.

All areas were nest dragged three times. The first nest drag began on May 16 and concluded on May 19. The second drag began on June 6 and concluded on June 9. The third drag began on June 23 and concluded on June 29.

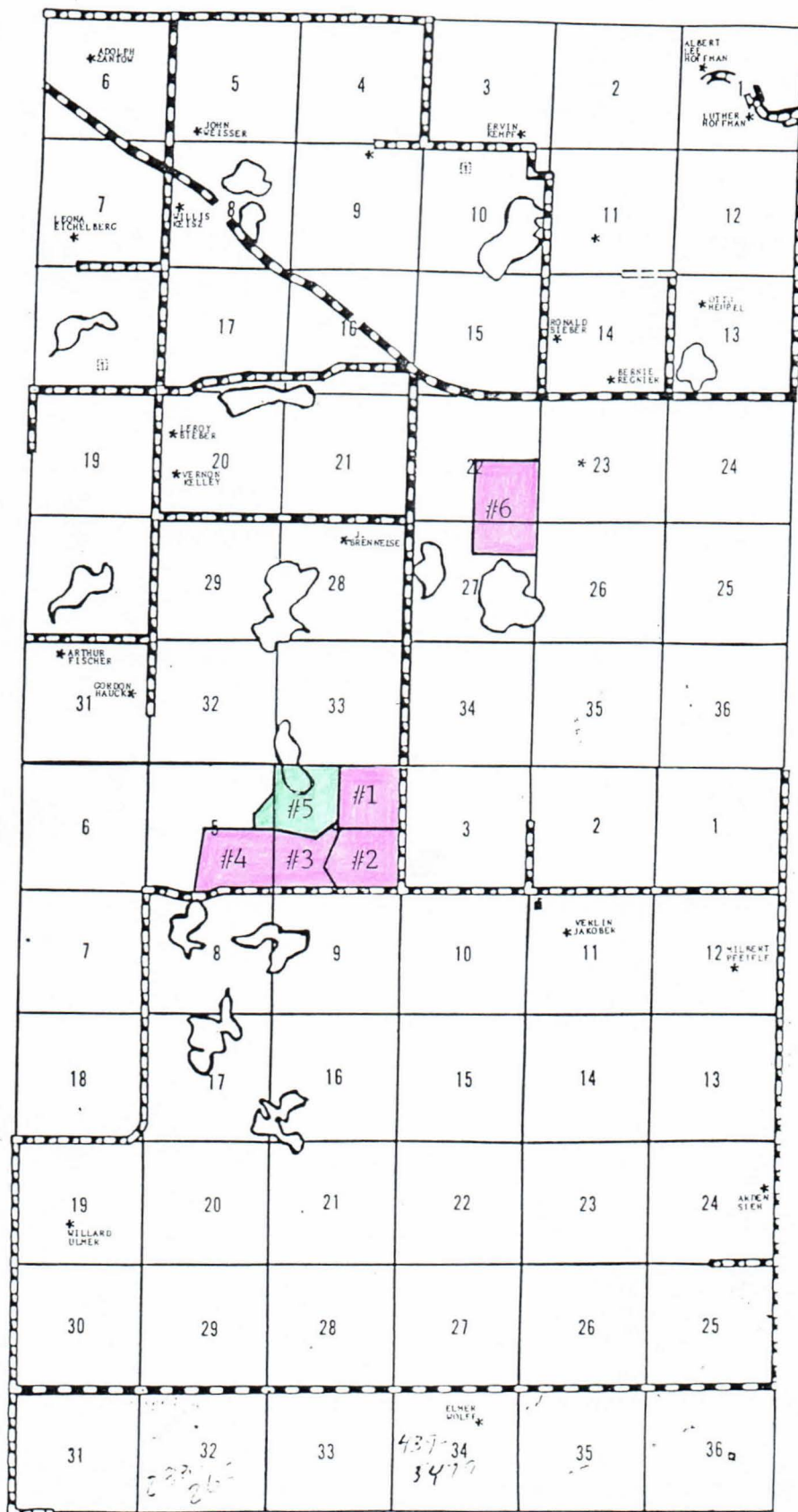
All the grassland easements nest searched contain unbroken, native prairie and are fenced into five different pastures. The WPA is also native grassland. Acreages of the 5 pastures and WPA are:

