

February 2006

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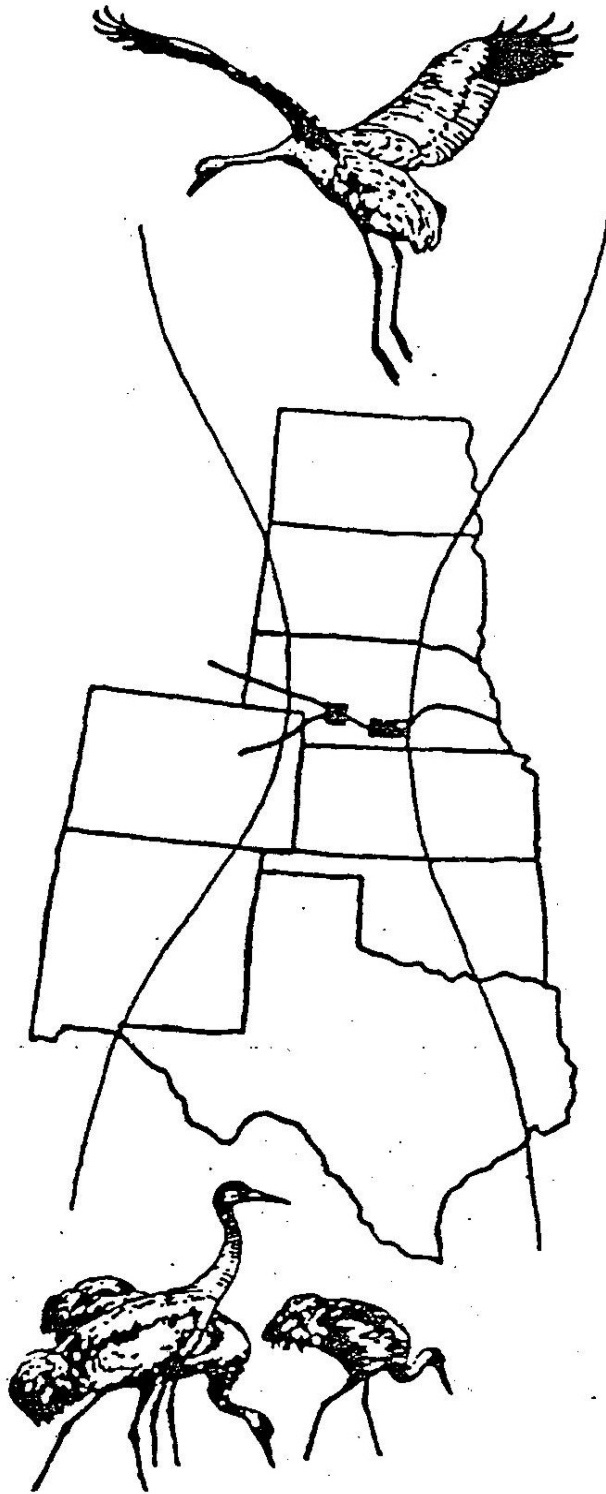
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COORDINATED SPRING SURVEY OF MID-CONTINENT SANDHILL CRANES

2005



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COORDINATED SPRING SURVEY OF MID-CONTINENT SANDHILL CRANES

2005 TOTAL: 530,600
2005 AERIAL TRANSECT: 491,900
THREE-YEAR AVERAGE (2003-05): 422,100
SURVEY DATES: 5 - 25 March 2005

SURVEY PERSONNEL:

Aerial Survey

Observer/pilot: John Solberg, USFWS, DMBM, Bismarck, ND
Observer: Jeff Drahota, USFWS, Rainwater Basin WMD, Kearney, NE
Photographer: Rich Walters, NGPC, Kearney, NE

Ground Surveys (State Coordinators)

North Dakota: Mike Szymanski, NDGFD, Bismarck, ND
South Dakota: Spencer Vaa, SDGFP, Brookings, SD
Nebraska: Mark Vrtiska, NGPC, Lincoln, NE
Kansas: Helen Hands, KDWP, Great Bend, KS
Texas: Jay Roberson, TPWD, Austin, TX

ABSTRACT: The aerial transect portion of the coordinated spring survey of mid-continent sandhill cranes was conducted on 23 March in Nebraska's Platte and North Platte River valleys. The 2005 photo corrected aerial estimate was 491,900 birds. Outside the traditional aerial transect portion, observers utilized both ground and air coverage during the period 5 – 25 March. From this region, observers in the Official Survey Area (OSA) of Nebraska, Kansas, and Texas reported an additional 38,700 cranes. The 2005 total estimate (530,600) increased 18% since 2004 and is the fourth highest in twenty-four years of comparable figures. The current three-year average (2003 - 2005), from photo corrected aerial transects only, is 422,100.

