Pest Risk Assessment for Mute Swan (*Cygnus olor*) in Oregon

Identity
Name: *Cygnus olor*
Taxonomic Position
Order: Anseriformes
Family: Anatidae
Common Name: Mute Swan

Risk Rating Summary – Relative Risk Rating:
Numerical Score: 9 (On a scale of 1-9)
Uncertainty:
Based on the population growth of mute swans in states along the Atlantic and Mississippi Flyway, Pacific Flyway states should expect similar type of growth patterns in mute swan populations. Yet, based on counts from the Pacific Flyway Waterfowl Surveys, this has not been the case. The Pacific Flyway states report a population decline from 700 birds in 1996 to 42 birds counted in 2009. However, the survey alone is not an accurate measurement of the total population of mute swans within the state. Most populations of mute swans are located in private ponds or lakes outside of the survey area, and are therefore not included in the flyway survey results. In 2009, no mute swans were observed in the Pacific Flyway count for Oregon, but in the Salem area alone, there is a known population of at least 15 birds, and other isolated populations have been observed throughout Oregon (ODFW 2009).

Introduction:
The Mute Swan is a non-native bird introduced to the United States from Eurasia during the late 1800s. Mute swans are large white birds, weighing from 20 to 30 pounds. They have a wingspan of 6.5 to 8 feet. They are best distinguished from the two native Swan species—the Tundra Swan (*Cygnus columbianus*) and the Trumpeter Swan (*Cygnus buccinators*)—by the black knob (cere) at the base of the upper bill and the orange bill with a black tip and base. They also swim with their neck in an "S"-shaped curve with their wings slightly elevated above their back. Mute Swans are, for the most part, non-migratory, however, birds sometimes make short seasonal movements.

Mute Swans breed at about 3 years of age and will select an island or construct mounds of cattails, reed canary grass (an invasive species), or other emergent plant species to build their nest. Nesting generally occurs in late March or early April. The female, or Pen, does most of the nest building and incubation of the eggs, but the male, or Cob, will incubate the eggs in the absence of the female. The Cob's main duty is to aggressively defending their territory from all intruders. The Cygnet (young) hatches in about 34 days after the last egg has been laid. Cygnets are swimming within a day or two after hatching. Cygnets are independent at about 125 days of age and are fully grown in less than six months. The young may stay with the parents until the next nesting season, but most are driven off by late fall or early winter.

In Oregon, mute swan breeding was first noted in the 1920s in Lincoln County (Gilligan et al. 1994, Marshall et al. 2003). In 1969, breeding populations were reported in the Bend area—a local population of six birds reached a population of about 35 birds in 1994. In the late 1990s, the majority of the Bend population was removed and replaced with Trumpeter Swans. In 2007 and 2008, breeding populations were also observed in the Salem area at Hidden Lake and Spinnaker Lake.

In Oregon, mute swans are regulated as a "Controlled Species" by Oregon Administrative Rules (OAR) 635-056-0070 (2)(a): "The possession, transport, sale, purchase, exchange and offer to sell, purchase or exchange is allowed provided that all males are neutered and all individuals are surgically pinioned. Importation of any mute swan is prohibited." If these rules are followed, breeding, and thus the production of eggs, should never occur.

Risk Rating Details:

Establishment Potential is High

Some Atlantic Flyway states, such as New York, Maryland, Virginia and Rhode Island, have experienced dramatic increases in mute swan populations in the past 50 years.

- New York documented a 69% increase in the numbers of adult mute swans counted during the mid-summer survey in 1986 compared to the same types of counts in 2008 (New York State Department of Environmental Conservation).

- The Chesapeake Bay area in Maryland experienced a rapid population growth from five escaped swans in 1962 to 3,955 birds counted in the 1999 mid-summer survey (Maryland Mute Swan Task Force, January 2001).

- Rhode Island experienced an increase in mute swan populations. A total of 300 birds were counted in the 1960s. They increased to an estimated population of about 1,400 birds in 2001 (RI, May 30, 2006).

- Virginia reported a population of 60 birds in 1986 and a population of 504 birds in 1999. This represents an 813% growth rate of mute swans in 13 years (Costanzo, G.). Even with population reduction measures taken by many states along the Atlantic Flyway during a 12-year time period, the mute swan population has continued to grow from 6,309 in 1986 to 10,541 in 2008 (Atlantic Flyway Mid-Summer Survey, 1986–2008).

The Mississippi Flyway has seen similar growth. In 1996, six states reported a population of about 4,687 birds—Michigan reported the largest population of about 4,000 birds.

