Breeding Status and Nest Site Selection of Common Raven in Ontario

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The Common Raven (*Corvus corax*), a widespread, holarctic species, is the world's largest passerine, if we exclude the lighter-bodied but long-tailed lyrebirds (Menuridae) and some birds-of-paradise (Paradisaeidae). The raven is also, arguably, the avian world's most intelligent bird. It is a non-migratory, year-round resident in most areas, inhabiting a wide range of habitats (Boarman and Heinrich 1999).

In Ontario, the Common Raven (*C. c. principalis*) is currently expanding its breeding range, similar to the northward expansion of the Turkey Vulture (Peck 2003), but in the opposite direction. With the exception of the southern portions of the prairie provinces and, until recently, southeastern Ontario, the Common Raven breeds throughout Canada and as far north as the high-arctic islands (Godfrey 1986).

Undoubtedly, the recent southward expansion of the Common Raven is due, at least in part, to land clearing and urbanization with its resultant increase in roads and road kills, landfill garbage, and nest site availability on buildings, towers, and other human structures.

Early reports of Common Ravens suggested that they were more common in southern Ontario prior to extensive land clearing. Wilson (1814) reported that they were numerous at Niagara Falls in 1804, and that they were seen daily along the shores of lakes Erie and Ontario. Saunders and Dale (1933) quoted J.A. Morden who had heard a raven in the fall of 1882 in Hyde Park, Middlesex County, and had often seen ravens in Lambton County at that time. By contrast, Farley (1891) considered it "a very rare migrant" in Elgin County, and Macoun (1903) described it as "rare in the cultivated parts of Ontario". Beardslee and Mitchell (1965) listed it as "Occasional very rare V(isitant)" in the Niagara Frontier region, and further stated that with the gradual settling of the region, the ravens disappeared and that there were only nine records in the century between 1861 and 1962. Speirs (1985) referred to ravens as "prevalent in the north but very rare in the south".

Due to habitat destruction, human persecution and the use of poison baits and trapping to reduce wolf populations, ravens became rare in the southern and settled parts of the province, until well into the twentieth century (Blomme 1987). Alberger (1890) suggested that ravens were common and bred in Sudbury. McIlwraith (1894) stat-

ed that they were seldom seen in southern Ontario, although they were said to be common in Muskoka. MacLulich (1938) said that they occurred rarely as permanent residents in Algonquin Park. And, Snyder (1951) indicated that they were nowhere really plentiful. These varying reports of their relative scarcity were borne out by Baillie and Harrington (1937) who reported that the only five known Ontario nesting/breeding records at the time of their writing were from Sudbury, Sudbury District in 1889; Port Arthur, Thunder Bay District in 1894; Temagami in Nipissing District in 1909; Moose Factory in Cochrane District in 1925; and from southern Kenora District in 1936.

Hofmann (2005) has presented in detail the reported breeding records of the Common Raven in the Greater Toronto Area (GTA), which includes the regions of Halton, Peel, Toronto, York, and Durham. His account included nest records from York Region and also possible but unconfirmed breeding records from Durham and Halton regions. He noted the nesting attempt by a raven in 1987 and 1990 (Jefferson 1989, 1991), and the probable and extremely rare hybridization of a Common Raven with an American Crow (*C. brachyrhynchos)* in 1993 (Jefferson 1994), all of which occurred at Etobicoke, Toronto. This hybridization in 1993 involved a presumed female crow with a male raven, and their nest from which two young birds fledged.

Despite the paucity of early nest records, the Ontario Nest Records Scheme (ONRS) now contains a total of 432 raven nest records, representing 30 provincial regions (Figure 1). Peck and James (1997) reported nest records from 19 provincial regions. The new nesting regions since then, all from southern Ontario, are Dundas, Frontenac, Glengarry, Lanark, Leeds, Lennox & Addington, Northumberland, Prescott, Simcoe, Stormont, and York. Further undocumented reports of nesting or breeding in Dufferin, Durham, Halton, and Peel regions await confirmation. All of these recent records indicate the continuing southward breeding expansion of the raven.

The large areas of northern Ontario without nest records (Figure 1) almost certainly indicate the inaccessibility and consequent lack of coverage there, rather than a real lack of nest sites.

Of 423 raven nest sites, 169 nests (40%) were on cliffs, rocky ledges and in quarries; 159 nests (38%) were in trees; and 95 nests (22%) were in or on various buildings, towers and other human structures. Of 70 nest sites in southern Ontario since 1980, the site percentages show a somewhat different pattern, with 34 nests (49%) on cliffs and rock ledges (mainly on the Niagara Escarpment); 14 nests (20%) in trees; and 22 nests (31%) on human structures. The decrease in the use of trees for nests and the increased use of human structures in southern Ontario would appear

to be the direct result of their respective availability in cleared and agricultural land.

The use of human-structure nest sites by our race (*principalis*) of the raven is much more common in recent times than formerly, judging from the account by A. C. Bent (1946) who described only one such site in his life history of the species.

