

LAKE ANDES WETLAND MANAGEMENT DISTRICT
Lake Andes, South Dakota

ANNUAL NARRATIVE REPORT
Calendar Year 1989

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U.S. Department of the Interior
Fish and Wildlife Service
National Wildlife Refuge System


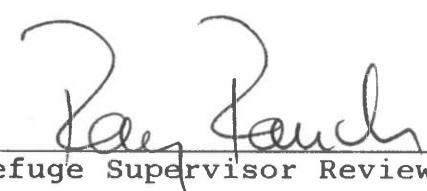

REVIEW AND APPROVALS

LAKE ANDES WETLAND MANAGEMENT DISTRICT

LAKE ANDES, SOUTH DAKOTA

ANNUAL NARRATIVE REPORT

Calendar Year 1989

		
<u>Refuge Manager</u>	<u>Refuge Supervisor Review</u>	<u>Date</u>
<u>10/29/90</u>		<u>11/18/90</u>
<u>Date</u>		

	
<u>Regional Office Approval</u>	<u>Date</u>
	<u>11/20/90</u>

INTRODUCTION

The Lake Andes WMD is located in the extreme southwestern portion of the Prairie Pothole Region. The southern location results in the area having milder winters than the remainder of the eastern Dakotas and Minnesota; however, summers are longer and warmer. Annual evaporation amounts to 36 inches, while the rainfall varies from 17 inches to 24 inches across the district. These conditions result in more years of marginal and poor wetland conditions in comparison to areas found further north and east.

Three vegetative zones are found across the District. The true or tall grass prairie zone, encompasses the four eastern counties, with the dominant native grasses being big bluestem, Indian grass, switchgrass, and other warm-season grasses. Very little native prairie remains in this area since it contains highly fertile soils and adequate rainfall conducive to maximized agri-business. Land use is extremely heavy and most private wetlands have been drained.

The tall grass/mixed prairie transition zone covers the central portion of the District. The dominant native grasses in this area are western wheatgrass, big bluestem, and porcupine grass. Lower annual precipitation limits row crops to some extent and land use is more diversified between small grains, row crops, hayland, and pasture. Shelterbelts, farmsteads, and feedlot areas are also more common. Wetlands and associated vegetative cover on private land supports excellent populations of wildlife. The vast majority of the District's WPAs are located within this zone. Waterfowl and other wildlife populations are highest within this zone as compared to other zones.

The western portion of the District falls within the mixed grass prairie zone, with dominant native grasses being western wheatgrass, needle and thread, and blue grama. Annual rainfall averages 17 inches; therefore, small grain crops are predominant on agricultural lands. Native prairie, pastures, and hayland comprise a larger percentage of the land use than in the two zones to the east. Even though land use is less intense, the wetlands are less numerous and upland vegetation is shorter due to the drier climate. Wildlife populations reach good numbers in scattered areas, but overall this area is less productive than the transition zone.

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A. HIGHLIGHTS

The delineation of easements on FmHA inventory property was a staff priority (C.3).

The Fish and Wildlife Service played an increasing role in administration of the 1985 Food Security Act (E.7).

Fifty-eight Waterfowl Production Areas received grazing treatments (F.7).

Noxious weeds continue to be our number one management problem (F.9).

B. CLIMATIC CONDITIONS

Extremely mild weather conditions in January broke many records and left most of the District "snowless". Lake Andes lost approximately 20% of its ice cover during the January warm spell. The continued lack of moisture following the 1988 drought conditions began to concern us all. A cold front moved through on January 30 dropping temperatures from 67° F. to below 0° F. on the same day. Some relief from the dry conditions occurred in February when a total of 2.21 inches of precipitation was recorded primarily in the form of rainfall.

A late winter snowstorm moved through on March 2 and 3 dropping 10 inches of snowfall which yielded only .73 inches of precipitation. The runoff did little to fill dry basins.

The months of April and May were very dry with only 1.31 inches of rainfall. Many farmers had poor crop germination rates due to the lack of topsoil moisture. Domestic cool season grasses had slow growth.

June and July were very hot with a temperature of 102° F. recorded on June 20 and 106° F. on July 8. Twenty-eight counties in South Dakota were declared drought disaster counties including Charles Mix. A 3.1 inch general rain on July 14 was very timely in preventing widespread crop losses. Temperatures ranging from 95° F. to 105° F. seemed to be the daily norm.

Drought conditions continued throughout the remainder of the growing season. Enough sporadic rainfall fell to save many crops; however, most wetlands on the District remained dry and subsoil moisture was critically short. Grasslands remained in a semi-dormant stage and did not recover as desired from spring grazing treatments.

Fall weather was ideal for the crop harvest. Yields varied widely as a result of the sporadic rainfall. Farmers had an opportunity to do a lot of fall tillage. A few even realized that by leaving the crop residue standing, more snow would be trapped resulting in more moisture, but fall tillage of standing crop stubble is still the norm.

Table 1. 1989 Climatic Conditions Recorded at Pickstown, SD.

	Snowfall	Total Precip.	Normal Precip.	Temp. (F.)	
				High	Low
January	Trace	.02	.38	67	- 0
February	1.0	2.21	.68	56	-19
March	10.0	.78	1.21	85	- 9
April	----	.54	2.29	95	19
May	----	.77	2.92	92	28
June	----	3.07	3.85	102	39
July	----	3.07	2.65	106	55
August	----	1.88	2.51	99	46
September	----	1.89	2.21	91	27
October	----	.13	1.27	86	19
November	----	.23	.77	65	7
December	14.5	.57	.63	60	-26
Totals	25.5	15.16			
Normals	25.2	21.37			

C. LAND ACQUISITION

1. Fee Title

Four new tracts were purchased totaling 870.96 acres for the Lake Andes Wetland Management District in 1989. Activity has been slowed by the improved farm economy. However, if the current drought conditions continue, there will definitely be an increase in land for sale in south-central South Dakota.

Table 2. Fee Acquisition, Lake Andes WMD, 1989.

Tract	County	Acres	Wetland Acres
DeHaai	Douglas	146.77	32
King	Douglas	160.00	34
Fousek	Charles Mix	206.00	108
Miller	Turner	358.19	108
Total		870.96	282

Fee title holdings for the Lake Andes Wetland Management District are described in Table 3.

Table 3. Fee Title Holdings, Lake Andes WMD, 1989.

County	# Mgmt. Units	Acres
Aurora	16	4,720.38
Beadle	18	3,823.61
Bon Homme	4	641.49
Brule	3	1,073.55
Buffalo	0	---
Charles Mix	18	4,052.20
Clay	1	40.00
Davison	4	224.52
Douglas	15	4,302.05
Hand	14	2,797.32
Hanson	6	836.13
Hughes	2	455.99
Hutchinson	5	613.06
Hyde	0	---
Jerauld	8	1,470.40
Lincoln	2	177.22
Sanborn	2	93.00
Turner	3	658.30
Union	1	96.02
Yankton	1	21.60
Totals	123	26,096.84

2. Easements

A total of 138 wetland acres within the District were protected by perpetual easements with landowners in 1989. A total of 86,665 acres are protected in the 20 county Lake Andes WMD.

Table 4. Easement Acquisition through 1989, Lake Andes WMD.

County	Easement Wetland Acres
Aurora	9,709
Beadle	15,357
Bon Homme	205
Brule	9,714
Buffalo	837
Charles Mix	4,479
Clay	7
Davison	162
Douglas	2,904
Hand	15,738
Hanson	2,443
Hughes	257
Hutchinson	1,045
Hyde	9,718
Jerauld	4,040
Lincoln	114
Sanborn	9,601
Turner	212
Union	--
Yankton	123
Total	86,665

3. Other

FmHA Inventory Lands

Nineteen eighty-nine was the year for many changes in the delineation of easements on FmHA (Farmers Home Administration) inventory property. Prior to December 9, 1988 easements were similar to the Service's perpetual easement program - in which the landowner could use the land as he had in the past but would not be able to alter the wetland basins within the easement area by draining, burning, or filling.

On December 9, 1988 all county FmHA offices were notified to cease all sales of inventory properties because a new type of easement would be in effect beyond this date. This new easement required placement of buffer areas around all existing wetlands

currently under inventory. It was decided that the easement buffer areas must be legally described, so a grid consisting of 2.5 acre blocks with 64 blocks per quarter section was developed.

The primary purpose of this easement is to protect water quality with the secondary function being wildlife enhancement. The new easement document is actually an FmHA document (AN 1727) or what is called a "boilerplate" or "B" document. Since many of these county supervisors are not trained in delineating wetlands, the U.S. Fish and Wildlife Service was called in as technical advisors to FmHA.

Considerable amounts of time were spent delivering and explaining these new documents to FmHA county supervisors. We feel fortunate because most of these supervisors in our District have been very cooperative.

Unfortunately, the State FmHA director is not as cooperative. Some of the inventory properties were identified as suitable for WPAs and the FWS requested fee title transfer. Although the 1987 Agricultural Credit Act allows the transference of FmHA lands to State and Federal agencies after former owner rights have expired, the State FmHA office refuses to transfer these properties to the Service. Consequently, these properties have been placed on inventory for sale to qualified buyers - most of them with sizeable easement encumbrances.

Once the state and county FmHA offices agree to the type and boundaries of the easement, FWS has proposed they sign a "caretaker" agreement. This assigns the Fish and Wildlife Service as easement manager of the property. At this time we can conduct wetland restorations, seeding, fencing or signing of the property. The following table lists by county the number of wetlands and surface acres restored in the Lake Andes WMD.

Table 5. FMHA Wetlands Restored in Lake Andes WMD, 1989.

<u>County</u>	<u>Year</u> <u>Restored</u>	<u># Wetlands</u> <u>Restored</u>	<u>Acres of</u> <u>Wetland Restored</u>
Beadle	1988	3	5.7
Davison	1988	4	3.9
Douglas	1988	2	7.1
Hand	1988	3	12.1
Hanson	1988	1	18.1
Sanborn	1988	1	6.4
Turner	1989	2	4.9
Totals		16	58.2

The boilerplate or "B" document restricts cultivation, mowing or cutting, grazing, burning, harvesting wood products, filling, or manipulation of water through pumping, draining, dredging etc. This easement does not restrict the landowner from recreational use of the easement land, but he is responsible for paying taxes, and controlling noxious weeds. The Fish and Wildlife Service in turn is responsible for fencing and seeding (if necessary) the "B" easement areas.

