

GREATER SANDHILL CRANE CENTRAL VALLEY POPULATION SURVEY RESULTS, FALL 2000

INTRODUCTION

The number of wintering Greater Sandhill Cranes in the Central Valley of California has been a debated topic of discussion for several years. Pogson estimated 6000-6800 Central Valley Population (CVP) Greater in 1983-1984 and Littlefield counted 6800 Greater in the Butte Basin in Fall 1992. These two population estimates are the numbers most frequently quoted for the CVP. Both counts have some problems: Pogson's counts are now 17 years old and Littlefield acknowledged that his peak count of 6800+ was for the Butte Basin only and that a significant number of cranes may have been in the Delta when that count occurred.

Efforts to simultaneously count known roosts began in mid-1990's but were hampered by poor weather and erratic participation. Based on these past experiences, the Fall 2000 survey was conducted earlier, for a week-long period, and with better participation.

The most important ingredient was the "better participation". Those who contributed to this survey effort include: L. Briden, S. Cordes, D. Gifford, P. Hofmann, S. Holm, W. Holt, J. Hunter, R. King, M. Leighty, K. Lewis, H. Lomeli, Z. MacKay, G. Mensik, J. Silveira, G. VanKlombenburg, M. Wolder, Margaret (?), and Sherry (?).

METHODS

Cranes generally roost in traditional areas and, as long as conditions remain stable, tend to use specific locations as roost sites. Concentrations that occur at roost sites are easier to count, with less chance of recounting, than birds dispersed in the foraging fields. Therefore, roost counts, occurring either in the morning as birds leave the roost, or evening counts as birds are coming in to the roost, were used as the survey method. An added advantage is that roost counts are not samples, but an absolute count of that location at that time. The biggest challenges to roost counts are avoiding interchange between roosts during the count period and finding and accurately counting all the roosts.

The fall 2000 count was scheduled for the first week of November because: That is before severe winter storms disperse the roosts; access is generally good with dry roads; birds are spread between the Sacramento Valley and Delta; fog has not yet formed to hamper visibility; and most of the cranes are believed to be in the Central Valley.

Roost counts provide the number of cranes using the roost, but both the Greater and Lesser subspecies are counted since neither can be reliably differentiated in flight at a distance. Therefore, a correction factor, based upon the proportion of Lessers in the roost, should be subtracted from the roost total to more accurately estimate the actual number of Greater using that roost. Differential counts were conducted by counting the number of Lessers within a sample of cranes. The resulting estimation of Lessers was then subtracted from the roost total for those cranes, yielding a more accurate estimate of the actual number of Greater.

While the subspecies differential counts were conducted, the number of juvenal-plumaged, young-of-the-year Greater was also tallied. The end result was a roost count with a corresponding subspecies ratio and a corresponding recruitment rate.

RESULTS

Fourteen roost areas were counted from 30 October through 9 November, 2000, by 15 observers (Table 1). Differential/Recruitment counts were conducted from 30 October through 11 November, 2000. A total of 3432 cranes were classified in differential counts throughout the Central Valley (Table 2).

Llano Seco and Cosumnes River Preserve were counted differently from the other sites. Llano Seco is a large property with several known roosts and feeding fields. The area is regularly surveyed by the USFWS. The survey consists of a set route designed to minimize potential for recounting birds. In addition, an observer was positioned on the east edge of the area to count any cranes leaving the ranch after the survey began. This then represents a ground count with the addition of cranes ($n=173$) that left the property to forage off the ranch.

Cosumnes River Preserve is similar in that it is a large property with several small roosts. Evening roost counts were attempted from 30 October to 13 November with inconsistent success. Differential counts on Cosumnes were started at sunrise on 3 November and conducted over the entire morning. The differential counts with detailed notes provide a ground count of cranes seen on the area that morning. Birds were not disturbed and the observer was confident that recounting did not occur. Therefore, the 718 cranes at Cosumnes represents both a ground count and the sample size of the differential count.

