

2024 COORDINATED SPRING SURVEY OF MID-CONTINENT SANDHILL CRANES

SURVEY PERSONNEL:

Aerial Survey

Observer/pilot: Terry Liddick, USFWS, DMBM, Spearfish, SD
Observer: Philip Thorpe, USFWS, DMBM, Broomfield, CO
Photographer: Jeff Drahota, USFWS, RWB WMD, Kearney, NE

Ground Surveys (State Coordinators)

Kansas: Richard Schultheis, KDWPT, Emporia, KS
Nebraska: John McKinney, NGPC, Lincoln, NE
North Dakota: Jacob Hewitt, NDGFD, Bismarck, ND
Oklahoma: Paxton Smith, OKDWC, Arcadia, OK
South Dakota: Rocco Murano, SDGFP, Brookings, SD
Texas: Owen Fitzsimmons, TPWD, San Marcos, TX
Wyoming: Noelle Smith, WYGFD, Casper, WY

ABSTRACT: We flew the annual photo-corrected aerial transect survey (ocular transect survey; OTS) for the Mid-continent Population of sandhill cranes (MCP) on March 22 in Nebraska's Central Platte and North Platte River valleys. The 2024 OTS estimate was 420,840 birds. Ground and aerial surveys conducted in Nebraska, Kansas, Texas, Oklahoma, and Wyoming concurrently with the annual OTS reported an additional 22,648 cranes. The total index of 443,448 cranes that includes the OTS estimate and the additional state survey counts is 65.5% lower than the 2023 total index and the lowest annual index since 2016. The current three-year (2022 – 2024) total index average is 819,494. The current three-year (2022 – 2024) average OTS-derived estimate is 788,505.

METHODS: The target date for the coordinated survey is set between March 22-26 (Central Flyway Webless Migratory Game Bird Technical Committee 2018). The OTS and the concurrent state surveys conducted outside the OTS area were completed on March 22. The OTS is a strip transect survey where counts by aerial observers are corrected for flock-size estimation bias by comparison to counts from photographed flocks. The observer-specific correction factors are then applied to the observer flock counts prior to expansion to the surveyed area.

Terry Liddick was the pilot-observer again this year. Phil Thorpe, wildlife biologist- pilot for the Division of Migratory Bird Management was the front right seat observer and will be taking over as pilot-observer in 2025. Jeff Drahota, Wildlife Biologist, participated as the photographer this year. Crane counts outside the OTS were directed and summarized by state coordinators. The state efforts focus in areas of traditional crane use/occurrence and are conducted by observers in the air and on the ground. Observations recorded outside the aerial transect region were not photo-corrected and do not follow a statistical sampling design but have been used to assess the timing of the OTS. Survey coverage in 2024 was the same as 2023. Specific survey design and detailed information are found in the MCP management plan

(Central Flyway Webless Migratory Game Bird Technical Committee 2018).

RESULTS and DISCUSSION: The total index for the MCP was 443,448, which was 65.5% lower than the 2023 total index and was the lowest total index since 2016 (Table 1). The total index includes 420,800 cranes estimated from the OTS (95% of the total crane index) and 22,648 cranes counted from other regions covered during the cooperative survey (Table 1). North Dakota and South Dakota reported no cranes during the week prior to the survey. Texas observers reported 2,475 cranes, the lowest estimate since 2004 (Table 1). Kansas reported 0 cranes, the lowest seen since 1996. Oklahoma also had a lower count of 37 cranes. Wyoming reported 9,705 cranes on their survey, the highest since Wyoming was added to the annual count in 2018 (Table 1). The Nebraska count that occurs outside of the OTS estimated 10,431 cranes and was below the 10-year average of 16,383 cranes (Table 1).

Correction factors of estimated flock counts are applied to aerial estimates and were calculated from photographs of 99 unique flocks (48 for Liddick, 51 for Thorpe) with visual correction factors (VCF) of 1.26 and 1.28 for Liddick and Thorpe, respectively. The current three-year average (2022 – 2024), based on the photo-corrected OTS, is 788,505 and is above the management threshold limits (350,000 – 475,000) (Figure 1) (Central Flyway Webless Migratory Game Bird Technical Committee 2018). State observer effort in 2024 was similar to 2023 (Table 2).

Temperatures for Nebraska and the other Central Flyway states during the winter of 2023-24 were close to record setting. All months from November through March had above average temperatures except for January, which was characterized in the Flyway by average to below average temperatures. Near record high temperatures occurred in December and February with above to well-above average temperatures occurring during November and March in the Flyway.

