

WHISTLING SWANS BREEDING IN SASKATCHEWAN PARKLAND

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The Whistling or Tundra Swan breeds in Alaska from Bristol Bay, along the Bering Sea coast and throughout the sub-arctic and arctic tundra adjacent to the Arctic Ocean east to Baffin Island (Figure 1).³ It nests chiefly north of the Arctic Circle to about 79°N. latitude.^{6 22} The southern limits of the breeding range have not traditionally extended below 60°N. latitude with birds present south to Nottingham and Southampton Islands, the barren grounds of northern Canada, the Alaska peninsula and St. Lawrence Island.^{4 6 12 3}

There has been a recent southward extension of Whistling Swan breeding range into areas where the species was extirpated toward the end of the 19th century, particularly around James Bay and the southern part of Hudson Bay.^{18 13} Whistling Swans have also been reported breeding on the coast of Quebec north of 58°N. latitude.¹⁰ Although this species has successfully pioneered the northeast coast of sub-arctic Quebec and the number of breeders is increasing in the Hudson Bay Region, nesting densities are sparse south of the tree line. A small population nesting near the Thelon River, Northwest Territories, appears to represent the southern limit of the breeding range, exclusive of southern Hudson Bay and James Bay.² In Saskatchewan, Whistling Swans have been known only as migrants.^{15 8}

During Canadian Wildlife Service aerial waterfowl inventories in west-central Saskatchewan in 1973, four adult swans and one brood were observed north of North Battleford

(Figure 1). The occurrence of these birds within former Trumpeter Swan breeding range and their proximity to present breeding areas in Saskatchewan (Cypress Hills) and Alberta (Grande Prairie) led to the assumption they were Trumpeter Swans.^{3 17} The range of Trumpeter and Whistling Swans do not overlap, with the exception of western Alaska.¹¹

Subsequent investigations revealed obvious differences in nest site selection and egg size between Trumpeter Swans in the Cypress Hills and the newly discovered swans. Studies were initiated to identify the swans nesting farther north in Saskatchewan.

Study Area and Methods

The birds were located in the aspen parkland of west-central Saskatchewan approximately 90 km north of North Battleford.⁵ Topography is gently to moderately rolling with ponds located in the many depressions. The area is characterized by the interspersed of two principal biotic communities, the grassland and parkland forest.²¹ Climate, soils, topography and vegetation of this region have been summarized by Bird and Richards and Fung.^{5 21}

The Canadian Wildlife Service conducted aerial surveys during May and July 1973 through 1979 to locate swans and nest sites. During ground studies at the nest site, clutch and egg sizes were determined, and characteristics of the nest and its location recorded. An adult bird, flightless during the moult, was captured in July 1979 to confirm iden-

