OCTOBER 2012 RECRUITMENT SURVEY OF THE ROCKY MOUNTAIN POPULATION OF GREATER SANDHILL CRANES

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Sandhill crane flocks were surveyed in the San Luis Valley, Colorado (Valley), during 21-23 October 2012 to assess recruitment (% juv) in the Rocky Mountain population (RMP) of greater sandhill cranes (Greaters). In order to assess RMP recruitment, it is necessary to distinguish the lesser subspecies, and to the degree possible, the Canadian subspecies from the Mid-Continent populations (MCPs) (Drewien et al. 1995). Therefore, a secondary objective was to assess the proportion and recruitment of the lesser subspecies (Lessers) from the MCP mixed with Greaters from the RMP. Data collected from flock samples included 1) number of Greaters and Lessers 2) number of adults and juveniles by subspecies and 3) brood size by subspecies. Fall recruitment surveys of RMP cranes in the Valley have been conducted annually since 1972 (Drewien 2011). Survey methodology is described elsewhere (Drewien et al. 1995). This survey was funded by the Migratory Bird Office, U.S. Fish and Wildlife Service, Southwest Region.

In the Valley, most cranes concentrate in Alamosa and Rio Grande Counties, using wetlands, meadows, and agricultural fields associated with the Rio Grande River between the towns of Monte Vista and Alamosa. Large numbers usually gather south of town of Monte Vista on Monte Vista National Wildlife Refuge (MVNWR). Cranes also are found northward in scattered groups for approximately 20 miles north of the Rio Grande, in southern Saguache County, mainly between Hooper and Center, and roosting in available wetlands around the Russell Lakes Wildlife Management Area when grain is available nearby. In 2012, I found over 200 cranes utilizing private lands 5-7 miles north of the town of Center. I also surveyed crane habitat and sampled flocks south of MVNWR into Conejos County near La Jara, Sanford, and Los Sauces, and eastward from the Rio Grande into Costilla County.

The Valley has suffered from extended drought in 2011 and 2012. Weather was extremely warm during my October surveys, with daytime temperatures reaching 65 to 68 degrees F, 8 to 10 degrees F higher than the long term averages (ACCUweather.com). Many shallow wetlands were dry or had low water levels. Due to the low water table, the MVNWR was unable to pump and fill a major crane and waterfowl roost in the southwest corner of MVNWR near Spring Creek in 2011 and 2012 (Scott Miller, San Luis Valley Refuge Biologist, pers. comm.). Although roosts in other refuge units to the east of Spring Creek were filled, I observed fewer cranes than usual feeding in refuge grain fields. I sampled approximately 350 cranes on two refuge grain units where numbers have exceeded 2000 in some years. In general, the greatest number of cranes was found in rather widely dispersed groups on private lands near the Rio Grande from Alamosa to Monte Vista, south of Monte Vista NWR into Conejos County, and on State Wildlife Management Areas (Playa Blanca, Higel, and Rio Grande).

I sampled 42 flocks and classified 3,639 cranes including 3,375 (92.7%) RMP Greaters, and 264 (7.3 %) MCP Lessers (Table 1). However, the proportion of Lessers I classified did not represent the full proportion of Lessers in the Valley during the survey period. Lessers tend to be concentrated on Monte Vista Refuge and in the southern portion of the Valley. In 2011, Drewien reported that the proportion of Lessers in flocks increased from 5.4% north of the Rio Grande, to 82.4% from MVNWR southward. In

2012, I observed two additional flocks, estimated at 550 cranes that I determined were predominately Lessers. However, I was unable to sample these flocks because they were not accessible at a distance whereby I could accurately classify birds. These two flocks were located several miles south and east of MVNWR where the greatest proportion of Lessers is typically present. Had I been able to classify those flocks, the overall proportion of Lessers would have been substantially higher. As a crude estimate, applying Drewien's (2011) factor of 82.4% Lessers south of MVNWR to these flocks adds 453 Lessers, bringing the total number of Lessers to 717. Similarly, applying 17.6 percent Greaters in these flocks brings the total number of Greaters to 3,472. This results in an estimate of 17.1% Lessers to the total survey sample, which is consistent with numbers and trends reported by Drewien (2011). Drewien found 19.4% MCP Lessers in October 2011, stating that this was the third highest proportion recorded during fall surveys with larger proportions in 2009 (24.7%) and 2010 (23.5%). He further noted that the proportion of Lessers in crane flocks during 1989-2011 has averaged 9.1% (range, 0.8-24.7%) and increased substantially in recent years. Although any obvious Canadian subspecies were eliminated from my samples, as in previous years a small but unknown number may have been included because all Canadian subspecies cannot be reliably separated from the Greater subspecies during ocular field surveys (Drewien et al. 1995).