The same results could be expected in states along the Pacific Flyway if mute swans are allowed to become established.

Spread Potential is high

The population of mute swans in the Atlantic Flyway from 1986–2002 increased 5.8% annually for a cumulative 148% increase to more than 14,000 birds by 2002 (RI, May 30, 2006). If mute swan populations become established in the Pacific Flyway, we should expect the same type of annual growth as in the Atlantic Flyway. The high spread potential is a result of longevity—once a mute swan reaches breeding age, about 85% survive from one breeding season to the next. Mute swans have an average life span of about 11 years, which means that the average number of breeding attempts by an adult swan is estimated to be five (Ciarance, 1997). Clutch size can range from 4–10 eggs, with the mean of 6.2 eggs per pair (Reese 1996). Once a mute swan reaches breeding age, they have very few predators to contend with, and they adapt to the presence of humans and food handouts rather quickly. Because of supplemental feeding by humans, they are able to survive under harsh environmental conditions.

Mute swans generally are sold in catalogs or online as proven breeding pairs for about $2,250 (Murray, 2010). Often the seller will not mention or place a disclaimer about checking state regulations before placing an order. Although it is the sole responsibility of the purchaser to follow state regulations, people purchasing through a catalog or online assume that it is legal to possess these types of birds.

Besides their beauty and grace, mute swans are also known and advertised for the aggressive way in which they defend their territory from other waterfowl, such as geese and ducks. This is considered a positive attribute because the swans keep unwanted animals away from ponds or lakes. However, their aggressive behavior doesn't distinguish between intruders, thus they have reportedly attacked people and pets, and have potential to cause considerable physical harm to children or the elderly.

Sellers of mute swans promote the large volumes of submerged aquatic vegetation (SAV) the birds eat (about 8 pounds of vegetation per day) (Willey 1968), encouraging their use as an important component of a successful aquatic plant management plan for ponds or small lakes. However, in locations where swans have become established, the large consumption of aquatic vegetation detrimentally affects the habitat of native fish and wildlife (see economic impact section).

Once mute swans are introduced to an area, public support for their continued presence increases. This makes it very difficult to conduct population reduction control work. In many Atlantic and Mississippi Flyway states, population control efforts, such as lethal removal and addling of eggs, have been hampered or stopped because of court cases against control agencies (state or federal) by animal conservation groups or concerned citizen groups.

Economic Impact Potential is High

Due to the aesthetic appeal of mute swan, their destructive side is often overlooked or considered inconsequential. Once mute swans become established or concentrated in an

area, they can impact an entire ecosystem by destroying valuable wetland habitat, dispersing nesting listed birds and reducing the much needed food supply of migrating waterfowl.

The feeding activities of groups of mute swans, regardless of the size of the water body, can cause substrates to become barren (NY DEC 1993). Studies conducted in Rhode Island on mute swan feeding habitat have shown a 92–95% reduction in SAV biomass (Allin and Husband 2000). This reduction in biomass can increase water turbidity, increase soil erosion (Hurley 1991), reduce the reproductive success of SAV and reduce the micro invertebrates, invertebrates, fish and shellfish that are dependent on these plants for food and shelter (Krull 1970). The reduction in SAV biomass also reduces the food supply of migrating birds.

Environmental Impact Potential is High

Mute Swans do not commonly migrate and tend to remain in local areas throughout their life. Consuming about 8 pounds of submerged aquatic vegetation (SAV) per day (Willey 1968) and uprooting several pounds of SAV during feeding activities can have devastating effects on plant communities, a vital energy supply for migratory waterfowl.

Mute swans are a very large, intimidating bird and can be very territorial, especially during the nesting season. A breeding pair of mute swans can claim a territory of up to 13 acres. Aggressive behavior from the male typically involves chasing an intruder until the intruder leaves the nesting area (Ciaranca 1997). Mute swans have been documented attacking and killing young ducks and goslings that have entered their territory (MD DNR). But in some cases, mute swans will accept the presence of waterfowl nesting nearby. In Salem, an active nesting pair of Canada geese was observed nesting within four meters of an active nesting pair of mute swans (ODFW 2008).

In Maryland, listed threaten birds such as the least terns (*Sterna antillarum*) and black skimmers (*Rynchops niger*) have been evicted from their historic nesting areas by the disturbance and crushing of eggs under the feet of hundreds of mute swan using the sites as loafing areas (Gochfeld 1983, Mueller and Glass 1988).

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Author
Rick Boatner
Oregon Department of Fish and Wildlife
Wildlife Division
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