

MANAGEMENT PLAN FOR MUTE SWANS IN NEW YORK

New York State Department of Environmental Conservation Division of Fish, Wildlife, and Marine Resources

Revised Draft - March 2015

This plan provides guidance to New York State Department of Environmental Conservation (DEC) staff and the public concerning management of mute swans (*Cygnus olor*). Mute swans are a non-native, “invasive” species that many people enjoy seeing despite adverse impacts the birds can cause. This management plan strives to balance these competing values, by minimizing the occurrence of mute swans in important fish and wildlife habitats while permitting their continued presence in urban parks and other controlled settings.

BACKGROUND

Mute swans are a beautiful bird that many people have enjoyed seeing in public parks and on lakes and coastal waters of New York for many years. However, these birds are not native to North America; they were imported as captive birds from Europe during the late 1800s to beautify private estates in the Hudson Valley and on Long Island. Mute swans began nesting in the wild here in the early 1900s, establishing a population that has since grown to more than 2,000 birds in New York (Fig. 1). All mute swans living in the state today are descendants of birds that were released or escaped from these captive settings beginning in the early 1900s.

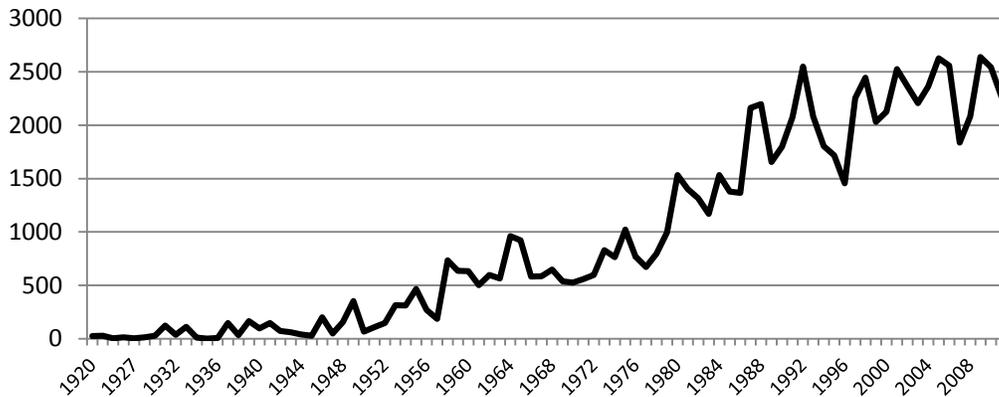


Figure 1. Total number of mute swans counted during Christmas Bird Counts in New York State, 1920-2011 (source: National Audubon Society, 2013; Christmas Bird Count Historical Results [Online], <http://netapp.audubon.org/cbcobservation>, accessed August 13, 2013).

Population Status

Two distinct populations of mute swans currently exist in the wild in New York State.

First is the “downstate” population of swans that occurs on many inland and coastal water bodies throughout Long Island, New York City, and the lower four counties of the Hudson Valley (Orange, Rockland, Putnam and Westchester). This population was estimated at approximately 500 birds in the early 1970s, but expanded northward and grew to more than 2,000 birds by the

early 2000s (Fig. 2). Further range expansion has been prevented by egg-addling and removal of adult birds by DEC and others. The overall numbers in this region have been relatively stable since then because of the control activities and perhaps because most potential nesting areas on Long Island are now occupied (Swift et al. 2013).

