Articles

An Update on the Status of the Sandhill Crane in Northern and Central Ontario

by
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INTRODUCTION

The Sandhill Crane (*Grus canadensis*) is distributed in three relatively distinct populations throughout Ontario. In the west, summering populations of cranes have been reported from wetlands south of Lake of the Woods (Lumsden 1971), and nesting has recently been confirmed in this area (Peck and James 1993). In north-central Ontario, a breeding population of about 225 cranes was reported from the Algoma region (Tebbel and Ankney 1982). The Hudson Bay Lowlands appear to support the largest population of cranes in the province with some areas reporting more than 10 pairs per 100 km^2 (Lumsden 1987). It has been suggested that there are two racial identities of cranes in the province (Walkinshaw 1965). Cranes in the Algoma region and near the Lake of the Woods are thought to have originated from an expansion of the Michigan crane population and probably belong to the race *G. c. tabida* (Tebbel and Ankney 1982, Lumsden 1971), while those on the Hudson Bay Lowlands have been referred to the race *G. c. rowani* (Lumsden 1971). The two races are distinguished based on size; *G. c. tabida* is considered to be the largest crane in Canada, while *G. c. rowani* is intermediate in size.

Throughout its range, the population status of the Sandhill Crane is generally considered to be stable or increasing (Tacha et al. 1992). Across Canada, there has been a mean annual increase of 9.1% in crane numbers from 1966-1994 (Downes and Collins 1996). Tebbel and Ankney (1982) reported that the crane population centred around Sault Ste. Marie was increasing in numbers and expanding eastwards, and Lumsden (1987) suggested that the population on the Hudson Bay Lowlands underwent a rapid increase throughout the 1970s. Since 1980, the Canadian Wildlife Service has been conducting aerial surveys to monitor waterfowl populations throughout northern and central Ontario. During these surveys, sightings of non-waterfowl species, such as the Sandhill Crane, were also recorded. This data provided us with an opportunity to examine the extent to which Sandhill Crane populations in Ontario are changing in numbers and geographic distribution.

METHODS

Aerial Survey Methods

The aerial survey design that was used from 1980-1990 is described in detail in Ross (1987) and Fillman (1990). Basically, 33-100x100 km blocks were systematically located throughout northern Ontario (north of the French and Mattawa rivers) based on the Universal Transverse Mercator (UTM) mapping grid. Systematically

located 2x2 km plots, within each of these blocks, were flown at least once between 1980 and 1989. We used the information from these surveys to produce a province-wide distribution map for the crane. A subset of 7 blocks, located between North Bay in the southeast and Wawa in the northwest, was flown in 1985 and annually from 1987-1989. This information allowed us to examine whether crane numbers were changing over this time period.

A different survey design was used from 1990-1995. This survey employed 48-10x10 km plots, that were systematically located between Pembroke in the southeast and Geraldton in the northwest. All plots were flown at least once from 1990-1995, which allowed us to produce a distribution map of the crane in northeastern Ontario over this time period. Twenty-five plots were flown annually from 1990-1994. We used this data to test for a trend in crane numbers during this time period.

Surveys were flown in the spring, starting with the most southerly plots in early May and finishing with the northerly plots in late May or early June. All wetlands within each plot were surveyed by a helicopter containing one navigator/recorder and two observers as well as the pilot (as in Ross 1985). The flights were carried out at an altitude of 15 to 90 m and a speed of 60 to 100 km/h. Single passes were usually made over wetlands, but circling was done if coverage on the first pass was not adequate. All crane sightings were recorded.

Distribution Maps

Maps of density estimates were generated through the POTMAP routine of the SPANS spatial analysis system program (SPANS 1993). This approach essentially takes the mean number of cranes seen on each block or plot and uses weighted averaging to produce a contour map of crane density. In order to examine whether a spatial change had occurred in Sandhill Crane distribution, one map was generated for the 1980-89 sampling period and a second map was generated for the 1990-95 sampling period.

