

TRUMPETER SWAN PRODUCTIVITY IN  
GRAND TETON NATIONAL PARK, WYOMING

Paul A. Johnsgard  
School of Life Sciences  
University of Nebraska  
Lincoln, Nebraska

This is a report of some of my activities carried out during the summers of 1974 through 1976 in Grand Teton National Park, which were associated with field work in the gathering of materials for a book on the ecology and behavior of sandhill cranes and trumpeter swans in the park. Only one month (May 22 to June 22) was spent in the park during 1976, and thus no data on swan productivity were obtained in that year. Data on the park's swan production for the years prior to 1974 were obtained from the card files of the National Park Service and have been organized in such a way as to make them comparable to similar data by J. Halladay from Yellowstone National Park (Proceedings of the Third Trumpeter Swan Society Conference, 1973), and published data from Red Rock Lakes National Wildlife Refuge (North American Fauna No. 63, 1960) and from Alaska (Wildlife Monographs No. 26, 1971), and R. Page's unpublished data from Red Rock Lakes (Ph.D. dissertation, University of Montana, 1974).

Observations

Habitats Used by Breeding Swans

During the years since 1970, eight areas have been used successfully for breeding by swans in or immediately adjacent to Grand Teton National Park, as shown in Table 1. Of these, the Christian Pond location has been most regularly successful, and indeed has been utilized by swans on a yearly or nearly yearly basis since at least as early as 1957 (see summary in 1975 Annual Report). Presumably the same pair has been present all this time; if so, the birds have been nesting there for 20 years or more. This pair has also been the most successful of those nesting in the park, at least in recent years. The pairs at Pinto Ranch and Sawmill Pond have also been relatively successful; the Sawmill Pond pair has nested there since at least as long ago as 1964, but in 1976 did not appear. Likewise the pair that nested on Cygnet Pond in the 1960's no longer does so, but a pair is sometimes still seen using that area. The pair using Hedrick Pond has not nested there since 1973; the male of that pair was killed by a poacher in 1974. The sizes of the areas used for nesting in the park varies considerably, and averages slightly more than 30 acres, or very close to the average territorial size reported for Red Rock Lakes birds.



### Breeding Success

Data for the Park from the period 1969 through 1974 indicated that about seven territorial pairs were present during that period, and that about half of these raised one or more cygnets to late summer (Table 2). The number of cygnets raised per successful brood was, however, relatively low (2.14 average), which is comparable to data reported by Page for Red Rock Lakes in recent years. Cause of this substantial brood mortality is still extremely uncertain, but it is appreciably greater than that reported for the Alaskan population. One possibly contributing factor for the loss of young, which seems to occur very shortly after hatching, is the frequent periods of sub-freezing weather as late as mid-June, when hatching normally occurs. The possible influence of dietary factors in the survival of cygnets is unknown, but few if any cygnets are likely to be lost to predation in the park.

A similar estimate of breeding success can be obtained by determining an adult:cygnet ratio in late summer, as shown in Table 3 for Grand Teton National Park during the 12 years between 1960 and 1974 for which such data were available in Park files. The resulting ratio of 3:15 adults per cygnet is a relatively favorable one by comparison with Halliday's reported figures for Yellowstone National Park during a similar period and with Banko's data from Red Rock Lakes National Wildlife Refuge for the year 1954, when population levels of swans at the refuge were at their maximum. Obviously these ratios reflect not only breeding success of nesting birds, but also the incidence of non-nesting by adults and the presence of sub-adult birds in the population.

### Summary

The Grand Teton Park population of swans appears to be small but stable, and probably most or all of the park's suitable habitats are now being used by swans. Sources of egg and cygnet mortality are very difficult to judge, but appear to be no greater than in other areas of the general region. A few of the swan pairs, such as those at Christian Pond, have become highly tolerant of human presence, although in general trumpeter swans tend to be highly wary of humans as well as intolerant of other swans in the near vicinity. Disturbance at Christian Pond, which is perhaps the most productive and diversified of all pond habitats in the park in terms of abundance and diversity of breeding aquatic birds, should thus be kept at a minimum.



Table 1. Swan Breeding Habitats, Grand Teton National Park, 1970-75.

	Total Yng. Raised	Years of Success	Approximate Acreage
Christian Pond	14	4/6	30
Pinto Ranch	9	4/6	20
Sawmill Pond	6	3/6	5
Two-Ocean Pond	5	3/6	15
Swan Lake	5	2/6	35
Elk Ranch Reservoir	2	1/6	100
Hedrick Pond	1	1/6	25
Glade Creek	1	1/6	10

Table 2. Trumpeter Swan Breeding Success, Various Areas.

	Ave. Total Pairs	Ave. Total Broods Raised	Ave. Total Cygnets Raised	Broods Per Pair	Cygnets Per Pair	Cygnets Per Pair
Grand Teton Nat. Park (1969-74)	ca. 7.5	3.7	7.5	0.47	1.0	2.14
Red Rock Lakes N.W.R. (1971-73)	33.7	10.7	24.0	0.32	0.71	2.24
Alaska (1968)	666	251	923	0.38	1.38	3.60

Table 3. Breeding Success Based on Late Summer Adult:Cygnets Ratios.

	Ave. No. of Adults	Ave. No. of Cygnets	Ratio of Adult:Cygnets
Grand Teton Nat. Park (12 yrs, '60-74)	21.5	6.8	3.25:1
Yellowstone Nat. Park (1960-1970)	52.4	5.0	10.5:5
Red Rock Lakes N.W.R. (1954)	352	28	12.5:1
All of U.S.A. (1954)	580	82	6.8:1