Nidiology

RECORDS 432 nests representing 30 provincial regions (Figure 1).
Breeds on ledges and crevices of natural cliffs, as well as in similar places in quarries, open-pit mines, and railway and highway rock cuts (Figure 3); in living deciduous (97 nests), and coniferous trees (61 nests), and in dead or partly dead trees (8 nests) (Figure 4); and in or on human structures like hydro/radar/navigational towers (33 nests), active or abandoned hospitals/barns/silos/grain elevators (28 nests), bridges/canal locks (14 nests), racetrack light platforms (11 nests), water towers (4 nests), and miscellaneous human-structure sites (5 nests) (Figures 5 and 6). One of these miscellaneous human-structure sites was on a moving power crane.

Several of the cliff nests were at abandoned Peregrine Falcon (*Falco peregrinus*) aeries, and old Bald Eagle (*Haliaeetus leucocephalus*) tree nests also were used occasionally. Among 91 deciduous tree nests, 82 nests (90%) were in aspen/poplar trees, 4 nests (4%) were in willow spp., 3 nests (3%) in Yellow Birch, and 2 nests (2%) in maple spp.; among 60 coniferous tree nests, 33 nests (55%) were in pine spp., and 27 nests (45%) were in spruce spp.

Cliff nests were on ledges and in crevices, which usually were under overhangs, and nests often were supported by bushes and small trees. They most often were above water and heights ranged from near the tops of cliffs to as low as 3 m from the bottom. Tree nests ranged in height from 3 to 30 m; and nests on human structures ranged from near the top of high towers to as low as 2.4 m on the heating duct of an abandoned building. Nests were bulky structures of sticks and twigs, with deep cups lined variously with mammal hair, grasses, bark strips and other plant material (Peck and James 1987).

Outside diameters of 18 nests ranged from 41 to 150 cm (16 to 59 inches), with 9 averaging 61 to 91 cm (24 to 36 inches); inside diameters of 2 nests were 15 and 25 cm (6 and 10 inches); outside depths of 13 nests ranged from 20 to 76 cm (8 to 30 inches); inside depths of 3 nests were 10, 15, and 20 cm (4, 6, and 8 inches).

An instance of re-nesting after a nest failure was reported from Timiskaming District in 1994.

EGGS 80 nests with 3 to 7 eggs; **3E** (16N), **4E** (40N), **5E** (20N), **6E** (2N), **7E** (2N).
Average clutch range 4 eggs (40 nests).

INCUBATION PERIOD 4 nests, from 20 to 21 days; because incubation is reported usually to begin with the second egg (Steihl 1985), ONRS periods are based on that premise.

EGG DATES 105 nests, 2 March to 16 May (138 visit dates); 52 nests, 20 March to 2 April. An adult was observed sitting tightly and continuously on a Grey County nest on a silo from 23 February 2005, likely indicating an earlier egg date than above (M. O'Dell, pers. comm.).

Data from eight nests indicated fledging periods varying from more than four to six weeks. Asynchronous hatching prohibits exact estimations of the fledging period (Stiehl 1985).

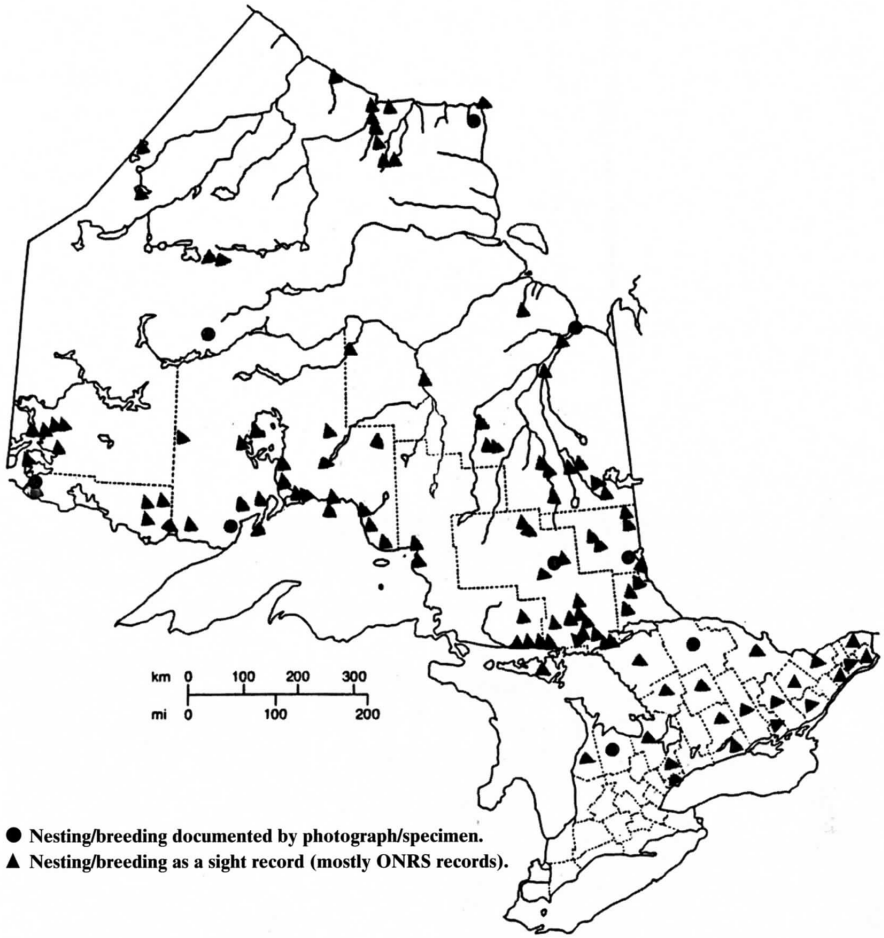

Figure 1: Distribution of Ontario breeding records for Common Raven.

