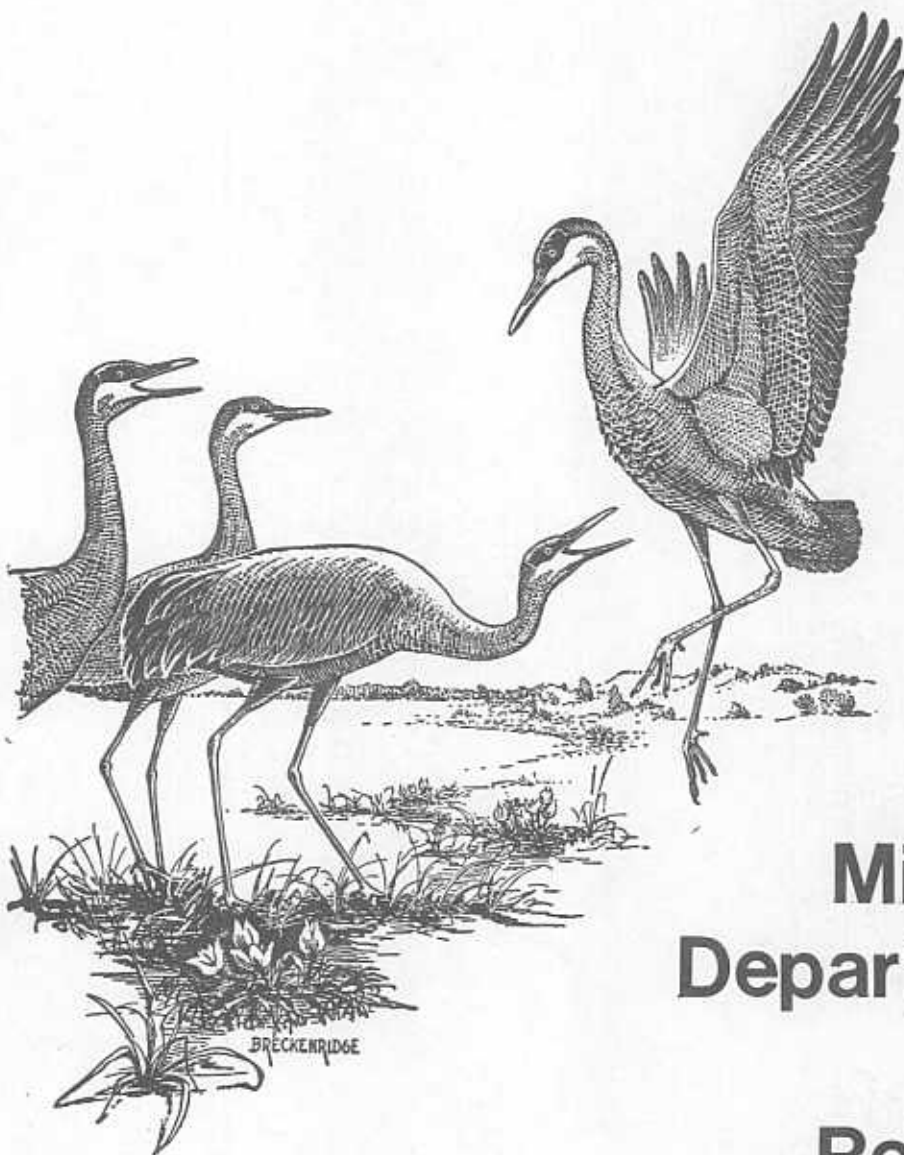


MINNESOTA SANDHILL CRANE REPORT

1979



Minnesota
Department of
Natural
Resources

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1979

by

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Minnesota Department of Natural Resources

The sandhill crane is one of Minnesota's most interesting nongame birds, yet it is a species about which little has been known until recent years. One of the first goals of the DNR's nongame program when it was created in 1977 was to determine the current status and distribution of the sandhill crane so that appropriate research and management activities could be planned.

Methods

Observation cards and an explanatory letter are shown in Appendix I and have been distributed annually since 1977 to volunteer observers throughout the state. Most observers were affiliated with the Minnesota Department of Natural Resources, the U.S. Fish and Wildlife Service, and several other private and public conservation groups. After filling out cards, observers mailed them to the nongame supervisor in St. Paul. This report summarizes the results of the data submitted for 1979 and also includes the data for 1977 and 1978.

