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Fall Trumpeter Swan Survey
of the
High Plains Flock

Fall 2005



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Introduction

The annual fall trumpeter swan survey is conducted to determine production and distribution for a portion of the Interior Population of trumpeter swans in accordance with the Central Flyway and the Lacreek National Wildlife Refuge (hereafter Refuge) trumpeter swan management plans (1997 and 1982 respectively). Each plan outlines population objectives (VI-2 and A-1) and management strategies for monitoring population status, which includes aerial surveys in South Dakota, Nebraska, and Wyoming. These surveys are part of a trumpeter swan monitoring program that spans over two decades. Additionally, a complete survey of the population in North America is conducted every 5 years, and this year that survey was conducted. This year's survey results were submitted to the survey coordinator for inclusion in the 5 year status report.

Methods

The survey was conducted from September 8th to September 10th, 2005 using a Cessna 206H airplane, flying at elevations of 800 to 1000 ft AGL and at speeds of 120 knots. The weather conditions were favorable over most of the survey area with the exception of parts of central South Dakota. Low cloud cover obstructed views from the aircraft, so a small portion of the route over Mud Butte, South Dakota was not surveyed. Over the remainder of the survey area cloud cover ranged from 0 to 20%, temperatures were in the low 90° F range, and winds gusted up to 20 mph on the ground.

The traditional survey route included much of northwest Nebraska, southwest South Dakota, and a small portion of northeast Wyoming in the vicinity of Colony (Fig. 1). This year Wyoming was excluded from the route because there have been no swans sighted there for 5 years, and the distance to the Colony site increases the expense of the survey substantially. The area can be monitored from the ground, and if swans return to Colony that portion of the route may be reinstated.

Once a potential swan was sighted, the survey biologist verified whether it was a swan and, if so, classified its age and social status. Swans were categorized as pairs with or without broods, singles with or without broods, cygnets, and groups. Adult and subadult birds were recorded as white birds. The survey biologist also evaluated habitat conditions (i.e., availability of food resources and water) from the air.

Results

Biologists counted a total of 358 swans, which is a decrease of 8% from 2004. The decrease was solely the result of a decrease in cygnet production (31%; 107 to 74 birds); the number of white birds remained the same at 284 (Fig. 2). These results are above the 16-year average for white birds (185 ± 14) and total birds (266 ± 17), but not cygnets (81 ± 6). Although the number of cygnets decreased this year, the count is not significantly different from the fifteen year average ($P < 0.001$). Specific results for each category are listed in Table 1.

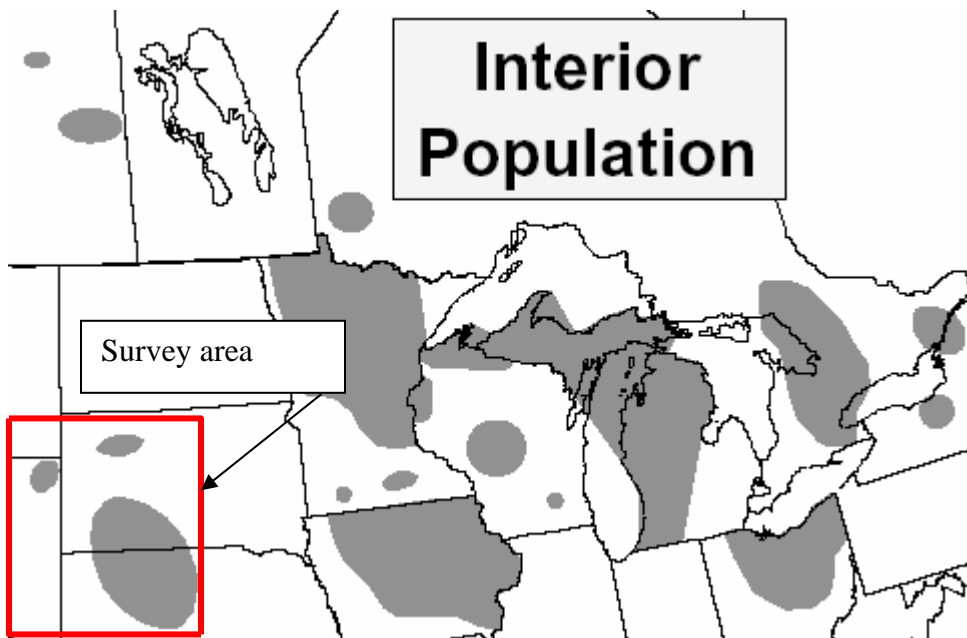


Figure 1. Survey area for High Plains Flock trumpeter swans located in southwest South Dakota, northwest Nebraska, and northeast Wyoming.