	<u>Upland Acres</u>	<u>Wetland Acres</u>
Pasture #1	147	11
Pasture #2	151	18
Pasture #3	134	8
Pasture #4	156	39
WPA #5	138	39
Pasture #6	<u>203</u>	<u>37</u>
Total Acres	929	152

All of the units searched, except the WPA, are annually grazed. Cattle were in pasture #3 from prior to the first nest drag to approximately June 10. Cattle were in pasture #1 from approximately June 10 through the end of the nest checks. The remaining units were grazed later in the year.

Robel readings of each pasture and the WPA were recorded during the first drag. Robel readings were also recorded at each waterfowl nest.





T-126-N

T-125-N

R-69-W

Figure 3. Locations of grassland easement and WPA nesting study area, McPherson County, South Dakota.

## RESULTS

Results of the three drags are as follows:

### Grassland Easement

Pasture #1 - Field Average Robel Reading(1st drag) - 0.783

#### **Waterfowl**

<u>Species</u>	<u># Nests</u>	<u>Fate</u>
Blue-winged Teal	22	15-Successful 4-Dest.-Predator 3-Dest.-Livestock
Gadwall	7	3-Successful 2-Dest.-Predator 1-Dest.-Livestock 1-Dest.-Unknown
Mallard	2	1-Successful 1-Dest.-Predator
Northern Pintail	<u>1</u>	<u>1</u> -Dest.-Livestock
<b>Total</b>	<b>32</b>	<b>19 Successful</b>

**Ave. Robel Reading at nests(1st drag) - 1.268**

**Apparent Success - 59.4%**

**Mayfield - 45.7%**

#### **Other Species**

- 2 marbled godwit nests
  - fate not determined
- 1 upland sandpiper nest
  - fate not determined
- 2 killdeer nests
  - 1 successful; fate not determined for other nest
- 1 Wilson's phalarope nest
  - fate not determined



Pasture #2 - Field Average Robel Reading(1st drag) - 0.608

### Waterfowl

<u>Species</u>	<u># Nests</u>	<u>Fate</u>
Blue-winged Teal	38	28-Successful 9-Dest.-Predator 1-Dest.-Investigator Damage
Northern Pintail	7	6-Successful 1-Dest.-Predator
Gadwall	7	2-Successful 4-Dest.-Predator 1-Abandoned
Northern Shoveler	6	5-Successful 1-Dest.-Predator
Mallard	1	1-Successful
Green-winged Teal	1	1-Successful
Redhead	<u>1</u>	<u>1-Successful</u>
<b>Total</b>	<b>61</b>	<b>44 Successful</b>

**Ave. Robel Reading at nests(1st drag) - 0.882**

**Apparent Success - 74.6%**

**Mayfield - 61.0%**

### Other Species

- 4 killdeer nests
  - 1 successful; fate not determined for other nest
- 3 willet nests
  - 2 successful; fate not determined for other nests
- 2 marbled godwit nests
  - fate not determined
- 3 upland sandpiper nests
  - fate not determined
- 1 Wilson's phalarope nest
  - fate not determined
- 1 sharp-tailed grouse nest
  - 1 successful

Pasture #3 - Field Average Robel Reading(1st drag) - 1.100

### Waterfowl

<u>Species</u>	<u># Nests</u>	<u>Fate</u>
Blue-winged Teal	14	6-Successful 5-Dest.-Livestock 3-Dest.-Predator
Northern Shoveler	7	6-Successful 1-Unknown
Northern Pintail	3	2-Successful 1-Abandoned
Gadwall	2	2-Successful
Mallard	2	1-Successful 1-Abandoned
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<b>Total</b>	<b>28</b>	<b>17 Successful</b>