Fall and winter precipitation varied throughout the Central Flyway. November had average to below average precipitation. For the remainder of the winter the Central Flyway, overall, saw average to well-above average precipitation. However, there were dry areas in the Flyway. The Dakota's remained dry through the winter while Nebraska received average to above average precipitation. Although, the eastern quarter of Nebraska, mostly in the southeast corner of the state, remained dry and was classified by the drought monitor as moderate to severe drought. Most of Kansas and North Dakota and parts of South Dakota remained in various drought classifications from abnormally dry to severe drought.

The OTS has shown large interannual variation in the past (Table 1) and the total estimate for 2024 was 65.5% lower than in 2023. While the concurrent state counts provide some information on the timing of the OTS and the proportion of cranes in the OTS area at the time of the survey, often the source of interannual variation in the estimates is not clear. The late winter and early spring in the Central Flyway was mild and favorable for earlier migration. No snow or ice was observed from Spearfish, SD to Kearney, NE or during the survey period in Nebraska. Snow cover was reported to start in northern South Dakota and snow and ice charts showed most of North Dakota, Saskatchewan, and Alberta as snow covered (National Ice Center 2024). However, parts of the Saskatchewan grasslands and the Alberta Peace River – High Level area were free of snow. In addition to state counts, another source of sandhill crane

observations is eBird (Sullivan et al. 2009). While eBird is based on opportunistic observations by the public, and can be biased towards population centers, it provides another means to assess the spatial and temporal distribution of sandhill cranes around the time of the survey. Sandhill crane eBird observations for March indicate that crane sightings were scattered from Texas to Alberta (3/28, n=1) and Saskatchewan (3/14, n=25). South Dakota eBird checklists showed 1,000 cranes on 3/22 and 1,200 on 3/23 in the Wessington Springs area (Uecker 2024). This area may need to be added to the pre-survey effort, especially in mild years.

We want to thank all coordinators, observers, and participants who assisted in the 2024 survey. Two long time contributors continued their able assistance, patience, and support, Dr. Douglas Johnson (USGS retired) for his statistical analysis and Mr. John Steiner (Jamestown, ND) for his photo processing and interpretation. Both critical elements of the survey design.

Philip Thorpe, July 25, 2024

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This report contains data tables and charts that may be large and complex. Readers that may need assistance reading and interpreting the data, or that may need data presented in an alternative format to facilitate reading and interpretation, should contact the U.S. Fish and Wildlife Service' Migratory Bird Survey Office (303) 882-1016.

Table 1. Distribution of mid-continent population of sandhill cranes during the coordinated spring survey, 1974-2024 (rounded to nearest 100).