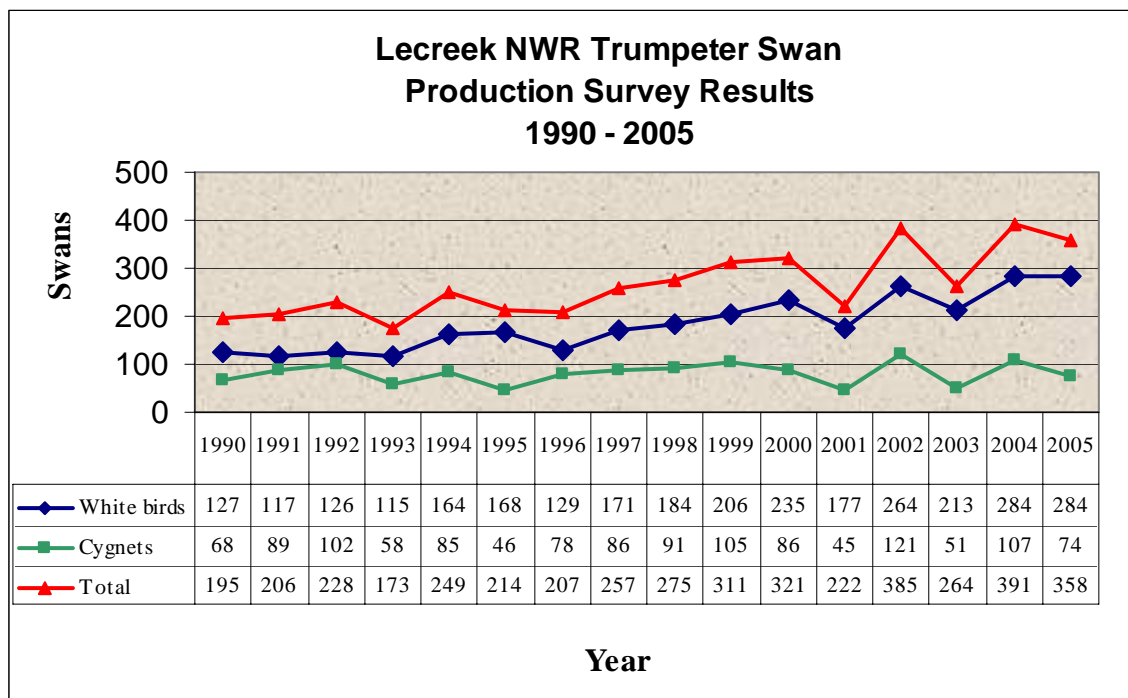


Figure 2. Fall survey results for High Plains Flock trumpeter swans, 1990 to 2005.

Table 1. Results of the 2005 fall production survey of High Plains Flock trumpeter swans.

Population parameter	Count or Mean Estimate
Adults and subadults	284
Cygnets	74
Total swans	358
Adults and subadults in flocks	70
Total flocks	15
Pairs with cygnets	27
Pairs without cygnets	69
Singles with cygnets	2
Singles without cygnets	14
Total broods	29
Mean brood size	2.53

Discussion

Flock Status

Although the number of white birds remained steady this year, a large percentage (72%) of the pairs observed had no cygnets. This may be because many of the white birds counted have not reached breeding age and did not produce young, or due to a loss of broods as a result of several hail-producing thunder storms that occurred early in the summer. Also, some breeding pairs that were present in South Dakota may not have been counted because heavy cloud cover prevented aerial observers from surveying the area. The percentage counted in that area is generally small, however, and likely would not change the final survey results much. A drop in cygnet numbers like the one experienced this year has happened before, but the flock increased to pre-decline levels in one to two years. In 2001 the number of cygnets dropped to 45, but rebounded to 121 the following year. This slight decrease in production is likely part of population dynamics for this long-lived bird and currently warrants little concern.

Habitat Conditions

Precipitation in the survey area fell in the midrange of historic values this year (Fig. 3). Precipitation was steady throughout the summer months, which kept water conditions in wetlands favorable. When the survey was conducted, most Sandhill wetlands continued to provide cover and food resources. The submergent aquatic vegetation (SAV) appeared to be plentiful in many areas and could easily be seen from the air. However, some wetlands in the southwestern portion of the survey route have been drained over the years and no longer provide habitat for swans. Conditions continue to be favorable in the southeastern portion of the route, and swans have been expanding east according to Nebraska Game and Parks Commission personnel. The route may have to be adjusted slightly to capture this expansion. Habitat conditions outside the Sandhills were of poorer quality relative to those of the Sandhills.