**Ave. Robel Reading at nests(1st drag) - 1.808**

**Apparent Success - 65.4%**

**Mayfield - 54.1%**

### Other Species

- 3 willet nests
  - fate not determined
- 1 marbled godwit nest
  - fate not determined
- 1 upland sandpiper nest
  - 1 successful
- 1 sharp-tailed grouse nest
  - fate not determined



Pasture #4 - Field Average Robel Reading(1st drag) - 0.221

### Waterfowl

<u>Species</u>	<u># Nests</u>	<u>Fate</u>
Blue-winged Teal	36	19-Successful 15-Dest.-Predator 2-Dest.-Investigator Damage
Gadwall	9	3-Successful 5-Dest.-Predator 1-Dest.-Investigator Damage
Northern Shoveler	7	5-Successful 1-Dest.-Predator 1-Abandoned
Northern Pintail	4	3-Successful 1-Dest.-Predator
Mallard	2	2-Dest.-Predator
Redhead	<u>1</u>	<u>1</u> -Successful
<b>Total</b>	<b>59</b>	<b>31 Successful</b>

**Ave. Robel Reading at nests(1st drag) - 1.775**

**Apparent Success - 56.4%**

**Mayfield - 40.3%**

### Other Species

- 3 willet nests
  - 3 successful
- 8 upland sandpiper nests
  - 2 successful; fate not determined for others
- 3 marbled godwit nests
  - 2 successful; fate not determined for other nest
- 3 killdeer nests
  - 3 successful
- 1 Wilson's phalarope nest
  - 1 successful
- 1 sharp-tailed grouse nest
  - fate not determined

Pasture #6 - Field Average Robel Reading(1st drag) - 1.192

### **Waterfowl**

<u>Species</u>	<u># Nests</u>	<u>Fate</u>
Blue-winged Teal	27	16-Successful 8-Dest.-Predator 2-Abandoned 1-Dest.-Investigator Damage
Northern Shoveler	15	6-Successful 8-Dest.-Predator 1-Abandoned
Mallard	4	3-Successful 1-Dest.-Predator
Gadwall	3	1-Successful 2-Dest.-Predator
Northern Pintail	2	2-Successful
Redhead	<u>1</u>	<u>1-Dest.-Predator</u>
<b>Total</b>	<b>52</b>	<b>28 Successful</b>

**Ave. Robel Reading at nest(1st drag) - 1.641**

**Apparent Success - 54.9%**

**Mayfield - 37.1%**

### **Other Species**

- 2 Wilson's phalarope nests
  - fate not determined
- 1 upland sandpiper nest
  - fate not determined
- 1 killdeer nest
  - fate not determined
- 1 sharp-tailed grouse nest
  - 1 successful
- 1 short-eared owl nest
  - 1 successful



**Waterfowl Production Area**

WPA - Field Average Robel Reading(1st drag) - 0.942

**Waterfowl**

<u>Species</u>	<u># Nests</u>	<u>Fate</u>
Blue-winged Teal	32	18-Successful 9-Dest.-Predator 3-Dest.-Investigator Damage
Gadwall	14	2-Abandoned 5-Successful 5-Dest.-Predator 2-Dest.-Investigator Damage
Mallard	6	1-Abandoned 1-Unknown 4-Successful 1-Dest.-Predator 1-Abandoned
Green-winged Teal	3	3-Successful
Northern Shoveler	2	1-Successful 1-Dest.-Predator
Northern Pintail	1	1-Successful
Lesser Scaup	<u>1</u>	<u>1-Dest.-Predator</u>
<b>Total</b>	<b>59</b>	<b>32 Successful</b>

**Ave. Robel Reading at nests(1st drag) - 1.934**

**Apparent Success - 65.3%**

**Mayfield - 47.7%**

**Other Species**

4 upland sandpiper nests  
     -1 successful; 1 destroyed; fate not determined for others  
 1 northern harrier nest  
     -fate not determined  
 1 short-eared owl nest  
     -1 successful; nestlings depredated

## Discussion

The year 1994 was an excellent duck production year for South Dakota. The 1994 Waterfowl Production and Habitat Survey, coordinated by the Migratory Bird Management Office, showed a strong and successful nesting effort, which resulted in a record brood index for the state (Figure 4).



