GLOBAL INVASIVE SPECIES DATABASE

FULL ACCOUNT FOR: ***Cygnus olor***

Cygnus olor 正體中文

System: Freshwater_terrestrial

Kingdom	Phylum	Class	Order	Family
Animalia	Chordata	Aves	Anseriformes	Anatidae

Common name Fysyldayan gu gushu (English), Mute swan (English), Lebed-shipun (Russian), Cygne tuberculé (French)

Synonym *Anas olor* , Gmelin

Similar species

Summary Cygnus olor (mute swans) are a large swan species that can utilise a variety of aquatic habitats. They consume submerged aquatic vegetation to the point of overgrazing, which in turn reduces the carrying capacity of natural habitats for native waterfowl. They will occasionally overgraze to such an extent that certain vegetation is eliminated from the ecosystem. Cygnus olor is also very territorial and will drive off native waterfowl species and has been known to attack and kill native species while defending territory. Mute swans have also been known to attack and injure humans and can be especially dangerous to small children.

view this species on IUCN Red List

Species Description
Cygnus olor (mute swans) are large birds, measuring 144 to 158cm. The wingspan is 2 to 2.5m and total mass can reach from 8.4-10.2kg. Males are larger than females. Both sexes are similar in appearance: adults have white plumage and orange bills with a characteristic black, basal knob and a black terminal nail. The head and neck may sometimes be stained brown from water and mud containing iron. Legs and feet of adults can range in colour from black to greyish pink. Mute swan cygnets are greyish brown or white, with slate grey legs and feet or pinkish/tan feet, respectively. Cygnets lack the basal knob. White morph cygnets have tan bills, while grey morph cygnets have slate bills (Chesapeake Bay Program, 2002; and Ivory, 2002).

Lifecycle Stages
Cygnus olor (mute swan) chicks are brownish grey (gradually turning white within the next 12 months) and only remain in the nest for one day. They are able to fly in about 60 days. Chicks can ride on the backs of their parents or under their wings. By the following breeding season the parents drive the young away. Adolescents then join flocks of other non-breeding swans and during this time molt their feathers, becoming flightless for a short period of time. In the next two years, they begin to bond with a mate and begin to look for suitable breeding territory. Swans do not begin to breed until around year three (Ivory, 2002).

Habitat Description
Cygnus olor (mute swans) utilise a variety of aquatic habitats, including ponds and lagoons, fresh to salt water marshes, well-sheltered bays and lakes. In the warmer months, mute swans spend most of their time in shallow water. As shallow water freezes, the birds move to deeper water, but will utilise deeper water throughout the year (Chesapeake Bay Program, 2002; and Ivory, 2002).

Reproduction
Adult *Cygnus olor* (mute swans) do not necessarily pair for life, but established pairs are more successful breeders than non-established pairs. Mute swans rarely nest in colonies. Nest sites are selected and breeding begins in March or early April. Nests will be built or a previously constructed mound, such as a muskrat house will be used. Nests are large, composed of aquatic vegetation and lined with feathers and down. It is built above the water level in a swampy place near a pond or lake. Clutch sizes of 5 to 12 can occur, but 5 to 7 is most common. Eggs are pale grey to pale blue-green. Incubation lasts 36 to 38 days. Incubation is shared between the male and female, but the female spends the majority of time sitting and the male typically stands guard (Ivory, 2002).

Nutrition
Submerged aquatic vegetation (SAV) is the preferred diet of *Cygnus olor* (mute swan), though they also eat grain crops. They consume daily at least 3-4kg (wet weight) of submerged aquatic plants, including leaves, stems, roots, stolons and rhizomes, uproot additional vegetation that is not eaten, and use emergent vegetation for nest building. They have been observed pulling plants up by the roots or rhizomes or paddling vigorously to dislodge whole plants to consume or to make available for cygnets (Chesapeake Bay Program, 2002; and Petrie and Francis, 2003).