U.S. Fish and Wildlife Service in response asked for some relaxations from the "boilerplate" or "B" easements. These relaxations brought about variances called "B1", "C" and "D" easements.

The restrictions of each type of easement are as follows:

1. The "B1" easement has the same restrictions as the "B" easement - no cultivation, mowing or cutting, burning, draining etc., except the landowner may graze the easement area. Fish and Wildlife Service will survey and sign the "B1" easement areas but does not pay for seeding or fencing.
2. The "C" easement restricts draining, burning, and filling of a wetland basin. The basin may be cultivated, mowed, grazed, etc. when dry. A "C" wetland must meet the following criteria:
 - a. Must be a temporary basin (dry during most of the growing season).
 - b. Must be small in size (less than one acre).
 - c. Must be traditionally cropped.
 - d. Must be isolated from large wetlands.

"C" wetlands are also not subject to the 2.5 acre buffer blocks. The "C" variance was not approved by FmHA until mid-July which required us to change any easement with wetlands meeting the above criteria if requested by the FmHA county supervisor.

3. The "D" easements can be placed on important wildlife areas and native grasslands which do not have wetlands. The landowner may graze and mow these areas but is not allowed to break sod or harvest wood products. These easements must be agreed to by the FmHA county supervisors. If the supervisors do not concur with the easement, it is not placed on the property. Only one "D" document was proposed in the Lake Andes WMD to protect 40 acres of native prairie but was refused by the county supervisor. Unfortunately, some of these supervisors do not share the same views as we do in protecting wildlife habitat.

Once we were notified the easements were changing from a "no burn, drain, or fill" to the 2.5 acre buffer zones, there was the monumental task of revising the existing 46 properties to include the 2.5 acre blocks. With help from Lonnie Schroeder, State Farm Bill Coordinator, and Dave Gilbert, Manager of Madison WMD, the existing properties were aerially checked and the wetland and land use was recorded on ASCS aerial photos. On February 6-10 Bill Wilson and John Jave attended a meeting to learn the documentation procedures for implementing these easements. These 46 properties were given new easements, and the documents were sent to the Regional Office for approval.

Through the year we aquired 21 new inventory properties which gave us a grand total of 66. It became apparent that the task of implementing these FmHA easements was becoming very time consuming, and a temporary Biological Technician, Sandy Abraham, was EOD in mid February. Her primary duties were to assist the managers with FmHA easements and related Farm Bill activities.

Because of limited staff time and budget, private contractors, (usually the new owner or leasee) seemed to be the most practical means by which to get some of these tracts both seeded and fenced, if the landowner had the equipment. There was also the possibility of paying them to restore wetlands on the property. A private contractor was used to restore two wetlands (6.2 wetland acres) in Turner county at a cost of \$960. Another property in Davison county was surveyed and arrangements made with the leasee for a fall grass seeding which was funded by Ducks Unlimited. One more property was seeded this year. Merle Stevens, the former land owner of FmHA property in Brule County, seeded 53 acres of "B" easement in conjunction with the seeding of land adjacent to the easement areas at a cost of \$1,296.

Costs for fencing, seeding, and other contract work including surveying on existing FmHA properties is estimated to be \$571,000 for the Lake Andes WMD. This cost increases every time another easement is placed on inventory lands.

Surveying of most of these tracts is to be done out of this office. A transit was borrowed from the Realty office in Aberdeen in order to monument the easement boundaries. Since most of the staff has limited surveying skills, the task of surveying these properties has become frustrating. Our first easement survey required three employees one and one half days to survey a 12.5 acre easement area in Davison County. Crooked fence lines and obstructions by brush made this property unusually difficult. Another 35 acre easement in Charles Mix County which had better conditions took one day to survey, but travel time was considerably less to this property. Judging from these two properties, surveying alone will consume vast amounts of time.

A few months after our first delivery of these FmHA easement documents, a few county supervisors requested we prepare preliminary assessments of wetlands on land which may come into inventory. Due to lack of time, these properties were not field checked, but a draft easement document was made using NWI (National Wetlands Inventory) maps, SCS (Soil Conservation Service) slides and ASCS (Agricultural Stabilization and Conservation Service) aerial photos. These draft easements were sent to the FmHA county supervisors with an explanation that these were only a rough draft and could be changed if more wetlands were found which required protection. Of the 24 properties for which we have conducted preliminary easements, only 4 have come into inventory.

Rather than allow FmHA to take their land into inventory, some landowners have taken the option of restructuring their debt by allowing long term easements to be placed on portions of their property. Not many of the county supervisors or landowners currently have taken advantage of this option. Only one such easement was delineated with the help of Bill Wilson, the Yankton county FmHA supervisor, the landowners, and members of the SCS and ASCS. It was decided that 14.2 acres of the property will be managed as a "wildlife habitat area" with defined management objectives and practices. The easement will last 50 years and the borrower will receive credit of \$500.00 per acre toward his debt. We were asked to serve as "enforcement authority" but since no wetlands were involved, we declined and suggested the State Game, Fish and Parks serve in this capacity.

Extension Agreements

Extension agreements proved to be an effective way of restoring wetlands on private property. These extension agreements usually terminate after 10 years or on expiration of a CRP contract. Upon expiration of the agreement, the ditch plug may be removed to the ditch level prior to plugging. The landowner is given a one time payment of \$10 per surface acre restored with a minimum payment of \$50 for each wetland. He may also be reimbursed for the dirt work needed to install a temporary plug if the proper equipment is available. If the proper machinery is not available, the landowner may opt to have us install the plug or have a private contractor install the plug for him.

The following table lists the extension agreements completed in the Lake Andes Wetland Management District.

Table 6. Extension Agreements, Lake Andes WMD, 1989.

<u>Cooperator</u>	<u>County</u>	<u># Acres</u>	<u># Wetlands</u>	<u>Funds</u>
Lyman Miller	Turner	3	1	\$ 200
Marvin Werning*	Hutchinson	10	1	450
Marvin Kelly*	Beadle	19	10	450
Dale Koch	Aurora	47	11	2555
Leon Beckman	Brule	13	2	600
Totals		92	25	\$4255

*Restoration documents out of Madison WMD Office.

D. PLANNING

4. Compliance With Environmental And Cultural Resource Mandates

East River Electric Cooperative requested environmental clearance to cross two properties under FWS wetland easements in Beadle County. Under the proposed project, East River would construct 13.5 miles of overhead powerline (69KV) between Virgil and Cavour. Project approval was given to East River after it was determined the project would not affect the wetlands under easement.

5. Research and Investigation

Lake Andes NR85 - Owens Bay Waterfowl Nesting Study

This study was initiated in 1985 to determine the density, nesting success and habitat preferences of upland nesting waterfowl on the Owens Bay Unit when nest predators are controlled. Maine Waterfowl Production Area was included in the study as a comparison area, but without predator control.

Waterfowl nests were located using a cable-chain drag pulled by two four-wheel drive vehicles. Two nest drags were completed, the first beginning on May 23. The second search was initiated on June 15. Cover types searched on Owens Bay included 149 acres of re-established native prairie, 36 acres of brome/sweet clover DNC, and 40 acres of tall wheatgrass/sweet clover DNC. On Maine WPA, 104 acres of native prairie and 38 acres of intermediate wheatgrass were nest searched. Ten raccoons and 3 skunks were removed on the Owens Bay study area from March 15 to July 1.

A total of 176 nests were located on Owens Bay and 21 on Maine WPA. The most common nesting species was blue-winged teal comprising 53% of the nests (197). The remaining nests located were gadwall (60), mallard (11), pintail (6), and shoveler (4). Nesting success for all species was 16% Mayfield (57% apparent) on Owens Bay where predators were controlled versus 1% Mayfield (10% apparent) on Maine WPA. Success on both units fell from 1988's finding (33% Mayfield on Owens Bay and 16% Mayfield on Maine WPA). One hundred forty-nine acres of native grass on Owens Bay were HRM grazed with the removal of .8 AUM/acre in two 4-day periods. Maine WPA had .5 AUM removed over a 2-week period on 104 acres of original native prairie badly invaded with Kentucky bluegrass.

The Mayfield nest success rate of the 149 acre seeded native unit was 34% in 1988 and 13% in 1989 while under the HRM grazing system. This is compared to 59% in 1987 and 42% in 1986 while idle. We cannot speculate whether the lower success rate was due to the HRM grazing program or a poor job of removing the predators.

Gadwalls, because of their tendency to initiate nests later, suffered greater predation losses. This can probably be attributed to predators moving into the habitat after the initial predator removal effort. Our trapping efforts tend to slow down once the busy summer work season begins.

Table 7. 1989 Habitat Preference - Owens Bay Waterfowl Nesting Study.

<u>Habitat Type</u>	<u>Acres Searched</u>	<u># Nests</u>	<u>Success</u>	
			<u>Apparent</u>	<u>Mayfield</u>
Reseeded Natives	149	143	55	13
Tall Wheat, Brome,				
Alfalfa, DNC	40	7	57	34
Brome	36	23	68	34

Table 8. 1989 Waterfowl Nesting Success - Owens Bay Waterfowl Nesting Study.

<u>Owens Bay Unit</u>				<u>Maine WPA</u>		
Predator Control				No Predator Control		
<u>Species</u>	<u># Nests</u>	<u>Nest Success</u>		<u># Nests</u>	<u>Nest Success</u>	
		<u>Apparent</u>	<u>Mayfield</u>		<u>Apparent</u>	<u>Mayfield</u>
Mallard	17	0.81	0.28	4	0.00	0.00
Gadwall	59	0.45	0.05	1	0.00	0.00
Blue-winged Teal	95	0.63	0.26	11	0.09	0.01
Shoveler	2	0.00	0.00	2	0.00	0.00
Pintail	3	0.33	0.19	3	0.33	0.01
Totals	176	0.57	16.00	21	0.10	0.01

Table 9. Historic Waterfowl Nesting Success - Owens Bay Waterfowl Nesting Study.