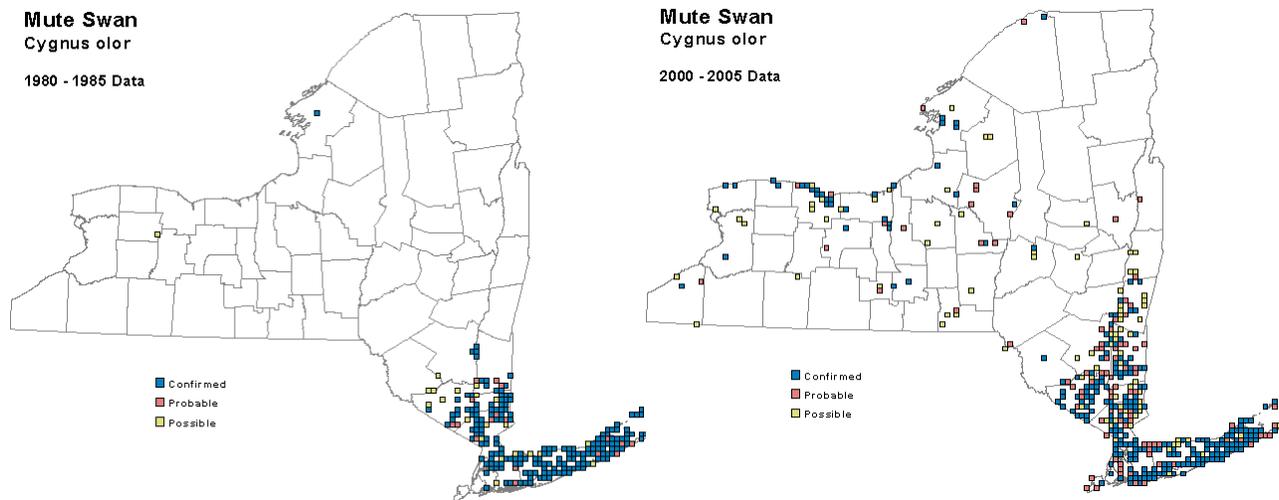


Figure 2. Breeding distribution of mute swans based on New York State Breeding Bird Atlas data, 1980-1985 (Andrle and Carroll 1988) and 2000-2005 (McGowan and Corwin 2008).

A second population of mute swans in New York became established along Lake Ontario in the 1980s, presumably from birds that came across the lake from Ontario (Fig. 2). This “upstate” population grew from just a few pairs in 1990 to nearly 200 birds by 2002, and these birds have the potential to expand to water bodies and wetlands throughout the state. Petrie and Francis (2003) estimated that mute swan populations on the Great Lakes, particularly Lake Ontario and Lake Erie, were increasing at a rate of 10-18% per year. Due largely to control actions (egg-addling and removal of adult swans) by DEC and others, the population in upstate New York has not increased since the early 2000s (Swift et al. 2013). However, free-ranging mute swans appear at new locations every year.

In a few upstate areas, trumpeter swans (*Cygnus buccinator*), which are native to North America, have also begun nesting, but their numbers have grown to only about 50 birds in New York since their first appearance in the mid-1990s (Swift et al. 2013). The potential impacts of trumpeter swans are uncertain, so DEC has not initiated any management to promote or control this species. Tundra swan (*Cygnus columbianus*), a native species that breeds in the high Arctic, also occurs in this region during fall and spring migration, and several hundred have wintered on the Niagara River and around the Montezuma Wetlands Complex in recent years. Both of these native swan species provide some opportunities for public enjoyment of swans in New York.

Impacts on Submerged Aquatic Vegetation (SAV)

Wildlife managers, ecologists, ornithologists and others have been concerned about the impacts of mute swans in North America for decades (Willey and Halla 1972, Allin et al. 1987, Maryland DNR 2001). Of particular concern is the consumption and uprooting of submerged aquatic

vegetation (SAV) that provides important food and shelter for native fish and wildlife in marine and freshwater ecosystems (New York State Seagrass Task Force 2009). The New York State Legislature recognized the importance of SAV when it passed the Seagrass Protection Act, signed into law by Governor Cuomo in August 2012. This law granted DEC the authority to regulate coastal and marine activities that threaten seagrass beds or seagrass restoration efforts.

Mute swans feed primarily on submerged aquatic vegetation (SAV), consuming 4-8 pounds per day and often uprooting far more than they consume (Willey and Halla 1972, Scott and the Wildfowl Trust 1972, Ciaranca et al. 1997, Bailey et al. 2008). This can reduce SAV biomass by as much as 70-95% within a single growing season (Allin and Husband 2003, Naylor 2004, Tatu et al. 2007, Swift et al. 2013). Mute swans consume the same SAV species used by native waterfowl, so they can reduce the amount of food available at migratory stopover or wintering sites (Bailey et al. 2008). The impact of SAV removal by mute swans, which are year-round residents of most areas, is likely greater than that of migratory waterfowl that are not present during the growing season (Badzinski et al. 2006).

The impact of mute swans on SAV at any particular location depends on the number of swans present, size of the affected area and other factors (Chasko 1986, Gayet et al. 2013). A large pond or lake with a single breeding pair would show little effect, whereas a small coastal pond or bay with a large number of mute swans year-round would have significantly less SAV and support fewer migratory waterfowl during the winter. Coastal SAV beds are important for sustaining several species of conservation concern, including black duck (*Anas rubripes*), canvasback (*Aythya valisneria*), and Atlantic brant (*Branta bernicla*). As natural foods become scarce, mute swans will readily accept human handouts, whereas these other waterfowl are not so adaptable. Mute swans are not the only threat to SAV in wetland or aquatic areas, but they can exacerbate the effects of other stressors, such as polluted runoff from upland areas, shoreline development, and rising sea levels. The presence of mute swans in tidal waters conflicts with efforts to protect and restore estuarine ecosystems in New York and the benefits they provide, including nursery areas for economically important species such as bay scallops (*Argopecten irradians*), winter flounder (*Pseudopleuronectes americanus*) and blue crabs (*Callinectes sapidus*).