Population Trends

Population trends were examined over two time periods: 1) from 1985-1989 using the 7 blocks that were repeatedly measured over this time, and 2) from 1990-1994 using the 25 plots that had been sampled in each of these years. We tested for trends by calculating a Thiel slope (Hollander and Wolfe 1973) for each block or plot and applying a Wilcoxon matched pair signed rank test (Siegel 1956) to determine if the slopes were predominantly negative or positive.

RESULTS AND DISCUSSION

Distribution and Range Expansion

The distribution maps generated for the 1980-1989 sampling period (Figure 1) and the 1990-1995 (Figure 2) period are in general agreement with previous studies. Lumsden (1971) concluded that the distribution of Sandhill Cranes in the northern portion of the province was closely tied to the post-glacial, marine submerged area of the Hudson Bay Lowlands. In the Algoma region, the range shown by our maps is in general agreement with the sightings reported by Tebbel and Ankney (1982).

Our distribution maps could not demonstrate an expansion in the range

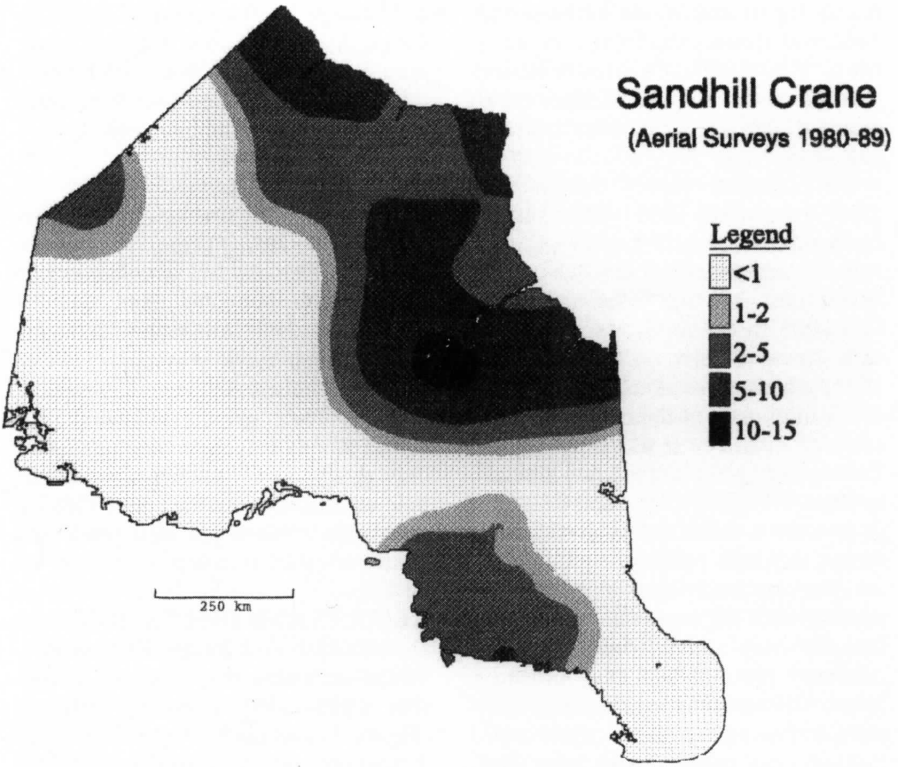

Figure 1: Contour map showing the density of the Sandhill Crane (#/100 km^2) throughout northern and central Ontario based on aerial surveys flown between 1980 and 1989.