<u>Owens Bay Unit</u>				<u>Maine WPA</u>		
Predator Control				No Predator Control		
<u>Year</u>	<u># Nests</u>	<u>Nest Success</u>		<u># Nests</u>	<u>Nest Success</u>	
		<u>Apparent</u>	<u>Mayfield</u>		<u>Apparent</u>	<u>Mayfield</u>
1989	176	0.57	16.0	21	0.10	0.01
1988	200	0.70	33.0	172	0.55	16.00
				<u>Trout WPA</u>		
				No Predator Control		
1987	181	76.0	48.0	80	41.0	10.0
1986	92	72.7	44.8	47	53.2	22.1
1985	104	70.2	44.3	56	42.9	14.8
No Predator Control						
1981	151	13.2	6.5			
1980	792	75.0	45.9			
1979	292	65.1	-			

6. Other

Wilson met with Project Manager Marc Goldhammer in May concerning the Lake Andes-Wagner and Marty II Irrigation Projects. He also met with the USGS, Bureau of Reclamation and FWE on December 28 to discuss contaminant monitoring associated with the projects and the collection of baseline data. The project has been scaled back and is now classified as an experimental project. Six sections of land are proposed to be irrigated, each a different soil type.

E. ADMINISTRATION

1. Personnel



Lake Andes NWR staff (L. to R.) Back Row: 2, 3, 1, 5.
Middle Row: 10, 6, 7. Front Row: 8, 4, 9.

89 NR 2
7/10/89 JJ

Permanent

- | | | |
|----|----------------------------------|---------------------|
| 1. | Bill Wilson, GS 12 | Refuge Manager |
| 2. | Bruce Schoonover, GS 11. | Refuge Manager |
| 3. | John Jave III, GS 9. | Refuge Manager |
| 4. | Ejner Frandsen, WG 8 | Maintenance Worker |
| 5. | Norma Martin, GS 6 | Refuge Asst(Typing) |

Career Seasonal

- | | | |
|----|--|--------------------|
| 6. | John Eldridge, WG 6. | Maintenance Worker |
| 7. | John Fuchs, Jr., WG 6 (retired 10/1/89). . | Maint. Worker |
| 8. | Leon Kirchhevel, WG 6. | Maintenance Worker |
| 9. | Eugene Slaba, WG 6 | Maintenance Worker |

Temporary

- | | | |
|-----|--|-----------------|
| 10. | Sandra Abraham, GS 5 (EOD 2/12/89) . . . | Biological Tech |
|-----|--|-----------------|

Table 10. Lake Andes Complex Staffing Pattern, 1984-89.

Year	Permanent		Seasonal	Coop Ed &		Total FTE
	Full Time	Career		Temporary		
1989	5		4	1		8.84
1988	5		4	2		8.60
1987	5		4	2		8.66
1986	5		4	4		8.98
1985	5		4	4		8.51
1984	5		4	1		8.13

2. Youth Programs

No YCC enrollees were allocated to the Lake Andes WMD in 1989.

5. Funding

Funding for the Lake Andes WMD, the Lake Andes NWR and the Karl E. Mundt NWR is consolidated within a single annual appropriation for the complex (Table 11).

Table 11. Annual Appropriations and Manpower Levels Since 1984, Lake Andes National Wildlife Refuge Complex.

Fiscal Year	O&M Budget	Resource Problem	Large ARMM's Project	Manpower S/D
1989	307,500	--	--	2,260
1988	316,000	20,000	35,000	2,244
1987	301,000	--	27,000	2,260
1986	278,000	--	63,000	2,343
1985	330,000	--	41,000	2,221
1984	230,000	--	66,000	2,120

6. Safety

Monthly safety meetings were held in conjunction with personnel from the local Soil Conservation Service Office. A variety of subjects were covered including flammable liquids, office safety, heart disease, accident reporting, seat belts, lyme disease, hazards of electrical power, fitness walking, and winter driving.

No lost time accidents occurred this year; however, Gene Slaba suffered a slightly lacerated cornea in his left eye when a tree branch scratched his eye while he was on a tractor. He did receive medical attention.

Increased emphasis was placed on personnel wearing protective gear for spraying herbicides. In addition, all herbicides were purchased in 2½-gallon containers instead of 30-gallon drums to reduce spills and exposure during handling.

Two members of the staff were unfortunately stricken with heart problems during the year. John Fuchs, WG-6 Maintenance Worker, had heart by-pass surgery on June 14. He retired on October 1, after 21 years of federal service. Ejner Frandsen, WG-8 Maintenance Worker, had heart by-pass surgery on November 24. His return to work is still indefinite.

All staff members were tested for lyme disease on July 12. All tests were negative.

7. Technical Assistance

Manager Wilson gave recommendations for wildlife habitat improvements to Jerry Turner, representative for the Brule Conservation Trust, in October.

Information was given to Mid-Dakota Pipeline concerning a proposed waterline to run from Pierre to Huron. Wetland enhancement was discussed as possible mitigation. The pipeline as proposed would traverse the northern portion of the District. Twelve WPAs have been identified to potentially receive water.

Coot eggs were collected from Owens Bay for the Federal Wildlife Enhancement Office in Pierre. They will be analyzed for selenium levels as part of the groundwork for the Lake Andes-Wagner Irrigation project.

Swampbuster

The FWS played an ever increasing role in the administration of the 1985 Food Security Act in 1989. The Soil Conservation Service is required to consult with the FWS on the restoration of any swampbuster violations. In most cases, once the SCS makes the determination of converted wetland, they request the FWS to make an onsite survey with them. Converted wetlands usually involve the loss of wetland values through draining, leveling or filling. The removal of trees and shrubs with other than "conventional" tillage equipment is also a swampbuster violation. This applies to all wetlands converted after December 23, 1985. Should an operator plant a commodity crop on a converted wetland, he stands to lose his USDA program benefits if he participates under the program. Restoration of converted wetlands provides

for the recovery of wetland values and enables farmers to farm the restored wetland under natural conditions in future years without loss of benefits. It is our job to provide guidelines for proper wetland restoration and to ensure the job is completed correctly.

Congressional inquiries were received by this office from the offices of Senator Larry Pressler and Representative Tim Johnson concerning the swampbuster violation of Glen Henglefeld, Alexandria, SD in Davison County. He had drained a 4-acre Type III wetland with a ditch during the fall of 1987. He was notified in 1988 that he would lose his program benefits should he plant a commodity crop within the wetland basin. He refused to fill the ditch. In 1989, he planted soybeans in the wetland basin and as a result the ASCS withheld his USDA program benefits. At this time his case is still being appealed to the USDA State Office. He insists he will fill the ditch if his 1989 benefits are restored.

Another swampbuster problem surfaced in August, when a farmer in Hutchinson County (Don Glanzer) also lost his USDA benefits for planting a converted wetland with a commodity crop. He is appealing his on the basis that 1989 was a drought year and that draining had "minimal effect" on the wetlands involved. The SCS has been shaky on this and the ASCS is looking for any possible reason to restore lost benefits. The FWS position has been that any recorded measurable rainfall constitutes more than a minimal effect. Our position was not helped when a neighboring county had a similar violation but the ASCS Committee restored the farmer's lost benefits.

We have had considerable problems in the District with the interpretation of regulations by ASCS and SCS officials between the various counties. Out of 20 counties within the District, we have had 10 who have not requested consultation concerning potential violations. It is hard for us to believe that a lot of drainage is not being "swept under the table" by "pro-producer" attitudes by county USDA officials. The problems still stem from not having an organized enforcement program by the USDA and by ASCS County Committees who are often friends or neighbors of swampbuster violators.

Wilson met with Hanson County SCS and the ASCS Committee in November to discuss a third party drainage of a converted wetland. The case involves the Rosedale Hutterite Colony and a wetland they own that was partially drained by the county to prevent road damage. The Colony did not request the action, and apparently the County has the authority to take action necessary to protect their roads. A minimum sill was placed on the wetland so no further drainage would occur.

Table 12. Signed Minimal Effects - Lake Andes NWR Complex - 1989

<u>County</u>	<u>Dugout Cleanouts</u>	<u>New Dugouts</u>	<u>Wildlife Dugouts</u>	<u>Swampbuster Wetland Restorations</u>	<u>Consultation Only</u>
Aurora			1		
Beadle					
Bon Homme	1	3			
Brule					
Charles Mix	2				
Clay				1	
Davison	5	1		1	2
Douglas	1	4			
Hanson	2			3	
Hand					
Hughes					
Hutchinson	3			1	3
Jerauld					1
Lincoln					
Sanborn					
Turner				1	
Union					2
Yankton			1		
Totals	<u>14</u>	<u>8</u>	<u>2</u>	<u>7</u>	<u>8</u>

F. HABITAT MANAGEMENT

1. General

Management practices that are used on waterfowl production areas are instituted to meet the following objectives: develop and maintain waterfowl habitat with the emphasis on waterfowl production, preserve and maintain a prairie wetland ecosystem for plants and wildlife indigenous to the area, and to preserve, restore, and enhance federally listed endangered and threatened species.

Management responsibilities on the District have been divided between two wetland managers into the west and east zones. During the last two years, the primary management emphasis was to implement HRM grazing practices on as many units as possible.

The never-ending fight with noxious weeds (primarily musk and Canada thistles) is probably our biggest problem. County weed boards, commissioners, and adjacent neighbors continually pressure and remind us of our responsibilities. It's a tough job to try meet these obligations and yet comply with Service policies regarding the use of chemicals.

Drought in many areas of the District in 1989 did not noticeably affect management on the Lake Andes WMD. However, the drought related demand for grazing/haying increased.

2. Wetlands

Wetland conditions on the District were the worst since 1981. Most counties in South Dakota were declared drought disaster areas in 1989 and our District was no exception. Spring wetland conditions ranged from fair to poor. The best spring conditions were found in the northern counties. A spring snowstorm dumped large amounts of snow which quickly melted. The resulting runoff filled many temporary wetlands but only partially filled the more permanent basins. On the southern two-thirds of the District, only the largest type IV and V wetlands held water and these areas were shallow. Wetland basins in the District were estimated to be 57% wet overall as compared to 70% in 1988. With the combination of below normal rainfall and abnormally high temperatures, many WPAs were dry by August. Drought conditions continued through the end of the year and no recharge of wetlands occurred. This is the natural way of the prairie and the dry basins now will provide the best waterfowl habitat once the drought is broken.



Spring wetland conditions were fair in the northern part of the District.

89 NR 2
• 4/3/89 BTS



Wetlands that held shallow water through late fall, 1988...

89 NR 3

10/25/88 BTS



...were dry by the end of June.

* 89 NR 4

5/22/90 JJ

Two privately owned areas were nominated for the National Wetlands Conservation Plan-Simpson Lake, south of Corsica and Collins Slough in Hughes County.

