

The Mute Swan *Cygnus olor* in Finland

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A survey is given of the rise and spread of the Finnish population of the Mute Swan. Breeding first took place on the Åland islands in 1934, and was observed for the first time in the archipelago of Turku in 1958. In 1970 the population of the Åland islands and the southwestern archipelago was estimated at 125 pairs. In 1975 the estimate for the Åland islands alone was 400 pairs. The Mute Swans breed (1) in rushy coastal waters and lakes, (2) in the barren and unprotected outer archipelago. In the outer archipelago the number of young fledged is usually low. On the other hand, the waters of the outer archipelago remain ice-free much longer than the inner waters, thus enabling the young to become fully fledged. The sudden rise in the population in the 1970s was due to a series of unusually mild winters.

In recent decades the populations of the two swan species in Finland have changed considerably. The Whooper Swan (*Cygnus cygnus*) was nearly extinct at the end of the 1940s, the whole population being estimated at only 15 pairs in 1949. Now there are about 150—200 breeding pairs and nesting has even been observed near the southern coast. The Mute Swan (*C. olor*) was equally rare in the 1940s, but now the breeding population in the southwestern parts of Finland consists of a few hundred pairs. Thus the Whooper Swan, expanding in the northeast, will soon meet the Mute Swan, spreading from the southwest!

The wild population of the Mute Swan had its origin in tame birds set free from bird ponds in Maarianhamina on the Åland mainland at the beginning of the 1930s. Breeding was first observed in Lemland in 1934. The population remained quite small for the next two decades. In 1958 breeding

was reported for the first time in the archipelago of Turku, at Attu, Parainen.

In 1969 and 1970 I made three estimates of the population size from the air in the southwestern archipelago, the most important on 29 June 1969. The flights were concentrated on the outer archipelago in the Archipelago Sea, where I counted about 60 pairs. During the same summer, PAASIVIRTA and MIKKOLA estimated the population of the Åland mainland and the main islands of Föglö at 48 breeding and 10 nonbreeding pairs. At that time I estimated the breeding population of the whole southwestern archipelago at about 125 pairs, concentrated on the Åland mainland, the Föglö archipelago and the skerries at the southern limit of the Bothnian Sea (Selkämeri).

In summer 1975 the Office for Nature Conservation in Åland had the province thoroughly investigated. In all, 309 breeding pairs of Mute Swans were

recorded, the total estimate being about 400 pairs. When the cygnets and the nonbreeding juveniles are included, the number of birds in late summer 1975 may have risen to over 3800, but this must be regarded as a rough estimate.

The main reasons for the increased numbers of Mute Swans in northern Europe are considered to be the ban on hunting and intensified winter feeding. Another contributory factor is the introduction of Mute Swans in many places. The sharp increase of the population in the 1970s, especially in Åland, is evidently the result of a succession of mild winters.

One of the most interesting aspects of the occurrence of the Mute Swan in the southwestern archipelago is the dichotomy in its habitats: (1) the original habitats of the species are rushy coastal waters and productive lakes (2) recently the species has also occupied barren unprotected sites in the outer archipelago. When the Mute Swans breed in inland lakes, these are almost always close to the coast, so that the young birds can be taken to the sea. On the Åland islands the species seldom breeds in lakes. Of the 400 pairs mentioned earlier, only 20 pairs bred in lakes, and breeding occurred in only 17 of the 70 lakes examined.

I shall now deal briefly with the ecology of the birds breeding in the outer archipelago and the possible reasons for this widespread change in breeding habits in the northeastern fringe of the range.

The nesting habitat of the Mute Swan in the outer archipelago consists of treeless skerries with protected bays and shallow waters, suitable for feeding. Breeding often takes place on the most barren skerries with only the Eider (*Somateria mollissima*) or the Great Black-backed Gull (*Larus marinus*) as a neighbour. The nest is often

located at the water's edge and is most often made of wrack (*Fucus*), which is usually available around the nests.

