

# DOUBLE-CRESTED CORMORANTS AND FISHERIES IN THE GREAT LAKES BASIN

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### Introduction

Flying low, in a straight line or ragged-V formation, large dark birds fly past, feathers rustling as they settle on the water. Swimming with bodies submerged, head and neck above water, bills pointed upward, they dive under water to catch fish. Taking flight, they head for another destination in the Great Lakes basin. Not to be confused with geese or loons, the birds are double-crested cormorants, called crow-ducks by European settlers, and *Phalacrocorax auritus*, by bird scientists.

Adult birds look alike, with dark plumage tinted a greenish gloss on the head, neck and underparts. They have slender, hooked bills, with webbed feet set well back on their body, orange facial skin, and an orange throat pouch, like their relative the pelican. The species is named for the two small tufts or crests of feathers, that appear for a short period of time on either side of the head of adult birds in breeding plumage. One to two year old juvenile cormorants have gray or tan plumage.

### Natural History

Double-crested cormorants reside in many locations throughout North America. They nest along the Pacific coast from Southwest Alaska to Mexico, and from lakes in central Alberta to James Bay and Newfoundland, south along the Gulf of Mexico. Along the Pacific coast and the southern Atlantic coast, populations are

resident year-round. The interior population, centered in the northern prairies, spread eastward and first nested on the Great Lakes in 1913. The birds in the Great Lakes population migrate south, along the Atlantic coast and Mississippi River drainage to overwinter in the southeastern states and Gulf of Mexico. By May, birds have returned north to breed and rear their young. They often nest on islands in the company of terns and gulls, great blue and black-crowned night herons, and great and snowy egrets. Nests are constructed from sticks and twigs and located in trees or on the ground. They usually contain from two to four light blue eggs. Both adult birds incubate the eggs for about 28 days by wrapping their feet around them, and care for their young until they become fully independent, about 10 weeks after hatching.

Cormorants are expert divers, adapted naturally to forage under water for fish. Fully-webbed feet propel slim, streamlined bodies on dives usually from 8 to 20 feet. Greater depths are possible. Eye muscles are specialized to allow acute vision both above and under the water. Feathers absorb moisture, helping cormorants to stay under water for about 30 seconds. After foraging, cormorants often dry their feathers by perching in a distinctive wing-spreading posture.

The Great Lakes population of double-crested cormorants was devastated during the 1960s, primarily by the effects of chemical contamination especially DDT. Because they are fish-eating birds at the top of the food chain and long-lived (up to 20 years), adults accumulated pesticides and other toxins from the bodies of their prey. These chemicals caused reproductive failure, and chicks that hatched sometimes had crossed bills, club feet, and eye and skeletal deformities. In addition to contamination, human disturbance and nest destruction contributed to the decline.

In the early 1970s the Great Lakes population had plummeted, with few birds remaining or breeding successfully. In Wisconsin, the species was placed on the list of threatened and endangered wildlife. Nesting platforms were erected to aid their recovery. In 1972, double-crested cormorants were added to the list of species protected by the 1918 Migratory Bird Treaty Act. Despite these conservation efforts, the Great Lakes population continued to decline, with few breeding birds remaining or breeding successfully. The devastation of the Great Lakes cormorant population was a grim example of the declining health of the Great Lakes ecosystem.

## **A Population Resurgence**

Today, the Great Lakes population of double-crested cormorants is at historic highs. Pollution control has lowered concentrations of toxic contaminants in their food supply, food is ample throughout their winter and summer ranges, and they are protected by federal and state laws. Nesting populations can be found on all

the Great Lakes in both United States and Canadian waters, on inland lakes like Lake Champlain and Oneida Lake, and on the Niagara River.

Scientists do not expect the population to grow continuously. Instead, the number of birds should decline eventually, and then stabilize. Nesting habitat may become an important limiting factor. Disease may also play a role in this reversal. Although the cormorant population resurgence may indicate enhanced water quality in the Great Lakes, it has been accompanied by concern and controversy about the effects the birds may be having on stocks of recreational and commercial fish species, and island nesting habitat.

## **Issues**

Because cormorants are conspicuous fish-eating birds, anglers in the Great Lakes basin may consider them a nuisance species and a threat to populations of recreational and commercial fish species. However, studies of the feeding habits of cormorants show the birds feed on many fish species, concentrating on the ones that are easiest to catch. Adult birds eat about one pound of fish per day. Because the ease with which a fish can be caught depends on such factors as distribution, relative abundance, and behavior, a cormorant's diet can vary considerably from site to site and throughout the breeding and nesting seasons. All told, small (three to five inch) fish like alewife, yellow perch or gizzard shad provide most of their food. The birds find these fish in large schools, sometimes in shallow water.

Cormorants also feed on steelhead, lake and brown trout when available, especially when recently-stocked schools of small fish can be found in shallow near shore waters. Population level effects from cormorant predation on lake trout, salmon or steelhead are not apparent though, as diet studies indicate the birds consume very few of these fish in open waters. Can large colonies of cormorants reduce local populations of catchable-size pan fish like sunfish and rockbass, or sportfish like smallmouth bass, walleye pike, or yellow perch sufficiently to compete with anglers? Recreational and commercial anglers in some locations in the Great Lakes basin believe they can. Until biologists obtain additional information, the answer to this question remains unclear.

