

## **Territorial and temporal distribution of Whooper Swan *Cygnus cygnus* marked with neck collars in Latvia in 2003 - 2005**

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### **Abstract**

In total 149 Whooper Swans *Cygnus cygnus* were marked with neck collars in Latvia from 2003 to 2005: 113 cygnets, 29 moulting non-breeders and seven breeding birds. Blue plastic neck collars with white inscription were used for marking. This article includes all data the author has received from 14 August 2003 till 31 December 2006. A total of 1329 resightings were received. Birds arrive in wintering places during November and December. The majority of these sites are located in the eastern part of Germany along the banks of River Elbe and Oder and in Poland near Oder River. Some birds were observed in Denmark, in The Netherlands and in the western part of Germany. The airline distance from ringing to wintering sites was 623 - 1189 km. In June birds ringed in previous year as cygnets were observed in Latvia and Estonia, during autumn migration – in Finland and Estonia. All these sightings show that Latvian young birds use locations far to the North from Latvia for moulting.

**Key words:** cygnets, migration, moulting, neck collar, Whooper Swan.

### **Introduction**

In the middle of the 20<sup>th</sup> century Whooper Swan (*Cygnus cygnus* L.) bred only in North Russia and Scandinavia. In the 1970s it started to expand breeding range to the south. The breeding population of Whooper Swan in Europe is increasing. Now it has started to breed, for example, in Ukraine (M. Gavriljuk, personal communication) and Hungary (Kovács 2005).

The first nesting Whooper Swan in Latvia was found in 1973 (Baumanis 1975). In the beginning of the 1980s 10 to 20 breeding pairs were counted (Priednieks et al. 1989), in 2000 to 2004 – 150 pairs (Boiko 2005). The number of breeding pairs in Latvia increased very rapidly, and in 2007 reached about 200 pairs.

Intensive ringing programmes for the Whooper Swan are implemented in Finland, Iceland and Sweden. Birds from Finland migrate along the Baltic Sea western coast and fly through Sweden to wintering places in Denmark, Germany, Belgium, England and The Netherlands (Laubek et al. 1998). The author began a Whooper Swan ringing programme in Latvia in 2003 because nothing was known about migration, wintering grounds and moulting locations. Since that time much material has been accumulated. The goal of the

present study is to summarize all the accumulated ringing data dealing with territorial and temporal distribution of the Latvian Whooper Swan population.

## Materials and methods

### *Ringling of Whooper Swans*

The author started a ringing programme for Whooper Swans in Latvia in summer 2003. The number of ringed birds is shown in Table 1. The numbers of ringed birds in different districts of Latvia are shown in Table 2. The most important ringing sites of moulting non-breeders are Skrunđa fish ponds (56°42'N, 21°59'E), for cygnets Renda fish ponds (57°04'N, 22°17'E) and Rimzāti fish ponds (56°58'N, 22°10'E).

For ringing blue plastic neck collars with white inscription were used: 1C00 - 1C99, 2C01 - 2C49. Neck collars are 83 mm in height, plastic thickness – 3 mm, inner diameter – 57 mm and weight – 71 g. Number and letter height is 77 mm and width 33 mm. It is possible to read the numbers from a distance 50 to 300 m using a 20 - 60 × telescope. Each bird was also ringed with a metal leg ring.

Cygnets were caught at age of 8 - 11 weeks for ringing. At this age they are large enough to implace a neck collar, but they are still flightless. They reach this age in Latvia during the end of July to beginning of August. Moulting birds were ringed from early July till late August. Breeding birds moult on breeding grounds and therefore it was possible to captive them.

In Latvia Whooper Swans stay mainly in ponds and fish ponds with a depth of 0.3 to 2 m (D. Boiko, unpublished data). For captive we used a plastic boat. The catching team consisted of 2 to 12 persons: one on the boat, others wading tried to find and catch cygnets by hand or with a “swan hook” (3 m long bamboo handle with hooked wire on the end which helps to grab the swans neck) in vegetation.

In deeper places (more than 1 m) we used motorboats. Very often cygnets dove and then emerged 10 - 50 m from the boat.

In breeding places bordering with wood cygnets often run into shrubs while catching, making capture difficult. In breeding places with high and dense vegetation cygnets remain still.

In Skrunđa fish ponds we used motorboats and a “swan hook” for catching. During moulting the bird is flightless. It was very hard to catch adult swans because often they dove. Some birds were caught only after some 40 minutes effort. During this time other moulting birds ran far into the woods.

**Table 1.** Number of ringed Whooper Swans *Cygnus cygnus* with neck collars in Latvia

Year	Cygnets	Moulting breeding birds	Moulting non-breeders	Total
2003			2	2
2004	33	3	7	43
2005	80	4	20	104
Total	113	7	29	149

**Table 2.** Number of ringed Whooper Swans *Cygnus cygnus* in different districts of Latvia in 2003 - 2005 (C - cygnets, M - moulting non-breeders plus moulting breeders)

District	2003		2004		2005		Total	
	C	M	C	M	C	M	C	M
Kuldīga	–	2	14	8	44	21	58	31
Liepāja	–	–	18	2	22	2	40	4
Saldus	–	–	1	–	10	1	11	1
Talsi	–	–	–	–	3	–	3	–
Valmiera	–	–	–	–	1	–	1	–
Total	–	2	33	10	80	24	113	36

### Data collecting and processing

The author entered the information about the swan ringing project with blue neck rings into the web: [www.lob.lv](http://www.lob.lv), [www.cr-ebirding.be](http://www.cr-ebirding.be) where bird watchers can obtain the author's address and e-mail. They were asked to give information about the neck collar inscription, location, state, country, coordinates, habitat and flock size. After receiving of data author checked the coordinates, and the observer was provided with all available information about the bird observed.

