

SEPTEMBER 2023 SURVEY OF THE ROCKY MOUNTAIN POPULATION OF GREATER SANDHILL CRANES

Philip Thorpe, USFWS, DMBM, 134 Union Blvd, Suite 540, Lakewood, CO 80228

Terry Liddick, USFWS, DMBM, 423 Hatchery Circle, Spearfish, SD 57783

Dan Collins, USFWS-Region 2 Migratory Bird Office, P. O. Box 1306, Albuquerque, NM 87103

Greater sandhill cranes of the Rocky Mountain Population (RMP) were counted at fall pre-migration staging areas in Colorado, Idaho, Montana, Utah, and Wyoming during September 2023. Migrants that had arrived at RMP migration stopover areas near Jensen, Utah and in the San Luis Valley, Colorado were also recorded. The cooperative survey was organized by the Pacific Flyway Subcommittee on RMP of Greater Sandhill Cranes and the U.S. Fish and Wildlife Service (FWS). The FWS, Division of Migratory Bird Management (DMBM), Denver, provided a Quest Kodiak for a portion of the survey. Aerial and ground surveys were conducted by personnel from respective state agencies, FWS and volunteers (participants listed in Table 1).

We counted **27,267** RMP cranes at 85 survey areas with 37.3% in Montana, 20.7% in Utah, 20.3% in Wyoming, 15.4% in Idaho, and 6.4% in Colorado (Table 1). The total estimate was the highest recorded for the survey (Table 2). All states had estimates higher than 2022 and Montana and Utah had the highest estimates in survey history. There were seven areas with estimates between 500 and 999 cranes and eight areas with estimates of 1,000 or more cranes (Figure 1, Table 3).

The survey was conducted during the last week in September to improve the overall likelihood that cranes would be in the survey area (Bunting et al., 2022; VonBank et al. 2023). The majority (98.7%) of survey areas were counted during the designated survey week (25-29 September) with 68.2% of the areas surveyed during the three-day target period (26-28 September) (Table 1). In 2023 we had 10 of 15 functioning telemetered cranes all within the survey area during the week of the survey.

We used average-high temperatures based on NOAAs 129-years of record keeping for each state in the RMP survey area. June across the RMP survey states was characterized by below-average high temperatures in Wyoming, Utah, and Colorado. Montana and Idaho had average-high temperatures for June. July warmed up across the RMP survey states and all states except Wyoming had above to much-above average-high temperatures, in Utah, July was the third hottest on record. August across the region had average-high temperatures but warmed slightly in September to above-average in Montana, Wyoming and Colorado and remained average for Idaho and Utah.

Precipitation was widespread and abundant over the RMP sandhill crane breeding grounds compared to 2022. June, across the breeding grounds, had above to much-above average precipitation reducing drought classified areas in all five of the survey states. Wyoming and Colorado had their third and fifth wettest June, respectively. These are state averages and parts of all RMP sandhill crane states continued to have areas of drought, but all states had much improved habitat conditions compared to 2022. The early monsoonal moisture stopped in July across all the breeding states. Idaho experienced its third driest July. However, Wyoming was the wettest state this summer and early fall and even had above-average precipitation in July. The flow of moisture returned to all states in August and September with average to above average statewide precipitation and much-above average precipitation in August for Idaho and Wyoming. A strong El Nino is forecast for the winter months and drought conditions are expected to persist in the northern Rockies of Idaho and Montana affecting parts of the RMP sandhill crane breeding range. Long term forecasts for the remainder of the breeding range are for average precipitation.

Weather conditions for the FWS aerial survey were ideal for counting cranes (i.e., clear skies and calm winds) and we were able to complete the survey within the survey week. Other survey participants reported similar survey weather conditions for counting cranes. We believe that ideal weather for counting and sandhill crane groupings in traditional survey areas resulted in a reliable crane count for the 2023 survey.

We thank all who participated in the survey and especially appreciate efforts made to complete counts during the designated period. Of the 85 survey areas covered in 2023, we completed 98.7% of them during the designated survey week, great job everyone!

