

# COORDINATED SPRING SURVEY OF MID-CONTINENT SANDHILL CRANES

2008



2008

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2008 TOTAL: 571,500  
2008 AERIAL TRANSECT: 545,900  
THREE-YEAR AVERAGE (2006-08): 382,300  
SURVEY DATES: 24 – 26 March 2008

SURVEY PERSONNEL:

Aerial Survey

Observer/pilot: John Solberg, USFWS, DMBM, Bismarck, ND  
Observer: Terry Liddick, USFWS, DMBM, Laurel, MD  
Photographer: Dave Fronczak, USFWS, DMBM, Fort Snelling, MN

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 25 March in Nebraska’s Platte and North Platte River valleys. The 2008 photo-corrected aerial estimate is 545,900 birds. Outside the traditional aerial transect portion, observers utilized ground coverage during the period 24 – 26 March. From these regions, observers in the Official Survey Area (OSA) of Nebraska, Kansas, and Texas reported an additional 25,600 cranes. The 2008 total estimate (571,500) increased 38% since 2007 and is the highest index of record in the years of similar survey design (1985). The current three-year average (2006 - 2008), based on photo corrected estimates from aerial transects, is 382,300.

METHODS: The annual target date for the coordinated survey is the 4<sup>th</sup> Tuesday of March and in 2008, the survey was accomplished on that day (25<sup>th</sup>). 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 54 aerial transects. Terry Liddick, a Flyway Biologist from Laurel, MD, replaced Jeff Drahota as right seat observer in the USFWS aerial crew in 2008. Data collection outside the region of the aerial transects was directed and summarized by state coordinators. Using ground coverage, the state efforts focus in areas of traditional crane use/occurrence. Observations recorded outside the aerial transect region were not photo corrected. Survey coverage in 2008 was similar to 2007 and included changes adopted by the Central Management Unit Technical Committee (CMU) in 1985. Specific details regarding coverage, personnel, photography, habitat, and weather conditions are on file in the Bismarck office of the USFWS.

**RESULTS:** On or prior to the survey target date, no cranes were reported in North Dakota. In South Dakota, about 1,600 birds were recorded by personnel from the Huron and Lake Andes Wetland Management Districts. Unlike the past eight years, no cranes were encountered by Texas observers and in Kansas, only 1,100 birds were submitted for tally. Considering comments from state coordinators and the fact that only 1,100 birds in the total index were reported outside Nebraska, we feel that the 2008 survey captured peak crane numbers in Nebraska. The 2008 total estimate of mid-continent sandhill cranes is 571,500 which includes 545,900 birds (95% of the total) from the traditional aerial transect portion and 25,600 cranes from other regions in the OSA (Table 1).

Flock estimation correction factors, which are applied to aerial estimates, were calculated from photographs of 88 unique flocks (45 Solberg, 43 Liddick). Observer effort in 2008 is presented by state in Table 4. The current three-year average (2006 – 2008), based on the photo-corrected Nebraska aerial portion of the survey, is 382,300 (Fig. 1) and is within the management range (349,000 – 472,000) outlined in the Management Guidelines for the Mid-Continent Population of Sandhill Cranes (revised March 2006).

Appreciation is expressed to all coordinators, observers, and participants who assisted in the 2008 survey. Two long time contributors, Dr. Douglas Johnson (USGS) for his statistical analysis and Mr. John Steiner (Jamestown, ND) for his photo processing and interpretation, continued their able assistance, patience, and support.

John W. Solberg  
December 2008

#### References:

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.

Central Flyway Council, Pacific Flyway Council, and Mississippi Flyway Council. 2006. Management Guidelines for the Mid-continent Population of Sandhill Cranes. Special Report in files of the Central Flyway Representative, Denver, Colorado.

Table 1. Distribution of Sandhill Cranes within the Mid-Continent region during the coordinated spring survey, 1974-2008 (rounded to nearest 100).

