

STATUS OF THE HIGH PLAINS FLOCK OF TRUMPETER SWANS IN 2005

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ABSTRACT

Lacreek National Wildlife Refuge was the focal point for reintroduction of Trumpeter Swans (*Cygnus buccinator*) into the High Plains in the 1960s, but soon the swans pioneered into other parts of South Dakota and Nebraska. This High Plains Flock (HPF) eventually established nesting territories in northeastern Wyoming, western South Dakota, and throughout the Sandhills of Nebraska and South Dakota. The HPF has continued to grow, and the average annual growth rate was 4.2 percent during 1990-2004. The estimated total that presently comprises the HPF was just under 400 birds. Additionally, 40 broods were produced in 2004, the highest thus far. The majority of these swans (90%) were located in the Sandhills and mostly in western Nebraska. In 2005, 106 of the Trumpeter Swans counted during the midwinter survey were in the Lacreek area, and the remaining 423 were observed in Nebraska (Refuge files). Refuge staff believes that Lacreek NWR will continue to support swans in the winter, but may also function as a migratory and staging location with continued population growth.

INTRODUCTION

Trumpeter Swans historically nested in South Dakota and Nebraska, however by the early 1900s few swans remained. Only three records of nests were noted between 1912 and 1960 in this region, and all were in the Sandhills (Lacreek NWR, 1982). Because these birds historically occurred in the Sandhills and much of the wetland habitat was still relatively intact, biologists believed this area was well suited for reintroduction of swans. The U.S. Fish and Wildlife Service (Service) began to reintroduce swans into the interior United States at Lacreek National Wildlife Refuge (NWR) when 57 cygnets were transported from Red Rock Lakes NWR between 1960 and 1962 (Monnie 1966). The Refuge kept these cygnets in holding facilities for 3 years before releasing them on the Refuge, and ultimately released seventeen 3-year-old birds on Lacreek NWR from 1963 to 1966.

Lacreek NWR was the focal area for nesting and wintering swans, but soon the swans pioneered into other parts of South Dakota and eventually into Nebraska, where they began nesting at Valentine NWR in 1969. By 1977, the Lacreek flock increased to 200 birds, and, by 1978, banded birds began moving southward into Missouri. This flock established nesting territories in northeastern Wyoming, western South Dakota, and throughout the Sandhills of Nebraska and South Dakota. In 1991, Trumpeter Swans collared on their breeding territories in Greenwater Lake Provincial Park in northeastern Saskatchewan wintered at Lacreek NWR. This portion of the flock has continued to grow. It is believed that these nesting birds

originated from the Lacreek Flock and now have a well established migratory route from breeding territories in Canada to Lacreek NWR and vicinity. This flock is now referred to as the High Plains Flock (HPF) which more accurately describes its range.

ABUNDANCE AND DISTRIBUTION

Summer

The HPF is monitored twice annually using aerial and ground techniques. The Service conducts a late summer/early fall aerial survey in September to determine abundance, production and distribution. A fixed-wing aircraft is flown at low speeds (104 to 139 knots) and elevations (183 to 244 m AGL) along a predetermined route while an observer(s) counts and classifies swans. These aerial counts are not corrected for birds present but not seen by the aerial crew. The adult and subadult birds are counted as singles, pairs, or groups and are termed "white birds." All gray birds are counted as cygnets. Each location is determined with GPS and the waypoints are saved.

The HPF has continued to grow, and the average annual growth rate was 4.2 percent during 1990-2004 (Figure 1). The estimated total that presently comprises the HPF was just under 400 birds. Additionally, 40 broods were produced in 2004, the highest thus far (Table 1). The majority of these swans (90%) were located in the Sandhills and mostly in western Nebraska. Areas in Wyoming and South Dakota combined contained less than 40 swans.

Winter

Waterfowl surveys are conducted each January by federal and state agencies in South Dakota and Nebraska, and these surveys enumerate Trumpeter Swans. During the 2004 midwinter waterfowl surveys, 529 swans were counted in the High Plains (Figure 3). The difference between the summer and winter counts varies from year to year, but on average the difference seems minimal, with winter counts being slightly higher than summer counts ($\bar{0} = 36 \pm 14$ birds; 1980-2004). This difference may be due to HPF birds expanding to areas outside the survey route in the summer, but inhabiting areas within the boundaries of the winter survey, movement of birds from Canada or other restoration areas into the winter survey area, or both.

As many as 268 swans have been observed at Lacreek NWR in early winter months, but that number can drop to as little as 24 birds when prolonged subzero temperatures leave little open water on the Refuge. During that time, most move to more southerly locations such as the Snake and North Loup Rivers (Nebraska Game and Parks Commission, unpublished memo). In 2005, 106 of the Trumpeter Swans counted during the midwinter survey were in the Lacreek area, and the remaining 423 were observed in Nebraska (Refuge files). Refuge staff believes that Lacreek NWR will continue to support swans in the winter, but may also function as a migratory and staging location with continued population growth.