Bunting, D. P., M. A. Boggie, D. P. Collins, P. P. Thorpe, and J. P. Donnelly. 2022. "Linking Ecological Processes and Animal Movements to Inform Timing of Long-term Surveys of a Migratory Game Bird." *Ecosphere*. 2022;13:e4298

VonBank, J.A., D.P. Collins, K.S. Ellis, J.P. Donnelly, and J.M. Knetter. 2023. Movement dynamics influence population monitoring and adaptive harvest management strategies in migratory birds. *Global Ecology and Conservation* 48: e02715 <https://doi.org/10.1016/j.gecco.2023.e02715>

Table 1. Counts in September 2023 of the Rocky Mountain Population of greater sandhill cranes at premigration staging and migration stopover areas in Colorado, Idaho, Montana, Utah, and Wyoming (Figure 1). Surveys were conducted by air (a) and ground (g) between 20-29 September.

Map No. & Location	No. Cranes	Date	Source
<u>COLORADO</u>			
1 Yampa River	579		
<i>Axial Basin</i>	0	9/27	(g) B. Holmes, CPW
<i>County Line grain fields</i>	0	9/26,27	(g) L. Miller, CPW, A. Reishus, CPW Vol
<i>Craig vicinity fields</i>	264	9/27	(g) A. Hutton, B. Holmes, E. Jones, S. Schwolert, CPW
<i>Hayden airport/racetrack</i>	217	9/26	(g) L. Rossi, K. Bond, CPW
<i>Morgan Bottoms</i>	46	9/26	(g) L. Rossi, CPW
<i>Yampa River SWA</i>	52	9/26	(g) L. Miller, CPW
2 Elk River	0		
<i>Selby's grain fields</i>	0	9/26	(g) E. Vannatta, CPW
3 White River	31		
<i>West of Meeker - Powell Park</i>	0	9/26	(g) B. Holmes, CPW
<i>East of Meeker - Irish Mesa/Agency Park</i>	31	9/27	(g) R. McGee, B. Holmes, CPW
4 Williams Fork River			
<i>East of Hamilton</i>	no survey		
5 Little Snake River	0		
<i>Slater</i>	no survey		
<i>Two Bar Ranch</i>	0	9/27	(g) J. Goncalves, CPW
6 Delta Co.	39		
<i>Harts Basin/Fruitgrowers Vicinity</i>	39	9/28	(g) E. Phillips, S. Sinclair, CPW
7 San Luis Valley	1,091	9/26,27,28	(g) S. Miller, FWS
Subtotal	1,740		6.4% of total estimate
<u>IDAHO</u>			
1 American Falls Res.	254	9/25	(a) FWS survey ^a
2 Ashton-St. Anthony	211	9/25	(a) " "
3 Bear River Valley	414		
<i>Bear Lake Valley</i>	38	9/26	(g) K. Elms, N. Rodgers, FWS
<i>Border-Pegram</i>	137	9/25	(a) FWS survey
<i>Bennington-Soda Spr.</i>	70	9/25	(a) " "
<i>Grace-Thatcher</i>	135	9/25	(a) " "
<i>Thomas Fork</i>	34	9/25	(a) " "
4 Blackfoot Res.	460	9/25	(a) " "
5 Camas NWR	141	9/27	(g) A. Kristof, A. Bower, S. Tackett, R. Hughes, J. Salwey, FWS
6 Camas Prairie	0	9/26	(g) S. Robotcek, IDFG
7 Carey Lake area	12	9/28	(g) S. Robotcek, IDFG
8 Chesterfield Res.	63	9/25	(a) FWS survey
9 Grays Lake NWR	77	9/26	(a) " "
10 Henrys Lake Flats	4	9/27	(a) " "

Table 1 (continued)

Map No. & Location	No. Cranes	Date	Source
11 Henry's Fork/Snake R. confluence	321	9/26	(g) J. Rydalch, IDFG
12 Island Park Res.	0	9/25	(a) " "
13 Market Lake WMA	0	9/28	(g) B. Gullett, IDFG
14 Marsh Valley	64	9/25	(a) FWS survey
15 Mud Lake WMA	42	9/27	(g) B. Panting, N. Marlin IDFG
16 Oxford Slough-Swan Lake	129	9/25	(a) FWS survey
17 Silver Creek	520	9/26	(g) J. Knetter, B. Hurd, IDFG
18 Teton Basin	1,253	9/27	(a) FWS survey
19 Malad River	235	9/27	(g) B. Stringham, UDWR
Subtotal	4,200	15.4% of total estimate	