RESULTS

Cooperation from crane observers has continued to be excellent in 1979. Table 1 is a summary of general crane observation statistics for 1977 through 1979.

Table 1. Crane Observation Statistics from 1977 through 1979.

	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>3-Year Total</u>
Number of Observers	56	60	47	163
Number of Crane Cards	133	147	114	374
Number of Cranes Reported	4182	1545	5931	11,658

The large number of cranes observed was primarily the result of several large flocks seen in Norman County at a major staging area near Borup. It is therefore important to evaluate the records of cranes seen in Minnesota during the breeding season from May 1 through August 31.

From 1977 through 1979, the number of cranes reported from May through August has been 656, 498, and 236, respectively.

The total number of sandhill cranes breeding in the state was at least 75 pairs which produced at least 19 young. In 1977, at least 76 pairs produced 61 young and in 1978, at least 87 pairs produced 46 young. A total of 201 nonbreeding birds were seen in 1977, 277 in 1978, and 55 in 1979.

By plotting the location of the breeding season sightings (May through August) from 1977-1979, it is possible to identify the approximate breeding range of sandhill cranes in Minnesota. The distribution is shown in Figure 1. There are two separate populations -- a northwest population and an east central population. Summer records now exist for 27 townships in the east central population and for 78 townships in the northwest. Eleven new townships were added to the range map in 1979.

By reviewing the crane observation cards for each county in each population, it is possible to develop a minimum estimate for the number of cranes breeding in the state. These figures are shown in Tables 2 and 3. The determination of these estimates is admittedly subjective for some observations when there is a lack of evidence to conclude whether cranes are breeding pairs or nonbreeders. However, most observers comment on a pair's suspected breeding status, or on the location of cranes with respect to known breeding territories. In 1979, approximately 50 breeding pairs were observed in the northwest and 25 pairs were seen in the east central region. Fifteen young were seen in the northwest and four young were counted in the east central region. Fewer flocks of nonbreeders were reported in 1979 -- only 39 in the northwest and 16 in the east central region.

Table 2. Summary of resident sandhill cranes observed in northwest Minnesota in 1977, 1978 and 1979, by county.

County	Northwest Population								
	Breeding Pairs			Young			Nonbreeders		
	1977	1978	1979	1977	1978	1979	1977	1978	1979
Becker	0	0	0	0	0	0	0	0	0
Beltrami	17	4	3	18	4	0	55	3	9
Lake of the Woods	6	7	9	2	2	5	0	16	1
Mahnomen	0	0	0	0	0	0	0	0	0
Marshall	15	26	27	7	11	2	23	16	20
Kittson	1	3	3	1	5	4	15	75	0
Koochiching	0	0	1	0	0	0	0	0	2
Pennington	1	4	1	2	1	0	0	1	2
Polk	2	1	2	1	1	3	12	0	5
Roseau	<u>19</u>	<u>23</u>	<u>4</u>	<u>18</u>	<u>13</u>	<u>1</u>	<u>84</u>	<u>158</u>	<u>0</u>
	61	68	50	49	37	15	189	269	39

Table 3. Summary of resident sandhill cranes observed in east central Minnesota in 1977, 1978 and 1979 by county.

County	East Central Population								
	Breeding Pairs			Young			Nonbreeders		
	1977	1978	1979	1977	1978	1979	1977	1978	1979
Anoka	2	3	8	2	1	0	6	1	7
Aitkin	2	4	3	3	3	1	0	2	2
Chisago	0	0	0	0	0	0	0	0	0
Kanabec	1	1	0	0	0	0	0	0	0
Mille Lacs	2	0	1	2	0	2	0	0	0
Morrison	5	0	6	3	0	0	0	0	2
Pine	2	6	3	1	0	0	0	0	2
Sherburne	<u>1</u>	<u>5</u>	<u>4</u>	<u>1</u>	<u>5</u>	<u>1</u>	<u>6</u>	<u>5</u>	<u>3</u>
	15	19	25	12	9	4	12	8	16

Statewide Sandhill Crane Summary - Minimum

<u>County</u>	<u>Est. Breeding Pairs</u>	<u>Est. Young</u>	<u>Est. Nonbreeders</u>
Anoka	2	2	6
Aitkin	2	3	2
Becker	0	0	0
Beltrami	17	16	55
Chisago	0	0	2
Kanabec	1	0	0
Lake of the Woods	6	2	0
Mahnomen	0	0	0 (possible)
Marshall	15	7	23
Mille Lacs	1	1	0
Morrison	2	3	0
Kittson	*	*	*
Pine	1	0	0
Sherburne	1	1	6
Pennington	1	2	0
Polk	2	1	9
Roseau	<u>17</u>	<u>14</u>	<u>50</u>
	68	52	153