Displacement of Native Bird Species

Mute swans often behave aggressively towards other birds, especially other waterfowl during the nesting and brood-rearing periods (Kania and Smith 1986, Allin et al. 1987, Ciaranca et al. 1997, Swift et al. 2013). In extreme cases, mute swans may attack and kill ducklings, goslings or other small water birds (Stone and Marsters 1970, Virginia DGIF 2012, and many video clips on the internet). More often this aggression simply displaces other birds from the swan's territory, limiting the use of valuable or preferred wetland habitats by native species (Willey and Halla 1972, Chasko 1986, Allin et al. 1987, Ciaranca 1990, Ciaranca et al. 1997). Mute swans will typically defend several acres around their nest site, especially against other swans, Canada geese, or humans who enter their territory. However, this behavior varies widely among individual swans (Willey 1968, O'Brien and Askins 1985, Conover and Kania 1994, Gayet et al. 2013, Swift et al. 2013); in some cases other waterfowl have nested in close proximity to active mute swan nests (Willey and Halla 1972, Conover and Kania 1994, Maryland DNR 2001).

Displacement of other species by mute swans can be difficult to observe, as birds attacked or threatened by swans are not likely to keep returning to the area.

Non-breeding swans generally do not behave aggressively toward one another or other species, but they can displace other sensitive bird species by their sheer abundance on loafing sites. In Maryland, a large molting flock of mute swans caused the abandonment of a colony of least terns (*Sterna antillarum*) and black skimmers (*Rynchops niger*) (Therres and Brinker 2004), two species of conservation concern in New York. The same could happen to black terns (*Chlidonias niger*), a State-listed endangered species that nests in large freshwater marshes in upstate New York that are favored by mute swans. One of New York's largest known black tern nesting colonies at Braddock Bay (near Rochester) disappeared in the mid-1990s, within a few years after mute swans were first documented nesting in the area (Swift et al. 2013); a similar correlation was reported from Michigan (Shuford 1999).

Other Concerns

Mute swans have little or no fear of humans so they provide opportunities for people to observe and come in close contact with them. However, mute swans can cause problems for people too. Some territorial swans will directly attack humans, especially small children or people in small watercraft who get too close to nests or young. In extreme cases this has resulted in accidental deaths (from drowning) or injuries (Willey and Halla 1972, Rhode Island DEM 2006, Animal People Online 2012). The potential for injury is low, but the aggressive behavior of swans can render some land or water areas inaccessible for outdoor recreation during the nesting season.

Swan feces contain especially high levels of fecal coliform bacteria (Hussong et al. 1979), so the presence of large flocks at certain times could impair use of waters for drinking, swimming, or shellfishing. Mute swans have been associated with high fecal coliform counts in some marine waters on Long Island, which could affect the use of local areas for shellfishing (Swift et al. 2013).

Where mute swans occur near airports, they pose a serious threat to aviation. Their large size makes them one of the most hazardous species to aviation in New York. Since 1990, there have been eight documented mute swan strikes in the U.S., and four of those occurred at JFK International Airport. Observations and annual take of mute swans at airports in New York have increased, with 51 mute swans removed from JFK, LaGuardia, and Stewart International airports to protect aviation safety during 2012-2013 (USDA Wildlife Services, unpublished data).

The Need for Management

DEC is concerned about the impacts of mute swans that currently exist in and around coastal areas of Long Island, New York City and the lower Hudson Valley (estimated to be about 2,000 birds in 2012). These birds are one of several stressors on important fish and wildlife habitats in the downstate area. DEC is also concerned about the recently established population of mute swans around Lake Ontario (estimated to be about 200 birds in 2012), which could rapidly expand into many lakes, ponds, and wetlands throughout the state.

Based on available information and past experience, it is reasonable to expect that in the absence of management, wild mute swan populations will expand throughout New York State, and could reach numbers in excess of 5,000 birds within 20 years. Most of this growth would occur north of New York City, but swan densities and use of important wetland areas would increase everywhere to some extent. Many of these swans would be subject to starvation during severe winters, especially in upstate areas where open waters freeze over in most years.