MONTANA

1 Blackfoot/Ovando Valley	No Survey		
2 Cascade-Ulm	363	9/26	(a) M. Evans, MFWP
3 Centennial Valley	0	9/29	(a) M. Bryant, FWS
4 Clark Fork of the Yellowstone	539	9/20	(a) S. Stewart, MFWP
5 Deadman's Basin	1,195	9/25	(a) D. Harty, MFWP
6 Dillon-Twin Bridges	3,697	9/28	(a) FWS survey
7 Gallatin Valley	269	9/26	(g) J. Cunningham, C. Gower, MFWP
8 Helena Valley	403	9/25	(a) L. Parsons, MFWP
9 Paradise-Shields Valleys	809	9/26	(a) M. Yarnell, MFWP
10 Melville	49	9/25	(a) D. Harty, MFWP
11 Musselshell River	271	9/25	(a) D. Harty, MFWP
12 Otter Creek	298	9/25	(a) D. Harty, MFWP
13 Teton River-Eureka Res.	489	9/26	(a) M. Evans, MFWP
14 Toston-Townsend	322	9/28	(a) A. Grove, MFWP
15 Upper Madison Valley	264	9/28	(a) FWS survey
16 Warm Springs	707	9/27	(g) B. Shortman, K. Yeager, MFWP
17 White Sulphur Spr.	361	9/25	(a) J. Kolbe, MFWP
18 Whitehall	133	9/28	(a) FWS survey
Subtotal	10,169	37.3% of total estimate	

UTAH

1 Cache Co.	400	9/27	(a) J. Jones, UDWR
<u>Great Salt Lake Basin</u>			
2 Box Elder Co.	200	9/27	(a) J. Jones, UDWR
3 Davis Co.	0	9/27	(a) " "
4 Weber Co.	0	9/27	(a) " "
5 Morgan Co.	2	9/26	(g) X. Walden, UDWR
<u>Rich Co.</u>			
6 Bear River Valley	130	9/27	(a) J. Jones, UDWR
7 Round Valley	36	9/27	(a) " "
8 Summit Co.	43	9/29	(g) D. Smedley, UDWR
<u>Uintah Co.</u>			

Table 1 (continued)

Map No. & Location	No. Cranes	Date	Source
9 Jensen	2,010	9/26	(a) J. Jones, UDWR
10 Pelican Lake area	2,810	9/26	(a) " "
11 Leland Bench	0	9/26	(a) " "
12 Wasatch Co.	no survey		
Subtotal	5,631	20.7% of total estimate	
<u>WYOMING</u>			
1 Baggs	9	9/28	(g) P. Damm, WGFD
2 Bear River Valley	982	9/26	(a) FWS survey
<u>Big Horn Basin</u>			
3 Greybull River/Otto	147	9/29	(a) C. Rudd, WGFD, J. Burgess, WY Aero Photo
4 Shoshone River/Ralston	234	9/29	(a) " "
5 Worland	156	9/29	(a) " "
<u>Green River Basin</u>			
6 Big Piney-Daniel	37	9/26	(a) FWS survey
7 Bridger Valley	65	9/26	(g) A. Deru, WGFD
8 Lonetree	0	9/26	(g) " "
9 Farson	1,045	9/26	(a) FWS survey
10 Hams Fork	41	9/26	(a) " "
11 Pinedale-Cora-Boulder	0	9/26	(a) " "
<u>North Platte River Basin</u>			
12 Saratoga	127	9/27	(g) T. Cufaude, WGFD
13 33 Mile	623	9/28	(a) C. Rudd, WGFD, J. Burgess, WY Aero Photo
<u>Powder-Tongue River Basin</u>			
14 Barnum - Middle Fork Powder R.	0	9/28	(a) C. Rudd, WGFD, J. Burgess, WY Aero Photo
15 Mayoworth - N. Fork Powder R.	0	9/28	(a) " "
16 Kaycee-Sussex	36	9/28	(a) " "
17 Buffalo	2	9/28	(a) " "
18 Dayton	441	9/28	(a) " "
<u>Snake River Basin</u>			
19 Jackson Hole			
Natl Elk Refuge	36	9/27	(g) E. Cole
20 Star Valley	338	9/26,27	(a, g FWS survey, J. Bohne, WGFD retired
<u>Wind River Basin</u>			
21 Hidden Valley	491	9/29	(a) C. Rudd, WGFD, J. Burgess, WY Aero Photo
22 Ocean Lake	2	9/29	(a) " "
23 Riverview Valley	715	9/29	(a) " "
Subtotal	5,527	20.3% of total estimate	
TOTAL	27,267		