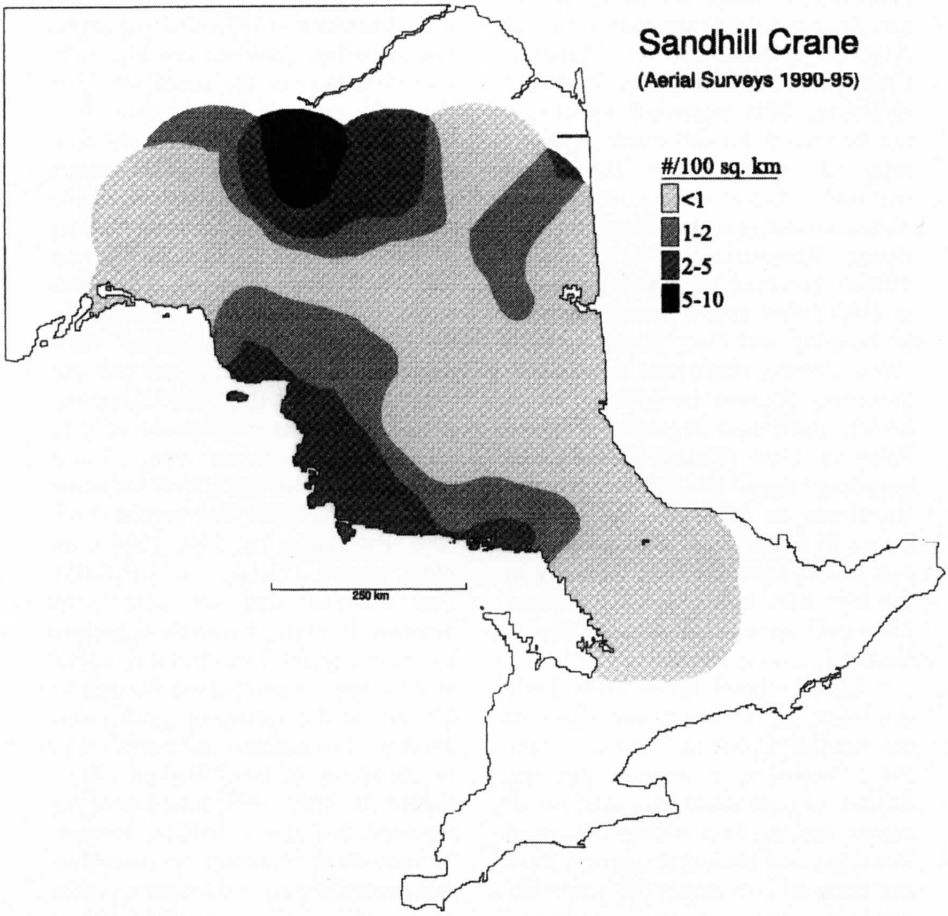

Figure 2: Contour map showing the density of the Sandhill Crane (#/100 km^2) throughout northeastern Ontario based on aerial surveys flown between 1990 and 1995.

of Sandhill Cranes between the 1980 and 1990 sampling periods (compare Figure 1 and Figure 2), even though other reports indicate that the crane is expanding its range in Ontario. Tebbel and Ankney (1982) suggested that the Algoma population of Sandhill Cranes was expanding in an eastward direction. This eastward expansion can be traced through crane sightings reported in *American Birds* and *National Audubon Society Field Notes*: confirmed breeding on the Bruce Peninsula in 1985 (Weir 1985a), breeding pair in Parry Sound in 1989 (Weir 1989), spring migrants in Innerkip and Deep River in 1990 (Weir 1990b), confirmed breeding in Waterloo Region in 1992 (Ridout 1992), confirmed breeding at Long Point in 1993 (Ridout 1993c), and breeding pairs at Sundridge and Buckhorn in 1994 (Ridout 1994b). Bruce Di Labio (pers. comm.) reports that cranes have returned annually to the Mer Bleu bog near Ottawa since 1986 and have bred successfully at least twice since then.

These reports leave little doubt that there is an eastern expansion of the Sandhill Crane in Ontario. At this point, however, it appears that the expansion consists of low numbers of cranes moving into widely separated locations, and helicopter surveys have not been able to detect the relatively subtle changes that have occurred in crane distribution to date.

Population Change

Our distribution maps (Figures 1 and 2) indicate an area of high density that starts at the tip of James Bay and curves upward to the northwest. This corresponds well with Lumsden (1971), who reported a preponderance of sightings from the Missinaibi, Albany, and Attawapiskat Rivers. Our abundance estimates are in the same range as those given by Lumsden (1987) of about 2 to 10 pairs per 100 km^2. Lumsden (1987) also suggested that breeding densities are higher in the north than in the south which is generally supported by our data.