**Figure 4.** Hundreds of ducklings could be observed on one wetland in pasture #2, on the grassland easement study area.

This nest dragging effort indicates similar results (Tables 1, 2, & 3). Waterfowl nest densities on grassland easement areas went from 2.2 nest/100 acres in 1993 (dragged 2 times) to 29.4 nests/100 acres in 1994 (dragged 3 times). Densities on the adjacent Waterfowl Production Area jumped from 6.5 nests/100 acres in 1993 (dragged 2 times) to 43.5 nests/100 acres in 1994 (dragged 3 times). Although the additional nest drag in 1994 probably affected the difference between the 2 years, the effect was not major. Nest densities after the second drag in 1994 were 23.8 nests/100 acres on the grassland easement and 32.3 nests/100 acres on the WPA. Data indicates that nest densities were lower on the two pastures being grazed by cattle during the nesting season (Table 1). Nest densities were 21.7 nests/100 acres in pasture #1 and 20.8 nests/100 acres in pasture #3.



Mayfield nest success averaged 44.3% on the grassland easement and 47.7% on the WPA (Table 1). Mayfield success on the different pastures included in the grassland easement varied from 37.1% to 61.0%. Much of the depredation occurred near the end of the nesting season. Cattle had an impact on nest success in the two pastures with cattle grazing during the nesting season. Cattle were involved in the destruction of 38% of all destroyed nests in pasture #1, and in 50% of all destroyed and abandoned nests in pasture #3. But overall Mayfield nest success in these two pastures was still high (45.7% & 54.1%).

During 1994, field crews from the HAPET office in Bismarck, North Dakota, searched 1464 acres of CRP cover and 966 acres of WPAs in seven study areas in the Sand Lake WMD (McPherson and Edmunds Counties). Nest densities averaged 31.3 nests/100 acres in the CRP and 25.6 nests/100 acres on WPAs. Overall Mayfield nest success for the seven study areas was 32.1% in the CRP and 37.6% on the WPAs.

**Table 1. Nest Drag Summary-1994\***

<u>Unit</u>	<u>Acres</u>	<u>Ave. Robels</u>	<u>Duck Nests</u>	<u>Nests</u>		<u>Mayfield Success</u>	<u>Other Mig. Bird</u>	
				<u>/100 Ac.</u>	<u>Apparent Success</u>		<u>Nests</u>	<u>/100 Ac.</u>
Past. #1	147	.783	32	21.7	59.4	45.7	6	4.1
Past. #2	151	.608	61	40.0	74.6	61.0	13	8.6
Past. #3	134	1.100	28	20.8	65.4	54.1	5	3.7
Past. #4	156	.221	59	38.5	56.4	40.3	18	11.5
Past. #6	203	1.192	52	25.6	54.9	37.1	5	2.5
<b>Combined</b>	<b>791</b>	<b>.781</b>	<b>232</b>	<b>29.4</b>	<b>62.3</b>	<b>44.3</b>	<b>47</b>	<b>6.0</b>
WPA #5	138	.942	59	43.5	65.3	47.7	6	4.3

