

# Mute Swans Make Noise: Lower Great Lakes Population Scrutinized

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## Introduction and Population Status

Mute Swans (*Cygnus olor*), endemic to Eurasia, were introduced to North American city parks, zoos, avicultural collections, and estates in the late 1800s and early 1900s. The intentional releases and accidental escape of these birds and their progeny resulted in a rapidly expanding free-flying feral population along the northeastern Atlantic Coast of the United States, portions of the Pacific Coast, and more recently, much of the southern half of the Great Lakes basin.

It is well known that exotic waterfowl can have negative ecological impacts on native species, particularly if the introduced species is aggressive, competes with other waterfowl for food or habitat, and/or hybridizes with native species. Although hybridization is not currently a problem with Mute Swans in North America, the species' size, extremely aggressive disposition, and voracious appetite make it a strong competitor with substantial regional impacts on native waterfowl and their habitats.

Populations of feral Mute Swans in North America have been growing at an astounding rate. For example, the Chesapeake Bay (Maryland and Virginia) populations have grown from 1962 when five birds were released, to approximately 4,500 birds last year. Despite efforts to control them, the United States Atlantic Coast population is close to 13,000 birds.

More recently (since the mid-1960s), Mute Swans have been colonizing the Great Lakes watershed, and the population is now nearly 10,000 birds. The southern Ontario population is presently about 2,000 birds and is increasing at

10 to 15 percent per year. At this growth rate, the southern Ontario population will double every seven to eight years. Also, given that the lower Great Lakes includes about 116,000 acres of coastal wetland habitat, the population could potentially reach 30,000 swans. If Mute Swans populations increase to the point that they begin nesting on inland wetlands and man-made waterbodies, as they have in Poland and along the Atlantic Coast of the United States, we could expect that the southern Ontario population could even surpass 30,000 birds.

The rapid growth rate of southern Ontario's feral Mute Swans can probably be attributed to a number of factors. The lower Great Lakes is climatically similar to the native Eurasian range of Mute Swans. There are few natural predators of Mute Swan nests, cygnets or adults on the Great Lakes. Mute Swans are dominant over all other members of the lower Great Lakes waterfowl community. There has been minimal interference with the birds by humans. In Ontario, these birds have been protected under the Migratory Bird Act since 1974. Reduced availability of lead artifacts in the environment has helped this species; Mute Swans are highly susceptible to lead artifact ingestion. The recent warming trend has been beneficial, as cold winters result in reduced overwinter survival and future reproductive output. Finally, Mute Swans have large clutch sizes and are capable of laying replacement clutches.

## Ecological Concerns

This rapidly growing Mute Swan population is of concern for numerous reasons. Mute Swans are one of the most

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aggressive species of waterfowl in the world; they regularly attack other species of waterfowl, as well as other wetland-dependent birds. They also are known to attack humans. Mute Swans maintain large territories (>15 acres) during mating, nesting, brood rearing, and foraging; they have even been reported to occupy territories throughout the year. During incubation and brooding, cobs actively patrol the perimeter of their territory and aggressively defend it, thereby forcing native species to nest and feed in less-preferred areas.

By displacing other waterfowl from their territories, Mute Swans reduce the amount of staging and breeding habitat available to native species of ducks, geese, and swans on the lower Great Lakes. This probably reduces the carrying capacity of (with respect to number of birds and capability of birds to acquire body fat) coastal wetlands for staging and breeding waterfowl. Mute Swans have also been reported to kill ducks, Canada Geese, Pied-billed Grebes, and herons, and cause nest abandonment in Least Terns, Black Skimmers, Forster's Terns, and Common Terns. Therefore, as the quality and quantity of wetland habitat continues to decline in North America, increasing populations of aggressive Mute Swans serve to further reduce the carrying capacity of remaining habitats for wintering, staging and breeding waterfowl as well as other wetland dependent avifauna.

Competition in waterfowl will most likely occur on wintering and/or spring staging areas where food is most limiting. Whereas coastal Great Lakes wetlands are most important as staging habitat for native waterfowl, these habitats are now being used year round by Mute Swans. Being primarily herbivorous aquatic foragers, Mute Swans consume daily at least six to eight pounds (wet weight) of submerged aquatic plants, including leaves, stems, roots, stolons, and rhizomes. Because adults also tend to paddle and rake the substrate to dislodge food for themselves and their cygnets, additional veg-

etation is uprooted and destroyed, further decreasing the availability of food for native waterfowl. At high densities, Mute Swans can overgraze an area, causing a substantial decline in the availability of submerged aquatic vegetation, before they move to a new area. In extreme cases, Mute Swans can even eliminate some plant species from an ecosystem.

Mute Swans increase their feeding rate during spring and summer because more food is required before feather molt and egg laying, which probably influences the availability of submerged aquatic vegetation (SAV) to fall migrant waterfowl. During winter, Mute Swans quite likely consume nutrient storage and overwintering structures (tubers) that could have a long-term impact on aquatic plant availability and species composition. For instance, perennial species such as *Vallisneria americana* and *Scirpus americanus* overwinter as vegetative buds, and the survival of these structures is the main determinant of the next seasons growth. Therefore, feral Mute Swan populations reduce the carrying capacity of lower Great Lakes wetlands for native waterfowl directly via aggressive interactions (reduced space) as well as indirectly through resource depletion (reduced food).

## Management Considerations

Given the similarity of climate between Eurasia and North America, the unparalleled competitive abilities of Mute Swans, and the almost total lack of predators, it seems highly probable that Mute Swans will continue to increase exponentially in the lower Great Lakes. As natural causes are unlikely to limit the population in the near future, it seems prudent to control the species in the Great Lakes region (and elsewhere) before the population becomes much larger.