*no estimate available

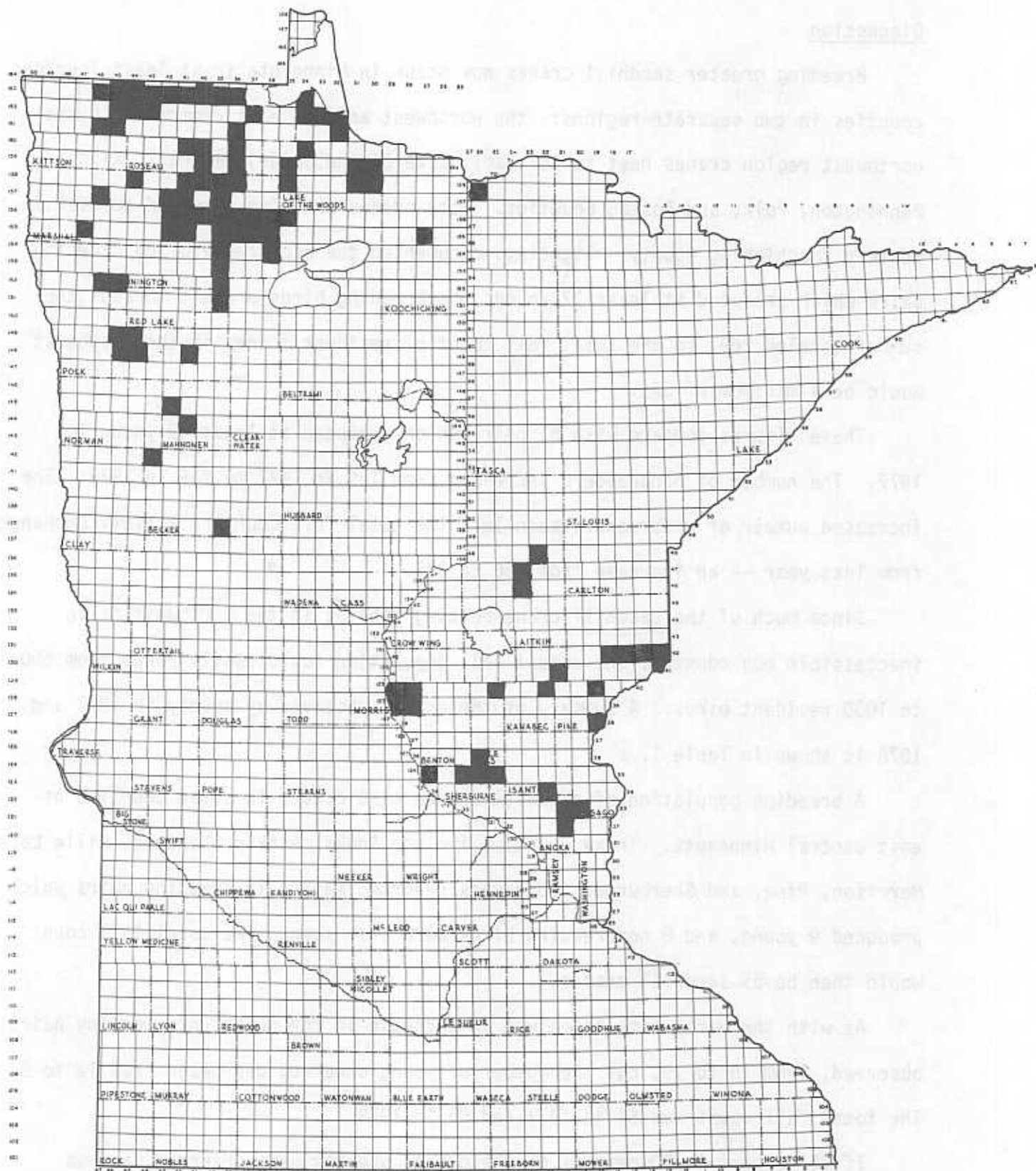


Figure 1. Location of sandhill cranes observed in Minnesota from May through August, 1977, 1978 and 1979.

