

INDICATOR: DOUBLE-CRESTED CORMORANT POPULATION CHANGES

Background

The double-crested cormorant (*Phalacrocorax auritus*) is a large black waterbird with a partially orange face and webbed feet. It feeds primarily in littoral zone areas on small fish such as alewife, yellow perch, and round gobies; rainbow smelt, pumpkinseed, crappie, and bass are secondary food choices. Double-crested cormorants are often observed standing on rocks or posts with their wings outstretched (Figure 1). They are also observed swimming low in the water, often with only their head and neck exposed. Cormorants are very sociable birds migrating and often flying between their breeding



Figure 1. Double-crested cormorant (*Phalacrocorax auritus*) (Photo credit: Larry Hamrin).

areas and wintering grounds in V-shaped flocks. They nest in colonies and often gather on the water's surface in gregarious frenzied feeding flocks. Both male and female birds share the responsibility of building the nest, incubating, and feeding the chicks.

Cormorants were first noted breeding on the Great Lakes in the early 1900s. By the early 1970s, the continental population of double-crested cormorants had greatly declined and had been extirpated in several areas due to DDE-induced reproductive failure through eggshell thinning (Weseloh et al. 1983, 1995). DDE is a breakdown product of the pesticide DDT. DDE-

induced eggshell thinning – a serious problem from 1955 until the early- to mid-1970s – caused little to no recruitment into the population. The breeding population eventually crashed from this lack of recruitment and natural adult mortality, which may also have been augmented by a higher death rate among adults who were also contaminated. Subsequently, when the use of DDT was banned, the cormorant population greatly expanded. This expansion was also due to reduced human persecution, and increased forage fish populations (Weseloh et al. 1995). Many people feel that since the early 1980s, the cormorant population has grown to the point of being a nuisance in several areas of the Great Lakes: eastern Lake Ontario, western Lake Erie, northwestern Lake Huron, Georgian Bay, etc. An overabundance of cormorants may impact fish and wildlife populations by:

- impacting vegetation, especially the last natural remnants of Carolinian vegetation on East Sister and Middle Islands in western Lake Erie (Hebert et al. 2005);
- taking over other colonial waterbird nesting habitats (Cuthbert et al. 2002); and
- possibly degrading fisheries by consuming too many forage and sport fish (Lantry et al. 2002; Weseloh et al. 2002; Rudstam et al. 2004).

Status and Trends

The current double-crested cormorant population in North America is estimated at two million birds, with nearly 70% of them in the interior population, which includes the Great Lakes region (USFWS 2006). In the Great Lakes, the cormorant population showed a 30-year colonization period (1920s-1950s), followed by a 20-year decline (1950s-1970s) and, most recently, a 30-year resurgence (1970s-2000s). This resurgence is a result of legislation protecting cormorants, a decrease in commercial fishing, a decrease in human persecution, and a lower level of toxic chemicals, such as PCB and DDT (Environment Canada 1995) in their food. The number of cormorant nests on the five major nesting islands in western Lake Erie increased from 87 in 1979 to 12,973 in 2004 (Figure 2). In 2000, 81% of the Lake Erie breeding population was located on East Sister and Middle Islands, both located in the western basin 16 km (10 miles) north of the north shore of Ohio (Hebert et al. 2005). Western Lake Erie is one of the five major cormorant nesting areas in the Great Lakes (Weseloh et al. 2002).

