

Habitats of Sandhill Cranes in the Southern Hudson Bay Lowland, Ontario

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During a 1979 reconnaissance of the southern Hudson Bay Lowland (50° to 52° N, 79° 30' to 86° W), 128 Sandhill Cranes were observed. Based on observations of 10 flightless young, or inference of breeding from adult bird behaviour, nine breeding sites are reported. The vegetation at these sites consisted of mixtures of open graminoid, open low shrub and treed low shrub physiognomic groups, in proportions characteristic of the region. In comparison with the habitat occupied by non-breeding cranes, breeding birds appeared to prefer sites with less open graminoid elements, presumably in order to optimize accessible cover for flightless young.

Key Words: Sandhill Crane, *Grus canadensis*, Hudson Bay Lowland, peatland habitat, breeding records, Ontario.

Sandhill Cranes (*Grus canadensis*) have been termed "uncommon local summer residents" of the Hudson Bay Lowland and elsewhere in Ontario (James et al. 1976). P. Tebbel (personal communication, 1980, Department of Zoology, University of Western Ontario) reported substantial breeding populations in north central Ontario from Sault Ste. Marie to Espanola, where they use many wetland types, from large treed bogs and low shrub fens to open cattail marsh, with some preference for secluded, undisturbed bogs and marshes away from the Lake Huron shoreline. Lumsden (1971) reviewed the status of Sandhill Cranes in northern Ontario and reported eight breeding locations, seven of these within the southern Hudson Bay Lowland (Figure 1). Lumsden noted that summer reports of cranes, like Canada Geese, were almost exclusively from areas of postglacial marine submergence or from postglacial lake beds. The maximum limits of the postglacial Tyrrell Sea closely approximate the contact line between the Precambrian Shield and the Paleozoic Lowland (Figure 1; Craig 1968; Sanford et al. 1968).

Methods

A helicopter reconnaissance of the area from 50° to 52° N, and 79° 30' to 86° W, 7 - 28 July 1979, involved ground-truthing and photography for mapping of surficial geomorphology. This necessitated the development of vegetation mapping units and a wetland classification to describe the vegetation dominating the region. Within this area (1:250 000 mapsheets 42N-P, 42I-K, and parts of 32L and M), approximately 200 sites were visited in order to record data on wetland vegetation. Sites were preselected from aerial photographs to reflect both representative and unusual landscape features. Approximately 16 000 km

were flown, at altitudes generally less than 350 m above ground level. Cranes were actively sought and recorded during this reconnaissance.

The habitats noted at breeding sites were described following the wetland classification of Jeglum et al. (1974, 1977), as modified for the Hudson Bay Lowland. The "formations" mentioned are bogs (peat pH < 5.0) and fens (pH > 5.0), the differences between which are discussed in detail elsewhere (ibid.). The "subformations" are open (< 10% cover by trees > 135 cm tall) or treed (10-40% cover by trees > 135 cm tall). The "physiognomic groups" are graminoid (conspicuous grass/sedge layer > 8% cover, shrubs < 135 cm tall < 10% cover) and low shrub (shrubs < 135 cm tall > 10% cover).

Observations

One hundred and twenty-eight Sandhill Cranes, including 10 flightless young, were recorded from the air or ground (Figure 1). Six breeding sites located were based on observations of flightless young. Three other breeding sites were inferred from the distraction displays by adult birds. (Photos of flightless young at sites A, C, D, G and H have been submitted to the Ontario Nest Records Scheme, Ornithology Department, Royal Ontario Museum.) The habitat descriptions and bird observations at breeding sites proceed from east to west (Figure 1).

A. 50° 10' N, 81° 35' W; east of Coral Rapids (19 July).

Two adults showing distraction display, two flightless young.

Habitat: Open low shrub bog complex; treed low shrub bog 'islands' ca. 10%, and open graminoid bog pools < 5%. Slight 'hummock-hollow' patterning; hummocks with increased low shrub cover and hollows with increased grami-

noid cover. Open low shrub bog (pH 3.9, depth to water 5 to 30 cm, peat depth 3.5 m over silty till) dominated by *Sphagnum nemoreum* (95% cover), *Chamaedaphne calyculata* (20%), *Eriophorum spissum* (10%), *Carex oligosperma* (5%), *Sphagnum fuscum* (5%), *Picea mariana* (5%), *Rubus chamaemorus* (3%), *Vaccinium oxycoccus* (2%). Treed low shrub bog 'islands' in this region predictably consist of: *Sphagnum fuscum* (80+%), *S. magellanicum* or *S. fallax* (< 20%), *Chamaedaphne calyculata* (25-60%), *Picea mariana* (15-25%), *Kalmia angustifolia* (0-15%), *Ledum groenlandicum* (0-35%); usually with *Cladina stellaris* and *C. rangiferina* (0-20%) increasing with the elevation of 'island' above surrounding area.

