Present status of Mute Swans *Cygnus olor* Whooper Swans *C. cygnus* and Bewick's Swans *C. bewickii* wintering in the Eastern Baltic Region

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Census work on wintering duck and swan populations has been undertaken in most European countries during recent decades as national projects but more especially as international counts promoted by the International Waterfowl and Wetlands Research Bureau (IWRB). Intensive January counts were conducted annually from 1967-89 in Estonia (Kuresoo 1985, 1988), and in 1967-74 and 1984-89 in Latvia (Viksne & Stipniece 1988). In 1987-89 nationwide censuses were carried out in Lithunia (Raudonikis *et al.* 1989). Some data for 1988 are available also from the Kaliningrad Region of the Russian SFSR (Grishanov, unpubl.) (Fig. 1).

Two swan species - the Mute Swan *Cygnus olor* and Whooper Swan *Cygnus cygnus*, winter regularly in this region; the Bewick's Swan *Cygnus columbianus bewickii*, is a very rare wintering bird.

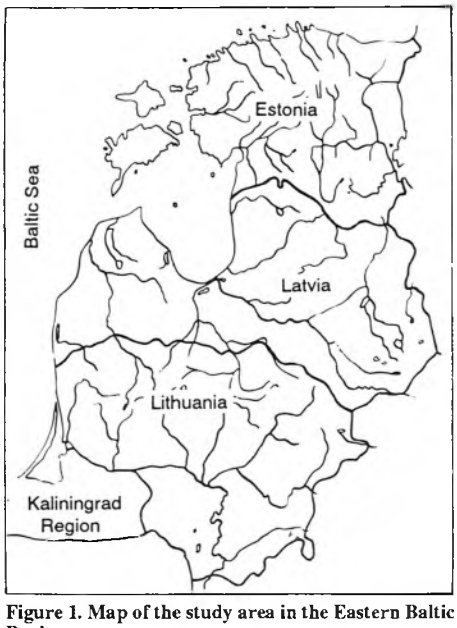

Figure 1. Map of the study area in the Eastern Baltic Region.

Conditions are favourable for swans only in mild winters. Usually shallow areas are ice-bound too long to allow the swans to survive. In Latvia and especially in Lithuania the birds were recorded mainly on inland waterbodies. The coastal bays and shallows of Estonia are the main habitats for wintering swans in the Eastern Baltic Region.

Aims and methods

The main aim of the census in the Eastern Baltic region has been to estimate the total numbers of wintering swans and to discover numerical trends in the whole population (international level) and the local population (national level).

In the Eastern Baltic region the counts were coordinated by the Baltic Commission for the Study of Bird Migration. The counts in 1987-89 were more thorough since it was a period of intensive counts in the area of the North Sea and Baltic Sea.

The censuses were undertaken mainly from the ground by volunteer observers and hunters. More than 300 recorders took part in Estonia and around 90 in Lithuania. Professional ornithologists contributed with observations in the important wintering sites and made aerial surveys.

The coverage of counts in inland sites of the Baltic countries was better in 1988 than before (in Estonia coverage was estimated at around 90%). The coverage of the shoreline was high in Lithuania (>90%), satisfactory in Estonia (*c.* 70%) and low in Latvia (19%) and in the Kaliningrad Region. The accuracy of the results has been improved by choosing one main counting day, when, for example, in Estonia 40% of the wintering sites were visited.

Results

Numbers of wintering swans in Estonia

Changes in the numbers of wintering swans have

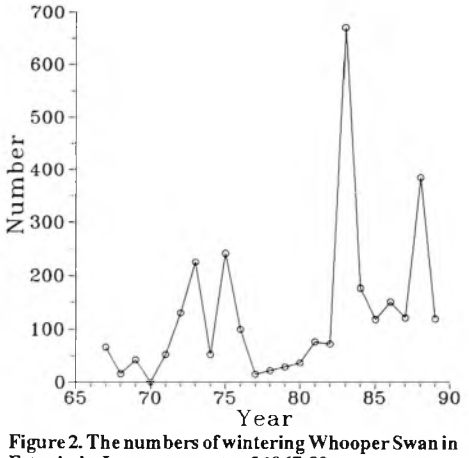

Figure 2. The numbers of wintering Whooper Swan in Estonia in January counts of 1967-89.

been known in Estonia since 1967. In mild winters the Whooper Swan has been observed regularly in Estonia and its maximum numbers exceeded a total of 1,000 birds in January 1961 (Jogi 1973). The number of wintering birds varies being minimal in hard winters (Fig. 2). The breeding grounds of these Whooper Swans are principally in Finland and Karelia. They rarely breed in Estonia, where only three successful breeding attempts have been reported since 1980.