\*Dragged 3 times

**Table 2. Nest Drag Summary-1993\***

<u>Unit</u>	# <u>Acres</u>	Ave. <u>Robels</u>	# Duck <u>Nests</u>	# Nests		Apparent <u>Success</u>	Mayfield <u>Success</u>	Other	
				/100 <u>Ac.</u>				Mig. Bird <u>Nests</u>	Nests <u>/100</u> <u>Ac.</u>
Past. #1	147	.754	2	1.4	0	0	0	5	3.4
Past. #2	151	1.148	3	2.0	33	14	12	12	7.9
Past. #3	134	.642	3	2.2	33	22	15	15	11.2
Past. #4	148	.838	5	3.4	40	16	12	12	8.1
<b>Combined</b>	<b>580</b>	<b>.846</b>	<b>13</b>	<b>2.2</b>	<b>31</b>	<b>13</b>	<b>44</b>	<b>44</b>	<b>7.6</b>
WPA #5	138	1.254	9	6.5	56	37	6	6	4.3

\*Dragged 2 times

**Table 3. Species Composition-Waterfowl  
Nests Located-1993() & 1994**

	Past. #1	Past. #2	Past. #3	Past. #4	WPA #5	Past. #6*	<u>Total</u>
Blue-winged teal	22(0)	38(2)	14(2)	36(2)	32(4)	27(-)	<b>169(10)</b>
Gadwall	7(0)	7(0)	2(0)	9(1)	14(1)	3(-)	<b>42( 2)</b>
Northern Shoveler	0(1)	6(0)	7(0)	7(1)	2(2)	15(-)	<b>37( 4)</b>
Northern Pintail	1(1)	7(1)	3(1)	4(1)	1(0)	2(-)	<b>18( 4)</b>
Mallard	2(0)	1(0)	2(0)	2(0)	6(2)	4(-)	<b>17( 2)</b>
Green-winged Teal	0(0)	1(0)	0(0)	0(0)	3(0)	0(-)	<b>4( 0)</b>
Redhead	0(0)	1(0)	0(0)	1(0)	0(0)	1(-)	<b>3( 0)</b>
Lesser Scaup	0(0)	0(0)	0(0)	0(0)	1(0)	0(-)	<b>1( 0)</b>
<b>Total</b>	<b>32(2)</b>	<b>61(3)</b>	<b>28(3)</b>	<b>59(5)</b>	<b>59(9)</b>	<b>52(-)</b>	<b>291(22)</b>