Several roosts were counted more than once. Some counts were unsuccessful and were later revisited for a re-count. After considering dates, proximity of roosts and comments from observers, I selected the counts that I felt best represented each roost. Selection of a roost count was not based on the number of cranes but on timing and observer confidence.

Sacramento Valley roosts appeared stable and defined with little apparent movement between roosts during the survey period. Roosts in relatively close proximity (UBBWA/HSU and UBBWA/LDCU) were counted simultaneously. A total of 6707 cranes were counted on the 8 Sacramento Valley Roosts.

The Delta roosts most likely to have interchange were Woodbridge North, Woodbridge South, and Cortopossi. Woodbridge South and Cortopossi were counted simultaneously, and Woodbridge North and Staten Island were counted the preceding day. The following day, Cosumnes was counted and, lastly, Tyler Island was counted on 4 November. Counts made after 4 November were discarded because other counts provided a smaller survey window. The six selected Delta roost counts had a total of 8430 cranes.

All of the (14) selected roost counts took place within a 5 day period, and 4 counts occurred simultaneously (UBBWA/HSU, UBBWA/LDCU, Woodbridge South, and Cortopossi), with 3 more occurring simultaneously the following morning (Butte sink, Lurline, and Cosumnes).

Differential counts classified 3432 cranes, or 23% of the Central Valley total (Table 2). Llano Seco was the least represented with only 163 (4.3%) cranes classified. All the other roost areas had 19% or more of the roost classified. The estimated proportion of Lessers was subtracted from the corresponding roost count, yielding an adjusted Central Valley Greater Sandhill Crane estimate of 13,940 (Table 3).

Recruitment rates ranged from 1% for the Cherokee roost to 10.7% young for Brack Tract. The overall Central Valley Population recruitment rate was 6.3% young.

**TABLE 1.
CENTRAL VALLEY SANDHILL CRANE ROOST COUNTS, FALL,2000**

ROOST SITE	DATE/TIME	OBSERVER	No. CRANES
Llano Seco	11/2 -AM	js/ph/ml	3830
UBBWA/LDCU	11/2 -PM	sc	1080
UBBWA/HSU	11/2 -PM	ph	731
Butte Sink	11/3 -AM	mw	318
Lurline	11/3 -AM	ph	197
Gray Lodge	10/31 -PM	hl	94
Esquon	11/03 -PM	hl	192
Cherokee	11/01 -PM	hl	265
		SAC VALLEY TOTAL	6707
Woodbridge North	10/30 -PM	dg	(1583)
Woodbridge N.	11/1 -AM	jh	944
Woodbridge N	11/8 -PM	dg	(572)
Woodbridge South	11/1 - AM	sh	(322)
Woodbridge S	11/2 -PM	lb, gv	1307
Staten Is.	11/1 -PM	dg,wh,lb, gv	1495
Staten Is.	11/09 -PM	dg,wh,m,s	(2171)
Cortopossi/Brack Tr.	11/02 -PM	dg	3045
Tyler Is.	11/04 -PM	dg	921
Cosumnes	11/03 -AM	kl	718
		DELTA TOTAL	8430

COMBINED CENTRAL VALLEY ROOST TOTALS (UNCORRECTED) 15,137
(Numbers in parentheses are discarded counts)

TABLE 2.
SUMMARIZED SANDHILL CRANE DIFFERENTIAL COUNTS, FALL 2000

ROOST	DATE	OBSERVER	TOTAL CRANES (%Roost)*	AD.GR.	JUV.GR (% GR)	LESSER	% LESSER
Cherokee	11/8	hl	215 (81)	204	2 (1.0)	9	4.2%
Llano Seco	11/2	ph	163 (4.3)	147	3 (2.0)	13	8.0%
Butte Sink	11/7	ph,mw	90 (28)	82	8 (8.9)	0	0
UBBWA	11/09	ph	340 (19)	307	33 (9.7)	0	0
Lurline	11/6,11/ 3	ph	60 (30)	56	4 (6.7)	0	0
		TOTAL	868 (13)	796	50 (5.9)	22	2.5%

