



U.S. Fish & Wildlife Service

Lake Champlain Ecosystem

Fish and Wildlife Resources Complex

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U.S. Fish and Wildlife Service Releases Draft Environmental Impact Statement On Double-Crested Cormorant Management

Double-Crested Cormorants and Fisheries on Lake Champlain

Flying low, in a straight line or "ragged-V" formation, large dark birds fly past and land on Lake Champlain, making deep croaking sounds as they settle on the water. Swimming with bodies submerged, head and neck above water, bills tilted skyward, they dive underwater to catch fish. 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 coast from southwest Alaska to Mexico, and on lakes from central Alberta to James Bay and Newfoundland, south along the coast to 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 first Vermont sighting (three birds) was reported in the late 1930s. Cormorants were reported next in the mid-1970s, when birds were seen on Lake Champlain in the Young Island (South Sister Island) vicinity, and again in 1981 when 35 birds were seen on this island.

Vermont's cormorants are part of the Interior Great Lakes population which migrates south in autumn along the Atlantic Coast and Mississippi River drainage, to overwinter in the southeastern states and Gulf of Mexico. By May, the birds return north to breed and rear their young. Cormorants 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 or twigs and are located in trees or on the ground. Nests 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 underwater for fish.

Fully-webbed feet propel streamlined bodies on dives usually from 8 to 20 feet, although greater depths are possible. Eye muscles are specialized to allow acute vision both above and underwater. 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 spread-wing posture.

During the 1960s, the Great Lakes population of double-crested cormorants was devastated primarily by the effects of chemical contamination. 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 State's list of threatened and endangered wildlife, and 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 efforts the Great Lakes population continued to decline, with few breeding birds remaining or breeding successfully.

A Population Resurgence on Lake Champlain

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 the birds are protected by Federal and State laws. Nesting colonies can be found on all the Great Lakes in both United States and Canadian waters, and on inland lakes like Lake Champlain, including the Missisquoi National Wildlife Refuge in Swanton, Vermont. Nesting was first confirmed on Lake Champlain (Young Island, Vermont) in 1982, when one nest was found. Two years later, cormorants began nesting in New York waters on the Four Brothers Islands. Since then, these islands have supported the majority of nesting pairs on the lake, with most of the population growth occurring in the 1990s.

On Young Island, the cormorant colony grew from 34 nests in 1993 to 2,597 in 1998. On the Four Brothers Islands, the colony likewise grew to 1,499 nests in 1998. Nearby islands in Vermont have also shown recent signs of cormorant expansion from the main colonies, although a similar expansion has not yet occurred in New York. In 1994, Mud Island was colonized, and in 1996, biologists counted 180 cormorant nests on Bixby Island (North Sister Island), 25 on Shad Island, and 2 nests on Popasquash Island. The lake's double-crested cormorant population is growing rapidly, with an average of 2.5 chicks fledged per nest. Population modeling, based on lower productivity rates in 1996, predicts a lakewide population of 7,100 pairs by the year 2000.

Feeding Habits on Lake Champlain

Double-crested cormorants normally hunt for fish within a range of 5 to 10 miles (8 to 16 kilometers) from their nesting colonies, and some evidence indicates the preferred distance is less than 1.4 miles (2.3) kilometers. They are attracted particularly to schooling fish. The birds typically fish in water up to thirty feet deep, where they dive from the surface, propelling themselves with their feet and using their tail as a rudder. A captured fish is brought to the surface and tossed about until it can be swallowed head first. It is not unusual for double-crested cormorants to feed heavily on the most common, readily available fish species. This is true for Lake Champlain's cormorants, where a recent study of the cormorants' diet found yellow perch to be the principal prey species. Consumption was between 14.5 to 18.6 ounces (412 to 526 grams) of fish per day for each bird. The study, conducted by the University of

Vermont, and supported by the U.S. Fish and Wildlife Service, the High Peaks Audubon Society and the U.S. Geological Service's Tunison Laboratory in Cortland, New York, found that less than 2% of the fish consumed were salmonids, like brown and lake trout, or Atlantic Salmon.