Eighteen brood sightings were reported in 1979. Eighteen pairs of cranes were seen with 27 young. Two pairs were seen with three colts each, and two pairs were seen with two colts each. At the Agassiz National Wildlife Refuge, four pairs were known to have hatched seven young.

Habitat Use

Crane observation cards contained space and instructions for reporting both the cover type and land use for each observation. See Appendix I. Data submitted were divided into four seasonal periods -- March through April, May through July, August, and September through October. Results of the habitat use analysis are given in Table 4. By combining the habitat use data from 1977 to 1979, it is possible to get a general picture of the changing habitat needs of sandhill cranes through the year. Table 4 represents habitat data for 9381 cranes seen during the past 3 years.

March through April

There have been 5814 cranes reported during March and April of 1977-79. The largest percentage, 59.1, were in corn stubble. The other three main categories were small grain fields -- 14.0 percent, grasslands -- 16.3 percent, and wet meadows -- 8.8 percent. Marshes accounted for only 1.2 percent, and other categories comprised the remaining 0.6 percent.

May through July

A total of 590 cranes have been reported from May through July during the past three years. The largest percentage, 27.5 percent, was seen on grasslands, and the second highest percentage, 26.9, was seen in marshes. Small grain fields accounted for 22.4 percent of the cranes sighted, wet meadows comprised 13.7 percent, corn stubble - 4.2 percent, and other - 5.3 percent. The most dramatic change in habitat use from spring to summer was the drop in use of corn stubble, the increase in marshes and wet meadows for nesting, and the increase in use of grasslands for feeding. Of 42 cranes seen in marshes during

this period where the marsh classification was identified, 5 were in type 1 wetlands, 12 were in type 2 wetlands, 20 were in type 3 wetlands, and 5 were in type 4 wetlands.

August

A substantial change occurs in sandhill crane habitat use in August. After hatching and rearing cranes in wetlands, the cranes become more conspicuous by flying to small grain fields to feed prior to migration. Of 698 cranes seen in August during the 3-year period for which the habitat was noted, 59.3 percent were in small grain fields, 21.8 percent were in grasslands, 8.7 percent were in marshes, 8.0 percent were in wet meadows, and 2.2 percent were in other categories. The most commonly used fields used were wheat, barley, and oats. Sightings in marshes decreased from 26.9 percent in May-July to 8.7 percent, and sightings in wet meadows decreased from 13.7 percent to 8.0 percent during the same period.

September - October

Large numbers of cranes appear in September-October as both Canadian and Minnesota birds stage and migrate through the state. A total of 3030 cranes have been counted during the three year period and their habitat recorded.

Most use, 77.2 percent, was in small grain fields, while 20.9 percent of the cranes were seen in grasslands and 1.9 percent were in marshes. Again, wheat, oats, and barley fields were the main crops affected by cranes during this period.

Migration Phenology

Now that three years of crane data have been accumulated, it is possible to determine the phenology of the annual crane migration. This composite data is in Table 5. The earliest date on which cranes have been observed in the east central region is March 26, and the earliest dates on which cranes have

Table 4. Number of Sandhill Cranes Observed by Habitat Type and Season, 1977-1979.

	Mar-Apr			May-July			August			Sept.-Oct.			Total		
	1977	1978	1979	1977	1978	1979	1977	1978	1979	1977	1978	1979	1977	1978	1979
1. <u>Row Crops</u>															
Corn stubble	531	1	2906	0	7	18	0	0	0	0	0	0	531	8	2924
2. <u>Small Grain</u>															
Wheat	300	79	127	23	15	10	11	123	5	754	51	0	1088	268	142
Oats	0	2	0	5	0	0	112	4	0	750	0	0	867	6	0
Other	7	79	215	25	37	17	14	138	7	0	10	21	46	264	260
Subtotal	307	160	342	53	52	27	137	265	12	1504	61	21	2001	538	402
3. <u>Grassland</u>															
Alfalfa	8	6	177	13	38	9	9	43	0	600	3	0	630	90	195
Prairie	0	103	651	16	9	2	0	8	0	0	30	0	16	150	653
Improved pasture	0	1	0	2	6	0	53	3	0	0	0	0	55	10	0
Summer fallow (old field)	2	1	0	9	49	9	18	0	9	0	0	0	29	50	18
Subtotal	10	111	828	40	102	20	80	54	18	600	33	0	730	300	866
4. <u>Wet Meadow</u>	503	5	4	25	32	24	45	11	0	0	1	0	573	49	28
5. <u>Marsh</u>															
Type 1	0	4	0	0	5	0	15	0	0	0	0	0	15	9	0
Type 2	0	0	0	9	0	3	4	0	0	8	0	0	21	0	3
Type 3	0	0	8	6	2	12	0	3	0	0	0	0	6	5	20
Type 4	0	3	0	0	3	2	1	0	0	0	0	0	1	6	2
Unspec.	11	41	4	97	16	4	31	3	4	43	0	5	182	60	17
Subtotal	11	48	12	112	26	21	51	6	4	51	0	5	225	80	42
6. <u>River</u>	1	0	0	2	5	0	3	0	0	0	0	0	6	5	0
7. <u>Other</u>	0	30	0	11	3	17	10	0	2	0	0	0	21	33	19
Total	1363	355	4092	243	227	127	326	336	36	2155	95	26	4087	1013	4281