The 2012 annual recruitment estimate for RMP cranes was 7.79 (Table 1). This is just 3% below the 40 year mean recruitment reported by Drewien (2011) (x = 8.1%, range = 3.4-12.0%, 1972-2011). The mean brood size of 213 RMP family groups was 1.13 (Table 2). Drewien (2011) reported a 40 year mean of 1.23 (range = 1.13-1.39). The average recruitment with the relatively low mean brood size that I observed in 2012 suggests that nesting and early brood-rearing conditions were favorable but resources to support two-chick broods were not ideal. In support, Drewien (pers comm.) stated that conditions in southeast Idaho were extremely dry throughout the summer, noting that nearly all of the marsh at Grays Lake NWR, Idaho, a major RMP nesting area, was dry by early September. Such dry conditions do not support abundant invertebrate populations to feed chicks, and exposes them to higher predation levels. Historically, we have observed smaller mean brood size in dry years for RMP Greaters.

My sample of 264 MCP Lessers included 14.39% juveniles. This is a small sample size and, as noted above, I was unable to classify two large flocks of primarily Lessers to obtain adult/juvenile ratios. Therefore, I do not consider these numbers definitive. Brood size in the 20 family groups observed included only one brood of identifiable twins, yielding a mean brood size of 1.05. While these statistics for the MCP Lessers are not definitive, they are consistent with long-term trends previously reported by Drewien et al. (1995): i.e., the RMP Greaters normally have a higher proportion of 2-chick broods but a lower productivity than the Lesser subspecies indicating that Lessers start nesting on average at an earlier age.

I thank Rod Drewien for many years of training during our collaborative work on sandhill and whooping cranes in the Rocky Mountains, and for providing valuable insights into 2012 breeding grounds and migration information for RMP sandhills. Scott Miller, Rick Schnaederbeck, and Greg Gossar provided information regarding timing of crane migration and locations in the Valley. I thank Bill Kendall, Assistant Unit Leader, USGS, Colorado State University, Ft. Collins, and graduate student Brian Gerber for assistance during the survey. Dr. Kendall plans to refine RMP survival estimates based upon our large sample of banded cranes (>1,900) marked from mid-1990s and earlier.

Table 1. Recruitment (% juv) estimates for Greater Sandhill Cranes of the Rocky Mountain Population (RMP) and for Lesser Sandhill Cranes from the Mid-continent Population (MCP) recorded in the San Luis Valley, Colorado, October 2012. *

		Recruitment			
Subspecies	% subspecies	Adults	Juv.	Total	% Juv.
Greaters (RMP)	92.7	3,112	263	3,375	7.79
Lessers (MCP)	7.3	226	38	264	14.39
Total	100.0	3,338	301	3,639	

* The proportion of MCP Lessers is accurate for flocks sampled, but under-represents the total proportion of Lessers in the Valley during this survey. Recruitment figures should not be considered definitive for MCP Lessers. Two large flocks containing primarily Lessers could not be classified due to access and distance constraints within the available time (see discussion above).

Table 2. Brood sizes in Greater Sandhill Cranes of the Rocky Mountain Population (RMP) and in Lesser Sandhill Cranes from the Mid-continent Population (MCP) recorded in the San Luis Valley, Colorado, October 2012. *

	Brood Size				
Subspecies	1	2	3	Total	X
Greaters (RMP)	189	24	0	213	1.13
Lessers (MCP)	19	1	0	20	1.05
Total	208	25	0	233	

*The sample of Lessers is small and brood size should not be considered definitive. Two large flocks containing primarily Lessers could not be classified due to access and distance constraints within the available time (see discussion above).

Literature Cited

Drewien, R.C. 2011. October 2011 Recruitment survey of the Rocky Mountain population of greater sandhill cranes. Unpubl. Report to U.S. Fish and Wildlife Service, Migratory Bird Office, Region 6.

Drewien, R.C., W.M. Brown, and W.L. Kendall. 1995. Recruitment in Rocky Mountain greater sandhill cranes and comparison with other crane populations. J. Wildl. Mgmt. 59 (2):339-356.