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, the Pacific Flyway states should expect similar type of growth patterns in the mute swan population. So far this has not been the case based on the counts from the Pacific Flyway Waterfowl Surveys. The Pacific Flyway states appear to have had a decline in population from 700 birds in 1996 to 42 birds counted in 2009. But 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 therefore not included in the flyway survey results. In 2009, no mute swan where observed in the Pacific Flyway count for Oregon but in the Salem area alone there is a population of at least 15 birds and other isolated populations have been observed in Oregon (ODFW, 2009).

Introduction:
The Mute swan is a non-native bird introduced to the U.S. from Eurasia during the late 1800's. Mute swans are large white birds, weighing from 20 to 30 pounds and with 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 their orange bill with a black tip and base. They also swim with their neck in an "S" - shaped curve and their wings slightly elevated above their back. Mute swans are for the most part non-migratory, with birds sometimes making 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, 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 Cygnets (young) hatch in about 34 days after the last egg has been laid and are swimming within a day or two after hatching. Cygnets are independent at around 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 the adults in late fall or early winter.

In Oregon, breeding of mute swans was first noted in the 1920's in Lincoln County (Gilligan et al. 1994, Marshall et al. 2003). A breeding population of about six birds was established in the

Bend area starting around 1969 reaching a population high of around 35 birds in 1994. In the late 1990's 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 classified 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 of the Atlantic Flyway states such as New York, Maryland, Virginia and Rhode Island have experienced dramatic increases in the population of mute swans in less than 50 years.

- New York has documented a 69% increase in the numbers of adult mute swans counted during the mid-summer survey in 2008 compared to the same types of counts in 1986 (NYS Dept. of Env. 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 saw a population growth from 300 birds in the 1960's to an estimated population of 1,400 +/- birds in 2001 (RI, May 30, 2006).

- Virginia observed a population of 60 birds in 1986 and a population of 504 birds in 1999 which is 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 22 year time period, the mute 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 states have seen similar growth in 1996 as six states reported a population of around 4,687 birds with - Michigan having the largest population of around 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 had an annual population growth of 5.8%, an increase of a 148% in 2002 to over 14,000 birds (RI, May 30, 2006). The

high spread potential is a result of longevity - once a mute swan reaches breeding age; about 85% of them survive from one breeding season to the next with an average life span of about 11 years. This equates to five breeding cycles in the life span of a swan. (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. Due to the 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 pair for around $2,250 (Murray, 2010). Often the seller will not mention or place a disclaimer at the bottom of the advertisement about checking state regulations before placing an order. Although, it is the sole responsibility of the purchaser to follow state regulations often the person purchasing swans through a catalog or online assumes that it is legal to possess these types of birds.

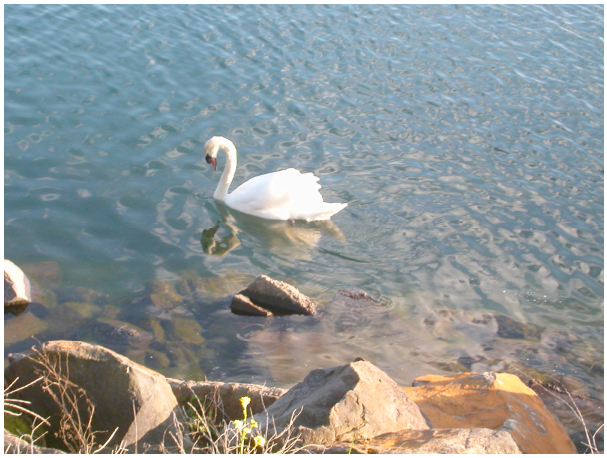
Besides their beauty and grace, mute swans are also known and advertised for the aggressive way they defend their territory from other waterfowl such as geese and ducks. This is considered a positive attribute because the swans keep unwanted animals away from the ponds or lakes. However, their aggressive behavior doesn't distinguish between intruders, thus the have reportedly attacked people and pets, and have the 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 is detrimental to 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 of the states located in Atlantic and Mississippi Flyways concerted population control efforts such as lethal removal and addling of eggs have been hampered or stopped due to court cases brought against the state or federal agencies by animal welfare groups or concerned citizens groups.

Economic Impact Potential is High

Due to the aesthetic appeal of these large white birds 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 birds and reducing the 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 and increase soil erosion (Hurley 1991). This reduction of SAV biomass can reduce the reproductive success of SAV and reduce the invertebrate, fish and shellfish populations that are dependent on these plants for food and shelter (Krull 1970). The reduction in SAV biomass also reduces the much needed food supply of migrating birds.

Environmental Impact Potential is High

Mute swans do not commonly migrate like other waterfowl and tend to stay in the local area 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 which are vital energy supplies for migratory waterfowl.

Mute swans are a large, intimidating bird and can be very territorial especially during the nesting season. A breeding pair of mute swans can claim a territorial of up to 13 acres. Aggressive behavior from the male typical involves chasing an intruder until it 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).

In Maryland, listed threatened 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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Format

This pest risk assessment (PRA) is based on the format used by the Exotic Forest Pest Information System for North America. For a description of the evaluation process used, see Pest Risk Assessment Guidelines at: http://spfnic.fs.fed.us/exfor/download.cfm.

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