A general impression of how crane numbers in the Algoma district changed over the study period can be obtained by plotting the mean number of cranes per plot for each survey year (Figure 3 and Figure 4). The Thiel slope, or average yearly change, for the 1985-1989 sampling period was a decrease of 0.025 cranes per plot per year, and for the 1990-1995 sampling period there was an increase of 0.12 cranes per plot per year. These changes were not significant for either the 1985-1989 sampling period ($T=7$, $N=5$, $P>0.05$) or the 1990-1994 sampling period ($T=10$, $N=7$, $P>0.05$). Our analysis did not detect the increase in crane numbers suggested by other reports. For instance, a total of 45 cranes was reported throughout Ontario in the spring of 1985 (Weir 1985b) – this number had risen to 199 by the spring of 1993 (Ridout 1993a; Figure 5). After 1993, totals were not reported for the province because "cranes were becoming so numerous that several regions no longer reported total numbers" (Ridout 1994c). More specific to the Algoma region, Chris Saunders (pers. comm.) reported that he has noticed an increase in the frequency of crane sightings in the Sault Ste. Marie area in the last decade.

There are a number of possible reasons for the discrepancy between our aerial survey results and the increase suggested by the published

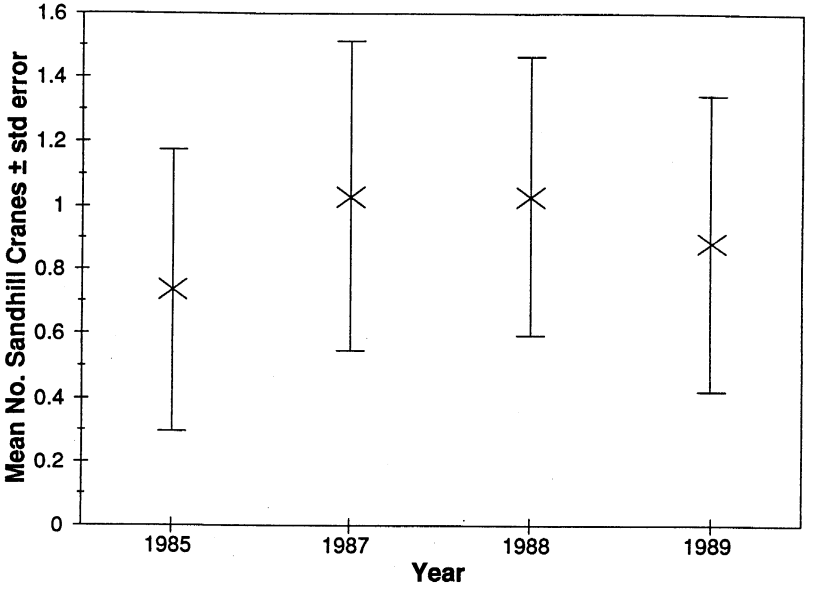

Figure 3: The mean number of Sandhill Cranes per 100 km^2 (±S.E.) seen during aerial surveys in the Algoma region from 1985-1989.