4. Croplands

Land that is farmed on the District falls into two categories, food plots and areas in preparation for grass seedings. Food plots are planted for resident wildlife through cooperative farming agreements with local farmers. These are planted where a suitable land base exists in excess of what we feel is needed for nesting cover. All work and seed is provided by the cooperator. The use of herbicides and insecticides is prohibited. We usually designate corn to be planted on our 25% share. Other suitable food crops include forage sorghum and milo. Cooperators are allowed to harvest the government's share after April 1 the following year.

Table 13. Food Plots on the Lake Andes WMD in 1989.

WPA	Crop	Acres	Government Share	Permittee
Broken Arrow	Milo	15	25%	Holleman
Huber	Corn	20	100%	Force Account
Koss	Corn	13	25%	Falor
Varilek	Corn	30	25%	Zylstra
Jackson	Corn	120(3 plots)	25%	T. Jackson
Bauer	Corn	60(2 plots)	25%	Kleinsasser
Humphrey	Corn	35	25%	Hanten
Lutz	Oats	45	100% left in field	Veurink
Star	Milo	5	100%	Vanden Hoek
Hyde	Milo	10	100%	Pheas/Forever
Youngstrom	Corn	8	100%	Force Account
Total		361		

Croplands on newly acquired WPAs are often cash rented to prepare a suitable seedbed prior to native grass seeding and to rid the soil of any herbicide carryover. Oats is usually planted for seedbed preparation. It can be seeded as a cover crop with natives or the natives can be seeded directly into the standing stubble as a dormant fall seeding or spring seeding.

Table 14. Cash Rent - Lake Andes WMD - 1989.

WPA	Crop	Acres	Permittee
Jackson	Corn, Sunflowers	230	Jackson
Huizenga	Oats	25	Baan Hofmann
Winter	Oats	22	Schimke

5. Grasslands

The Lake Andes District manages approximately 10,000 acres of native prairie/native grass seedings and nearly 5,000 acres of tame grass/DNC throughout the 20 county area. Because of the large size of the District, three distinct prairie communities are covered. These communities, east to west, include tall grass or true prairie, mixed grass/tall grass transition, and mixed prairie. The District grassland management program includes properly timed burning, haying, and grazing treatments, coupled with periods of rest to try to achieve the desired range conditions.

Management of re-established native stands and native prairie are usually managed through grazing contracts with permittees while tame grass and DNC are hayed. In 1989, we began putting more emphasis on grazing some of our DNC/tame grasslands to leave as a goal 50% of the cover standing instead of removing everything as haying would do.

In 1989, a total of 138 acres on 3 units were planted to native grasses. The following lbs. PLS/acre mix was used: green needle (3.4), western wheatgrass (1.8), big bluestem (1.6), little bluestem (.7), Indian grass (.5), switchgrass (1.2), and sideoats grama (.7) totaling 9.9 lbs. Units planted included Tucek (43 acres), Varilek (65 acres), and Mayer (30 acres) for a total of 138 acres. A variety of seed beds were used. On Varilek WPA, the unit was fallowed during the summer. In August oats was planted, then during March, natives were seeded directly into the winter-killed residue. However, the oats did not provide a good upright stubble to catch snow needed for moisture. We did have good germination, but many seedlings dried out. Sudan stubble was used for the seedbed on Varilek WPA. It provided a good seedbed but germination was poor. We also experimented with planting nitro alfalfa and using this for a seedbed the following year. This is a southern species of alfalfa and is supposed to winterkill in our climate. The idea was to provide a solid seed bed and produce nitrogen for the grass seeding. However, because the alfalfa failed to winterkill, we ended up using a herbicide. As a result of the drought conditions, early results looked poor on all units.



Native grass was seeded into a seedbed of winter-killed oats on the Tucek WPA in March.

89 NR 5
3/89 JJ

Native grass seed worth over \$2,400 was provided to this station by Quivira NWR in Kansas. A seed dealer harvested native grass seed on Quivira. As credit for the refuges share of the seed, the company provided us credit to purchase locally the varieties adapted to our District.



New native grass seedings are mowed the first two years to reduce the competition from weeds as being done here on the Varilek WPA.

89 NR 6
7/89 JJ

7. Grazing

Fifty-eight units received grazing treatments (Table 15) in 1989. The grazing rate was \$9.20/AUM which was up from \$8.20/AUM charged in 1988. Discounts were made for moving cattle, temporary fencing, fence maintenance and hauling water.

The emphasis in 1989 was to use short duration grazing as the management tool where possible. We preferred to keep the duration down to 1 week or less where possible, but permits were issued with durations of up to 30 days. Each unit was different depending on the location of water, existing fences, herd size, the proximity of the permittee and also what he was willing to do. Generally, our goal was to remove .5 to .75 AUMs/acre. In some cases, units that had not been managed for some years had heavy mulch buildups. In these cases, more AUMs were removed. Leaving about half the cover standing, still allows for nest initiation and ensures a mulch layer for the following spring.

Management philosophy has changed from one of trying to change grassland species composition to one of attempting to keep the existing cover type in vigorous condition. Kentucky bluegrass is our most common invader of original native prairie. In the past we have always grazed these areas for 30 days during the month of May with the idea of stressing the exotic grass species by "overgrazing" them and thus encouraging the warm season native species. However, this method lowers the number of waterfowl nest initiations. It removes most of the cover and greatly reduces waterfowl production during the season of treatment. Unless the graze is timed exactly right, it does as much damage to the cool season native species as the exotics. According to our waterfowl nest drag data, 60% of our nesting is done by blue-winged teal and they love Kentucky bluegrass. However, bluegrass is not favored by mallards and gadwalls which prefer a thicker, denser, upright cover. Nor does it provide very good winter cover for resident game because it "flattens" with snow cover.

Fall grassland conditions on the units grazed during the spring-early summer period ranged from fair to good. Because of the drought, most cool season species did not respond while the deep rooted warm season natives were in slow growth status. Most cover did not fully recover from the grazing treatments.

Table 15. 1989 Grazing Program, Lake Andes WMD

WPA	Acres	AUM'S	Dates	
<u>Aurora County</u>				
Crystal Lake	245	225	05/10-06/29	HRM
Humphrey	215	120	04/17-05/03	
Lutz	25	25	05/13-06/01	
Maine-Units 1,2,3	160	105	05/17-06/20	
Maine-III	122	30	06/21-07/01	
Maine-NE $\frac{1}{2}$	104	100	05/01-07/07	HRM
Overweg	55	42	05/01-05/10	HRM
Schute-E $\frac{1}{2}$	60	25	04/20-05/18	
Sorenson-SW $\frac{1}{2}$	74	60	05/01-06/01	
<u>Beadle County</u>				
Bauer	125	95	05/01-07/14	HRM
LeClaire	110	139	04/23-05/03	
Quiram	19	19	06/15-06/30	HRM
Shull	85	75	06/07-07/07	
<u>Bon Homme County</u>				
Buchholz	54	54	04/22-05/20	
Cosby	30	30	06/20-07/11	
<u>Brule County</u>				
Koss	221	113	05/04-06/06	HRM
<u>Charles Mix County</u>				
Broken Arrow	1985	1250	05/01-08/31	HRM
Green	136	104	04/27-06/30	HRM
Juran	46	49	05/01-06/01	
Kafka	104	56	04/28-06/01	HRM
Koupal	47	25	04/29-05/28	
Novotny	25	15	05/15-06/01	
Sherman	90	45	05/01-06/01	HRM
Soulek	32	20	05/20-05/27	
Trout	125	75	06/05-07/05	
Van Zee	43	22	05/01-05/15	
Varilek	75	53	06/05-07/17	
Vogt	108	57	05/01-05/21	
Youngstrom	28	28	04/27-05/07	
<u>Davison County</u>				
Lindeman-west	21	9	06/15-07/01	
Vogel	23	10	07/02-07/15	
<u>Douglas County</u>				
Coler-north	112	52	05/03-05/18	
DeCook-south	157	93	05/01-07/01	
Denning	114	57	05/08-05/29	
Dubes	30	30	05/15-06/01	
DeVelder	137	69	05/15-06/22	HRM
Korevaar	17	12	05/15-06/05	
Kuil	64	30	05/13-05/27	
New Holland-north	66	35	04/29-05/13	& HRM
			06/10-06/17	
<u>Hand County</u>				
Campbell	297	96	05/09-05/29	
Fisher	14	7	05/22-06/05	
Johnson	7	3	05/10-05/17	
Lingeman	99	26	06/02-06/08	
McGillvrey	16	7	05/18-06/01	
Millerdale	313	102	05/20-06/07	
Mullenberg	51	18	05/27-06/01	
Reinhardt	133	35	05/10-06/05	
Spring Lake-east	140	40	05/15-06/01	
Spring Lake-west	50	26	05/22-05/26	& HRM
			06/26-07/01	HRM
Treichler	150	60	05/15-06/01	HRM
Weideman	21	8	05/15-06/01	
<u>Hanson County</u>				
Delger	40	40	05/01-06/01	
Welker	22	22	04/10-04/24	HRM
<u>Hughes County</u>				
Hyde	140	33	05/15-05/25	
<u>Hutchinson County</u>				
Roth	57	45	06/08-07/01	
<u>Jerauld County</u>				
Brandenburg	24	15	05/22-05/31	
Freudenberg	51	23	05/27-06/10	
Linn	105	45	05/06-06/02	
Zink	37	18	05/15-06/01	
<u>Sanborn County</u>				
Johnson	32	17.5	07/13-07/20	
<u>Union County</u>				
Collar	64	65	05/22-06/20	
Total	7152	4204.5		

*HRM designation indicates multiple units were grazed on the WPA, each for 1 week or less.

8. Haying

Periodic haying is used to reduce restrictive mulch accumulation where weeds (primarily thistles) are a problem, or used on units that are not set up for grazing. Haying is allowed only during the period July 10-31, in order not to interfere with waterfowl nesting and still give time for some re-growth.



The permittee on Sorenson WPA disked the unit as part of his haying agreement in an effort to rejuvenate this DNC stand.

89 NR 7

8/18/89 BTS

In 1989, we hayed 38 acres of alfalfa on the Kafka WPA on June 10, because of an extensive musk thistle infestation. We know that some nests were destroyed, but they were sacrificed in order to remove the thistle before it went to seed and caused a greater problem in the future. Because of the early haying, our office received five complaints from local sportsmen. We were caught in the middle between sportsmen and the weedboard. We experimented with spraying this field in the fall. Many new rosettes were visible. To kill these, we sprayed with 2,4-D after the first heavy frost had caused the alfalfa to drop its leaves. Musk thistle is fairly tolerant of frost. We'll see what kind of kill we got during the spring of 1990. If this fails to do the job, the unit will be broken out and farmed for a few years.