The consequences of not preventing such population growth include reduced habitat availability and value for native fish and wildlife species, including several of conservation concern. Site-specific conflicts between mute swans and human activities would also increase, as swans establish new nesting territories in many areas currently used for water-based recreation or municipal purposes. This would place a growing demand on DEC for relief from such problems, ranging from aggressive swans to water quality concerns and hazards at airports.

Complete elimination of mute swans from New York is not a viable option given the expressed public opinions associated with these birds. However, the demand for viewing swans can be largely met through closely regulated possession of mute swans for enjoyment in urban parks and other public settings. Measures are needed to ensure that those swans do not reproduce or leave those areas, to prevent their entry into wild populations or impacts on natural resources. Prohibitions on importation and commercial trade or propagation of mute swans are also needed to help prevent escapes or intentional releases of additional mute swans to the wild in New York.

MANAGEMENT GOAL

In light of the above, the goal of this plan is to *minimize the potential adverse impacts of mute swans on native wildlife and their habitats, and to alleviate site-specific conflicts between mute swans and human health, safety, or recreational activities.*

DEC believes that this goal can be satisfactorily achieved through management of mute swans back to their distribution and abundance circa 1980, as documented by the New York State Breeding Bird Atlas and various winter waterfowl counts. This would generally limit mute swans to Long Island, New York City and the lower four counties of the Hudson Valley (Orange, Rockland, Putnam and Westchester counties), with fewer than 800 birds in total and as few as possible occurring in tidal waters or other important wildlife habitats. It would also mean the elimination of free-flying mute swans from the rest of upstate New York. A much smaller and managed population of this non-native species will best serve the public desire to see mute swans while protecting the integrity of wetland ecosystems in New York.

OBJECTIVES

To achieve the above goal, we established the following management objectives:

1. Increase public support for responsible management of mute swans in New York.
2. Minimize the number of mute swans successfully nesting or occurring on tidal waters within New York City, Long Island, and Orange, Rockland, Putnam and Westchester counties (referred to hereafter as “downstate”).

3. Prevent the establishment or expansion of wild or self-sustaining mute swan populations in all other areas of the state (referred to hereafter as “upstate”).
4. Prevent entry of new swans into wild populations through intentional releases, escapes, or natural reproduction.
5. Provide relief to communities and property owners experiencing conflicts related to mute swans, especially where natural habitats or human health and safety are involved.
6. Permit community-based programs for the maintenance of mute swans in urban parks or other public settings where native species and habitats will not be adversely affected.
7. Work with a diversity of government and non-government partners to achieve the above objectives.

To be clear, the goal and objectives of this plan relate to the impacts of mute swans, not to any specific methods that may be used to minimize those impacts. Because many people object to the use of lethal control methods, especially killing adult birds, DEC will use “non-lethal” methods (i.e., egg-addling and placement at licensed facilities), where practical and timely, to achieve the management objectives. However, this will require some commitment of funding and assistance from organizations and individuals who wish to see non-lethal options used to the extent possible. Placement and proper care of swans in public parks or other controlled settings can be costly to local governments or communities, but if people who enjoy seeing mute swans are willing to support such programs, DEC will cooperate with those efforts.

REGIONAL APPROACH TO MANAGEMENT

To achieve the above objectives, DEC will use a “regional approach” that recognizes the distinct differences in history, status, impacts, objectives and management opportunities for mute swans between downstate and upstate regions of New York (see Background section of this plan).

Downstate swan populations have been building for nearly a century and most suitable nesting areas may now be occupied. Although population growth has slowed, and many of the birds are in parks or other settings where conflicts with native wildlife or people are not of great concern, impacts are undoubtedly occurring in some areas and every nesting pair is a source of more swans that may disperse to sensitive wildlife habitats, including tidal waters. Fortunately, the high densities of people, development, and public open spaces in this region create opportunities for cooperative management of mute swans with local communities, non-government organizations (NGOs) and landowners. DEC will strive to involve such partners to the extent possible in implementing the strategies described in this plan.