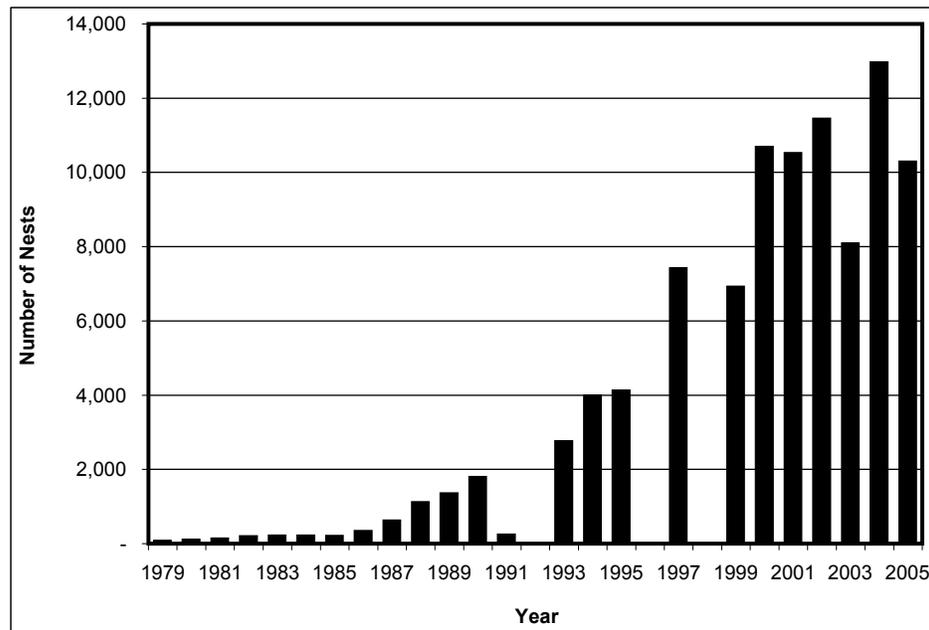


Figure 2. The number of double-crested cormorant nests on Pelee, Middle, Big Chicken, East Sister, and Middle Sister Islands in western Lake Erie, Canada, 1979-2005 (data collected by Canadian Wildlife Service). There were no counts or only partial counts in 1991, 1992, 1996, 1998 and 2003.

In the near future, cormorant population levels will oscillate from a combination of declining food stocks (i.e., alewife populations have declined dramatically in Lakes Ontario and Huron, however, cormorants have begun to feed on the abundant round gobies) and increased lethal management in an attempt to reduce the population.

Management Next Steps

The U.S. Fish and Wildlife Service is conducting a two-year Environmental Impact Study on the growing double-crested cormorant population across the United States. The results of this study will be used to develop a U.S. nationwide Cormorant Management Strategy. A local environmental assessment has been conducted by the U.S. Fish and

Wildlife Service that proposed cooperating agencies reduce double-crested cormorant numbers to a target population of 3,800-4,800 breeding birds in Ohio by 2009 (USFWS 2006). In 2006, there were more than 3,800 pairs of cormorants nesting on West Sister Island alone; management goals call for that number to be reduced to no more than 2,000 breeding pairs (USFWS 2006). Techniques such as physical exclusion, habitat modification, or harassment will be used to reduce the ecological impact to the island from cormorants. In more severe situations, cormorants will be removed by shooting, egg oiling or destruction, nest destruction, or euthanasia following live capture (USFWS 2006).

In Canada, the Ontario Ministry of Natural Resources conducted a cormorant monitoring and research program on several islands in western Lake Erie, Presqu'île area of eastern Lake Ontario, several locations in the Georgian Bay and North Channel area and several inland lakes. This five-year cormorant program:

- included an intensive baseline monitoring program beginning in the spring of 2000;
- tested selected harassment techniques as a means of reducing the impact of cormorant populations; and
- undertook experimental control beginning in spring 2001 (OMNR 2000).

Parks Canada is also evaluating its direction in assessing cormorants on Middle Island.

Research/Monitoring Needs

It is difficult to assess many of the standard biological and chemical parameters associated with using the cormorant as an indicator species in western Lake Erie; since 1987, all nests have been relatively inaccessible in the tops of tall trees. However, further research is needed on the growth potential of the cormorant population in Lake Erie and on the determination of the point at which the population will stabilize. Also, research is needed to further determine if the cormorant population is having an effect on the Lake Erie sport or commercial fishery by studying the consumption by all cormorant colonies individually in the lake and specifically in the western basin (Madenjian and Gabrey 1995; Hebert and Morrison 2003). However, all current findings must be considered in light of the extensive cormorant management actions, including lethal control which is now occurring in western Lake Erie.

References

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Weseloh, D.V., S.M. Teeple, and M. Gilbertson. 1983. Double-crested cormorants of the Great Lakes: Egg-laying parameters, reproductive failure, and contaminant residues in eggs, Lake Huron, 1972-1973. *Canadian Journal of Zoology* 61:427-436.

Links for More Information

Environment Canada. The rise of the double-crested cormorant on the Great Lakes: Winning the war against contaminants: http://www.on.ec.gc.ca/wildlife/factsheets/fs_cormorants-e.html

North American Fishing Club. They're Everywhere! They're Everywhere!: <http://forums.fishingclub.com/eve/forums/a/tpc/f/72010418011/m/92710053521>

U.S. Geological Survey. Predation on walleyes (*Sander vitreus*) by double-crested cormorants (*Phalacrocorax auritus*) at the West Sister Island colony in 2005: http://www.glsc.usgs.gov/_files/reports/2005LakeErieCormorantReport.pdf

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