Survey Dates	Nebraska Central Platte Valley ¹							Other								TOTAL			
	Ocular Cruise		Ocular Transect		Ocular transect w/photo correction			Other NE	KS	TX	OK ⁶	WY ⁷	NM ⁶	CO ⁶	ND ⁵	SD ⁵	Ocular Cruise	Ocular Transect Uncorrected	Ocular Transect Photo
	% ²	% ³	% ³	% ³	% ³	% ³	% ³												
3/24-31/74	162,600	92%	-	-	-	-	9,000	1,900	3,200	400		0	0	0	0	177,100	-	-	
3/25-30/75	223,600	98%	-	-	-	-	2,300	900	Tr	100		100	500	0	0	227,500	-	-	
3/22-26/76	147,500	97%	-	-	-	-	2,800	300	800	100		1,000	0	-	0	152,500	-	-	
3/13-23/77	173,400	79%	-	-	-	-	1,100	1,600	30,700	400		12,500	0	0	300	220,000	-	-	
3/20-24/78	149,800	94%	188,600	96%	-	-	2,200	700	4,900	0		2,300	0	-	0	159,900	196,400	-	
3/20-29/79	-	-	203,600	98%	-	-	2,600	1,100	0	1,500		0	500	0	0	-	207,300	-	
3/24-4/15/80	223,400	95%	254,400	96%	-	-	5,000	4,100	1,400	100		500	0	Tr	-	234,500	264,900	-	
3/22-28/81	-	-	248,900	86%	-	-	8,300	11,200	21,800	0		0	200	0	0	-	290,200	-	
3/22-27/82 ⁴	-	-	348,000	95%	417,300	95%	7,100	2,000	7,800	0		100	2,800	0	Tr	-	364,900	437,100	
3/25-26/83	-	-	306,300	96%	343,400	97%	4,100	200	7,000	200		Tr	0	0	0	-	317,600	354,900	
3/25-30/84	-	-	222,700	92%	261,800	93%	18,100	900	800	1,100		Tr	0	0	Tr	-	242,500	282,700	
3/25-26/85	-	-	378,100	96%	514,800	97%	11,500	3,000	1,200	-		-	-	-	-	-	393,800	530,500	
3/25-26/86	-	-	317,000	99%	353,000	99%	1,000	200	2,100	-		-	-	Tr	Tr	-	320,300	356,300	
3/24-26/87	-	-	383,600	100%	416,100	100%	0	Tr	400	-		-	-	0	0	-	384,000	416,500	
3/21-25/88	-	-	386,900	98%	463,500	98%	0	0	7,700	-		-	-	0	0	-	394,600	471,200	
3/28-29/89	-	-	391,400	100%	392,000	100%	100	1,000	800	-		-	-	0	200	-	393,300	393,900	
3/27-28/90	-	-	386,000	94%	412,200	94%	11,000	5,200	10,300	-		-	-	Tr	Tr	-	412,500	438,700	
3/25-26/91	-	-	297,800	100%	340,600	100%	100	800	200	-		-	-	0	200	-	298,900	341,700	
3/19-25/92	-	-	257,700	95%	406,500	97%	12,200	300	1,100	-		-	-	200	Tr	-	271,300	420,100	
3/23-24/93	-	-	253,800	79%	378,900	85%	16,800	37,700	13,500	-		-	-	0	-	-	321,800	446,900	
3/20-22/94	-	-	395,500	96%	477,200	97%	14,600	0	0	-		-	2,400	400	0	-	410,100	491,800	
3/28-30/95	-	-	273,400	90%	326,200	91%	30,400	0	0	-		-	6,700	200	0	-	303,800	356,600	
3/25-26/96	-	-	318,900	98%	520,000	99%	7,600	0	0	-		-	3,900	0	0	-	326,500	527,600	
3/20-26/97	-	-	350,900	96%	534,600	97%	16,200	100	0	-		-	-	Tr	Tr	-	367,200	550,900	
3/24-26/98	-	-	337,200	96%	530,800	97%	13,600	100	0	-		-	-	0	Tr	-	350,900	544,500	
3/22-25/99	-	-	219,800	68%	284,900	73%	3,500	100,000	0	-		-	-	0	500	-	323,300	388,400	
3/10-29/00	-	-	484,600	92%	490,100	92%	16,900	26,100	500	-		-	-	100	800	-	528,100	533,600	
3/25-27/01	-	-	387,300	87%	413,500	88%	10,500	42,300	3,500	-		-	-	0	Tr	-	443,600	469,800	
3/25-27/02	-	-	309,000	90%	315,000	90%	17,100	15,100	1,200	5,800		-	-	Tr	0	-	342,400	348,400	
3/22-27/03	-	-	300,900	90%	348,000	91%	24,800	4,100	3,800	-		-	-	Tr	400	-	333,600	380,700	
3/22-25/04	-	-	365,400	95%	426,500	95%	17,700	1,200	2,200	100		-	-	50	600	-	386,500	447,600	
3/5 - 25/05	-	-	412,300	91%	491,900	93%	27,100	2,900	8,700	2,600		-	-	Tr	500	-	451,000	530,600	
3/15-29/06	-	-	178,600	70%	216,800	74%	70,000	2,100	5,500	-		-	-	Tr	Tr	-	256,200	294,400	
3/12-27/07	-	-	307,100	91%	384,100	93%	20,400	3,600	5,900	-		-	-	2,000	8,700	-	337,000	414,000	
3/24-26/08	-	-	474,100	95%	545,900	96%	24,500	1,100	0	-		-	-	0	1,600	-	499,700	571,500	
3/21-26/09	-	-	457,400	92%	565,300	93%	29,900	Tr	10,800	-		-	-	100	4,800	-	498,100	606,000	
3/23-26/10	-	-	455,100	91%	691,500	94%	17,600	1,300	28,000	-		-	-	0	2,100	-	502,000	738,400	
3/20-24/11	-	-	347,500	90%	482,800	93%	18,800	3,500	14,300	4,700		-	-	0	100	-	384,100	519,400	
3/27-30/12	-	-	253,800	94%	339,600	95%	12,900	Tr	4,200	-		-	-	970	14,600	-	270,900	356,700	
3/25-27/13	-	-	745,900	97%	867,100	97%	16,080	279	9,740	1,800		-	-	0	400	-	771,999	893,199	
3/24-26/14	-	-	402,200	91%	617,900	94%	24,390	5,996	7,534	239		-	-	0	11,973	-	440,120	655,820	
3/23-25/15	-	-	326,000	83%	386,500	85%	24,545	4,479	37,121	2,195		-	-	324	8,723	-	392,145	452,645	
3/22-23/16	-	-	272,300	91%	405,700	94%	11,218	261	16,500	175		-	-	548	8,412	-	300,279	433,679	
3/21-3/22/17	-	-	436,700	94%	568,400	95%	18,674	180	9,193	16		-	-	79	-	-	464,747	596,447	
3/22/2018	-	-	516,400	93%	1,005,600	96%	12,137	1,058	23,906	932	3475		-	0	-	-	553,501	1,047,108	
3/22/2019	-	-	633,800	92%	946,000	94%	16,818	2,423	39,460	777	4140		-	0	0	-	692,501	1,009,618	
No Survey 2020																			
3/24/2021	-	-	487,400	91%	782,400	94%	9,394	1,422	38,123	0	4512		-	8	0	-	536,339	835,851	
3/24/2022	-	-	464,900	92%	685,500	94%	23,911	727	13,869	115	6350		-	6	0	-	503,407	730,472	
3/21-22/23	-	-	686,700	97%	1,259,200	98%	6,661	662	11,872	68	6100		-	0	0	-	705,895	1,284,563	
3/22/2024	-	-	330,600	96%	420,800	95%	10,431	0	2,475	37	9705		-	0	0	-	343,506	443,448	