Table 5. Sandhill Crane Spring Migration Phenology, 1977-79.

Date	Number of Birds Counted	
	East Central Region	West and Northwest Region
March 26	(Heard, 1977, Sherburne NWR)	
	(Heard, 1978, Carlos Avery WMA)	
March 27	3 (1977, Sherburne NWR)	
March 28	3 (1978, Carlos Avery WMA)	
March 31		28 (1978, Ottertail Co.)
April 1-2	0	103 (1977, Wilkin Co.)
April 3-4	5	0
April 5-6	0	0
April 7-8	1	72 { (1977, Polk Co.) - 2 (1978, Norman Co.) - 70
April 9-10	1	8 { (1979, Marshall Co.) - 5 (1978, Roseau Co.) - 3
April 11-12	13	20
April 13-14	8	3396
April 15-16	7	1
April 17-18	5	3831
April 19-20	2	205
April 21-22	0	8
April 23-24	0	28
April 25-26	1	179
April 27-28	7	35
April 29-30	3	10
	59	7924

been observed on nesting areas of the northwest is April 10. Migrant cranes were reported in Norman County as early as April 7. The peak of migration in the east central area was from April 11-18, and the peak of migration in the west and northwest was from April 13-18.

The fall migration data for 1977-79 is summarized in Table 6. Of 28 cranes seen in the east central region on or after September 1, 16 (57.1 percent) were seen from September 1-15, and 23 (82.1 percent) were seen during the entire month of September. One of the five remaining cranes seen in October was a crippled juvenile. The latest fall sightings of cranes in the east central region were of 2 birds in Anoka County on October 22, 1977, and 1 bird in Anoka County on October 23, 1977.

Of 3501 cranes reported in the northwest after September 1, the peak of sightings was from September 1-15, when 2465 (70.4 percent) of the cranes were seen. During the month of September, 3032 (86.6 percent) of all cranes seen during the September-October period were reported. Only 12.6 percent of all cranes reported during the fall migration were seen from October 1-15, and 0.8 percent of the fall count occurred from October 16-30. The latest fall sightings in the northwest were October 24 (Marshall County, 1977, 20 birds), October 25 (Marshall County, 1979, 2 birds) and October 27 (Becker County, 1977, 4 birds).

Land Ownership

A summary of the land ownership status of Minnesota's sandhill crane habitat is given in Table 7. The amount of this land in public ownership is the key to the future of sandhill cranes in Minnesota. Intensive clearing and draining of privately owned marginal lands -- crane habitat -- in northwest Minnesota -- mean that population declines can be anticipated there in a few more years. It appears that the most important habitats which need preservation are the type 2 and type 3 wetlands which serve as nesting areas.

Table 7. Land Ownership of Locations where Sandhill Cranes were Sighted, 1977-79.

<u>Public or Protected Lands</u>	<u>Total Cranes</u>			<u>Percent of Total</u>		
	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>
Federal NWR	47	31	29	11	8	13
State WMA	122	222	86	29	54	38
Trust Fund Lands	12	3	0	4	1	0
Conservation Area Lands	39	1	0	9	Tr.	0
TNC Lands	19	2	2	5	Tr.	1
State Forest Lands	0	2	2	0	Tr.	1
	<u>239</u>	<u>261</u>	<u>119</u>	<u>58</u>	<u>64</u>	<u>53</u>
<u>Private Lands*</u>						
Adjacent to WMA	77	13	26	18	3	12
Adjacent to State Park	0	0	5	0	0	0
Adjacent to Trust Fund Lands	3	2	0	1	Tr.	2
Adjacent to Conservation Area Lands	13	7	7	3	2	3
Other Private Land	<u>84</u>	<u>128</u>	<u>67</u>	<u>20</u>	<u>31</u>	<u>30</u>
Private Land Subtotal	<u>177</u>	<u>150</u>	<u>105</u>	<u>42</u>	<u>36</u>	<u>47</u>
TOTAL	416	411	224	100	100	100

*"Adjacent" means cranes were within 1 mile of the types of land mentioned.