It is clear, though, that double-crested cormorants can feed heavily on small fish being raised commercially on minnow farms for bait, or for human consumption at fish farms or aquacultural sites. Also, in some locations within the Great Lakes basin, double-crested cormorants are competing with other colonial nesting water and wading birds for the same island nesting sites. A special concern exists when this competition jeopardizes the reproductive success of rare, threatened, or endangered plant and animal species.

## **Federal and State Responsibilities**

The population resurgence of double-crested cormorants in the Great Lakes basin has been accompanied by requests for the U.S. Fish and Wildlife Service, U.S. Department of Agriculture/ Wildlife Services, and state fish and wildlife management agencies to act. Each agency has a different role to play. The primary responsibility of the U.S. Fish and Wildlife Service is regulatory oversight, to ensure that actions taken by the states will not cumulatively jeopardize cormorant populations. Because the birds are protected under the Migratory Bird Treaty Act, their nests and eggs cannot be disturbed, and the birds cannot be captured or shot, unless a depredation permit is first obtained from the Service. At the federal level, the Service does not conduct on-the-ground management activities when cormorants cause damage. This role is the responsibility of the U.S. Department of Agriculture's Wildlife Services Program. Their job is to help states, organizations, and individuals resolve conflicts between people and wildlife on public and private lands, by either recommending or implementing wildlife damage management options. The U.S. Fish and Wildlife Service does not act on a request for a depredation permit until the U.S. Department of Agriculture recommends this action.

## **Management Activities**

Federal and state fish and wildlife agencies have responded to public and private concerns about double-crested cormorants in the Great Lakes basin. The U.S. Fish and Wildlife Service has funded Great Lakes-wide population monitoring surveys in coordination with states and the Canadian Wildlife Service. The agency has issued a regulation permitting the lethal take of cormorants, without a permit, on catfish and bait fish farms in 12 southeastern states and Minnesota, where economic impacts have been well-documented and non-lethal control has proven ineffective. The Service has also funded a variety of studies to assess the impact of cormorants on fish populations, and has conducted an extensive review of other studies.

The State of New York has altered fish stocking methods in response to recommendations from a citizen's task force. It has also requested and received depredation permits for double-crested cormorant control from the U.S. Fish and Wildlife Service to prevent nesting colonies from becoming established on new islands in Lake Ontario, and to prevent the colony on Oneida Lake from jeopardizing the nesting habitat of common terns, a state-listed threatened species. The U.S. Department of Agriculture and the State of New York have conducted a pilot study to investigate techniques to change migration and roosting patterns of double-crested cormorants on Oneida Lake. The U.S. Fish

and Wildlife Service has also issued depredation permits to the State of Vermont to prevent cormorant colonies from spreading to new islands in Lake Champlain in order to reduce competition with other colonial waterbirds, and to prevent private property damage. To assist the State, the U.S. Department of Agriculture has conducted a variety of both lethal and non-lethal cormorant management activities on the lake.

## **What Comes Next?**

The U.S. Fish and Wildlife Service will cooperate with state and federal fish and wildlife management agencies to develop a regional management plan for double-crested cormorants. While the plan is being developed, the Service is preparing a comprehensive assessment of the population status of cormorants, and a review of the impacts of double-crested cormorants on commercial and sport fish populations in both natural and artificial settings. Although it is not the current policy of the Service to issue depredation permits to reduce cormorant predation on sport fish, permit requests may be considered under unique circumstances. Any significant policy changes must be based on sound science, and would be implemented only after coordination with appropriate federal and state resource agencies and the concerned public.

## **For Further Information**

Additional information on double-crested cormorants is available on the Internet at the following websites:

### **McMaster University**

<http://www.science.mcmaster.ca/Biology/Harbour/SPECIES/CORMRNT/CORMRNT.HTM>

### **U.S. Department of Agriculture/Animal and Plant Health Inspection Service/Wildlife Services**

[http://www.aphis.usda.gov/wildlife\\_damage/nwrc/symposia/cormorant\\_symposium/index.shtml](http://www.aphis.usda.gov/wildlife_damage/nwrc/symposia/cormorant_symposium/index.shtml)

### **U.S. Fish and Wildlife Service/Lake Champlain Fish and Wildlife Resources Complex**

<http://www.fws.gov/r5lcfwro/corfct.htm>

### **U.S. Fish and Wildlife Service/Office of Migratory Bird Management:**

<http://migratorybirds.fws.gov/issues/cormorant/cormorant.html>

**U.S. Geological Survey/Patuxent Wildlife Research Center**

<http://www.mbr-pwrc.usgs.gov/id/mlist/h1200.html>

<http://www.mbr-pwrc.usgs.gov/bbs/htm96/trn626/tr1200.html>