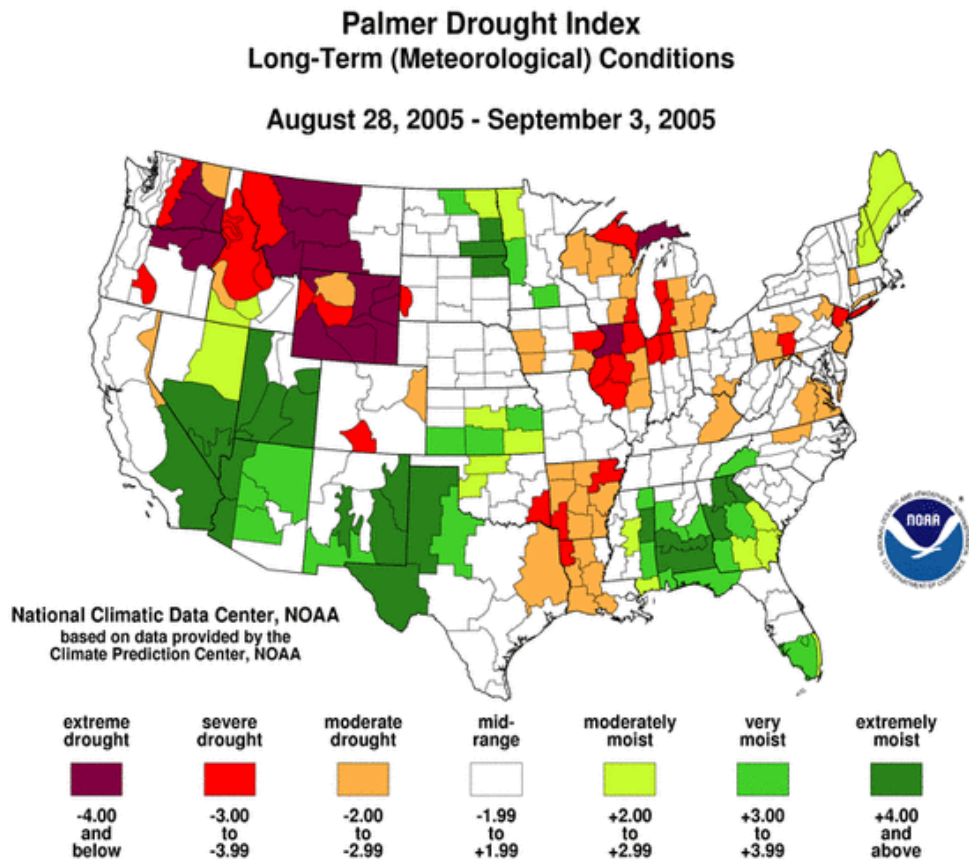


Figure 3. NOAA map of drought conditions just prior to the survey.

Recommendations

We recommend that the survey route be changed to exclude northeastern Wyoming. Few birds have been seen in this area since the drought, perhaps due to less favorable habitat conditions. In contrast, we recommend that the Nebraska portion of the survey be expanded eastward, pending discussions between the Service and State personnel and the survey biologists. Expanding the survey area could potentially result in a more accurate accounting of contemporary production.

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Appendix A. Survey results by location for the High Plains Flock, 2005. W.B. = White bird (adult/subadult), N.B.P.= non-breeding pair, and B.P. = breeding pair.

Date	W.B. single	N.B.P	B.P.	Cygnets	Groups	Total Birds
9/8/2005		1				2
			1	3		5
			1	1		3
					3	3
					7	7
		1			8	10
		1				2
		2				4
					3	3
		1				2
		1				2
		1				2
		2			3	7
			1	2		4
		1				2
					12	12
		1			3	5
			1	2		4
			1	2		4
		1				2
		1				2
			2	1		5
		1				2
		1				2
			1	6		8
Subtotal		16	8	17	39	104
9/9/2005			1	3		5
			1	2		4
		1				2
	1	2				5
	1	1				3
		1				2
		1				2
		1				2
			1	1		3
			1	2		4
		2				4
		1				2
		1				2
		1				2
	1	2				5
					3	3
	1					1
		1				2
					3	3

Appendix A. (cont.)

		1				2
		1				2
			1	6		8
		1				2
		1				2
					3	3
		1				2
		1				2
			2	4		8
			1	3		5
		1				2
		1				2
					8	8
			1	5		7
		1				2
					3	3
	1			2		3
			1	3		5
		2				4
	1					1
		1				2
		5				10
			1	2		4
	1					1
	1					1
	1	2				5
	1			2		3
			1	3		5
	1					1
			1	2		4
			1	1		3
			1	3		5
			1	4		6
			1	3		5
Subtotal	11	34	17	51	20	184
9/10/2005		2				4
			2	3		7
		2				4
					3	3
		2				4
		2				4
					3	3
					5	5
		1	1	1		5
		1				2
			1	1		3
	1					1
		2				4
	1					1

Appendix A. (cont.)

	1					1
			1	1		3
		1				2
	1	2				5
		1				2
	1					1
		1				2
		2				4
Subtotal	5	19	5	6	11	70
Total	16	69	30	74	70	358