Where nests are secure, undisturbed, and relatively successful, ravens demonstrate a pronounced tenacity in their annual, or sometimes intermittent, use of such nests for considerable periods. The Algonquin Park Visitor Centre Database indicated that one cliff nest site near Fisher Lake (Figure 7) in Algonquin Provincial Park, Nipissing District, had 20 years of known occupation from 1963 to 2000, and another Algonquin cliff site at Costello Lake (Figure 9) showed 21 years of use from 1970 to 1999 (R. Tozer, pers. comm.). A nest in Sudbury District, at Laurentian University was positioned on a light standard over a running track and was in annual use from 1991 to 2001 (10 records).

Figure 2: Adult Common Raven, 31 May 1999. Photo by *George K. Peck.*

Figure 3: Cliff nest site of Common Raven, Costello Lake, Algonquin Provincial Park, Nipissing District, Ontario, 20 May 1973. Photo by *George K. Peck.*

Figure 4: Active tree nest of Common Raven, Sarawak Township, Grey County, Ontario, 27 March 2004. Photo by *George K. Peck*.

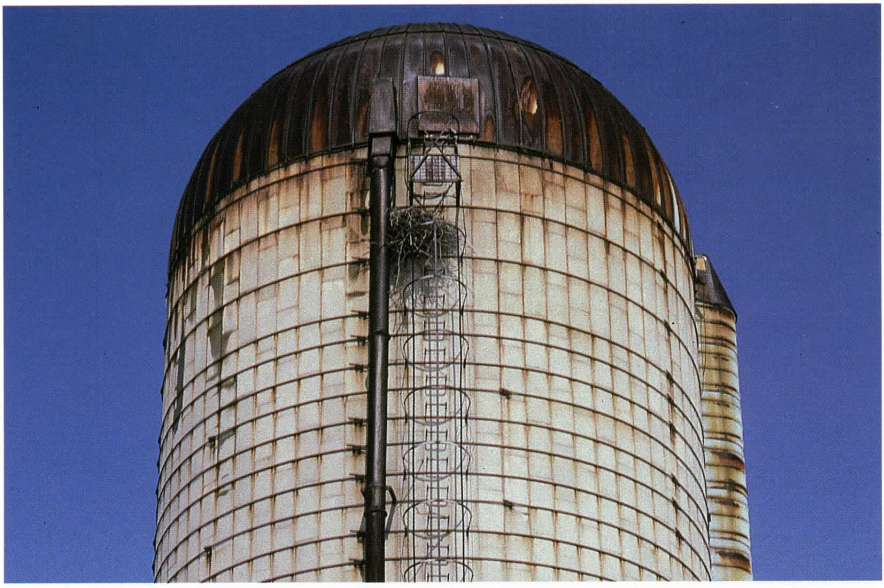

Figure 5: Active nest site of Common Raven on silo at a height of 21.3 m, Ravenna, Grey County, Ontario, 6 April 2003. Photo by *George K. Peck*.

Figure 6: Active Common Raven nest site in unused barn, Sullivan Township, Grey County, Ontario, 6 April 2000. Photo by *George K. Peck*.

Figure 7: Nest and eggs of Common Raven, Fisher Lake, Algonquin Provincial Park, Nipissing District, Ontario, 4 April 1970. Photo by *George K. Peck*.

Figure 8: Nest and three young Common Ravens, Polar Bear Provincial Park, Kenora District, Ontario, 24 June 1970. Photo by *George K. Peck*.

Figure 9: Adult Common Raven feeding whole thrush (Turdidae) eggs to nestlings, Costello Lake, Algonquin Provincial Park, Nipissing District, Ontario, 21 May 1973. Photo by *George K. Peck*.

A number of records were received by the ONRS where ravens typically used another nearby nest on alternate or subsequent years, in cliff, tree and human-structure sites.

In the ONRS database, of 102 nests with known outcome, 78 nests (76%) successfully fledged young. This successful percentage nest rate is unusually high when compared with the rates of most other passerine species. The 24 unsuccessful nests (24%) were deserted because of nest damage, or because of human interference, death of adult birds, or for other unknown reasons. Ravens appear to be much more vulnerable to human persecution than are some other Corvidae (Goodwin 1976).

Although no specific population figures were found for the province, it would appear that the numbers of Common Ravens are currently increasing, at least in southern Ontario.

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