- B. 50° 30'N, 82° 17'W; north of junction of Missinaibi and Rabbit Rivers (15 July). One adult showing distraction display; young assumed.

Habitat: Open bog complex; ca. 15% open graminoid bog 'hollows' (*Sphagnum fuscum* dominant), ca. 80% open low shrub bog 'hummocks' (*S. fuscum* - *Chamaedaphne calyculata*), with some treed graminoid and treed low shrub bog 'islands' and open bog pool patterning.

- C. 51° 08'N, 82° 15'W; north of junction of Kwataboahagan and Agwasuk Rivers (26 July). Two adults showing distraction display; two flightless young.

Habitat: Open fen complex; ca. 40% treed low shrub fen (*Larix laricina* > 135 cm 12% cover, shrub layer dominated by *Betula pumila* var. *glandulifera*, *Rubus acaulis*), ca. 50% open graminoid fen (*Scirpus cespitosus*, *Carex exilis*), with some treed low shrub bog 'islands'; no patterned pond component.

- D. 51° 50'N, 82° 37'W; southeast of Fishing Creek Island (27 July). Two adults; two flightless young.

Habitat: Open graminoid fen and fen pools (*Carex limosa*, *Menyanthes trifoliata* dominant) ca. 70% (pools ca. 25%), ribbed with open low shrub fen (25%), and with ca. 5% treed low shrub bog 'islands'.

- E. 50° 54'N, 83° 38'W; east end of Pledger Lake (7 July). Two adult cranes showing distraction display; young assumed.

Habitat: Willow-alder-leatherleaf zone along Cheepay River mouth.

- F. 50° 52'N, 83° 40'W; south of Pledger Lake (7 July). Two adult cranes showing distraction display; young assumed. Cranes approached within 40 m of ground party, calling rapidly and alternately, with 'cranks' in sets of three. The lighter-coloured (greyish), larger bird (male) led and

finished the calls, and the smaller red-brown bird (female) provided the middle 'crank' of each set, at a higher pitch. Approaching each other more closely, their calls came close to unison. Vocalization was part of a distraction display, attempting to lead ground party.

Habitat: Open bog complex; open low shrub bog 'hummocks' (i) ca. 70%, and open graminoid bog 'hollows' (ii) ca. 30%.

i) Open low shrub bog (pH 3.7, depth to water 0 to 30 cm, peat depth 3.5 m over marine silt) dominated by *Sphagnum nemoreum* (70% cover), *S. fuscum* (20%), *Chamaedaphne calyculata* (11%), *Picea mariana* (10%), *Cladina stellaris/rangiferina* (6%), *Rubus chamaemorus* (5%), *Scirpus cespitosus* (2%).

ii) Open graminoid bog (pH 3.9, depth to water 0 to 10 cm, peat depth 3.5 m over marine silt) dominated by *Sphagnum nemoreum* (95% cover), *Eriophorum spissum* (30%), *Chamaedaphne calyculata* (6%), *Carex oligosperma* (5%), *Kalmia angustifolia* (3%). Bog pool component < 3%.

- G. 50° 14'N, 84° 02'W; upper Squirrel River (13 July). One adult showing distraction display; one flightless young.

Habitat: Patterned fen complex; open graminoid fen and fen pools (i) ca. 50%, and treed graminoid fen 'ribs' (ii) ca. 50%.

i) Open graminoid fen and fen pools (pH 5.6, water depth 0 to 40 cm in pools, peat depth > 3.85 m) dominated by *Cladopodiella fluitans* (80% cover), *Scoropodium scorpioides* (15%), *Scheuchzeria palustris* (10%), *Carex chordorrhiza* (8%), *Menyanthes trifoliata* (4%).

ii) Treed graminoid fen (pH 5.5, depth to water 0 to 40 cm, peat depth 3.8 m over marine silt) dominated by *Sphagnum rubellum* (30% cover), *S. magellanicum* (30%), *S. fuscum* (20%), *Larix laricina* (15%), *Tomenthypnum nitens* (10%), *Drepanocladus* sp. (10%), *Carex limosa* (5%), *Chamaedaphne calyculata* (5%), *Scirpus hudsonianus* (5%), *S. cespitosus* (3%), *Smilacina trifolia* (3%), *Betula pumila* var. *glandulifera* (2%), *Ledum groenlandicum* (2%); also notable in this rich fen: *Aronia prunifolia*, *Platanthera lacera*, *Pogonia ophioglossoides*, *Thelypteris palustris*, and 22 other vascular plant species.