The charge per acre varies between permittees because of hay quality. Reductions are made for excessive weed growth, excessive mulch build-up and stand density.

Table 16. Haying Program, Lake Andes WMD, 1989.

WPA	Vegetation Type	Acres
<u>Aurora</u>		
Crystal Lake	Alfalfa	55
Foster	Brome	60
Humphrey	Brome	88
Scott	Brome	30
Sorenson	Brome	50
<u>Beadle</u>		
Bauer	Brome	110
Kahre	Brome	22
LeClair	Alfalfa	45
Rogers	Brome	43
Ruppel	Native	14
Shull	Native	50
Weiting	DNC	58
Wipf	Brome	15
Yauney	Native	65
<u>Brule</u>		
Koss	DNC	40
<u>Charles Mix</u>		
Kafka	Alfalfa	35
<u>Davison</u>		
Lindeman	DNC	33
Kurtenbach	DNC	15
<u>Douglas</u>		
Plooster	DNC	35
<u>Hanson</u>		
Boggs	Brome	30
<u>Hutchinson</u>		
Hohn	DNC	56
Mayer	Native	29
<u>Turner</u>		
Plucker	Native	80
Total		1058

9. Fire Management

Spring prescribed burns were completed on 2 units in the District totaling 107 acres. Units burned included 13 acres of native prairie on Varilek WPA and 94 acres of seeded natives on Collar WPA. Both units had severe thistle infestations. Burning removed the thick mulch layers so that spraying with herbicide would be more effective.

Prescribed burning is used on this District when other management tools such as haying or grazing will not work. Our District is too spread out to depend on prescribed burning. When you throw in other variables such as weather and manpower, it makes it tough to burn on other than a small scale.



Abraham ignites a fireline along a marsh border to prescribe burn a native prairie tract on the Varilek WPA.

89 NR 8
4/89 JJ

Only one wildfire was reported during the year. Lightning caused a small fire on the New Holland WPA on September 7. The fire only burned $\frac{1}{4}$ acre of cattails before rain extinguished it. It raised the question of fire danger to the town of New Holland, which adjoins the WPA. In the past, a firebreak was maintained between the two. This practice was discontinued in the mid 80's when the marsh was full of water.

Sandy Abraham completed S-130 and S-190 fire training at Valentine, NE on April 18-20.

10. Pest Control

According to South Dakota state law, landowners are required to control noxious weeds on their property. Because of this law and for good public relations, the Lake Andes WMD participates in a weed control program on its WPAs. Emphasis is placed on the control of Canada thistle, musk thistle and wormwood sage. Field bindweed and leafy spurge cause problems to a lesser extent. When neighboring landowners spot thistles on our property, they rarely fail to complain either to their county weed board or to us directly. We try to respond to all complaints.



Canada thistles have increased dramatically on District WPAs as receding water levels have left an open nitch around wetlands.

89 NR 9

8/89 BTS

In 1989, a total of 1789 acres were sprayed in the spring and another 706 acres were fall sprayed on the District with either 2,4-D ester or 2,4-D amine with SCI-40. A total of 2327 lbs. of ester AI and 388 lbs. of amine AI were applied. This is an increase of 39% over 1988 but can be attributed to the initiation of a fall spraying program. We hope to shift some of our spraying to the fall to get a more effective kill on Canada and musk thistle. We estimate a total of 95 man days were spent on weed control and the entire program cost the station \$17,150.

In 1990, we hope to use a new product called SCI-40 which is an acidic amendment. The company, Sorber Chemicals, Inc. Holdridge, NE, claims the additive should be used with amine and that it increases the rate of pesticide uptake through the leaf of the plant, prevents water hardness ions from "tying up" the pesticide and reduces the rate of decomposition of most herbicides. The company claims less herbicide is needed when combined with SCI-40. We'll experiment in 1990 to see if this is true.

Table 17. Noxious Weed Control Program, Lake Andes WMD, 1989.

County	# Units in County	Acres Sprayed	
		Spring	Fall
Aurora	8	180	110
Beadle	6	55	101
Bon Homme	4	125	70
Charles Mix	15	375	255
Davison	4	30	0
Douglas	11	668	80
Hand	2	21	0
Hanson	5	150	0
Hutchinson	4	55	40
Sanborn	1	20	0
Turner	2	100	50
Yankton	<u>1</u>	<u>10</u>	<u>0</u>
Total	63	1789	706

Along the lines of biological control, 300 ceutorhynchus litura (stem boring beetles) were released in Canada thistle patches on Broken Arrow WPA. The beetle supposedly weakens the thistle plant by boring into the center of the stem making it more susceptible to such things as plant viruses, etc. We plan to release more in 1990. The cost of the beetles was \$.85 each. They were purchased from a dealer in Bozeman, MT.



Canada thistle stem boring beetles were purchased from Montana and . . .

89 NR 10
5/89 JJ



. . . released in Canada thistle patches on Broken Arrow WPA in Douglas County.

• 89 NR 11
5/89 JJ

Musk thistle beetles are now well established on the District. A very high percentage of the flowering heads contain beetles which consume the seed. The FWS and other agencies released the beetles in the early 1980's. Hopefully a balance will be struck between the beetles and musk thistle populations.



The larva of musk thistle beetles can now be found in the plants on most WPAs.

89 NR 12
6/29/89 JJ



Hand collection of musk thistle flowering heads is not as effective because the plant quickly grows new flowers.

89 NR 13
6/29/89 BTS

11. Water Rights

The Fish and Wildlife Service had water right permits approved by the SD Department of Natural Resources to protect waterfowl breeding habitat on the Varilek and Sherman WPAs in Charles Mix County. Application was made for first priority water rights on these wetlands because the FWS owned the majority of the wetland basins involved, but local farmers were irrigating out of their portions. The permit set limits on the amount of water that could be pumped from the basins for irrigation.



A first priority water right permit was secured for Sherman WPA after a neighbor irrigated out of his portion of the wetland but only owned approximately 10% of the wetland basin.

89 NR 14
7/89 JJ

13. WPA Easement Monitoring

Since the early 1960's, perpetual easements have been purchased from landowners on a willing seller basis to protect wetlands in private ownership. The only restrictions the easement places on the land are that wetlands can not be drained, burned, or filled. In other words, when they are dry of natural causes, they belong to the farmer, when they are wet, they belong to the ducks.

The monitoring of wetland easements to insure compliance is one of our highest priority jobs. It is also one of the most time consuming and expensive jobs. Violations are usually detected with an aerial flight in the fall of the year, which requires over 40 hours of flight time to accomplish in this District. Each suspected violation is ground checked to gather evidence with measurements and pictures. Usually in February and March, landowner contacts are made to establish a compliance date for restoration of the wetlands. In the spring, all violations have to be reinspected to insure compliance has been met. If the landowner refuses to restore the wetlands, court action is initiated. In the fall, surveillance flights are again made and the process repeats itself.

A total of eleven violations were detected in the fall of 1988 after surveillance flights and ground checks had been completed, and an additional one was detected in the spring of 1989. Satisfactory compliance was gained on all of these in the spring and summer of 1989.

We had noted a significant decline in easement violations in 1988, giving credit to increased easement awareness, and the swampbuster provision of the 1985 Farm Bill, which added potentially large penalties for wetland destruction. This decrease in easement violations held steady in 1989, with only nine violations being discovered during fall surveillance activities. Landowner contacts will be made early in 1990 to get these corrected.



Beadle 44X

This hole in a protected wetland basin measures 150' by 150' and is over 11' deep, with spoil spread partially in the basin behind. The landowner's excuse for this one should be interesting, to say the least.

89 NR 15
12/20/89 JJ

G. WILDLIFE

1. Wildlife Diversity

The District's management objectives are aimed at providing optimum habitat for waterfowl production and to protect natural prairie wetlands. Upland habitat is managed through a program of controlled burning, grazing, haying and rest to provide optimum diversity of plants and animals indigenous to the prairie pothole region.

2. Endangered and/or Threatened Species

Bald eagles are classified as endangered in South Dakota and are a common winter resident along the Missouri River which flows along the western boundary of the District. In late winter the eagles generally disperse from areas of concentration along the river to forage on the uplands. Scattered birds are sighted on the District during this time, often near concentrations of upland game.

Peregrine falcons may be found on the District during their seasonal migrations. None were sighted this year.

Whooping cranes are known to pass through the District during the spring and fall migrations. However, no sightings were reported this year.

3. Waterfowl

Spring migration got started slightly later than normal this year as the first migrants didn't arrive until March 10. They were greeted by many dry wetland basins and little standing sheet water over the southern portion of the District.



Snowgeese rest during spring migration on sheetwater in Hanson County, one of the few areas with any runoff.

89 NR 16
3/24/89 BTS

The quarter section sampling technique has been used since 1982, to estimate the total number of breeding pairs on the District. The total breeding pair estimate for 1989 was 10,619 pairs, a 38% decrease from 1988. The 1988 survey was the highest number of pairs recorded on the District during the 1980's. The number of breeding pairs on the District increased from a drought year in 1981, when no survey was made, to a peak of 17,207 in 1988. The increase was in correlation to a cycle of high precipitation. It looks like the prairie moisture cycle has nearly run its course, but the drought could easily continue into the 1990's.

Wetland basins surveyed during the count averaged 57% full compared to 70% in 1988. Many WPAs held shallow sheet water but dried up by late July. Table 18 provides an indication of population trends. Estimates for lands under FWS wetland easements are not made. Production estimates for the District are based on an 18% hen success and 6 young. These figures are based on the results of 5 years of nest dragging on the WMD.

Table 18. Quarter Section Waterfowl Breeding Pair Surveys, Lake Andes WMD, 1981-89.

Year	Total Wetland Acres		Wet Acres In Sample	# Pairs In Sample	Pairs/ Wet Acre	Est. Pairs on WMD
	Sampled	% Wet				
1981	788.3	DROUGHT - NO SURVEY				
1982	788.3	60.3	475.11	237	0.5	3404
1983	788.3	68.6	520.38	538	1.03	6473
1984	788.3	85.0	670.00	787	1.17	7803
1985	788.3	79.3	624.85	1389	2.22	13683
1986	858.3	95.0	817.76	1121	1.37	11243
1987	858.3	100.0	858.30	1430	2.10	14427
1988	858.3	70.0	597.50	1714	2.87	17207
1989	858.3	57.0	492.00	720	2.14	10619

Table 19. Estimated Waterfowl Production, by species, on the Lake Andes WMD, 1989.