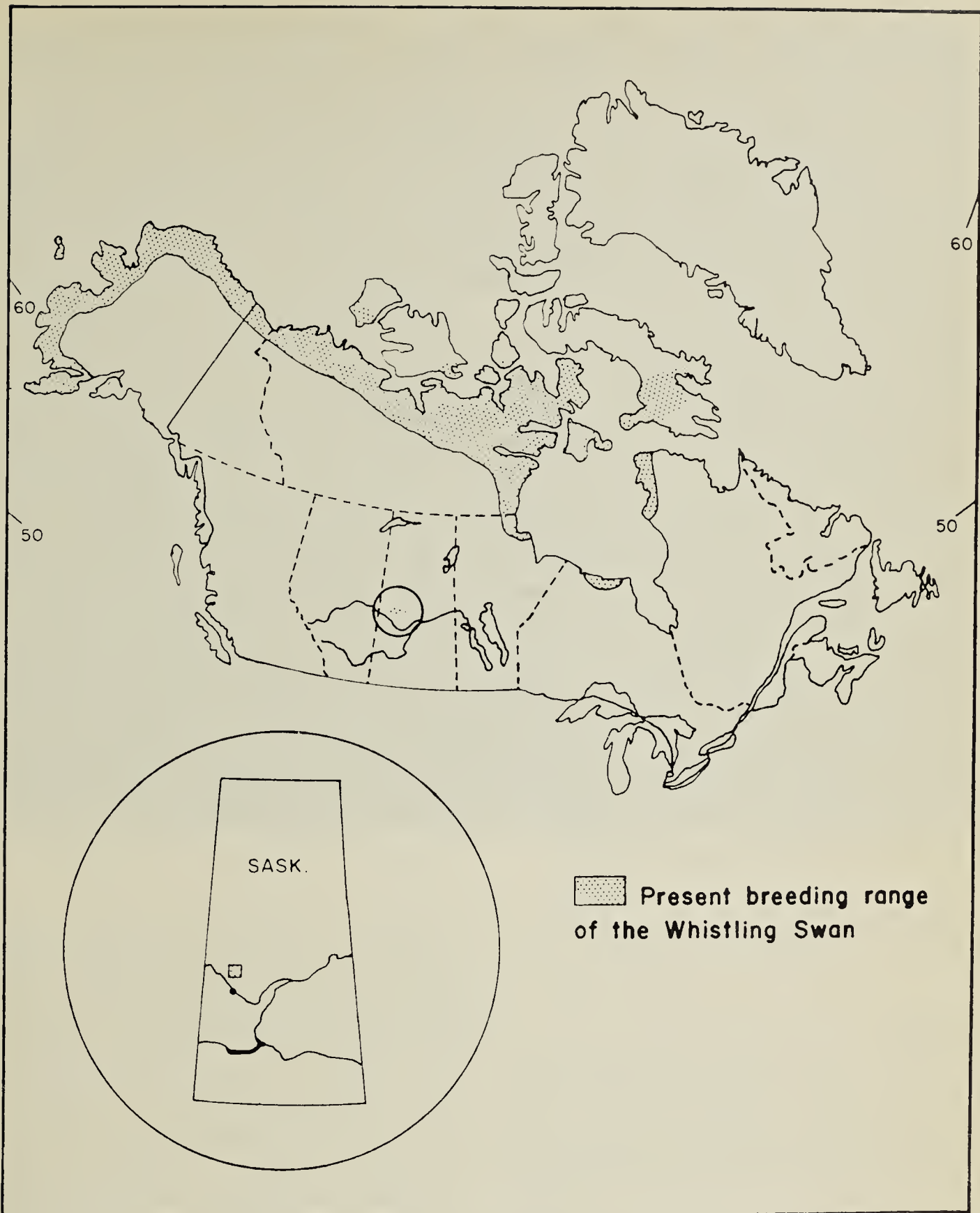


Figure 1. Breeding range of the Whistling Swan (*Olor columbianus*) in North America (after Bellrose³; Lumsden¹³; Pakulak and Littlefield¹⁸).



Whistling Swan nest, 1978.

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tification. The bird was banded and various measurements taken.

Results

A pair of swans has nested annually in west-central Saskatchewan from 1973 through 1980 except for 1975 (Table 1). Mean clutch size was 4.8 and an average of 1.9 cygnets was fledged per year. Two non-breeding swans, possibly sub-adults, were observed in the vicinity in 1973, 1975 and 1980.

The same nest site was used each year and differed in construction and location from typical Trumpeter Swan nests. Trumpeters usually nest over water and in emergent vegetation, often constructing a "moat" around the nest by removing surrounding vegetation for the nest structure.³ The nests studied were on a 4-ha island, in upland

vegetation 15 m from the water and beyond the wet meadow zone. They were located near small, sparse willows (*Salix* spp., approximately 1 m high) which partially obscured the incubating birds. Whistling Swans typically nest in such habitat on shores of lakes or islands.^{4 22 3} The 1979 nest was 152 cm in diameter with a 70 cm bowl. It was constructed primarily from unidentified grasses and mosses, willow twigs, annual weeds (*Sonchus* spp.), bog rush (*Juncus* spp.) and sedges (*Carex* spp.). Nest bowl measurements and materials used for construction conformed to Whistling Swan criteria.^{14 6 8 3}

Sixteen eggs were measured. The values differed markedly from Trumpeter Swan eggs and conformed to Whistling Swan egg measurements from other studies (Table 2).

Table 1. POPULATION STATUS AND PRODUCTION OF WHISTLING SWANS IN THE NORTH BATTLEFORD STUDY AREA, SUMMER 1973-1981.