In upstate New York, few if any mute swans existed in the wild before 1980. From the first few nesting pairs that appeared along Lake Ontario in the late 1980s, the population quickly grew to more than 200 birds. The potential for further range expansion to waters and wetlands throughout the state is very real based on experiences downstate, in Ontario, and elsewhere in North America. If that happens, it would be extremely difficult and costly to manage mute swans across the landscape to minimize adverse impacts to native fish and wildlife populations. Upstate New York also harbors two native swan species that regularly occur in western and central New York, and these species can satisfy some of the public desire to have swans in the local environment. Trumpeter swans are slowly expanding as a breeding species around Lake

Ontario, and DEC's current policy is to allow this population to undergo whatever changes may occur without substantial intervention. It is unclear whether trumpeter swans will create some of the same problems or concerns as mute swans. Tundra swans have been increasing also, but they breed in the Arctic and are here only during migration and winter periods. Still, they provide excellent swan viewing opportunities along the Niagara River, the larger Finger Lakes, and elsewhere in western New York.

MANAGEMENT STRATEGIES

Part 1. Public Education and Outreach

1.1 Inform the public about the status and ecological impacts of mute swans.

Many people are unaware or do not agree that mute swans are a non-native, invasive species that can adversely affect native wildlife and their habitats. However, numerous scientific studies since the 1960s have documented the ability of mute swans to multiply quickly and to cause the loss of aquatic vegetation or displace native wildlife (see Background section and other references in Swift et al. 2013). These impacts are largely unseen by the public, which makes it hard to convince people of the need for management. This lack of understanding is a major impediment to gaining public acceptance of management actions prescribed in this plan.

DEC will work with a variety of government and non-government partners, including conservation groups, bird clubs, animal protection organizations, local governments and others to better inform the general public about the history, status and impacts of mute swans. Such public education will acknowledge the enjoyment that many people derive from seeing swans, while explaining the need for management. We will identify key messages about the environmental impacts of mute swans and opportunities for community-based management of this species. Information will be disseminated through individual and combined efforts by partner organizations and cooperators. Outreach materials may include printed brochures, posting signs where mute swans occur, web-based information, and public presentations by DEC staff or partner organizations. Regional PRISMs (Partnerships for Invasive Species Management) and Cornell Cooperative Extension will be asked to assist in these efforts.

The primary goal of this strategy is to increase public awareness of the detrimental effects of mute swans and acceptance of other mute swan management strategies in this plan, including control of wild mute swan populations and permitting birds to remain available for viewing in urban parks and other settings (both discussed later in this plan). Specific messages to include in these outreach and education efforts include:

1. All mute swans in New York are descendants of imported captive birds that escaped or were released by their owners to the wild.
2. Where mute swans congregate, they impair habitats for native fish and wildlife species, and can interfere with efforts to restore degraded wetland areas.
3. Mute swans nesting or raising young can be very territorial and aggressive, deterring native bird species and people from using natural areas.

4. If left unchecked, free-living mute swans will multiply quickly and spread throughout New York State.
5. Learn to identify and appreciate native waterfowl species in the local area, including native swan species that occur in upstate New York (tundra swans and trumpeter swans).

DEC will work with partner organizations to develop and distribute information on how to prevent or alleviate conflicts with swans, how people can assist with monitoring or management of swans, and contact information for local or state agencies involved with swan management.

1.2. Discourage feeding of mute swans and other wild waterfowl.

Mute swans will readily accept human handouts of food, and many people enjoy this way of interacting closely with these birds. However, this should not occur where it will attract mute swans to natural habitats used by wild waterfowl, or where it conflicts with local efforts to discourage feeding of ducks and Canada geese. Therefore, this plan would allow for feeding of mute swans only where community-based management programs (see section 2.3) are in place and the birds are possessed pursuant to a DEC license.

DEC will seek authority to adopt and enforce statewide regulations to prohibit the intentional feeding of wild mute swans and other waterfowl, similar to what was enacted to prohibit the feeding of bears in New York (6 NYCRR Section 187.1). DEC will also encourage the adoption and enforcement of local ordinances or regulations to prohibit public feeding of wild waterfowl. An exception would be made for swans possessed pursuant to a DEC license, because those birds would not be able to move to natural areas (where they would compete with wild migratory waterfowl) when ponds or lakes freeze over.

Part 2. Responsible Possession and Care of Mute Swans

2.1. Designate mute swan as a “Prohibited Invasive Species” to prohibit sale, importation, purchase, transport, introduction, or propagation of mute swans in New York.