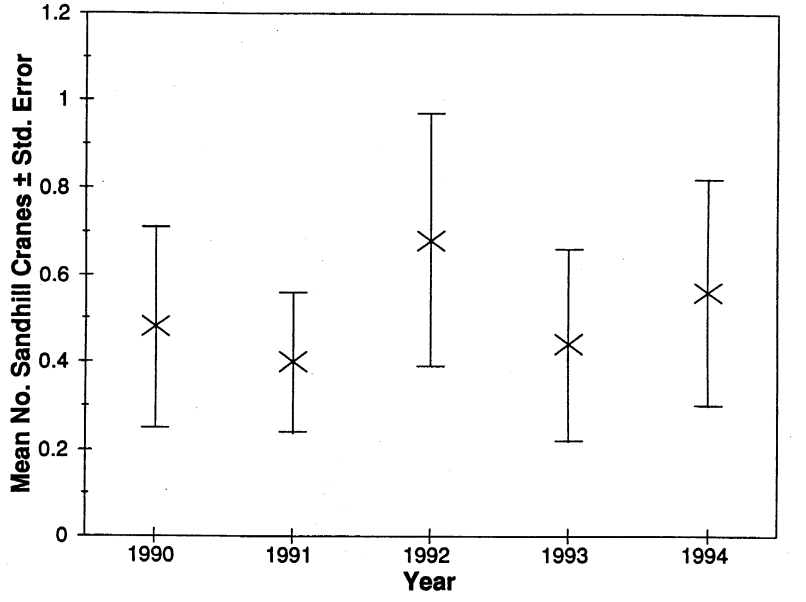

Figure 4: The mean number of Sandhill Cranes per 100 km^2 (±S.E.) seen during aerial surveys of northeastern Ontario from 1990-1994.

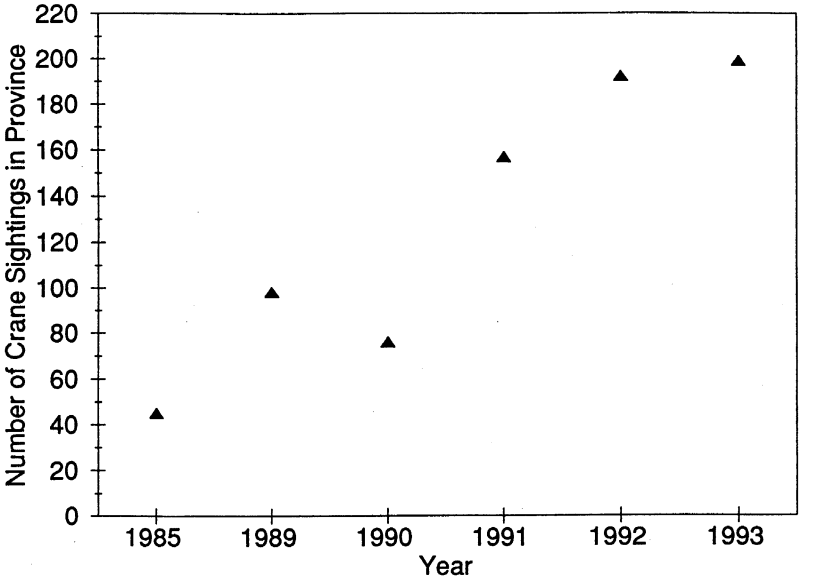

Figure 5: The total number of spring (1 March – 28 May) sightings of Sandhill Cranes reported in *American Birds*, 1985 to 1993.

sightings. It may be that helicopter surveys are not adequately sensitive to document the change that has occurred in crane numbers. Although cranes are large, easily identifiable birds, their cryptic coloration and dense breeding habitat make them difficult to accurately survey from the air. Unlike ducks, for which the survey was designed, cranes often do not flush during a helicopter fly-over.

Another possibility is that the published sightings are misleading, and there is actually no increase occurring. This could result from an increase in the number of people reporting sightings, or an increase in public awareness of the Sandhill Crane. This explanation seems unlikely given that the observer base in northeastern Ontario has changed little in the last decade, and most observers are well experienced birders (Ridout, pers. comm.).

A final possibility is that Ontario cranes have altered their migration routes such that more cranes are observed moving through the province, but there is actually little change in the size of the breeding population. Cranes in the Algoma region are thought to migrate through Michigan to overwintering areas in Georgia and Florida, while those in northern Ontario are part of a population that moves through western Ontario and the prairie provinces to overwintering areas in Texas (Tacha et al. 1992). However, Lumsden (1971) suggested that large numbers

of cranes used to migrate through southern Ontario in the mid-1600s, but were exterminated on their wintering grounds in New Hampshire and Vermont in the 19th century. He reported that crane migration through southern Ontario at the time of his report was scarce. Since then, Sandhill Cranes appear to have become considerably more common – in the fall of 1989, 358 cranes were reported to have passed south of a line connecting Wiarton and Hamilton (Weir 1990a). The reactivation of the southern Ontario migration route may, in part, explain the increased number of crane observations throughout Ontario.