METHODS: The annual target date for the coordinated survey is the 4th Tuesday of March. Survey coverage in 2005 was similar to 2004 and included changes adopted by the Central Management Unit Technical Committee (CMU) in 1985. The “traditional” aerial portion of the survey utilizes an ocular transect design with a sampling rate of approximately twenty-five percent. Sub-sampling crane flocks, using 35 mm oblique photography, allows determination of observer specific estimation correction factors which are applied to estimates from the aerial transects. Efforts outside the region of the traditional aerial transects are directed by state coordinators. Using a combination of ground and aerial coverage, these efforts focus in areas of traditional crane use/occurrence. Observations recorded outside the aerial transect region are not photo corrected. Specific details regarding personnel, photography, habitat, and weather conditions are on file in the Bismarck office of the USFWS.

RESULTS: The aerial transect component of the 2005 survey was conducted on 3/23, one day later than scheduled (weather delay). Concurrently, USGS field researchers reported that 90% (38 of 42) of their VHF radio marked cranes were present in the Platte River Valley (D. A. Brandt, USGS, pers. comm.). The 2005 total estimate of mid-continent sandhill cranes is 530,600 (Table 1), which includes 491,900 birds from aerial transects (Tables 2 and 3), and 38,700 cranes from other regions in the OSA. Correction factors, applied to aerial estimates, were calculated from photographs of 56 unique flocks (Drahota 23, Solberg 33). Observer effort in the 2005 survey is presented in Table 4. The 2005 index increased 18% from the 2004 figure and is the fourth highest of comparable record (24 years). The current three-year average (2003-2005), based on the photo-corrected Nebraska aerial portion, is 422,100 (Figure 1) and is within the management range (343,000 - 465,000) established by the CMU (Management Guidelines for Mid-Continent Sandhill Cranes, revised March 1993).

Appreciation is expressed to all coordinators, observers, and participants who assisted in the 2005 survey. Two long time contributors, Dr. Douglas Johnson (Northern Prairie Wildlife Research Center, USGS) for his statistical analysis and Mr. John Steiner (Jamestown, ND) for his photo processing and interpretation, continued their able assistance and support in completing the final report.

John W. Solberg
February 2006

Reference:

Benning, D. S. and D. H. Johnson. 1987. Recent improvements to sandhill crane surveys in Nebraska's Central Platte Valley. pp 10 – 16 in J. C. Lewis (ed.), Proc. 1985 Crane Workshop, Platte River Whooping Crane Habitat Maint. Trust, Grand Island, NE.

Table 1. Distribution of Sandhill Cranes within the Mid-Continent region during the coordinated spring survey, 1974-2005 (rounded to nearest 100).