DEC adopted final regulations (6 NYCRR Part 575) on September 10, 2014, designating various plant and animal species, including mute swan, as “Prohibited Invasive Species” pursuant to the recently enacted Invasive Species law (Environmental Conservation Law Section 09-1709). As of March 10, 2015, it will be illegal to sell, import, purchase, transport, introduce or propagate (or possess with the intent to sell, import, purchase, transport, or introduce) any prohibited invasive species in New York State. A person may possess, with the intent to sell, import, purchase, transport or introduce, a prohibited invasive species if the person has been issued a permit by the Department for research, education, or other approved activity. These permits will be issued by regional DEC Natural Resource Supervisors, and special permit conditions will be included to ensure that mute swans in possession do not escape or are not released to the wild (see Strategy 2.2). There is no provision for propagation of Prohibited Invasive Species, and DEC permits will prohibit release of mute swans to the wild. This regulation should eliminate commercial trade of this species in New York, which has been a source of mute swans escaping to the wild. Designation of mute swan as a Prohibited Invasive Species has no direct bearing on swans currently living in the wild.

Most people were unaware that a license was required previously to purchase or possess mute swans, and breeders across the country would ship birds to anyone without requiring proof of authorization by the state wildlife agency (except to California or Maryland, which have prohibitions). Therefore, known suppliers of mute swans and anyone else known to possess mute swans in New York (e.g., game bird breeders, wildlife rehabilitators) will be notified of the new regulations and compliance will be monitored. The occurrence of mute swans at many widely scattered locations across the state during the 2000-2005 Breeding Bird Atlas (Figure 2) is believed to be related to swans that were in private ownership, even though very few permits for possession had been issued at that time.

2.2. Regulate the possession of mute swans to prevent reproduction or release of mute swans into the wild in New York.

In accordance with Invasive Species regulations cited above (6 NYCRR Part 575), DEC will allow the possession of mute swans by certain properly licensed entities for scientific research, education, public exhibition or control (management) purposes. DEC will not authorize possession of mute swans for commercial sale, propagation, personal use, hobby collections, or to displace nuisance Canada geese. Mute swans lawfully possessed before adoption of the Invasive Species regulations would also be allowed to remain in possession of the licensee for the remainder of the birds' lives. However, to ensure that intentional or accidental releases of mute swans or their progeny do not occur, and to help identify any birds that escape, DEC will require that any person who possesses mute swans pursuant to DEC permit or license must:

1. Prevent the birds from leaving the licensed premises by: a) rendering the birds unable to fly, by regular clipping of the wing feathers or permanent pinioning in accordance with accepted veterinary practices (e.g., at an early age or with appropriate anesthesia); or b) maintaining a completely enclosed (fenced and covered) area that the birds can move freely within, but which does not allow them to leave the property by flying, walking or swimming.
2. Prevent any swans on the property from reproducing by: a) keeping only one gender (male or female) of swans on the property, as long as no swans of the opposite gender can enter the property; or b) having a licensed veterinarian surgically sterilize the birds.
3. Mark all swans on the property with a permanent leg band, collar or wing-tag that clearly identifies the owner or keeper of the birds. Any swan held by a licensed wildlife rehabilitator will only require a temporary marker until it is transferred to a licensee for keeping in perpetuity.

Acceptable disposition of mute swans possessed pursuant to a DEC permit or license will include transferring the birds to another entity licensed to possess mute swans, donation for zoological purposes, and euthanasia at the discretion of the permittee. Mute swans held in possession may not be used for shooting sport purposes. Licensed wildlife rehabilitators will not be allowed to release mute swans back into the wild. Instead, they may be turned over to any person permitted to possess mute swans in New York, where they will be subject to the same requirements listed above. Game bird breeders, wildlife rehabilitators and others known to possess mute swans will be notified of these requirements upon adoption of this plan.

2.3 Permit municipalities to develop community-based programs to keep and help manage mute swans within their jurisdictions.

Many New Yorkers have enjoyed seeing mute swans in their daily lives for many years. For some it has been their primary contact with wildlife in densely developed urban areas, especially parts of Long Island, New York City, and the lower Hudson Valley (i.e., Orange, Rockland, Putnam and Westchester counties) where swans were well established before the 1980-1985 Breeding Bird Atlas. Within this downstate area, public parks have long been popular places for people to see, photograph and feed mute swans. DEC will accommodate the public desire to maintain swans in such locations as long as potential impacts to natural habitats are minimized and any site-specific threats to human health, safety or recreational activities are addressed.