Management of this flock will promote the natural migration of swans to adequate wintering locations beyond those currently utilized. Small numbers of birds have migrated as far south as Missouri and Oklahoma, (Ad hoc Drafting Committee for the Interior Population of Trumpeter Swans 1998) and managers hope this trend will continue as to expand the extent of the winter range.

Current HPF survey data

Biologists counted a total of 358 swans in 2005, which is a decrease of 8 percent 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 (Figure 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 15 year average ($P < 0.001$). Specific results for each category are listed in Table 2.

Flock status in 2005

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 significantly change the final survey results. A drop in cygnet numbers like the one experienced this year has happened before, but the flock increased to pre-decline levels in 1 to 2 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.

LITERATURE CITED

- Ad hoc Drafting Committee for the Interior Population of Trumpeter Swans. 1998. Mississippi and Central Flyway Management Plan for the interior population of trumpeter swans. Mississippi and Central Flyway Councils. [c/o USFWS, Migratory Coordinator] Twin Cities, Minnesota. Unpublished report.
- Lacreek National Wildlife Refuge. 1982. Management plan for Lacreek trumpeter swans. USFWS, Lacreek NWR. Martin, South Dakota. Unpublished report.
- Monnie, J. B. 1966. Reintroduction of the trumpeter swan to its former prairie breeding range. *Journal of Wildlife Management* 30:691-696.

Table 1. Breeding performance of High Plains Flock from 1980 to 2004.

Year	White Birds	Pairs	Broods	Cygnets	Total
1980	120	28	18	44	164
1981	104	30	16	54	158
1982	no data	no data	no data	no data	no data
1983	no data	no data	no data	no data	no data
1984	116	42	28	65	181
1985	95	40	22	63	158
1986	103	41	21	74	177
1987	110	34	23	81	191
1988	no data	no data	no data	no data	no data
1989	152	51	30	79	231
1990	127	41	22	68	195
1991	117	44	24	89	206
1992	126	48	30	102	228
1993	115	42	21	58	173
1994	164	54	32	85	249
1995	168	48	17	46	214
1996	129	52	22	78	207
1997	171	51	29	86	257
1998	184	62	32	114	298
1999	206	69	36	105	311
2000	235	56	28	86	321
2001	177	68	18	45	222
2002	264	67	38	121	385
2003	213	54	26	51	264
2004	284	100	40	107	391

Table 2. Results of the 2005 fall production survey of High Plains Flock of 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

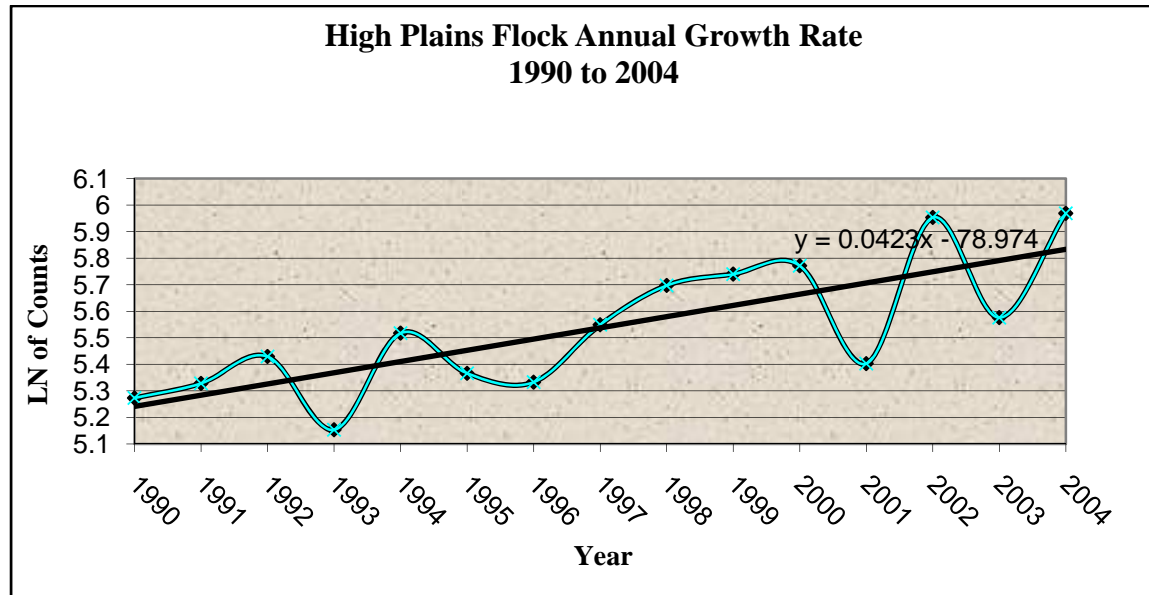


Figure 1. High Plains Flock annual growth rate 1990 to 2004.