In the outer archipelago the number of eggs seems to correspond to that elsewhere in Northern Europe; the average number recorded by me was 5.85 ($n = 14$). On the other hand the number of cygnets is usually low, more than two cygnets is exceptional, and the whole brood is often lost. In sheltered bays in the inner archipelago, the number of cygnets is higher, and often 4—5 cygnets survive till they can fly.

The considerable loss of cygnets evidently reflects poor adaptation to the outer archipelago. The situation is somewhat analogous to the case of the Velvet Scoter (*Melanitta fusca*). Stormy weather during hatching and consequent difficulty in obtaining food are the most probable reasons for the high mortality. The second week of life is presumably the most critical, for during the first days the cygnets use their food reserves. There is also evidence that the Great Black-backed Gull destroys cygnets in the outer archipelago. In an area studied in Kustavi, with an exceptionally dense population of Great Black-backed Gulls, all the cygnets were lost in some years. A rise in the water level sometimes destroys the nest, although the water seldom rises more than 50 cm above the normal level in the southwestern archipelago during the breeding season.

The feeding ecology is so far unclear. All the Mute Swans observed feeding have been in shallow water; I have not seen any grazing on land. Nine stomach samples taken in Föglö in May 1975 indicated that *Chara* algae form a considerable part of the food. Surprisingly, there was a great amount of sand, about 30 % of the stomach volume (the rapid digestion of organic food should naturally be considered). Large holes in the

sea bottom can be seen near the breeding sites, but the feeding proper takes place on muddy bottoms.

As the development of the ability to fly takes a long time for cygnets (4.5 months), it is tempting to conclude that the reason for increasing breeding in the outer archipelago is the late ice formation there. In the Bothnian Sea, the outer archipelago is usually ice-free until the end of January or the beginning of February, while the coastal bays are sometime covered with ice as early as in November. In both areas the cygnets hatch around mid-June. After the exceptionally mild winter of 1974—1975 a nest with three eggs was found as early as 19 April in the outer archipelago. However, I believe that future studies will show that the food supply has played an important role in the spread of the Mute Swan to the outer archipelago.

The lack of natural enemies may also have contributed to the increase in numbers of the Mute Swan. However, in some areas of Åland with a very dense population, the local fishermen have become hostile towards the species: it is accused of spoiling fishing and of disturbing other breeding water birds. The damage to fishing is said to be caused by flocks of non-breeding swans (maximally 150—200 individuals) feeding in shallow coastal bays, which destroy the bottom vegetation and, with it, fish spawn. Disturbance of other water birds may be considered exceptional; I have no observations of it. The behaviour of the species may admittedly change as its density increases, but the breeding population in Finland cannot yet be regarded as excessively dense (cf. observations in Central Europe).

Selostus: Kyhmyjoutsen (*Cygnus olor*) Suomessa

Kirjoituksessa tarkastellaan kyhmyjoutsenen kannan kasvua ja esiintymistä maassamme. Ensimmäinen pesintä tapahtui Ahvenan mantereella v. 1934, Turun saaristossa pesintä alkoi vasta v. 1958. Vuonna 1970 arvioitiin koko lounaisaariston kannan vahvuudeksi n. 125 paria; tihein kanta todettiin Ahvenanmerellä, Föglön saaristossa ja Selkämeren eteläreunalla. V. 1975 laskettiin yksistään Ahvenan maakunnan alueella olevan n. 400 paria (kannan huomattava kasvu 1970-luvulla johon perättäisistä leudoista talvista). — Laji pesii toisaalta runsasravinteisissa järvissä ja merenlahdissa, toisaalta aivan toisenlaisessa ympäristössä, karussa ja suojattomassa ulkosaaristossa. Kirjoituksessa tarkastellaan lähinnä jälkimmäisessä pesivän kannan ekologiaa. Täällä poikastuotto on alhainen, mutta toisaalta ulkosaariston vedet pysyvät kauan jäistä vapaina. Siten poikaset ehtivät varmemmin lentokykyaikaisiksi.

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