To implement this strategy, DEC will work with interested municipalities and cooperating non-government organizations to develop and implement community-based local mute swan management plans. The goal of these plans will be to accommodate the public desire to observe and interact with mute swans at certain locations, while enlisting cooperators to help manage wild populations within their jurisdiction. These plans will be developed primarily for locations in the downstate area described above, or where mute swans have been managed by a municipality prior to adoption of this plan (e.g., Village of Manlius in central New York). DEC will approve of these plans as a condition for issuing permits or licenses allowing possession of mute swans in the respective communities. Involvement of local government agencies will help ensure accountability and consideration of local interests. The plans can be quite simple and succinct, but must include:

1. Specific locations and facilities where mute swans will be maintained, including plans for food and shelter during the winter.
2. A commitment from the municipality to obtain the appropriate DEC permit(s) allowing possession and/or management of mute swans in their jurisdiction.
3. Specific measures that will be used to comply with the requirements described in Strategy 2.2 (i.e., prevent escape, prevent breeding, and marking all birds).
4. A commitment from the municipality to help DEC monitor and manage wild mute swans within their jurisdiction to prevent successful nesting, minimize impacts to natural habitats, and address any specific threats to human health, safety or recreation; the municipality can specify the acceptable control methods to be used on lands that they own or manage.
5. Plans for public education or outreach (e.g., signs, brochures) to inform the public about mute swans in their community.
6. Roles and responsibilities of any partner organizations or individuals who will directly participate in management activities.

DEC will invite input from animal care organizations to help develop appropriate guidelines for care of mute swans in captive settings, including municipal parks or other public properties where native species and habitats will not be adversely affected.

Part 3. Management of Wild Mute Swan Populations

3.1. Conduct mute swan population control activities to meet regional objectives.

DEC has conducted mute swan control activities for many years in accordance with a management policy adopted in 1993 (DFWMR 1993). That policy authorized staff to remove mute swans from lands administered by the DFWMR, but it did not specify the extent to which those activities should occur. Consequently, the amount of effort and type of controls conducted (e.g., nest/egg treatment, shooting or removal of adult birds) varied among regions of the state. During 2005-2012, more than 500 adult mute swans and close to 2,500 eggs were taken from the wild across the state. Most of the take of adult birds occurred around Lake Ontario and at other locations in upstate New York to help prevent range expansion. Downstate, most of the activity involved egg and nest treatment, which likely helped to stabilize the population in those regions.

DEC staff will continue to conduct, assist or support mute swan control activities on any accessible public or private lands (with landowner consent) or waters in New York State to accomplish the objectives of this plan. Control options will include nest destruction, egg-addling (coating with corn oil), capture and placement of swans at licensed sanctuaries or other captive settings, shooting of free-ranging swans (where it can be done safely), and live capture and euthanasia. Where immediate removal of birds is not necessary to alleviate a site-specific conflict, full consideration will be given to use of “non-lethal” methods (i.e., egg-addling and placement at licensed facilities) to achieve desired population reductions. However, the principal methods used will differ between downstate and upstate areas, because of the different management objectives, landscape characteristics, and opportunities for effective community-based management programs in the more densely developed downstate areas. In the downstate region, lethal control would be a last resort except where mute swans occur on designated wildlife management areas, threaten public safety (e.g., near airports) or interfere with the intended use of lands or waters by their aggressive behavior. Even in those situations, removal and placement of offending birds will be considered first, if practical and a licensed facility is willing and able to take live birds into possession immediately. In upstate areas, lethal control will more often be necessary to ensure that the swans do not disperse to inaccessible locations in response to live-capture efforts. Where applicable, DEC will act in accordance with approved community-based management programs. All lethal control activities will be done in accordance with established guidelines for humane killing of wildlife (e.g., Julien et al. 2010, AVMA 2013).

3.2. Provide clear guidance and humane procedures to other government agencies, municipalities or property owners who wish to conduct mute swan control activities.

DEC will continue to permit mute swan control activities by property owners or other cooperators who want to help reduce wild mute swan populations or their potential impacts. Likely cooperators include USDA Wildlife Services, New York State Office of Parks, Recreation and Historic Preservation, New York City Department of Environmental Protection, Port Authority of New York and New Jersey, town and county governments and others. Where mute swans occur on designated wildlife management areas, threaten public safety (e.g., near airports) or interfere with the intended use of lands or waters by their aggressive behavior, DEC will recommend or assist a full suite of options, including direct removal of the birds. In some

cases public education or warnings of possible aggressive behavior may suffice if acceptable to the property owner. Where practical, swans removed from such locations will be made available for placement in a licensed facility willing and able to take live birds upon request or euthanized as a last resort.