Brack Tract**	11/1,2, 3,7,9	dg,jh,sh	1175 (22)	943	113 (10.7)	119	10.1%
Tyler/ Staten Is.	10/30,3 1 11/2,3,7	dg	671 (28)	548	29 (5.0)	94	14.0%
Cosumnes	11/3	kl	718 (100)	709	9 (1.3)	0	0
DELTA DIFFERENTIAL TOTALS			2564 (30)	2200	151 (6.4)	213	8.3%

CENTRAL VALLEY TOTALS 3432 (23) 2996 201 (6.3) 235 6.8%

* (%Roost) is the percentage of the roost that received classifying

** Brack Tract includes Woodbridge North and South, Cortopossi, and Brack Tract.

TABLE 3.
FALL 2000 CENTRAL VALLEY GREATER SANDHILL CRANE SURVEY RESULTS
WEIGHED AND ADJUSTED ROOST ESTIMATES

Roost	No. Cranes	% Lessers	Estimated No. Lessers	Estimated No. Greater
Llano Seco	3830	8.0	306	3524
UBBWA/LD CU	1080	0	0	1080
UBBWA/HS U	731	0	0	731
Butte Sink	318	0	0	318
Lurline	197	0	0	197
Gray Lodge	94	2.5*	2	92
Esquon	192	2.5*	5	187
Cherokee	265	4.2	11	254
Woodbridge North	944	10.1	95	849
Woodbridge South	1307	10.1	132	1175
Cortopossi/ Brack Tract	3045	10.1	308	2737
Staten Is.	1495	14.0	209	1286
Tyler Is.	921	14.0	129	792
Cosumnes	718	0	0	718
TOTALS	15137		1197	13,940

* Differential counts were not completed for this roost, so the Sac. Valley average of 2.5% was used.

DISCUSSION

The approximately 14,000 Greater in the Central Valley Population represents a new and larger population estimate. Corroborating counts include a 2 November, aerial survey by the USFWS (Mensik, pers. comm.) of the Sacramento Valley. That flight counted 2876 cranes in all areas except Llano Seco. Surprisingly, that is within one bird of the Sacramento Valley roost counts total (2877), again excepting Llano Seco. Winter surveys by DFG (Schlorf) of the Delta found from 6000 to 12000 cranes but did not include Sacramento Valley areas or differentiate between Greater or Lessers. Finally, the Mid-Winter Waterfowl Survey, conducted in January 2001, counted cranes in the entire Central Valley survey area. [This data is not available yet but should be any day now. It will need to be broken down by survey strata, and would include both Greater and Lessers.]

The Fall 2000 Survey probably undercounted cranes. There is evidence of two additional roosts in the Sacramento Valley that were uncounted and no counts were conducted in the San Joaquin Valley. Also, any small flocks or family groups that arrived late or left roosts early would not have been counted.

The proportion of young in the CVP varied from 1% to 10.7%. Some of this variation may be due to different reproductive success at different nesting locations or may be due to difficulties in identifying young. I found young showing dark crown patches which could have caused them to be mistaken for adults under poor light conditions or long distance viewing (the best field aging discussion I have seen is Drewien, et. al. 1995. JWM 59(2):339-356). For these reasons, I agree with one observer that the recruitment of young is probably underestimated.

Several observers commented on the presence of intermediate-sized cranes. These birds are smaller and less robust than the Malheur-type Greater but are definitely not Lessers. Their origins and taxonomic status is debatable but to be consistent with Pogson and Littlefield, their numbers were not subtracted from the CVP total. I also do not feel their numbers can be accurately subtracted from the total as was done with Lessers because observers were not consistent in differentiating them from Greater. All observers felt they could distinguish Lessers, therefore the proportions of Lessers in the surveyed birds was confidently estimated.

While the Fall 2000 survey was not perfect, I feel it is the best survey yet conducted on the CVP. No other surveys have counted both the Sacramento Valley and Delta at the same time and corrected the totals to account for Lessers mixed within the wintering cranes.