The Mute Swan is quite a new wintering bird in Estonia but numbers have grown rapidly in recent years. This growth is associated with an increase in the local breeding population (Fig. 3). Its numbers also largely depend on the severity of the winter and fluctuate in a similar way to the

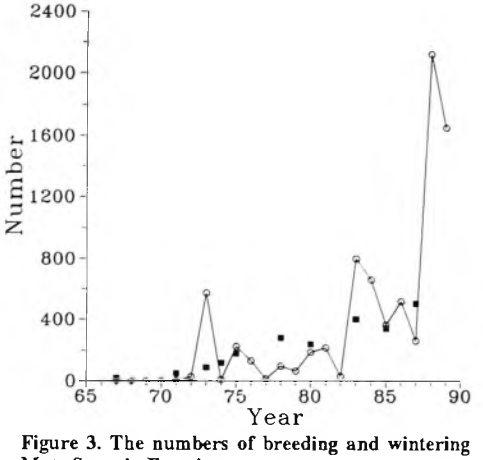

Figure 3. The numbers of breeding and wintering Mute Swan in Estonia.
■ = number of breeding pairs (Renno & Paakspuu 1987);
○ = number of wintering swans, January counts 1967-89.

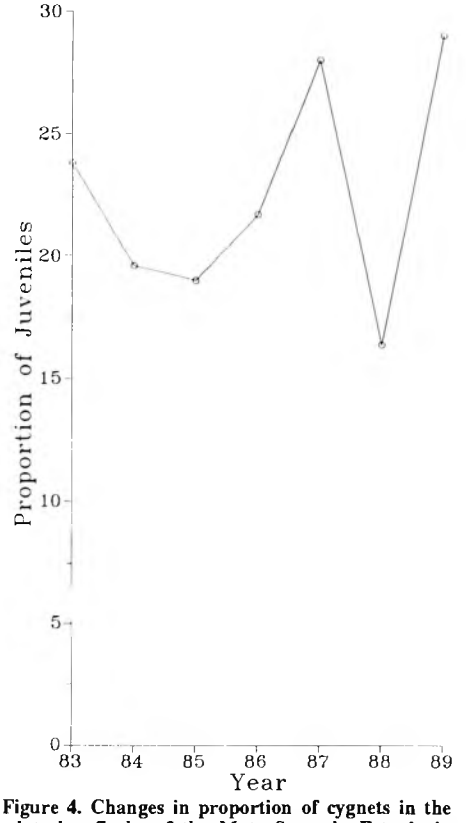

Figure 4. Changes in proportion of cygnets in the wintering flocks of the Mute Swan in Estonia in January counts of 1983-89.

Whooper Swan.

Figure 4 illustrates changes in proportion of cygnets in the Mute Swan flocks in Estonia during the January counts. The mean percentage of cygnets was 21.8% ±SD4.4, n = 3,274. The sharp decline in the number of young birds in winter 1987-88 can be explained by the severity of winter 1986-87 and subsequent low productivity in the spring of 1987. In Latvia the proportion of wintering cygnets has been 25-53% in mild winters (Lipsberg 1977).

Table 1. Numbers of wintering swans in Eastern Baltic in January 1988.

	Mute Swans	Whooper Swans	Bewick's Swans	Cygnus species *
Estonia	2110	390	3	190
Latvia	310	40		630
Lithuania	1100	10		
Kaliningrad Region	210			
Total	3730	440	3	820

*Unidentified swans, mainly the Mute Swan.