- H. 50° 06'N, 84° 47'W; northern Rowlandson Twp. (13 July). One adult showing distraction display; one flightless young.

Habitat: Open low shrub fen complex; open low shrub 'hummocks' ca. 50% (dominated by *Kalmia angustifolia*, *Chamaedaphne calyculata*).

lata, *Betula pumila* var. *glandulifera*, *Larix laricina*), and open graminoid fen 'hollows' ca. 50%; minimal pond component.

- I. 50° 18'N, 84° 55'W; north of Pembina Island (12 July). Two adults showing distraction display; two flightless young.

Habitat: Patterned open bog complex; open low shrub bog ca. 35%, and open graminoid bog ca. 65%, the latter with bog pools.

Discussion

The flightless young were assumed to be four to seven weeks old, based on hatching dates reported by Lumsden (1971) for this area, and the habitats in which they were observed were considered to be their breeding habitats. Previously observed nesting habitats in the southern Lowland (Lumsden 1971) are comparable to those noted above, and no birds, with or without young, were observed in the dominantly treed habitats commonly bounding large wetland systems, where adult birds would have been conspicuous. When flightless young and adult birds were distracted on the ground or by helicopter, the adults invariably showed distraction display, rushing about erratically with spread, drooping wings, while the flightless young ran directly towards shrub cover.

Walkinshaw (1949) reported Sandhill Cranes to be omnivorous, eating cranberries, 'heathberries', blueberries, sedge tubers, mice, lemmings, grasshoppers and other insects. He reported that nesting birds regularly left acid bog nesting areas in northern Michigan to feed in nearby upland sites, including marsh edges, streams and meadows. Omnivory and feeding mobility suggest that diet may not be the critical factor in breeding habitat preference.

There was no apparent preference for either bog or fen systems. The consistent habitat preference was for open systems, with patterning ('ribs', 'hummock-hollows', 'islands', pondings) of open graminoid, open low shrub or treed low shrub phases. These systems varied in their percentage composition of particular physiognomic groups but, as homogenous vegetation mapping units, they were never smaller than ca. 100 ha and several were much larger than 1000 ha. They combined open graminoid/pond communities (offering available food, take-off and landing space, and optimal visibility) and treed/low shrub communities (offering accessible cover for flightless young).

Averaging the estimated proportions of physiognomic groups within peatland systems in which breeding activity was observed or inferred suggests a general habitat mix: open graminoid units 42% cover (5–70%), open low shrub units 43% (0–85%), and treed units 14% (0–50%). An open graminoid phase occurred in all sites reported; ponding patterns usually accompanied this phase.

Data on the physiognomic groups making up the peatland systems within which non-breeding cranes were noted were collected for 8 sites in detail, 10 in general, for a total of 18 sites. The averages of physiognomic groups differed from those outlined above: open graminoid units made up 63% cover (20–90%), open low shrub units 18% (10–50%), and treed units 19% (0–80%). These sites differed from breeding sites in that open units tended to lack strong patterning of low shrub phases. These data suggest that areas with more cover (open low shrub and treed) are preferred as breeding habitat.

The preference by non-breeding birds for more open graminoid sites was also suggested by observations of larger groups of non-breeding birds: a) 10 cranes in a very large and unpatterned graminoid bog (Figure 1; 51° 37'N, 82° 58'W), and b) 9 and 15 cranes in coastal meadows near the mouth of the Moose River.

Cattail marsh, confined basin bogs and other types of open temperate wetlands are rare in the southern Hudson Bay Lowland, but are more common on the Shield to the south and west, where only one crane observation was made (Figure 1). The types of peatland systems described above as breeding habitats dominate the southern Hudson Bay Lowland (Sims et al. 1979; Cowell et al. 1978; Raveling and Lumsden 1977). The breeding habitats are characteristic open peatland systems of this region, with an apparent preference by breeding cranes for sites with vegetation patterns offering accessible cover for flightless young. Sandhill Cranes are regular though uncommon summer residents of the Hudson Bay Lowland, but are locally common in the southern James Bay portion of the Lowland.

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