\*Pasture #6 was not dragged in 1993

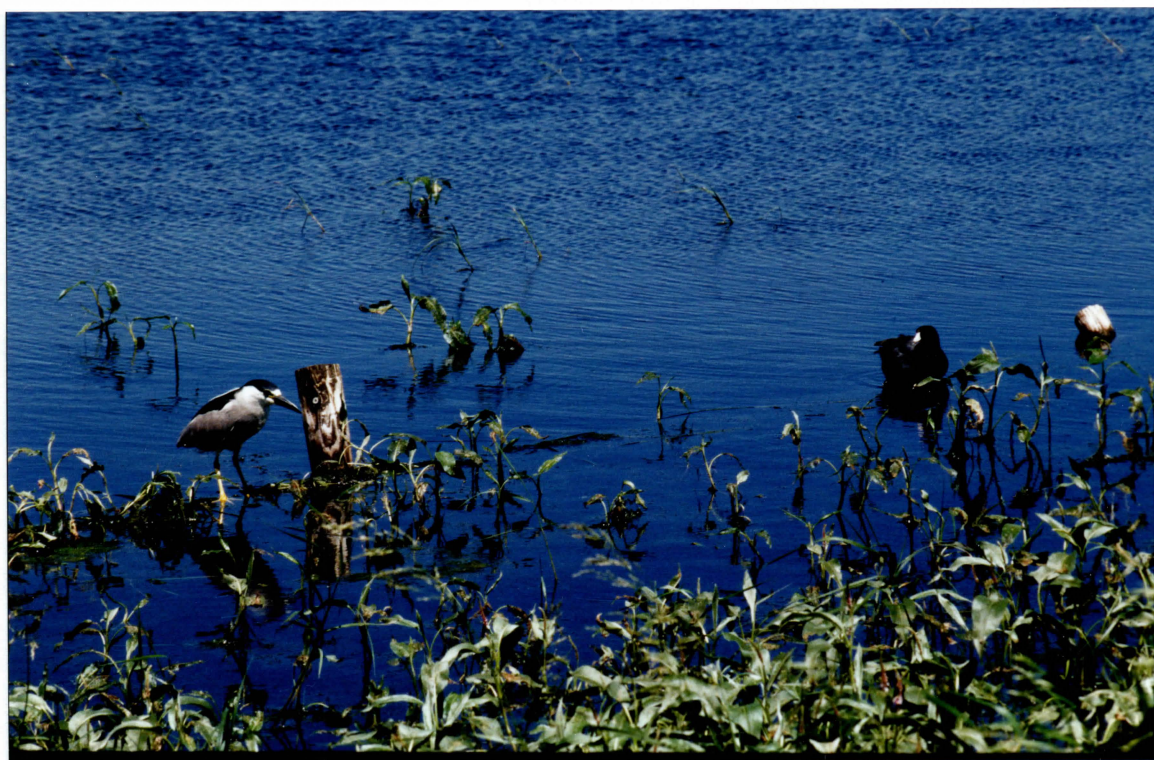


There was also an abundance of other birds on the grassland easement (Tables 1, 2, & 4). Killdeer, willets, marbled godwits, and Wilson's phalaropes show a definite preference to the grazed grassland easement. Other species also benefit from the upland and wetland complex on these areas (Figure 5).

**Table 4. Species Composition-Other Bird  
Species Nests Located-1993() & 1994**

	Past. #1	Past. #2	Past. #3	Past. #4	WPA #5	Past. #6*	<u>Total</u>
Upland Sandpiper	1(3)	3(5)	1(9)	8(7)	4(6)	1(-)	<b>18(30)</b>
Killdeer	2(0)	4(1)	0(1)	3(1)	0(0)	1(-)	<b>10( 3)</b>
Willet	0(2)	3(2)	3(1)	3(3)	0(0)	0(-)	<b>9( 8)</b>
Marbled Godwit	2(0)	2(2)	1(4)	3(1)	0(0)	0(-)	<b>8( 7)</b>
Wilson's Phalarope	1(0)	1(1)	0(0)	1(0)	0(0)	2(-)	<b>5( 1)</b>
Sharp-tailed Grouse	0(2)	1(0)	1(0)	1(1)	0(2)	1(-)	<b>4( 5)</b>
Short-eared Owl	0(0)	0(0)	0(0)	0(0)	1(0)	1(-)	<b>2( 0)</b>
Northern Harrier	0(0)	0(0)	0(0)	0(0)	1(0)	0(-)	<b>1( 0)</b>
Ferruginous Hawk	0(0)	0(1)	0(0)	0(0)	0(0)	0(-)	<b>0( 1)</b>
<b>Total</b>	<b>6(7)</b>	<b>14(12)</b>	<b>6(15)</b>	<b>19(13)</b>	<b>6(8)</b>	<b>6(-)</b>	<b>57(55)</b>

\*Pasture #6 was not dragged in 1993



**Figure 5.** Many other migratory birds, besides waterfowl, are present in the uplands and wetlands of the grassland easement study area.



## Conclusion

Results from data collected during the 1994 nesting season indicate that upland cover in private ownership can make a significant contribution to overall waterfowl production. Nest densities and nest success on the grassland easements studied were similar to nest dragging results on WPAs and CRP within the Sand Lake WMD. Nest success was well above the 15% - 20% success needed for a stable duck population.

It is important to note that the data collected in this study are all from one area, and results will probably vary from area to area. This study does indicate, however, that privately-owned, grazed grasslands have the potential to be important waterfowl producing areas, regardless of location. Their importance to nongame species is also evident. These data suggest that the Grassland Easement Program, which will insure that these areas remain in grassland, is an important part of the Fish & Wildlife Service's Habitat Preservation Program.

This study will continue through the 1995 nesting season, if funds and personnel are available.

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