Date	ND ₅	SD ₅	NEBRASKA				KS	TX	TOTAL (OSA)	OK ₆	NM ₆	CO ₆	TOTAL				
			Central Platte Valley			Other ¹							of all sources (excluding ND & SD) when added to the following:				
			Ocular cruise	Ocular transect	Ocular trans. w/photo correction								Vertical photo transect	Ocular cruise	Ocular transect uncorrected	Ocular transect photo corrected	Vertical photo transect
3/24-31/74	0	0	162,600(92%) ⁴	-	-	9,000	1,900	3,200	-	400	0	0	177,100	-	-	-	-
3/25-30/75	0	0	223,600(98%)	-	-	2,300	900	Tr	-	100	100	500	227,500	-	-	-	-
3/22-26/76	- ²	0	147,500(97%)	-	-	2,800	300	800	-	100	1,000	0	152,500	-	-	-	-
3/13-23/77	0	300	173,400(79%)	-	-	1,100	1,600	30,700	-	400	12,500	0	220,000	-	-	-	-
3/20-24/78	-	0	149,800(94%)	188,600(95%)	-	2,200	700	4,900	-	0	2,300	0	159,900	198,700	-	-	-
3/20-29/79	0	0	-	203,600(97%)	-	2,600	1,100	0	-	1,500	0	500	209,300	-	-	-	-
3/24-4/15/80	Tr ³	-	223,400(95%)	254,400(96%)	-	5,000	4,100	1,400	-	100	500	0	234,500	265,500	-	-	-
3/22-28/81	0	0	-	248,900(86%)	-	8,300	11,200	21,800	-	0	0	200	290,400	-	-	-	-
3/22-27/82	0	Tr	-	348,000(95%)	417,300(95%)	7,100	2,000	7,800	-	0	100	2,800	367,800	437,100	437,100	509,900	-
3/25-26/83	0	0	-	306,300(96%)	343,400(97%)	4,100	200	7,000	-	200	Tr	0	317,800	354,900	354,900	-	-
3/25-30/84	0	Tr	-	222,700(91%)	261,800(93%)	18,100	900	800	-	1,100	Tr	0	243,600	282,700	282,700	-	-
3/25-26/85	-	-	-	378,100(96%)	514,800(97%)	11,500	3,000	1,200	530,500	-	-	-	393,800	530,500	530,500	-	-
3/25-26/86	Tr	Tr	-	317,000(99%)	353,000(99%)	1,000	200	2,100	356,300	-	-	-	320,300	356,300	356,300	-	-
3/24-26/87	0	0	-	383,600(100%)	416,100(100%)	0	Tr	400	416,500	-	-	-	384,000	416,500	416,500	-	-
3/21-25/88	0	0	-	386,900(98%)	463,500(98%)	0	0	7,700	471,200	-	-	-	394,600	471,200	471,200	-	-
3/28-29/89	0	200	-	391,400(100%)	392,000(100%)	100	1,000	800	393,900	-	-	-	393,300	393,900	393,900	-	-
3/27-28/90	Tr	Tr	-	386,000(94%)	412,200(94%)	11,000	5,200	10,300	438,700	-	-	-	412,500	438,700	438,700	-	-
3/25-26/91	0	200	-	297,800(100%)	340,600(100%)	100	800	200	341,700	-	-	-	298,900	341,700	341,700	-	-
3/19-25/92	200	Tr	-	257,700(95%)	406,500(97%)	12,200	300	1,100	420,100	-	-	-	271,300	420,100	420,100	-	-
3/23-24/93	0	100	-	253,800(79%)	378,900(85%)	16,800	37,700	13,500	446,900	-	-	-	321,800	446,900	446,900	-	-
3/20-22/94	400	0	-	395,500(96%)	477,200(96%)	14,600	0	0	491,800	-	-	2,400	412,500	494,200	494,200	-	-
3/28-30/95	200	0	-	273,400(88%)	326,200(90%)	30,400	0	0	356,600	-	-	6,700	310,500	363,300	363,300	-	-
3/25-26/96	0	0	-	318,900(96%)	520,000(98%)	7,600	0	0	527,600	-	-	3,900	330,400	531,500	531,500	-	-
3/20-26/97	Tr	Tr	-	350,900(96%)	534,600(97%)	16,200	100	0	550,900	-	-	-	367,200	550,900	550,900	-	-
3/24-26/98	0	Tr	-	337,200(96%)	530,800(97%)	13,600	100	0	544,500	-	-	-	350,900	544,500	544,500	-	-
3/22-25/99	0	500	-	219,800(68%)	284,900(73%)	3,500	100,000	0	388,400	-	-	-	323,300	388,400	388,400	-	-
3/10-29/00	100	800	-	484,600(92%)	490,100(92%)	16,900	26,100	500	533,600	-	-	-	528,100	533,600	533,600	-	-
3/25-27/01	0	Tr	-	387,300(87%)	413,500(88%)	10,500	42,300	3,500	469,800	-	-	-	443,600	469,800	469,800	-	-
3/25-27/02	Tr	0	-	309,000(90%)	315,000(90%)	17,100	15,100	1,200	348,400	5,800	-	-	348,200	354,200	354,200	-	-
3/22-27/03	Tr	400	-	300,900(90%)	348,000(91%)	24,800	4,100	3,800	380,700	-	-	-	333,600	380,700	380,700	-	-
3/22-25/04	50	600	-	365,400(94%)	426,500(95%)	17,700	1,200	2,200	447,600	100	-	-	386,600	447,700	447,700	-	-
3/5 - 25/05	Tr	500	-	412,300(93%)	491,900(93%)	27,100	2,900	8,700	530,600	2,600	-	-	453,600	533,200	533,200	-	-

¹ Utilizing various survey techniques within Nebraska's Central Platte Valley.

² No survey.

³ Less than 50.

⁴ Percent of total M-C population index.

⁵ Crane sightings for North and South Dakota from 1985 and later are noted for over flight monitoring purposes and are not included in totals.