^a Fish & Wildlife Service aerial survey flown by P. Thorpe, T. Liddick and D. Collins

Table 2. September pre-migration staging area counts by state of the Rocky Mountain Population of greater sandhill cranes during 1987, 1992, 1995-2005, 2007-2023.

Year	Colorado ^a	Idaho	Montana	Utah	Wyoming	Total
1987	1,443	10,686	1,447	1,578	2,327	17,481
1992	3,181	5,801	5,264	2,810	2,248	19,304
1995	2,284	6,864	3,681	1,528	1,671	16,028
1996	1,255	8,334	2,974	1,849	2,526	16,938
1997	1,604	8,132	3,595	2,450	2,255	18,036
1998	1,273	8,067	3,415	2,185	3,162	18,102
1999	1,102	8,761	3,141	2,292	4,205	19,501
2000	749	9,337	3,598	2,416	3,890	19,990
2001	666	7,160	4,585	1,522	2,626	16,559
2002	1,355	7,698	4,843	1,869	3,038	18,803
2003	745	7,822	4,964	2,546	3,446	19,523
2004	1,410	7,152	4,637	2,239	3,072	18,510
2005	1,052	7,668	5,588	2,646	3,911	20,865
2007	1,743	8,262	6,509	2,401	3,907	22,822
2008	1,080	6,123	6,419	3,708	3,826	21,156
2009	1,162	6,934	6,329	2,283	3,613	20,321
2010	985	5,776	7,335	3,242	3,726	21,064
2011	1,347	5,029	6,642	1,498	2,978	17,494
2012	413	3,432	5,876	2,109	3,587	15,417
2013	1,594	5,228	7,218	2,732	3,588	20,360
2014	1,258	6,064	6,555	2,783	3,008	19,668
2015	1,089	6,454	9,493	3,698	3,596	24,330
2016 ^b	1,135	5,445	7,507	3,298	4,879	22,264
2017	1,658	4,066	7,149	2,994	3,725	19,592
2018	1,908	4,469	7,553	2,770	5,101	21,801
2019	1,879	4,428	7,511	3,106	4,366	21,290
2020	1,446	5,096	9,264	3,222	6,608	25,636
2021	3,141	3,091	7,783	3,889	6,059	23,963
2022	1,526	3,957	6,844	2,330	3,975	18,632
2023	1,740	4,200	10,169	5,631	5,527	27,267
3-yr Mean	2,136	3,749	8,265	3,950	5,187	23,287
All yr Mean	1,441	6,385	5,930	2,654	3,682	20,091

^a Colorado counts include migrants that had arrived at the staging area in the San Luis Valley.

^b Wyoming added six new survey areas per management plan guidelines.

Table 3. Survey areas with sandhill crane estimates of 500 to 999 and $\geq 1,000$ and percent change from previous year.

Survey Areas with ≥ 500 cranes	State	2023	% chg from		
			2022	2022	2021
Paradise-Shields Valleys	MT	809	51%	537	344
Riverview Valley	WY	715	140%	298	414
Warm Springs	MT	707	378%	148	467
33 Mile	WY	623	33%	469	780
Yampa River	CO	579	190%	200	210
Clark Fork of the Yellowstone River	MT	539	28%	421	734
Silver Creek	ID	520	79%	290	176
Total		2,968	94%	1,528	2,367

Survey Areas with $\geq 1,000$ cranes	State	2023	% chg from		
			2022	2022	2021
Dillon-Twin Bridges	MT	3,697	40%	2,644	2,837
Pelican Lake Area	UT	2,810	773%	322	715
Jensen	UT	2,010	156%	785	1,180
Bear River Valley, ID, WY, UT	ID, WY, UT	1,526	0%	1,528	2,220
Teton Basin	ID	1,253	22%	1,029	1,394
Deadman's Basin	MT	1,195	16%	1,029	1,394
San Luis Valley	CO	1,091	-11%	1,222	2,874
Farson	WY	1,045	4%	1,009	1,715
Total		14,627	53%	9,568	14,329