General Impacts
Cygnus olor (mute swans) impact native waterfowl habitat. They consume great quantities of submerged aquatic vegetation (SAV) and aquatic invertebrates and cause competition for space and food, attacking and driving off native waterfowl and potentially reducing the carrying capacity of breeding, staging and wintering habitats for native species of migratory waterfowl. Mute swans occupy and defend large territories (up to 6ha) of wetland habitat during nesting, brood rearing and foraging. Studies have shown that in Europe mute swans have successfully eliminated individual plant species from some wetlands and it is feared that in North America, similar impacts on food resources will occur and effect migrant and wintering waterfowl populations. They have been reported to kill adult and juvenile ducks and geese as well as other wetland-dependent birds (Allin and Husband, 2003; Petrie and Francis, 2003).
At high densities, mute swans can overgraze an area with the potential to eliminate some plant species from an ecosystem. During winter, mute swans may also consume nutrient storage and over wintering structures such as tubers, which could reduce the future availability of perennial species such as wild celery (*Vallisneria americana*) and American bulrush (*Scirpus americanus*), both important food sources for native waterfowl (Petrie and Francis, 2003).

Management Info
Physical: Clutch reduction by destroying or oiling a proportion of eggs in each clutch to prevent hatching has so far been a preferred method of control, but its effectiveness in actually controlling mute swan populations is in doubt, however clutch reduction has the advantage of being unobtrusive and it is likely to be less disruptive than culling or translocation of birds. Clutch reduction is labour intensive, requires persistence to be effective and its effects may vary between populations depending on immigration rates. Studies by Watola *et al.* (2003) have demonstrated that control of breeding output will not necessarily control mute swan populations enough to prevent overgrazing. Deterrent measures and habitat management at the site of conflict may be more effective. In simulated clutch reduction, if clutches were reduced to two eggs per clutch then non-breeding numbers decreased by 30% over a 10-year period. Total destruction of all eggs in each clutch stabilised the non-breeding sub-population but did not eradicate it. The effects of clutch reduction were offset by high survival rates and immigration (Watola *et al.* 2003).
Increasing the mortality of adult mute swans through culling would be three or four times more efficient than egg destruction, but culling is, and will remain, unacceptable in many areas (Watola *et al.* 2003).
Petrie and Francis (2003) recommend that the first step to management be to remove mute swans from the list of protected species in all regions in the United States and Canada. Second, they recommend initiation of a control programme. Non-lethal control programmes have been implemented in a number of the eastern United States, but their effectiveness has been limited. Capture and removal programmes or shooting would be most beneficial in removing adult swans from the current populations, but swan capture and removal would be costly and it is doubtful that sufficiently large numbers could be captured in a cost-effective manner. Encouraging hunters and managers to shoot adults would be a far more effective strategy. Such a programme would be unlikely to eradicate the species, but would probably be sufficient to maintain the regional population at no more than a few hundred individuals. In areas where lethal control may not be appropriate, such as city parks, egg oiling could also be implemented to prevent population expansion (Petrie and Francis, 2003).

Pathway
C. olor were introduced to North American city parks, zoos, avicultural collections, and estates in the late 1800s and early 1900s (Bellrose 1980). The intentional release and accidental escape of these birds resulted in the establishment of populations along the northeastern Atlantic Coast of the United States, portions of the Pacific Coast, and more recently, the lower Great Lakes (Petrie and Francis, 2003).

Principal source: Chesapeake Bay Program, 2002. Mute Swan *Cygnus olor*
Petrie and Francis, 2003. Rapid increase in the lower Great Lakes population of feral mute swanss: a review and a recommendation

Compiler: National Biological Information Infrastructure (NBII) & IUCN/SSC Invasive Species Specialist Group (ISSG)

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ALIEN RANGE

[1] AUSTRALIA
[1] BELARUS
[1] COLOMBIA
[1] DOMINICAN REPUBLIC
[1] FAROE ISLANDS
[1] GREECE
[1] ITALY
[1] LAKE ERIE
[1] AUSTRIA
[3] CANADA
[1] CYPRUS
[1] ESTONIA
[1] GREAT LAKES
[1] ICELAND
[1] JAPAN
[1] LIECHTENSTEIN

[1] NEW ZEALAND
[1] PERU
[1] SOUTH AFRICA
[1] UNITED ARAB EMIRATES
[1] NORTH AMERICA
[1] SLOVENIA
[1] SWITZERLAND
[23] UNITED STATES

Red List assessed species 6: LC = 6;

Anas rubripes **LC**
Aythya americana **LC**
Aythya valisineria **LC**
Cygnus columbianus **LC**
Ruppia maritima **LC**
Zostera marina **LC**

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