Public or protected lands accounted for 119 (53 percent) of 224 resident cranes seen in 1979 for which land ownership could be determined. Included in this total were 86 cranes (38 percent) on state-owned Wildlife Management Areas, 29 (13 percent) on federally owned National Wildlife Refuges and Waterfowl Production Areas, 2 (1 percent) on The Nature Conservancy lands, and 2 (1 percent) on State Forest lands.

Sightings on private lands accounted for 105 (47 percent) of the year's total. There were 26 (12 percent) seen on private lands within one mile of wildlife management areas, 5 (2 percent) seen on private lands within one mile of Zippie Bay State Park, 7 (3 percent) seen within one mile of conservation area lands, and 67 (30 percent) on other private lands.

DISCUSSION

The volunteer program for gathering baseline data on sandhill cranes has been an effective technique for learning about sandhill cranes in Minnesota as well as to stimulate interest in the species. Data from this survey was used for preparation of an article entitled "Last Call for Cranes" in the May-June issue of the Minnesota Volunteer magazine.

Based on the 374 observations that have been submitted during the past three years, it is conceivable that the statewide population is at least 300 nesting pairs, with 75 pairs in the east central population and at least 225 pairs in the northwest. It appears that the east central population is probably stable or possibly increasing, but the northwest population is likely to decline as habitat continues to be destroyed there.

Minnesota also serves as an important spring and fall migration staging area for transient cranes, particularly in Norman County. While it is known that the east central residents migrate to Florida wintering grounds, the wintering sites for the northwest residents and the transients are unknown. They need to be determined by future research.

The range of the northwest population appears to be about 8,700 square miles and the range of the east central population appears to be about 5,800 square miles. The total range in the state is approximately 14,500 square miles. Cranes have actually been observed in townships which account for 3,780 square miles of that estimated range.

One of the main considerations in the habitat use category is the importance of type 2 and type 3 wetlands. Traditionally, acquisition of wetlands for wildlife has been concentrated on type 3 and 4 wetlands. If land is to be considered for its value to sandhill cranes, however, type 2 lands should also be considered.

Land ownership patterns continue to highlight the need for designating remaining Conservation Area and Trust Fund lands in Roseau and Marshall Counties as Wildlife Management Areas. This will benefit sandhill cranes as well as many other kinds of wildlife that will surely decline unless positive steps are taken to protect remaining wildlands in the northwest.

This will also provide the additional potential of protecting habitat that one day may support whooping cranes. Manitoba is interested in restoring whooping cranes by switching whooper eggs into sandhill crane nests. The Manitoba crane range is contiguous with that range in Minnesota. Therefore, if the project is successful, whooping cranes could be expected to pioneer into this state eventually.

In the northwest, the most important publicly-owned crane habitats are in the Roseau River Wildlife Management Area, the Red Lake Wildlife Management Area, Beltrami Island State Forest, Eckvold Wildlife Management Area, and Agassiz National Wildlife Refuge.

The most important publicly-owned crane habitats for the east-central population are the Carlos Avery Wildlife Management Area, Mille Lacs Wildlife Management Area, Rice Lake National Wildlife Refuge, Sherburne National

Wildlife Refuge, and the Grayling Wildlife Management Area. Other cranes are found in the vicinity of the St. Croix State Forest, Rice-Skunk Wildlife Management Area, and Kunkel Wildlife Management Area. Several other breeding pair territories are found on private lands in Morrison County and Pine County.

SUMMARY

With the advent of nongame funding in 1981 from state and federal sources, it will finally be possible to utilize the crane data collected by volunteers to help implement research and management activities that will preserve the status of sandhill cranes in Minnesota. It will also be necessary to evaluate the damage being done to agricultural crops by cranes so that economic damages to farmers can be minimized. This will hopefully reduce local antagonism toward this species which is caused by crop depredations.