To ensure that authorized mute swan control work by cooperators is done in a safe, effective and humane manner, DEC will develop guidelines or “best management practices” for specific control methods, including but not limited to: oiling, puncturing, or removing eggs; destruction of nests; surgical sterilization of birds; shooting; and capture and removal of swans to be euthanized or turned over to someone licensed to keep the birds in captivity. Input on those guidelines will be requested from partner organizations with appropriate expertise. Guidelines for nest and egg management will be similar to procedures used for Canada geese. Hazing of mute swans will not be recommended, as this would simply disperse the birds to other locations and could promote range expansion. The same animal care and treatment considerations will be applied to these activities as for actions by DEC staff. This will be accomplished through issuance of individual permits with specific conditions and reporting requirements, which will enable DEC to monitor and evaluate these activities.

3.3. Allow take of mute swans by waterfowl hunters in certain situations.

ECL Section 11-0103 defines all swans as “migratory game birds,” although DEC has not previously established an open season for taking mute swans. Some waterfowl hunters in New York would like the opportunity to take a swan while they are hunting native species of ducks and geese, in part to help reduce the impacts of swans on habitats that the other species depend upon. However, some hunters are concerned that this could contribute to negative public attitudes toward hunting in general. In consideration of these views, DEC will evaluate the pros and cons of allowing waterfowl hunters to take mute swans in some circumstances before proposing such a regulation. This could be limited to tidal waters only, because those are the principal habitats of concern downstate, and it would exclude areas where native swans regularly occur in upstate New York. Waterfowl hunters would have to comply with species identification requirements for swans as they already do for various species of ducks and geese. Hunting would not occur where local ordinances prohibit the discharge of firearms for public safety, such as New York City or urban parks where mute swans are kept pursuant to a DEC permit or license. Other hunting constraints, such as season dates or bag limits, may be considered to further minimize conflicts or adverse public reaction towards people who hunt.

3.4. Encourage control of mute swans in neighboring states and provinces.

Wild nesting populations of mute swans exist in most adjoining states and provinces (Ontario, Connecticut, Rhode Island, New Jersey, and Pennsylvania) and all are potential sources of mute swans immigrating into New York. The population in Ontario is of particular concern because it is believed to be the original source of mute swans nesting and wintering along the New York shoreline of Lake Ontario. Most other states and provinces in the Atlantic Flyway support control of wild mute swan populations, as indicated by their adoption of a flyway management plan which called for a substantial reduction or elimination of mute swans in most jurisdictions (AFC 2003). Maryland has conducted a very aggressive control program, reducing the free-

ranging swan population from nearly 4,000 birds in 2000 to less than 200 by 2010 (Maryland DNR 2011). Vermont has been successful at preventing a free-ranging swan population from becoming established, and some control efforts (nest and egg treatment or removals) have occurred in Rhode Island and New Jersey. Ontario conducted some mute swan control (primarily egg-oiling) in conjunction with efforts to promote restoration of a breeding population of trumpeter swans in that province, but that program has been discontinued.

Under this strategy, DEC will advocate for mute swan management programs that will complement our own efforts. As noted above, Ontario is of particular concern, and we will urge provincial and federal wildlife agencies in Canada to take appropriate action. The Atlantic Flyway management plan is expected to be updated in 2015, and we will express our support for efforts to reduce wild mute swan populations in other jurisdictions.

EVALUATION OF MANAGEMENT SUCCESS

Many of the management strategies described in this plan will take several years to implement, and some will take even longer to have the desired effects. A realistic time frame to begin evaluating success would be in five years (i.e., beginning in 2020), assuming that most of the prescribed actions are in place within two to three years (i.e., by 2017). DEC will commit the staff time and resources necessary to implement the above strategies, contingent on public acceptance of this plan. However, we do not expect this to require a major commitment of staff time or expenditures; mute swans are still quite limited in numbers and distribution upstate, so much of the control work there can be incorporated into the current duties of existing staff. In downstate areas, where mute swans are more widespread, we hope that many municipalities will develop community-based mute swan management plans to help achieve the objectives of this statewide plan. If that occurs, DEC's primary task will be to provide guidance and assist with local plan development and implementation.

Ultimately, the success of this plan will be measured by periodic surveys of mute swan distribution and abundance, including wild birds as well as those in captive settings. DEC will monitor the results of available population monitoring programs for waterfowl and other birds, including agency-sponsored surveys, as well as independent, volunteer-based surveys such as winter waterfowl counts, Christmas Bird Counts, and breeding bird surveys. Where community-based management programs are established, surveys by local cooperators will be used to the extent possible. If necessary, specific additional surveys may be conducted to document the status of free-ranging mute swan populations every three to five years.

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