Species	Pairs In Sampled Area	Pairs/Wet Acre	Est. # Pairs	Est. # Young	% of Pop.
Blue-winged Teal	345	1.42	7040	7603	47.0
Mallard	114	.23	1140	1231	15.0
Gadwall	108	.21	1041	1124	15.0
Shoveler	49	.09	446	482	6.0
Pintail	38	.07	347	375	5.0
Ruddy Duck	34	.06	297	321	4.0
Wigeon	15	.03	149	161	2.0
Redhead	11	.02	99	107	1.0
Canvasback	4	.008	40	43	---
Wood Duck	1	.002	10	11	---
Green-winged Teal	1	.002	10	11	---
Total	720	2.142	10619	11468	

It is rare that Canada geese are found nesting within the District. However, one pair was confirmed nesting on the Bauer WPA in Beadle County on May 16.

Fall migration through the District was not very impressive. A few of the larger WPAs that still held water held fair mallard populations during the peak of fall migration in early November. The lack of both diving and puddle ducks was quite noticeable.

4. Marsh and Water Birds

The most common marsh and water birds on the District are great blue herons, green-backed herons, black-crowned night herons, great egrets, American bitterns, coots, soras and double-crested cormorants.

5. Shorebirds, Gulls, Terns, and Allied Species

Shorebird species recorded on the WMD during 1989 included willets, greater and lesser yellowlegs, avocets, Wilson's phalarope, marbled godwits, common snipe and long-billed dowitchers. Upland sandpipers were common on the larger grassland units. A significant number and variety of species can be found on wetlands within the District, but no formal surveys are conducted.

6. Raptors

During 1989, raptor sightings on the WMD included red-tailed hawks, northern harriers, ferruginous hawks, rough-legged hawks, Swainson's hawks, and American kestrels. Golden eagles are occasional winter visitors. Great horned owls, screech owls, Cooper's hawks, and sharp-shinned hawks are commonly found in shelterbelts.

7. Other Migratory Birds

Two mourning dove coo counts were conducted on the WMD in cooperation with the office of Migratory Bird Management. Established routes were run near Stickney and Platte, SD on May 25 and June 1, respectively. A total of 140 doves were heard for a total of 921 calls. This compares with 149 doves and 901 calls in 1988.

8. Game Mammals

The most abundant big game animal over the District is the white-tail deer. Mule deer are common along the Missouri River breaks and are occasionally observed on WPAs along the western edge of the District. WPAs provide excellent habitat for white-tails and are popular hunting areas.

10. Other Resident Wildlife

The ring-necked pheasant is the most popular of the resident game species on the District. The pheasant population was down in south central South Dakota in 1989. There was a good spring population, but drought conditions and extremely high temperatures during the critical part of the nesting season were blamed for less than normal production.

Sharp-tailed grouse and prairie chickens are common along the western border of the District. Millerdale, Campbell and Broken Arrow WPAs receive the most use.

Muskrat populations were very low except on a few isolated Type IV WPAs. Wetlands were mostly dry and provided poor habitat.

17. Disease Prevention and Control

There were no known waterfowl die-offs on the District's WPAs during 1989.

H. PUBLIC USE

1. General

District waterfowl production areas are open year-round to a variety of outdoor activities. Wildlife observation, hunting, photography, picnicking, and nature hikes are all available to those willing to leave their vehicles. Hunting and trapping are restricted to South Dakota seasons and bag limits. Use of motorized vehicles, overnight camping and fires are prohibited on all District WPAs. The scattered WPAs provide an opportunity for individuals to stand in waist-high native grass, overlook a cattail-lined marsh, and see the South Dakota prairie as it once was before the tractor and plow.

2. Outdoor Classrooms - Students

Members of the staff gave outdoor interpretive programs about refuge management and wildlife to seven school or Cub Scout groups totaling 211 kids in 1989. The station has a variety of old wildlife mounts and interpretive items that are used for demonstrations.

Table 20. Lake Andes NWR Complex I & R Programs given in 1989.

Date	Program	Attendance
01/27	Schoonover and Jave gave an interview to a Yankton newspaper about eagles on the Mundt NWR.	---
04/19	Abraham presented a program to Armour Elementary School 1st graders.	20
05/18	Abraham and Jave gave a program to Wagner Elementary 1st graders.	80
08/07	Abraham gave a program about the Refuge to Lake Andes Cub Scouts.	14
09/30	Schoonover gave a program about eagles to Wagner Cub Scouts and their parents.	12
10/13	Abraham gave a program on endangered species to Marty Indian School 5th graders.	15
10/16	Abraham spoke to Marty Indian School 6-8 graders about refuge management and South Dakota mammals.	55
10/20	Wilson gave an interview to Tom McCallister, outdoor editor with the <u>Oregonian</u> , Portland, OR, about wetlands and waterfowl.	
10/26	Abraham gave a tour of the nature trail to Marty Indian School 5th graders.	15
11/14	Jave gave a program to the Tyndall/Springfield Izak Walton League about waterfowl.	30

6. Interpretive Exhibits/Demonstrations

The headquarters office and a kiosk on the site serve as the primary contact station. Mounted specimens and interpretive displays are housed here. This area is also used to show films to visiting school groups.

The refuge manned a booth with display at the Charles Mix County Mid-Winter Fair in Platte on February 14 and 15. An estimated 1500 visitors viewed a wildlife display on the North American Waterfowl Management Plan.

8. Hunting

Ring-necked pheasant hunting was much better than expected in 1989. The pre-season forecast was for fewer birds as a result of the drought and poor reproduction. The hunting season traditionally opens on the third Saturday in October and this year it opened on October 21 and ran through December 10. Hunting pressure was extremely heavy during the first weekend of the season with most WPAs hosting several hunting parties. Because this part of South Dakota is the traditional pheasant range, it's difficult to gain access to private land unless you are "family" or pay for the privilege.



WPAs can provide excellent hunting early in the season
but the hunting pressure can be very heavy.

89 NR 17
10/89 JJ

Hunters generally had a poor waterfowl season. A combination of low duck populations and dry wetlands lowered hunting success. The District is covered by two hunting units. Most of the District was open October 7 through November 14. The other unit borders the Missouri River and was open October 21 through November 28.

South Dakota is known for its Missouri River Canada goose hunting. Most hunting is done near Pierre. The 1989 fall Canada goose flight was excellent and took some of the pressure off the duck populations.

Deer hunters had another excellent fall in 1989, with an average success rate of 76% in those counties east of the Missouri River. Waterfowl production areas provide an important public land base for deer hunters.

10. Trapping

Waterfowl production areas are open to public trapping subject to State law. Trappers had a poor year in 1989. Most WPAs had little or no water and supported low rat populations. In addition, the bottom fell out of the fur industry and prices for long-haired furs were extremely low.

17. Law Enforcement

Two dikes cross Lake Andes, dividing the lake into three units. The Center Unit is open to hunting in accordance with the terms of the easement from the State granting the U.S. Fish and Wildlife Service the right to manage the lake as a migratory waterfowl refuge. The North and South Units are closed to hunting and trapping, but open to fishing and boating. Most of the law enforcement load on Lake Andes is handled by State Conservation Officers.

Jave issued three citations of \$100.00 each to hunters who were refuge trespass hunting on Owens Bay in October.

Manager Wilson, Schoonover, and Jave attended the 40-hour Law Enforcement Inservice Training in Marana, Arizona on February 21-27. Manager Schoonover attended a law enforcement coordination meeting and qualified with his firearm in Sioux Falls on September 20-21. Managers Wilson and Jave qualified with their firearms on October 23 by Conservation Officer Gary Payer.

Assistant Manager Jave assisted with the joint FWS/Colorado Division of Wildlife San Louis Valley Sting Operation to apprehend poachers in South Central Colorado from March 3-7. He felt the operation was well planned and was a real learning experience.

On September 15, Schoonover and Jave discovered approximately 40 pair of cattle trespass grazing on the North Unit (Vogt tract). Upon investigating, we found that the cattle belonged to John Westendorf, an adjacent landowner. From the grazed down condition, it was apparent that the cattle had been on the unit for quite some time. A neighbor said the cattle had trespass grazed for about a month previous. Upon investigating, we found that the water in Lake Andes had receded which left about 8 feet between the end of the fence and the water's edge. It was Westendorf's right half of the fence. There was a well worn livestock trail through the opening and no attempt had been made to repair the gap. After documentation, SRA Cooper was contacted

and he advised us to give Westendorf 24 hours to get his cattle off or we would impound the cattle. We contacted Westendorf and he said they must of got in there "just last night". He agreed to move his cattle and repair the fence. Since that time, he has gone on a letter writing campaign to various officials complaining about FWS land purchases, weeds, wildlife trespass on his property, and a whole host of other gripes. As a result, we have had to answer three Congressional inquiries. This guy just hates government agencies but he sure likes our grass.



These cattle were found trespass grazing on the Vogt WPA in September . . .

89 NR 18
9/15/89 JJ



. . . and the owner said that they "must of just got in there last night."

89 NR 19
9/15/89 JJ

I. EQUIPMENT AND FACILITIES

1. New Construction

Several fencing projects were completed on new waterfowl production areas on the District in 1989. Our policy is to construct new boundary fences around each unit as they are purchased unless the existing fence is in good shape.

High water levels in 1985 to 1987 ruined many existing fences. As wetlands have receded, and with many now dry, we have had many problems with cattle trespass and with adjacent landowners contacting us concerning fence repair. Table 21 summarizes the fencing and posting program for the year. All fences were constructed of 3-strand barbed wire to control livestock.

Table 21. Fencing and Posting Program, Lake Andes WMD 1989.

WPA	Fence Type	No. of Rods
New Holland	Boundary Rehab	160
Maine	Boundary New	320
Lindeman	Boundary Rehab	80
Varilek	Boundary & Cross Fence	640
Schaeffer	Boundary Rehab	35
Hieb	Boundary Rehab	80
Broken Arrow	Cross Fence	490
Winter	Boundary & Cross Fence	400
McGillvery	Boundary Rehab	80
Cahalan	Boundary Moved to High Ground	80
Schull	Boundary-80 rods new, 80 rods rehab	160

Fencing materials were supplied to the permittee on Brandenburg and Dubes WPAs who repaired the boundary fences prior to spring grazing.