⁶ OK, NM, CO were eliminated from the Official Survey Area in 1985 by the Central Flyway CMU; crane sightings are noted for informational purposes only.

Table 2. Results of ocular transect survey for Mid-Continent Sandhill Cranes in the central Platte Valley of Nebraska during the coordinated spring surveys.

<u>YEAR</u>	<u>Population Index</u>	<u>Standard Error</u>	
1978	188,582	± 23,948	(± 12.7%)
1979	203,574	± 24,968	(± 12.1%)
1980	254,417	± 51,738	(± 20.3%)
1981	248,882	± 31,957	(± 12.8%)
1982	347,996	± 33,353	(± 9.6%)
1983	306,316	± 21,257	(± 6.9%)
1984	222,710	± 17,466	(± 7.8%)
1985	378,127	± 34,230	(± 9.1%)
1986	317,025	± 32,461	(± 10.2%)
1987	383,581	± 53,508	(± 13.9%)
1988	386,853	± 35,775	(± 9.2%)
1989	391,353	± 44,066	(± 11.2%)
1990	385,950	± 40,585	(± 10.5%)
1991	297,831	± 27,551	(± 9.2%)
1992	257,709	± 24,551	(± 9.5%)
1993	253,799	± 29,896	(± 11.2%)
1994	395,543	± 40,430	(± 10.2%)
1995	273,376	± 30,316	(± 11.1%)
1996	318,514	± 36,182	(± 11.3%)
1997	350,932	± 58,925	(± 16.7%)
1998	337,203	± 39,505	(± 11.7%)
1999	219,794	± 32,164	(± 14.6%)
2000	484,585	± 57,598	(± 11.9%)
2001	387,336	± 47,679	(± 12.3%)
2002	309,029	± 34,399	(± 11.1%)
2003	300,918	± 32,869	(± 10.9%)
2004	365,370	± 31,001	(± 8.5%)
2005	412,285	± 32,482	(± 7.8%)

Table 3. Results of ocular transect survey with photo correction fo for Mid-Continent Sandhill Cranes in the central Platte Valley of Nebraska during the coordinanted spring surveys.

<u>YEAR</u>	<u>Population Index</u>	<u>Standard Error</u>	
1982	417,263	± 42,331	(± 10.1%)
1983	343,378	± 31,674	(± 9.2%)
1984	261,802	± 24,198	(± 9.2%)
1985	514,763	± 49,650	(± 9.6%)
1986	353,040	± 37,340	(± 10.6%)
1987	416,058	± 65,588	(± 15.7%)
1988	463,457	± 53,213	(± 11.4%)
1989	391,995	± 51,349	(± 13.0%)
1990	412,154	± 50,496	(± 12.2%)
1991	340,645	± 33,897	(± 10.0%)
1992	406,457	± 50,644	(± 12.4%)
1993	378,883	± 50,454	(± 13.3%)
1994	477,215	± 50,910	(± 10.7%)
1995	326,181	± 35,256	(± 10.8%)
1996	519,984	± 62,582	(± 12.0%)
1997	534,630	± 86,889	(± 16.2%)
1998	530,848	± 79,164	(± 14.9%)
1999	284,858	± 35,599	(± 12.5%)
2000	490,118	± 71,754	(± 14.6%)
2001	413,498	± 64,221	(± 15.5%)
2002	315,044	± 42,218	(± 13.4%)
2003	348,023	± 41,263	(± 11.9%)
2004	426,534	± 43,337	(± 10.2%)
2005	491,915	± 47,392	(± 9.6%)

Table 4. Coordinated spring Mid-Continent Sandhill Crane survey effort by state - 2005.

<u>State</u>	<u>Date</u>	<u>Coverage Means</u>		<u>Effort</u> (Miles) Air/Gnd.	<u>Observer Affiliation</u>		
		Aircraft	Ground		Federal	State	Volunteer
ND*	17 - 22 March 2005	-	11	- /900	2	10	-
SD*	5 - 22 March 2005	-	?	- / ?	12	8	5
NE	22 - 23 March 2005	2	15	1200/1400	3	17	-
KS	21 - 25 March 2005	-	11	- / 300	1	8	2
TX	22 March 2005	-	10	- /1300	3	6	1
Total		2	47	1200/3900	21	49	8

* Monitors for over flights on or prior to scheduled survey date.

Figure 1. Annual and three-year average photo-corrected ocular transect spring population indices and population objective thresholds for Mid-Centroid sandhill cranes.