Issues

Because cormorants are conspicuous fish-eating birds, Lake Champlain anglers may consider them a nuisance species and a threat to recreational fish species like yellow perch. However, the scientific information to date does not support this belief. Yet, concern still exists. One reason is that the potential for cormorants to impact sport fish populations in Lake Champlain has not been studied extensively, so it is not well understood. Also, because cormorants are highly visible and increasing in number, anglers frequently witness these birds feeding on fish, whereas other, more invisible factors, are often unnoticed. This anecdotal information can easily become the most influential among the public, even though it is not supported by scientific data. However, State fisheries biologists are aware that double-crested cormorants can feed heavily on recently stocked fish, and fish stocking practices in Lake Champlain have been modified to account for this.

In the Lake Champlain Basin, the expanding population of double-crested cormorants may also be a threat to other plants and wildlife. A larger population of the birds, for example, may have significant consequences for island nesting colonial waterbirds like black-crowned night herons, cattle egrets, and great blue herons, and the habitats they depend on. Also, native and rare island plant communities and species may be impacted, such as the recently documented effect on the Canadian milk vetch--a Vermont State-listed threatened plant species--on Bixby Island.

Federal and State Responsibilities

The population resurgence of double-crested cormorants on Lake Champlain 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. Permits are issued to either the landowner or the wildlife management authority, such as the State agency.

At the Federal level, the U.S. Department of Agriculture/Wildlife Services provides on-the-ground assistance to resolve wildlife damage problems. Their job is to help states, organizations, and individuals solve 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 the States and the Canadian Wildlife Service. The agency has also issued a regulation permitting the lethal take of cormorants, without a permit, on catfish and baitfish farms in 12 southeastern states and Minnesota, where economic impacts to private property 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 Vermont Fish and Wildlife Department and the U.S. Department of Agriculture/Wildlife Services have attempted to limit cormorant colonization of new islands in Vermont. Permits were issued by the Service to the State agency for the purpose of reducing competition with other colonial waterbirds, and to reduce damage to private property. Nests and eggs have been removed from Mud, Popasquash, and Bixby Island from 1994-97. On Bixby Island, water under high pressure from fire hoses was used to dislodge nests from trees less than 50 feet from the ground. Following removal from these islands, in 1998 the birds returned to nest only on Bixby Island. A week of early hazing with pyrotechnics, followed by a summer of occasional propane cannon use, has prevented cormorants from nesting there in 1998. The birds continue to nest on Young and Shad Island, as well as the Four Brothers Islands in New York, where management activities have not been undertaken.

What Comes Next?

In 1998, the Vermont Fish and Wildlife Department, along with the New York State Department of Environmental Conservation and the U.S. Department of Agriculture/Wildlife Services, issued a draft Environmental Assessment of alternative strategies for the management of double-crested cormorants on Lake Champlain. The proposed alternative strategies ranged from no action to the prevention of colony expansion to other islands and the suppression of the primary Vermont colony on Young Island. Responses from public hearings favored the more aggressive management options. This Environmental Assessment is now undergoing final review. The Service expects to continue to support local cormorant control through the issuance of permits when these actions are justified and based on scientific or economic data, when they are used as a supplement to non-lethal management activities, and when any authorized takes have a reasonable chance of resolving the damage and will not have a significant impact on the migratory bird resource.

On a larger scale, the U.S. Fish and Wildlife Service, the U.S. Department of Agriculture/ Wildlife Services, and the States are cooperating in the development of a population management plan for the Great Lakes population, including Lake Champlain, and the Atlantic Coast population. The plan is expected to review the status of the species, to describe the various types of damages caused by cormorants and the techniques that can be used to reduce these damages, and to select appropriate actions that can be implemented by the Federal and State agencies. The Service has already funded the first phase of the plan, which will review the above information for use in the second phase, when the best management alternatives will be selected.

Further Information

Information is available on the Internet at several web sites.

- [Canadian Wildlife Service](#)
- [Michigan Department of Natural Resources](#)
- [U.S. Department of Agriculture, Animal and Plant Health Inspection Service, Wildlife Services](#)

- [U. S. Fish and Wildlife Service Migratory Bird Management Office](#)
- [U.S. Geological Survey: Patuxent Wildlife Research Center](#)
- [Tunison Laboratory of Aquatic Science](#)
- [Vermont Cooperative Fish and Wildlife Research Unit](#)
- [Vermont Fish and Wildlife Department](#)

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