Rapid increase in the lower Great Lakes population of feral Mute Swans

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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. The first breeding record of feral Mute Swans in southern Ontario was in 1958. Following this, Mute Swans began colonizing the lower Great Lakes in the mid-1960s and 1970s and the population has been expanding ever since. We used aerial survey data from Long Point, Lake Erie, Christmas Bird Count (CBC) data, and Mid-winter Inventory (MWI), data to estimate the rate of increase of Mute Swans around the lower Great Lakes. All counts were analyzed using Poisson regression with a log-link function, corrected for overdispersion, to estimate the rate of increase. Models were fitted assuming exponential growth, as well as with second-order year terms to test for changes in the rate of population growth. All 3 data sets indicate very rapid population growth rates, of between 10% and 20% per year, with peak growth rates potentially exceeding 30% per year. An increase of 10% per year leads to population doubling every 7 years, while a 30% annual increase leads to doubling in < 3 years. This rapid growth is likely a consequence of the establishment of populations in new habitats, climatically similar to the native range of Mute swans in Europe, with few natural predators, little inhibition from native breeding waterfowl (which they can outcompete), and minimal disturbance from humans (in Ontario, they have been protected under the Migratory Birds Act since the early 1970s). The estimated wintering population of Mute Swans in the Netherlands was 13,000 in the late 1980s, corresponding to a density of 0.31 swans/km2. If the carrying capacity for Mute Swans around the Great Lakes is similar, this would correspond to a population of 50,000 in southern Ontario. With an increase of 10% per year, the population could exceed 50,000 in 40-50 years. This poses a serious threat to native species of waterfowl and the integrity of wetland ecosystems. The most effective control measures for long-lived species like Mute Swans are to reduce adult survival. Therefore, we suggest that Mute Swans should be removed from the list of species protected in Canada under the Migratory Bird Conservation Act and that a management plan be developed. In view of their high potential growth rate, it could be necessary to remove at least 30-40% of the population every year to lead to a reduction.