Date	ND <sub>5</sub>	SD <sub>5</sub>	NEBRASKA				KS	TX	TOTAL (OSA)	OK <sub>6</sub>	NM <sub>6</sub>	CO <sub>6</sub>	TOTAL of all sources (excluding ND & SD) when added to the following:							
			Central Platte Valley			Other <sup>1</sup>							Ocular cruise	Ocular transect	Ocular trans. w/photo correction	Vertical photo transect	Ocular cruise	Ocular transect uncorrected	Ocular transect photo corrected	Vertical photo transect
			Ocular cruise	Ocular transect	Ocular trans. w/photo correction															
3/24-31/74	0	0	162,600(92%) <sup>4</sup>	-	-	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 <sup>3</sup>	-	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	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	-	-	-			
3/25-30/84	0	Tr	-	222,700(91%)	261,800(93%)	18,100	900	800	-	1,100	Tr	0	243,600	282,700	-	-	-			
3/25-26/85	-	-	-	378,100(96%)	514,800(97%)	11,500	3,000	1,200	530,500	-	-	-	393,800	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	-	-	-			
3/24-26/87	0	0	-	383,600(100%)	416,100(100%)	0	Tr	400	416,500	-	-	-	384,000	416,500	-	-	-			
3/21-25/88	0	0	-	386,900(98%)	463,500(98%)	0	0	7,700	471,200	-	-	-	394,600	471,200	-	-	-			
3/28-29/89	0	200	-	391,400(100%)	392,000(100%)	100	1,000	800	393,900	-	-	-	393,300	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	-	-	-			
3/25-26/91	0	200	-	297,800(100%)	340,600(100%)	100	800	200	341,700	-	-	-	298,900	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	-	-	-			
3/23-24/93	0	100	-	253,800(79%)	378,900(85%)	16,800	37,700	13,500	446,900	-	-	-	321,800	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	-	-	-			
3/28-30/95	200	0	-	273,400(88%)	326,200(90%)	30,400	0	0	356,600	-	-	6,700	310,500	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	-	-	-			
3/20-26/97	Tr	Tr	-	350,900(96%)	534,600(97%)	16,200	100	0	550,900	-	-	-	367,200	550,900	-	-	-			
3/24-26/98	0	Tr	-	337,200(96%)	530,800(97%)	13,600	100	0	544,500	-	-	-	350,900	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	-	-	-			
3/10-29/00	100	800	-	484,600(92%)	490,100(92%)	16,900	26,100	500	533,600	-	-	-	528,100	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	-	-	-			
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	-	-	-			
3/22-27/03	Tr	400	-	300,900(90%)	348,000(91%)	24,800	4,100	3,800	380,700	-	-	-	333,600	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	-	-	-			
3/5 - 25/05	Tr	500	-	412,300(91%)	491,900(93%)	27,100	2,900	8,700	530,600	2,600	-	-	453,600	533,200	-	-	-			
3/15-29/06	Tr	Tr	-	178,600(70%)	216,800(74%)	70,000	2,100	5,500	294,400	-	-	-	256,200	294,400	-	-	-			
3/12-27/07	2000	8700	-	307,100(91%)	384,100(93%)	20,400	3,600	5,900	414,000	-	-	-	337,000	414,000	-	-	-			
3/24-26/08	0	1600	-	474,100(95%)	545,900(95%)	24,500	1,100	0	571,500	-	-	-	499,700	571,500	-	-	-			

<sup>1</sup> Utilizing various survey techniques within Nebraska's Central Platte Valley.

<sup>2</sup> No survey.

<sup>3</sup> Less than 50.

<sup>4</sup> Percent of total M-C population index.

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

<sup>6</sup> 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%)
2006	178,564	± 13,156	(± 7.4%)
2007	307,094	± 27,245	(± 8.9%)
2008	474,051	± 52,201	(± 11.0%)

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%)
2006	216,810	± 18,054	(± 8.3%)
2007	384,118	± 39,637	(± 10.3%)
2008	545,884	± 76,107	(± 13.9%)

Table 4. Coordinated spring Mid-Continent Sandhill Crane survey effort by state - 2008.

<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*	25	March 2008	-	9	- /785	7	3	-
SD*	25	March 2008	-	?	- / ?	12	14	-
NE	25	March 2008	1	?	600/2101	3	18	1
KS	24 - 26	March 2008	-	7	- / 184	2	3	1
TX	25	March 2008	-	7	- /1204	1	6	-
Total			1	23	600/4274	25	44	2

\* 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-Continent sandhill cranes.**