This parking lot on Atkins WPA near Sioux Falls seems to get shot up annually by plinkers.

89 NR 20
9/20/89 BTS

2. Rehabilitation

Three dugouts were restored on the Broken Arrow WPA by a private contractor for livestock watering. The project took 24.75 hours of dragline work for a total fee of \$2,722.50. The project was paid for by our permittee as a portion of grazing fee. The dugouts had silted in and the restorations will benefit our short duration grazing program.

8. Other

Old building sites were cleaned up on the Mayer WPA in Hutchinson County and Varilek WPA in Charles Mix County. Beryl Meyer, heavy equipment operator on loan from Sand Lake NWR used his cat to pile and bury old buildings and junk that remained on each unit. Any salvagable building had been previously sold and moved or torn down.



The farmstead on Varilek WPA was one big junk pile and took many staff hours to clean up.

89 NR 21
10/3/89 JJ



The house foundation on Mayer WPA was burned after portions of the house were salvaged and the remainder burned.

89 NR 22
10/3/89 BTS



These volunteer trees in the ROW on the Plucker WPA were removed after the township voiced a complaint.

89 NR 23
10/3/89 BTS

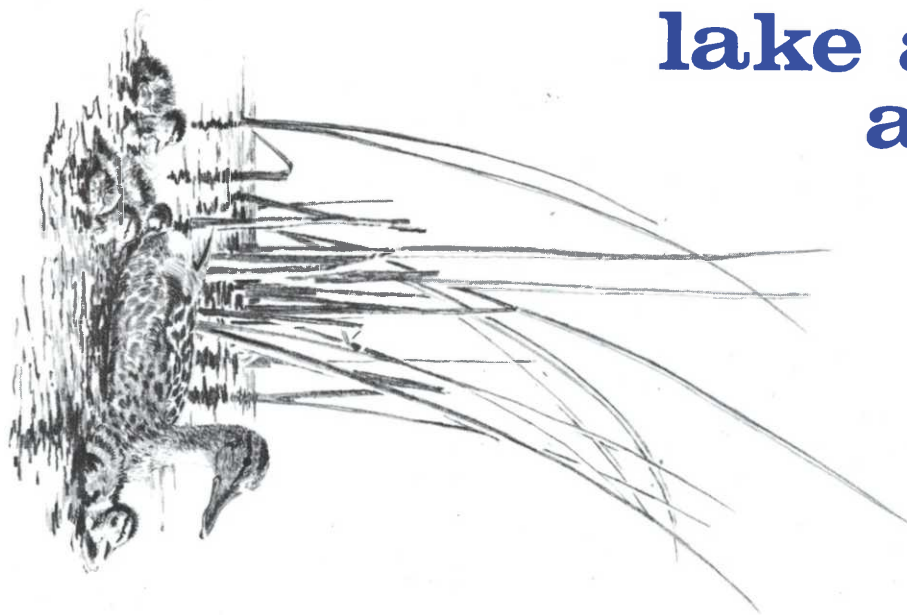
J. OTHER ITEMS

3. Items of Interest

Revenue sharing checks totaling \$24,714 were delivered to 18 counties within the WMD. Two counties have no fee title lands (only easements) and therefore received no payments.

4. Credits

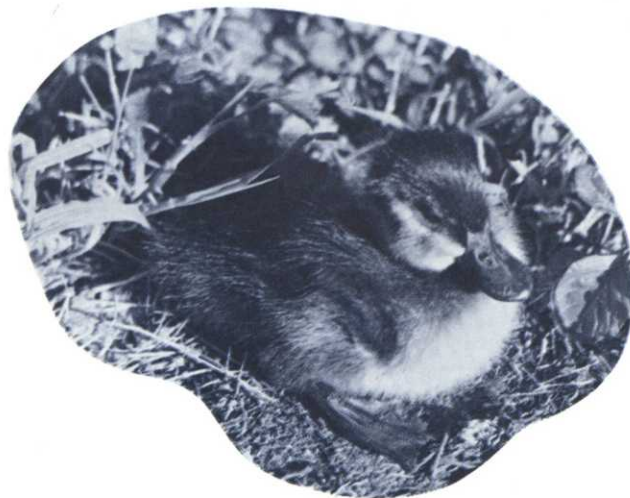
Jave wrote the document except for the following: Martin wrote Sections E.1 and E.5 and typed and assembled the report; Abraham wrote Section C.3; Schoonover wrote Section F.13.



**lake andes refuge
and wetlands
management
district**

Uniqueness: Lake Andes, with its 4700 acres of open water interspersed with marsh vegetation, represents a unique piece of wetland preserved for the production of ducks and a variety of waterbirds. The lake's importance during migration seasons must also be noted, as countless thousands of waterfowl utilize the marshlands during wet years. The Owens Bay Unit, an 832-acre refuge containing a 240-acre marsh surrounded by over 450 acres of native grass cover, plus the 320-acre Youngstrom Unit provide additional wildlife habitat adjacent to Lake Andes.

Over 20,000 acres of waterfowl production areas, small potholes nestled amongst the native prairie grasses, are intensively managed and operated under the Lake Andes Wetlands Management District. This 20-county district is the largest of its kind in South Dakota. An additional 80,000 wetland acres within the District are also protected from drainage via perpetual landowner easements.



History: Lake Andes is a natural, intermittent prairie lake, whose water supply depends entirely upon annual run-off. Lake levels periodically rise and fall, with the entire lake going dry approximately once every 20 years.

The lake, historically used as a campsite by Sioux hunting parties pursuing the migrant buffalo herds and waterfowl flocks, was actually named after a French trader whose nickname was Andy. "Andy's Lake" was given its present title following the establishment, in 1900, of a town and post office.

The refuge was established in 1936 by a Presidential Executive Order which authorized the purchase of 365 acres of land at Owens Bay. Subsequent land purchases have been made on a continuing basis.

In 1939, the largest single easement ever taken from the State of South Dakota conveyed to the United States Fish and Wildlife Service, the right to flood the meandered lake bed and maintain a closed refuge for migratory birds and other wildlife.

A 1958 Congressional Amendment to the Duck Stamp Act, plus additional authorization of funds in 1961 under the Wetlands Loan Act, provided the necessary legislation to carry on an accelerated wetlands habitat preservation program in South Dakota.

Cover: a mallard brood - Drawing, I. Grenier. Upper left: a young ruddy duck - U. S. Fish and Wildlife Service photo by C. J. Henry. Lower left: a pair of ring necked pheasants - U. S. Fish and Wildlife Service photo by Kent Olson. Center: Canada goose landing - Drawing, I. Grenier. Upper right: Upland sandpiper - Drawing, I. Grenier. Lower right: small group with wetlands manager learning about wetlands areas - U. S. Fish and Wildlife Service photo by Kent Olson.



Management: Two dikes separate Lake Andes into three management units, however the lack of a permanent water supply allows very little water level manipulation. The Owens Bay marsh, fed by the waters from a free flowing artesian well, is managed using a system of periodic water level drawdowns to produce optimum waterfowl brood rearing conditions, plus the production of natural waterfowl food.

A January, 1973 outbreak of Duck Virus Enteritis killed 40,000 ducks and geese using the open water of Owens Bay. This unfortunate die-off prompted drastic changes in the Unit's management program, including the shutdown of the artesian well during the winter months and the elimination of food crops previously grown for the wintering flocks of ducks and geese. Over 350 acres of cropland were re-seeded to native grass nesting cover and the area is now managed primarily for the production of waterfowl and various species of water birds.

Several small food plots and a series of shelterbelts have been planted at Owens Bay and received extensive use by resident white-tailed deer, ring-necked pheasants, plus a wide variety of small mammals and song birds.

Nesting cover on the waterfowl production areas is managed by periodic grazing, haying, or controlled burning programs. Annual surveys determine waterfowl response to the various management techniques. Small check dams are often constructed to create additional marshland, while food plots and shelterbelts are planted on many of the areas.

Public Opportunities: Wildlife observation, hunting and fishing are the major attractions of Lake Andes during the wet years. Visitors interested in wildlife observation can expect to find nearly any species of bird or mammal indigenous to the prairie pothole country. The spring and fall migrations offer the greatest diversity of species, however colony-nesting eared grebes, black terns, and Franklin's gulls create a summer spectacular for bird watchers. When suitable water depths are present, the entire lake offers good fishing for northern pike, perch, and bass. Although only the center unit of Lake Andes is open to hunting, duck and goose hunters find multitudes of waterfowl in the marshy habitat, while pheasant and deer hunters pursue their quarry along the wooded perimeter of the lake.

Continued on back.



A picnic area located at the northwest corner of the Owens Bay unit is open during daylight hours from April 15 through October 15. A mile-long nature trail originates at the picnic area and meanders along the wooded lake shore, across marshlands in the Prairie Pond complex, and returns via the native grass uplands. Early morning or late afternoon walks along the nature trail offer visitors views of elusive white-tailed deer, gaudy ring-necked pheasant, broods of blue-winged teal, or bobolinks singing from territorial perches in the grassland. Guided tours are available to organized groups, however prior arrangement must be made with the refuge manager.

The waterfowl production areas are open to the public on a year-round basis, although hunting is restricted to applicable South Dakota season dates and bag limits. Overnight camping and fires are prohibited on all waterfowl production areas.

Vanishing Prairies: Three distinct vegetative zones are found throughout the Wetland Management District. The tall grass prairie zone encompasses the four eastern counties, with dominant grasses being big bluestem, indiangrass, little bluestem, and switchgrass. The tall grass/mixed prairie transition zone covers the central portion of the District and hosts stands of western wheatgrass, big bluestem, side-oats grama, and porcupine grass. The western portion of the District falls within the mixed grass prairie zone, with dominant grasses being western wheatgrass, blue grama, and needle and thread grass.

As the trend toward increased agri-business continues, the destruction of the native prairie and its glacier-built potholes seems inevitable. The waterfowl production areas within the Lake Andes, Wetland District will serve as monuments to a forgotten era, where future generations can still reflect upon the uniqueness of the prairie environment. The sight of waist-high grasses waving in the wind, complemented by a beautiful array of prairie wildflowers, plus a ragged wedge of ducks passing over a cattail-lined pothole, will form indelible memories of that which once flourished across South Dakota.