The first step that should be taken is to remove any legal protection for the species: this would allow hunters and other private individuals to participate in control programs without a need for special permits. Since 1974, in Canada, Mute Swans have been on the list of bird species protected under the Migratory Birds Convention Act, 1916, despite the fact that they are a non-native species, and "Federal law does not generally protect species or families that were introduced to North America by humans, i.e., not native to this continent" (Environment Canada 1991). The species was originally listed in Canada as a means of prohibiting releases of captive individuals. Its effectiveness for this aspect is not known, but it has simultaneously had the effect of protecting the species from hunting or harassment, thus allowing the population to grow unchecked.



# List of Resources

Here are a dozen key resources for those birders who wish to pursue the subject.

- Allin, C. G. 1981. Mute Swans in the Atlantic Flyway. *Proc. International Waterfowl Symposium*. 4:149-154.
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- Bellrose, F. C. 1980. *Ducks, Geese and Swans of North America*. Stackpole Books, 540pp.
- Ciaranca, M. A., C. C. Allin, and G. S. Jones. 1997. Mute Swan (*Cygnus olor*). In *The Birds of North America*, No. 273 (A. Poole and F. Gill, eds.). The Academy of Natural Sciences, Philadelphia, PA, and The American Ornithologists' Union, Washington, D.C.
- Cobb, J. S., and M. M. Harlan. 1980. Mute Swan (*Cygnus olor*) feeding and territoriality affects diversity and density of rooted aquatic vegetation. *American Zool.* 20:882.
- Knapton, R. W. 1993. Population status and reproductive biology of the Mute Swan, *Cygnus olor*, at Long Point, Lake Erie, Ontario. *Canadian Field Naturalist*. 77:354-356.
- Owen, M., and C.J. Cadbury. 1975. The ecology and mortality of Mute Swans at the Ouses Washes, England. *Wildfowl* 25:31-42.
- Petrie, S.A. 1998. *Waterfowl and Wetlands of Long Point Bay and Old Norfolk County: Present Conditions and Future Options for Conservation*. Report prepared for the Norfolk Land Stewardship Council.
- Reese, J. G. 1975. Productivity and management of feral Mute Swans in Chesapeake Bay. *Journal of Wildlife Management*. 39:280-286.
- Weller, M. W. 1969. Potential dangers of exotic waterfowl introductions. *Wildfowl* 20:55-58.
- Wieloch, M. 1991. Population trends of the Mute Swan *Cygnus olor* in the Palearctic. *Wildfowl* supplement No. 1: 22-32.
- Wilmore, S. B. 1974. *Swans of the World*. Taplinger Publ. Co., New York.

Control programs have been implemented in a number of eastern U.S. states with varying degrees of effectiveness. Rhode Island began a control program of egg addling and pricking in 1979; despite the fact that 9,378 eggs were destroyed in 1,629 nests over a period of 22 years, the population increased by over 500 percent. Vermont, in contrast, reported no Mute Swans in 2000, apparently as a result of a lethal control program. This is supported by the fact that population models indicate that the most effective way to reduce population growth for a long-lived species such as the Mute Swan is to reduce adult survival rates. This could be done through capture and removal programs, or through culling. Swan capture and removal during wing molt may be an appropriate solution in some situations, but it is costly. It also is doubtful that a sufficient number of repositories exist for these birds once removed from the wild. Several hundred birds would have to be captured and removed annually, and measures would have to be taken to ensure that captured birds are never released back into the wild.

While the birds are not protected under U.S. federal regulations and are unprotected in some states, other states do protect the species, complicating the control issue.

A coalition of Mississippi River flyway states will meet in February 2002 to review recommendations for control of the birds. Joe Johnson, director of the Kellogg Bird Sanctuary, part of Michigan State University's Kellogg Biological Station and chairman of the Mississippi Flyway Technical Section Swan Committee, said, "We will suggest that Mute Swan be accepted as an exotic species." If Mute Swans are accepted and regulated as exotic, then the states "should gain authority over the sale and possession of Mute Swans and their eggs. And Mute Swans captured as a result of citizen complaint should not be returned to the wild." The committee also will recommend that the U.S. Forest Service and National Park Service should consider swan-manage-

ment policies similar to those of the U.S. Fish and Wildlife Service, which advised its managers to take effective steps to protect lands under their jurisdiction from degradation and destruction by Mute Swans.

Johnson said he would like to see these states adopt a program similar to that of Minnesota, which considers the species exotic, does not protect the birds, requires a permit for ownership, and sets strict standards for control of captive birds. The state presently has about 15 wild Mute Swans. Wisconsin also does not protect the birds and requires a permit for ownership. Wisconsin, however, has a Mute Swan population of about 600 birds. Both the number of swans and the problems they cause—conflict with native wildlife and public safety—are growing. Michigan, which does protect the birds, has the largest Midwest population, about 4,000 birds.

In those jurisdictions where Mute Swan populations have grown beyond novelty stage, Johnson said, "policy should be to manage the population at a level that will have minimal impacts on native wildlife or its habitat and on public safety."

Therefore, a simple and effective solution is to remove any protected status for the species, and encourage hunters and managers of refuges and other waterfowl management areas to control their numbers. If it was determined that these measures were not sufficient, then professional culling programs could be implemented. Given the present rate of increase, whatever control measures are selected should be undertaken as soon as possible, before the population becomes too large to control. However, Mute Swans are conspicuous, attractive birds that appeal to many members of the general public, many of whom are unaware of the swans' potential adverse ecological impacts. Attempts to control this species in the U.S. have sometimes been thwarted by well-meaning, but poorly informed citizens. Education and discretion must, therefore, be an integral component of any well coordinated Mute Swan management program. ↗