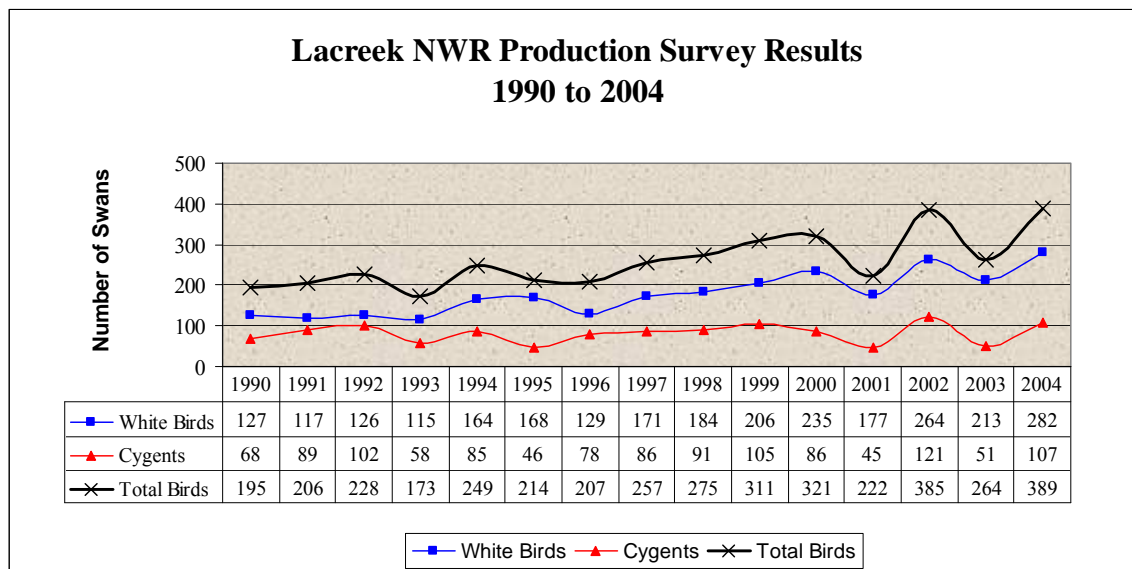


Figure 2. The High Plains Flock fall production survey results from 1990-2004.

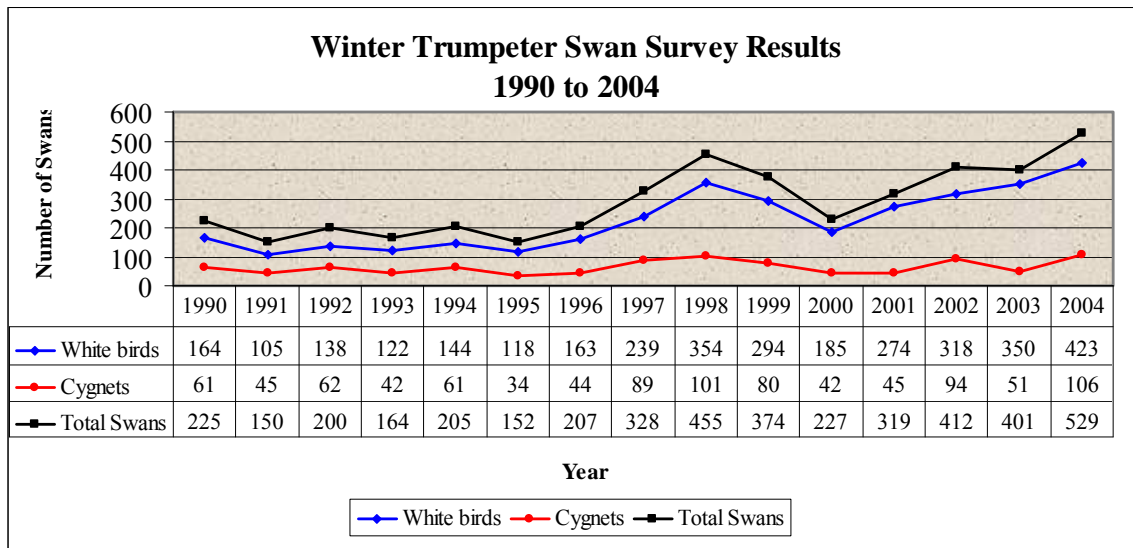


Figure 3. Midwinter Trumpeter Swan survey results for the High Plain Flock, 1990 to 2003. The year reflects the results that correspond to the most recent fall survey (i.e., the winter 1990 count was actually derived from the January 1991 survey).