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

² Percent of total M-C population index.

³ Percent of cranes counted in aerial transect portion of survey

⁴ Vertical photo transect conducted in 1982. Within MCPV, index was 490,100 and including Other 509,900.

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.

Tr <50 cranes

⁷ Wyoming and Oklahoma were incorporated into the official survey area in 2018 by the Central Flyway CMU

Table 2. Coordinated spring MCP survey effort by state, March 2024

State	Date	Coverage Means		Effort (Miles)		Observer Agency Affiliation		
		Aircraft	Ground	Air	Ground	Federal	State	Volunteer
ND ¹	March 18 - 22	0	17	-	568	11	6	0
SD ¹	March 18 - 22	0	3	-	500	0	3	0
NE	March 22	1	2	-	181	0	4	0
KS	March 22	0	12	-	525	2	9	3
TX	March 22	0	11	-	1095	2	10	0
OK	March 22	0	9	-	632	1	8	0
WY	March 22	0	1	-	0	0	2	0
Total		1	55	0	3501	16	42	3

¹ Monitors for over flights on or prior to scheduled survey date.

Appendix 1. Expanded population index and standard error for the ocular transect survey for the MCP in the Central Platte Valley of Nebraska.

Year	Population Index	Standard Error	
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%)
2009	457,436	± 39,355	(± 8.6%)
2010	455,104	± 44,324	(± 9.7%)
2011	347,501	± 26,841	(± 7.7%)
2012	253,783	± 18,261	(± 7.2%)
2013	745,854	± 77,801	(± 10.4%)
2014	402,228	± 33,616	(± 8.4%)
2015	326,053	± 24,491	(± 7.5%)
2016	272,250	± 30,692	(± 11.3%)
2017	436,671	± 42,331	(± 9.7%)
2018	516,397	± 46,206	(± 8.9%)
2019	633,839	± 85,277	(± 13.5%)
2020	-	-	-
2021	487,418	± 138,697	(± 28.5%)
2022	464,933	± 48,080	(± 10.3%)
2023	686,716	± 77,240	(± 11.3%)
2024	330,587	± 42,374	(± 12.8%)

¹ Survey was not flown in 2020.

Appendix 2. Expanded population index with photo correction and standard errors for the ocular transect survey for the MCP in the Central Platte Valley of Nebraska.

Year	Population Index	Standard Error	
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%)
2009	565,257	± 50,923	(± 9.0%)
2010	691,534	± 85,236	(± 12.3%)
2011	482,797	± 44,851	(± 9.2%)
2012	339,642	± 31,609	(± 9.7%)
2013	867,061	± 126,196	(± 14.5%)
2014	617,903	± 60,551	(± 9.8%)
2015	386,471	± 49,504	(± 12.8%)
2016	405,716	± 44,935	(± 11.1%)
2017	568,369	± 72,987	(± 12.8%)
2018	1,005,612	± 105,654	(± 10.5%)
2019	945,996	± 133,127	(± 14.1%)
2020	-	-	-
2021	782,462	± 309,357	(± 39.5%)
2022	685,476	± 85,473	(± 12.5%)
2023	1,259,199	±159,840	(± 12.7%)
2024	420,840	±66,572	(± 15.8%)

¹ Survey was not flown in 2020.

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