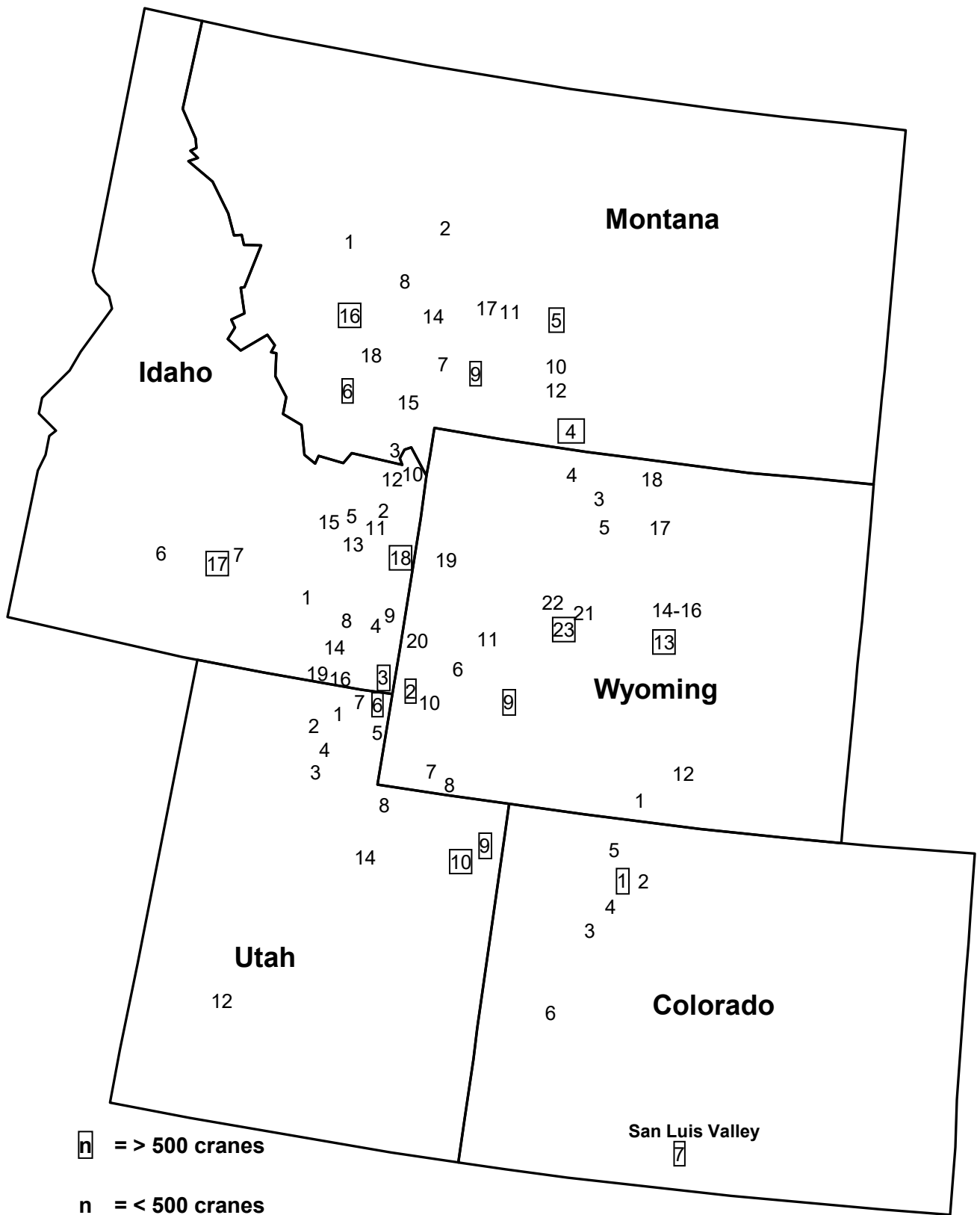


Figure 1. September survey locations for the Rocky Mountain Population of Greater Sandhill Cranes. See Table 1 for location names and numbers.