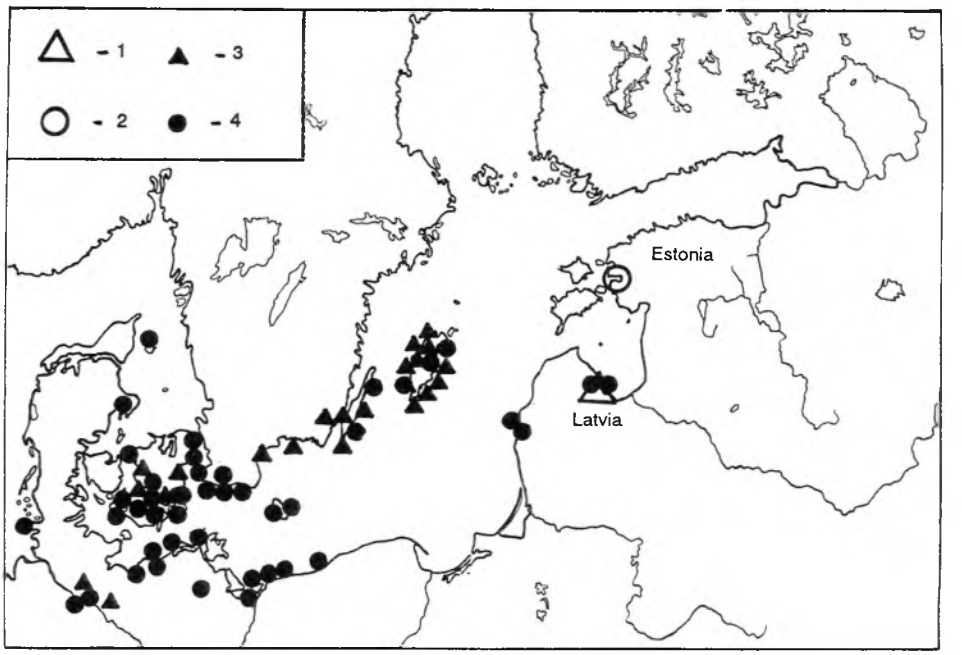

Figure 5. Re-sightings and recoveries of the Mute Swan in winter months (December-March) ringed in Estonia and Latvia. 1 - ringing area in Latvia; 2 - ringing area in Estonia; 3 - winter resightings and recoveries of swans ringed in Latvia; 4 - winter resightings and recoveries of swans ringed in Estonia.

Present wintering grounds of swans in the Eastern Baltic Region

For Eastern Baltic countries the most accurate mid-winter counts have been made in 1988 and 1989. Unfortunately both winters were extremely warm and the counts do not represent the typical situation in this region. The data for 1988 are presented in Table 1. There are the great differences in wintering habits of swans within the region. In Estonia almost all the wintering grounds are in coastal bays and shallows of the western archipelago and the Finnish Gulf. In Latvia and the Kaliningrad Region the majority of the wintering swans were recorded on inland waterbodies (77.8 and 73.3% respectively). In Lithuania the Mute Swan is rather urbanized and is almost always encountered on inland waterbodies.

Wintering grounds of the Mute Swan breeding in the Eastern Baltic Region

The Mute Swan is mainly sedentary, but birds in the Baltic region are more migratory than those of other European populations (Atkinson-Willes 1981). The swans have to leave Estonian breeding grounds due to the ice conditions, although part of the local population is resident. The flightless cygnets of late broods are forced to swim away before the bays become ice-bound and in some cases they even have to walk on ice (Paakspuu & Kastepold 1987).

The marking of swans in breeding areas has yielded new information about subsequent movements to wintering grounds. In 1974-80, 370 Mute Swans (216 juveniles, 154 adults) were marked with plastic collars in the Baltic states (213 in Lithuania, 79 in Latvia and 78 in Estonia).

In Lithuania up to 60% of the Mute Swans ringed after breeding overwintered in the same area during very mild winters (Nedzinskas 1987). The data from Estonia and Latvia are not representative as ringing was carried out on inland waterbodies which would normally be covered with ice.

The countries bordering the south and southwest shores of the Baltic Sea form the main wintering areas for Estonian and Latvian Mute Swans (Fig. 5). Excluding the local recoveries, the Estonian swans overwinter mainly in Denmark, Sweden and the former G.D.R. (34.9, 23.3 and 14.0% respectively; $n = 43$), the Latvian birds in Sweden and Denmark (69.2 and 15.4% respectively; $n = 21$) (Lipsberg 1987). The majority of winter resightings and recoveries of Lithuanian breeding swans have occurred in Denmark, Poland and the former G.D.R. (50.1, 20.7 and 18.5% respectively; $n = 87$) (Nedzinskas 1987). Part of

the Lithuanian population, particularly in cold winters, even overwinters in France, Great Britain and Italy (Jogi *et al.* 1976).

Discussion

The main threat to swans in the Eastern Baltic Region is hard winters, when shallow waterbodies freeze, dramatically altering the food situation. The true impact of hard winters is not satisfactorily documented here. Urban swans seem to experience better conditions - for example those of south and southwest Lithuania where the birds are fed by people (Raudonikis *et al.* 1989). At the same time the concentration of swans into towns and harbours, where waste outlets keep water ice-free, poses a threat of toxic contamination of the wintering birds.

The rapid growth of the Mute Swan population may partly be explained by the eutrophication of coastal bays and inland waters in the Eastern Baltic during recent decades. Changes in the amount of food available for waterfowl and the relationship with pollution of the Baltic Sea should be studied in the future.

Observations in Estonia have shown Mute Swans to be aggressive towards Whooper Swans in wintering places. Due to increasing numbers, Mute Swans seem to be displacing Whooper Swans from several old wintering places in the West Estonian archipelago. The Whooper Swan sites are now mainly concentrated in North Estonia.

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