ACKNOWLEDGMENTS

Grateful acknowledgment is extended to everyone who contributed sandhill crane cards in 1979 and resource agency managers who helped promote this effort. A list of persons who submitted sandhill crane cards is included in Table 8.

Table 8. Persons who Submitted Crane Observation Cards

Bryce Anderson	Joe Ludwig
Marty Anderson	Gladwin Lynne
Larry Bernhoft	Ann Magney
John Borowske	Larry Nelson
Carlson	Dave Paulley
George Davis	Lee Pfannmueller
Dave Dickey	Dan Rhode
K. Eidsmoe	Walt Rohl
Barb Eikum	Paul Rundell
Al Green	James Schneeweis
Mike Haws	Sherburne National Wildlife Refuge
Ed Hibbard	Neal Slik
Larry Hanson	R. Slick
Jay N. Johnson	John Stanton
Tom Keefe	Keith Steva
Lloyd Knudson	Shelley Steva
Marilu Koschak	Dick Tuszynski
Gary Lane	Joe Voller
Bob Ludwig	John Voller

DEPARTMENT Natural Resources - Wildlife*Office Memorandum*

TO : DNR Field Personnel and other Cooperators

DATE:

FROM : Carrol Henderson

PHONE: 3344

SUBJECT: Greater Sandhill Crane Observation Cards

One of the largest but least understood birds in Minnesota is the greater sandhill crane. A generation ago, it was extremely rare as a nesting species, but in recent years it has appeared to be making a modest comeback in a broad region that extends all the way from Roseau County to Anoka and Pine Counties.

Determination of the current distribution and status of the greater sandhill crane in Minnesota is one of the top priorities of the DNR's new non-game wildlife program. Your participation is critical to the success of this survey.

Please fill out a sandhill crane observation card for each occasion that cranes are seen or heard. Under the remarks section, you should also report the land ownership (federal, state, county, private) and the name of the landowner if nesting birds are involved. Cards should be filled out through each season and submitted to the address on the back of the card May 1, September 1, and December 1 of each year.

Negative information is also important. If you are certain that there are no nesting cranes in some townships or counties of your work area, list them and submit them to the non-game wildlife supervisor.

Sightings or nesting records from previous years should also be reported if they were not reported to the Minnesota Ornithologists' Union previously.

Periodic reports will be prepared concerning this survey and distributed to field personnel. Hopefully, it will help everyone understand how the few moments necessary to fill out these forms are an important contribution toward the continued recovery of this species in Minnesota.

CLH:pmt

		COUNTY										TWP.										RGE.										SECTION									
		1		7		4		2		1		7		4		2		1		7		4		2		1		7		4		2		1							
1		SANDHILL CRANE OBSERVATION CARD																																							
2		Minnesota Dept. of Natural Resources																																							
3		DATE _____ TIME _____																																							
4		COUNTY _____																																							
5		SEC. _____ TWP. _____ RGE. _____																																							
6		CRANES OBSERVED:																																							
7		ADULTS _____																																							
8		JUVENILES _____																																							
9		UNKNOWN _____																																							
10		TOTAL _____																																							
11		COVER TYPE AND LAND USE (SEE BACK)																																							
12		OBSERVATION MADE FROM:																																							
13		CAR/TRUCK _____																																							
14		AIRCRAFT _____																																							
15		BOAT OR CANOE _____																																							
16		ON FOOT _____																																							
17		OTHER _____ (Specify)																																							
18		REMARKS (Include whether birds were on breeding area or migrating)																																							
19		OBSERVER: _____																																							
20		HEADQUARTERS: _____																																							

Cover Types*

1. Row crop — give crop
2. Small grain — give crop
3. Hayfield/Alfalfa
4. Upland prairie
5. Improved pasture
6. Old field
7. Fen/wet meadow
8. Marsh-type 1, 2, 3, or 4
9. Open lake
10. River
11. Other — give details

Land Use

- A. Natural state
- B. Recently burned
- C. Grazed
- D. Mowed
- E. Disked
- F. Plowed
- G. Harvested
- H. Other — give details

*Give dominant plant species and note presence of shrubs, stands of phragmites, or aspen islands.

RETURN COMPLETED FORMS ON MAY 1, AUGUST 1, AND DECEMBER 1 TO THE NON-GAME SUPERVISOR, SECTION OF WILDLIFE, DEPARTMENT OF NATURAL RESOURCES, 390 CENTENNIAL BUILDING, ST. PAUL, MINNESOTA 55155.