Crane Conservation in Ontario

Based on our findings, and the published sighting reports, the Sandhill Crane appears to be stable or increasing in numbers in Ontario. This is in agreement with the Committee on the Status of Endangered Wildlife in Canada (COSEWIC), which lists the crane as "not at risk". During migration, Sandhill Cranes form into loose social groups that often concentrate in staging areas. These areas provide essential resources for the crane during migration, which makes this species particularly vulnerable to loss of strategic staging areas. A list of some of the staging areas in Ontario is provided in Table 1.

Location	Migration Period	Number of Birds	Dates	Reference
Bruce Mines/ Thessalon	Spring and Fall	up to 100	throughout 1990s	Chris Saunders (pers. comm.)
Massey	Spring	56	25 Apr. 1993	Ridout (1993a)
Shipsands Island	Spring	42	22 May 1993	Ridout (1993a)
Cochrane	Spring	35	29 May 1993	Ridout (1993a)
Britainville	Fall	345	25 Oct. 1992	Ridout (1993b)
Lion's Head	Fall	115	14 Nov. 1992	Ridout (1993b)
Teeswater	Fall	68	15 Nov. 1992	Ridout (1993b)
Gameland (Rainy Riv. Dist.)	Fall	98	15 Sept. 1993	Bill Crins (pers. comm.)
Massey	Fall	500	10 Oct. 1993	Ridout (1994a)
Hawk Cliff	Fall	65	23 Nov. 1994	Ridout (1995)

Table 1: Concentration areas for the Sandhill Crane in Ontario during spring and fall migration.

SUMMARY

We could not detect a change in the distribution and abundance of Sandhill Cranes in the Algoma district based on aerial surveys flown between 1980 and 1995, in spite of general observations throughout the province that suggest an increase. This discrepancy may be due to the difficulty in accurately censusing cranes by helicopter, or to altered migration routes which result in more cranes moving through the province during migration. Despite the differences between the two data sources, it appears that the Sandhill Crane is relatively abundant in Ontario and is maintaining a stable to increasing population throughout the province.

ACKNOWLEDGEMENTS

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PUBLICATION NOTICE

Bird Trends: A report on results of national and regional ornithological surveys in Canada. Number 5, Fall 1996. Migratory Birds Conservation Division, Canadian Wildlife Service, Ottawa, Ontario K1A 0H3. No charge.

The latest report in this series summarizes population status and trends of waterbirds in Canada. The following is just a sample of the many interesting facts available in this free publication.

Among ducks, the Northern Pintail has shown the most significant long-term (1961-1996) decline in the continental population, followed by the scoters. However, trends over the last ten years indicate stable or increasing continental populations of all ducks except scoters. The major issue of concern in eastern Canada is the gradual decline of American Black Ducks over the past 30 years, especially in the agricultural and industrialized areas of southern Ontario and Quebec.

Populations of "migrant" Canada Geese show significant decline in numbers, while the "resident" population (breeding primarily south of 47°N in southern Ontario) is dramatically increasing. Lesser Snow Geese numbers have grown rapidly over the last 30 years (to at least four million breeding birds in 1995), such that some Arctic colonies are threatened by overpopulation and degradation of the habitat due to over-grazing. Ross's Geese have also increased dramatically on the traditional nesting grounds that they share with Snow Geese in the Central Arctic, and they have recently expanded into Snow Goose colonies in the Eastern Arctic as well.

Trends in "other" waterbirds indicate declines in Horned and Pied-billed Grebes, American Bittern, rails, and American Coot. The Whooping Crane population has grown from a low of 16 birds (and only 4 or 5 breeding pairs) in 1941 to at least 133 individuals (including 47 breeding pairs) in 1995. The number of Double-crested Cormorants continues to expand on the Great Lakes, reaching an estimated 54,000 pairs in 1994.