*For further information contact the Refuge Manager,
Lake Andes NWR and Wetlands Management District,
Lake Andes, South Dakota.*

U.S. Fish and Wildlife Service
Department of the Interior

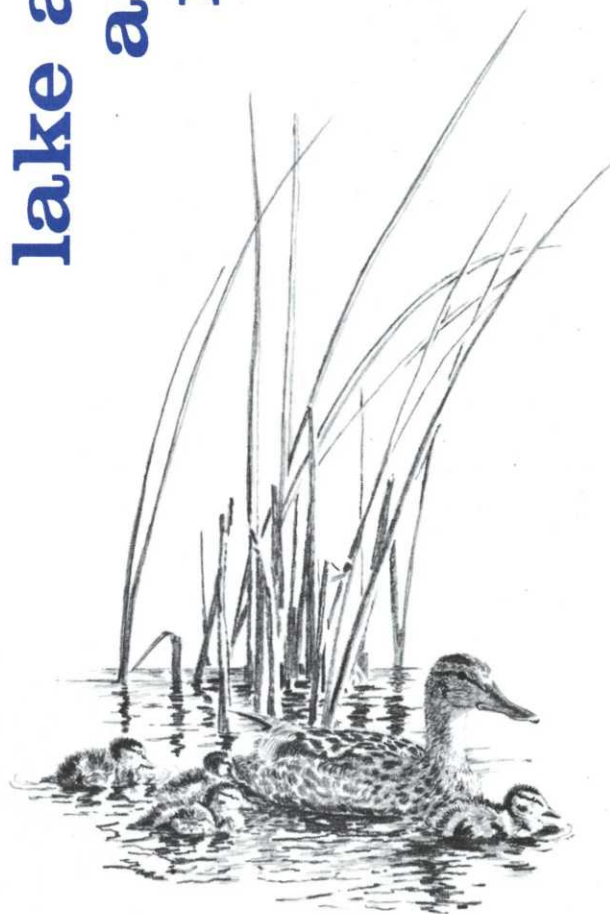


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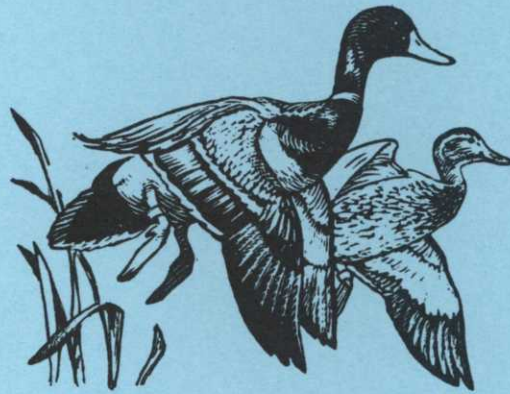


October, 1978

lake andes refuge and wetlands management district



Birds of the



Lake Andes

**NATIONAL WILDLIFE
REFUGE COMPLEX**

LAKE ANDES, SOUTH DAKOTA

The Lake Andes Complex consists of the Lake Andes National Wildlife Refuge, the Karl E. Mundt National Wildlife Refuge and the Lake Andes Wetland Management District.

Lake Andes NWR is managed as a waterfowl production refuge and contains the 4,700 acre lake, plus the Owens Bay and Andes Creek Units, 832 and 410 acres respectively. The Karl E. Mundt NWR provides a sanctuary for a wintering bald eagle flock, protecting 780 acres of river bottomland roost sites with an additional 300 acres of woodlands protected by perpetual easement. Over 20,000 acres of waterfowl habitat are preserved and managed within the 20 county Lake Andes WMD. The District also contains 83,000 wetland acres protected from drainage by perpetual easements with the landowners.

The best opportunities for bird watching on the Lake Andes Refuge and District are between April 1 and October 15. The Karl E. Mundt Refuge is closed to the public to prevent disturbance of the wintering bald eagles. The bald eagles can be easily observed from adjacent Corps of Engineers land from November 1 to March 1.

BIRDS OF THE LAKE ANDES NWR COMPLEX

This bird list contains 213 species that have been recorded on or near the Lake Andes NWR Complex. The list is in accordance with the 6th A.O.U. Check-list. New names are used where applicable. Species known to nest on the Complex are marked with a •. Season and abundance are coded as follows:

- S—Spring—March-May
- S—Summer—June-August
- F—Fall—September-November
- W—Winter—December-February

- a—abundant
- c—common
- u—uncommon
- o—occasional
- r—rare

	S	S	F	W
LOONS				
— Common Loon	o			
GREBES				
— • Pied-billed Grebe	c	u	a	
— Horned Grebe	u		u	
— Red-necked Grebe	o		o	
— • Eared Grebe	u	u	u	
— • Western Grebe	u		u	
PELICANS				
— American White Pelican	c	c	c	
CORMORANTS				
— Double-crested Cormorant	c	c	c	
HERONS AND BITTERNS				
— • American Bittern	u	u	u	
— Least Bittern	u	u	u	
— Great Blue Heron	c	u	c	
— Great Egret		o		
— Snowy Egret		o		
— Little Blue Heron		o		
— Green-backed Heron (Green Heron)	o	o	o	
— • Black-crowned Night-Heron	c	c	c	
— Yellow-crowned Night-Heron	r	r	r	
IBISES				
— White-faced Ibis	o	o	o	
WATERFOWL				
— Tundra Swan (Whistling Swan)	o		o	
— Greater White-fronted Goose	c		c	
— Snow Goose	u		u	
— Canada Goose	u	a	u	a
— • Wood Duck	o	r	o	r
— • Green-winged Teal	a	u	a	o
— American Black Duck	o		o	o
— • Mallard	a	u	a	a
— • Northern Pintail	a	u	a	o
— • Blue-winged Teal	a	a	a	
— Cinnamon Teal	o	o	o	
— • Northern Shoveler	c	c	c	
— • Gadwall	a	c	a	r
— • American Wigeon	a	o	a	o
— • Canvasback	c	o	c	
— • Redhead	c	o	c	
— • Ring-necked Duck	c		c	r
— Greater Scaup	o		o	
— • Lesser Scaup	a	o	a	r
— Oldsquaw			r	
— White-winged Scoter	o		o	
— Common Goldeneye	u	o	u	o
— Bufflehead	u		u	r
— Hooded Merganser	o		o	
— Common Merganser	u		c	
— Red-breasted Merganser	u		u	
— • Ruddy Duck	c	u	c	

	S	S	F	W
VULTURES				
— • Turkey Vulture	o	o	o	
HAWKS AND FALCONS				
— Osprey	o	r	o	
— Bald Eagle	o		o	a
— • Northern Harrier (Marsh Hawk)	c	c	c	r
— Sharp-shinned Hawk	o		o	
— Cooper's Hawk	o		o	
— Northern Goshawk	o		o	
— Red-shouldered Hawk	o	u	o	
— Broad-winged Hawk	o	u	o	
— • Swainson's Hawk	o	a	o	
— • Red-tailed Hawk	o	u	o	
— Ferruginous Hawk	o		o	o
— Rough-legged Hawk	o	r	o	c
— Golden Eagle				o
— • American Kestrel	c	c	c	
— Merlin	o		o	
— Peregrine Falcon	o		o	
— Prairie Falcon	o		o	
GALLINACEOUS BIRDS				
— • Gray Partridge	u	u	u	u
— • Ring-necked Pheasant	a	a	a	a
— • Greater Prairie-Chicken	o	o	o	o
— • Sharp-tailed Grouse	o	o	o	o
— • Wild Turkey	u	u	u	u
— • Northern Bobwhite (Common Bobwhite)	u	u	u	u
RAILS				
— Virginia Rail	o	o	o	
— • Sora	u	u	u	
— • American Coot	c	c	c	r
CRANES				
— Sandhill Crane	u		u	
SHOREBIRDS				
— Black-bellied Plover	o		o	
— Lesser Golden-Plover (American Golden Plover)	o		o	
— Semipalmated Plover	c	o	c	
— Piping Plover	o	o		
— • Killdeer	c	c	c	
— American Avocet	u	o	u	
— Greater Yellowlegs	c	o	c	
— Lesser Yellowlegs	c	o	c	
— Solitary Sandpiper	o		o	
— Willet	o	o	o	
— • Spotted Sandpiper	o	o	o	
— • Upland Sandpiper	o	o	o	
— Hudsonian Godwit	o		o	
— Marbled Godwit	u	u	u	
— Ruddy Turnstone	o		o	
— Sanderling	o		o	
— Semipalmated Sandpiper	o	o	o	
— Least Sandpiper	c	o	u	

	S	S	F	W
— White-rumped Sandpiper	o	o	o	
— Baird's Sandpiper	u	o	u	
— Pectoral Sandpiper	u	o	u	
— Stilt Sandpiper	o	o	o	
— Buff-breasted Sandpiper	o	o	o	
— Long-billed Dowitcher	c	o	c	
— Common Snipe	o	r	o	
— Wilson's Phalarope	c	o	u	
— Red-necked Phalarope	o		u	
GULLS AND TERNS				
— Franklin's Gull	c	a	c	
— Bonaparte's Gull	o		o	
— Ring-billed Gull	u	u	u	
— California Gull	u		u	u
— Herring Gull	u	o	u	r
— • Common Tern	c	c	o	
— • Forster's Tern	u	u	u	
— Least Tern	o	o		
— • Black Tern	c	a	c	
DOVES				
— Rock Dove	o	o	o	o
— • Mourning Dove	a	a	a	r
CUCKOOS				
— • Black-billed Cuckoo	o	o		
— • Yellow-billed Cuckoo	o	o		
OWLS				
— • Eastern Screech-Owl	c	c	c	c
— • Great Horned Owl	c	c	c	c
— Snowy Owl				u
— • Burrowing Owl	o	o	o	o
— Long-eared Owl	o	o	o	r
— Short-eared Owl	o	o	o	r
GOATSUCKERS				
— • Common Nighthawk	u	u	o	
SWIFTS				
— Chimney Swift		c		
HUMMINGBIRDS				
— Ruby-throated Hummingbird	o			
KINGFISHERS				
— Belted Kingfisher	u	u	u	
WOODPECKERS				
— • Red-headed Woodpecker	c	c	c	
— Red-bellied Woodpecker	u	u	u	u
— Yellow-bellied Sapsucker	u	o	u	
— • Downy Woodpecker	u	o	u	c
— • Hairy Woodpecker	u	o	u	c
— • Northern Flicker (Common Flicker)	c	c	c	
FLYCATCHERS				
— Olive-sided Flycatcher	o		o	
— Least Flycatcher	o			