Year	Breeding Pairs & Nests	Number of Eggs	Fledged Cygnets	Non-Breeders
1973	1	4	2	2
1974	1	5	0	0
1975	0	0	0	2
1976	1	*	1	0
1977	1	7	4	0
1978	1	*	*	0
1979	1	7	*	0
1980	1	6	3	2
1981	1	*	3	0
Mean	1	5.8	1.9	0.7

* Unknown

On 30 July 1979 two adult swans and two cygnets were approached by canoe. At 200 m, one adult took flight, vocalizing in a manner characteristic of Whistling Swans.^{24 8 3} The remaining adult, flightless due to moulted wing remiges, was captured and examined.

Yellow lores, present on most Whistling Swans, but never occurring on Trumpeter Swans were obvious.^{24 6 8} Five body measurements confirmed its identification as a Whistling Swan (Table 3).

Discussion

The Whistling Swans nesting in west-central Saskatchewan are approximately 1500 km south of the traditional and present breeding ranges of this species. This represents the first breeding record of wild Whistling Swans south of 60°N. latitude in North America except for the Hudson Bay area, a tundra region which is actually a low-latitude extension of the arctic biome.⁷

The Whistling Swans breeding in Saskatchewan occupied atypical habitat

Table 2. MEASUREMENTS OF WHISTLING AND TRUMPETER SWANS EGGS.

Mean values and standard deviations of Egg Measurements (mm)

Species	Length	Width	Source
Whistling Swan	105.8 ± 1.5	68.4 ± 1.5	Saskatchewan (16 eggs; this study)
Whistling Swan	105.2 ± 4.9	68.4 ± 2.5	Alaska/Hudson Bay ¹⁹
Whistling Swan	106.8 ± 2.7	68.9 ± 1.1	Hudson Bay ¹⁸
Trumpeter Swan	117.4 ± 8.8	75.0 ± 1.0	Alaska ⁹
Trumpeter Swan	110.9 ± 4.5	72.4 ± 2.0	Red Rock Lakes ¹



Adult male Whistling Swan, 1979.

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for this species. These birds nested on an 1100-ha lake located in the aspen grove parkland, a mosaic of grassland and forest characterized by light-colored forest soils (grey and dark grey wooded).²¹ About 35 percent of the uplands adjacent to the lake support stands of aspen (*Populus tremuloides*), willow (*Salix* spp.) and associated low shrubs. Most of the native grassland has been cultivated for cereal grain production (approximately 65 percent of the surrounding uplands).

Nearly half the lake shoreline is cultivated to the water's edge; the remainder supports woody vegetation and grasses. The lake bottom and portions of the shoreline are very rocky. Scattered stands of bulrush (*Scirpus* spp.), 10-15 m wide, occur along the shoreline and surround the nesting island.

The nesting of Whistling Swans in Saskatchewan is considered an isolated incident, and not a southward expansion of the breeding range of the

Table 3. BODY MEASUREMENTS OF WHISTLING AND TRUMPETER SWANS.

Species	Mean Values (Ranges in parentheses)				Source
	Culmen (mm)	Tarsus (mm)	Total Length (cm)	Weight (kg)	
Whistling Swan	101.0	115.0	128.0	7.6	Saskatchewan (this study)
Whistling Swan	102.6 (97-107)	111.9 (105-117.5)	132.0 (121.9-144.8)	7.3	Banko Bellrose ^{1 3}
Trumpeter Swan	112.5 (104-119.5)	122.9 (121.5-126)	149.9	12.5	Banko ¹

species. The breeding lake functions as an important spring and fall staging area for swans migrating through the province. Possibly a bird was injured during spring migration, unable to fly and its mate remained with it to nest, homing to the same site in subsequent years.

Non-breeding swans observed in the vicinity may be progeny from the nesting pair, returning to the area from which they fledged. However, sub-adult Whistling Swans have been known to remain south of the tree line during the breeding season.^{20 23}

A pair of swans has been observed nesting in this area since at least 1969 (E. Urbanowski, pers. comm.). With continued protection, and some recruitment of young, the species may continue to do so for some time.

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² BANKO, W. E., and R. H. MACKAY. 1965. Our native swans. *In* Waterfowl tomorrow. U.S. Dept. of Interior, Washington, D.C. 770 pp.



Lake where Whistling Swan nest located.

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