All information about ringing and all resightings were entered in Microsoft Access database. Distance between ringing and recovering place was calculating using the Google Earth programme. Maps were produced using the ArcMap9.1.

This article includes all data obtained from 14 August 2003 till 31 December 2006. A total of 149 birds during summers 2003 - 2005 were ringed, and 1329 resighting reports were received. The resighting data was divided into four periods: spring – from March 1 till May 31; summer – from June 1 till August 31; autumn – from September 1 till November 31; winter – from December 1 till February 28 or 29.

## Results and discussion

### Migrations and wintering places

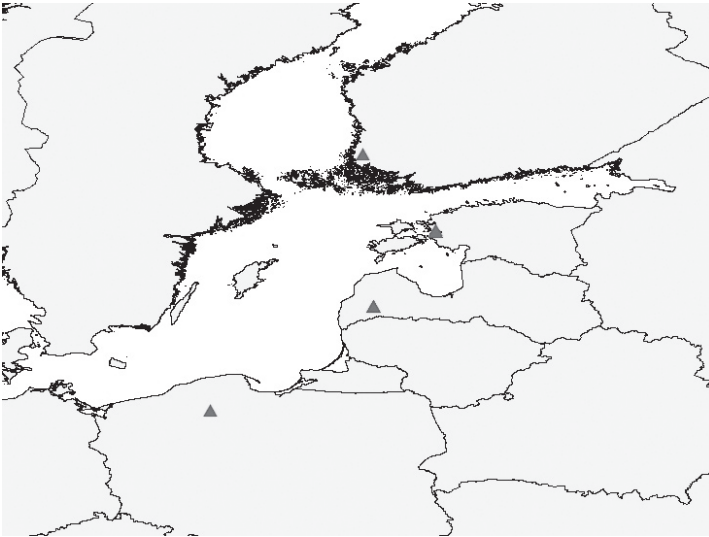
The number of ringed cygnets in different districts of Latvia is shown in Table 2. Cygnets were mostly ringed in the western part of Latvia where about 85 % of Latvian Whooper Swan population is breeding (D. Boiko, unpublished data).

In September and October cygnets and their parents left breeding places and arrived in wintering locations after 1 to 2 months (Fig. 1). The birds from Finland breeding grounds also spend about 1 to 2 months travelling to wintering grounds (Laubek et al. 1998).

During November and December birds arrive in wintering places. The majority of these are located in eastern Germany along the banks of River Elbe and Oder (Fig. 1, 3). Some birds were observed in Poland close to the German border near River Oder. Only a few birds were observed in western Germany. During the second winter of study one bird was found in Denmark (Jutland) and two in The Netherlands. The distance from ringing place to wintering places was 623 to 1189 km. Gardarsson (1991) studied the Iceland breeding population from which birds fly 800 to 1200 km from breeding grounds to wintering places. Whooper Swans from Finland fly 700 to 2100 km to wintering places



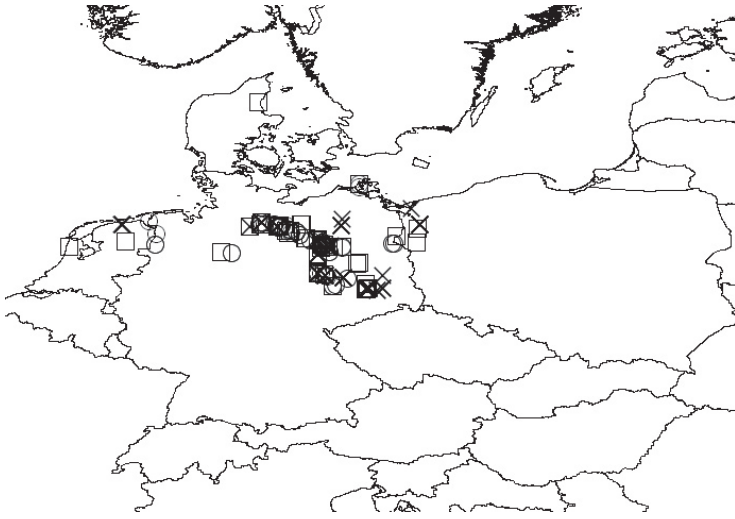
**Fig. 1.** Recoveries of Whooper Swan *Cygnus cygnus* ringed in Latvia as cygnets and observed during their first autumn (O - September, □ - October, × - November).



**Fig. 2.** Summer (June) recoveries of Whooper Swan *Cygnus cygnus* ringed in Latvia as cygnets, and recovered during the second calendar year.

(Laubek et al. 1998) located in Sweden, Denmark, Germany, The Netherlands and Great Britain. Our study shows that Latvian Whooper Swans possibly migrate along the eastern coast of the Baltic Sea. From Finland Whooper Swans migrate along the western coast of the Baltic Sea (through Sweden) (Laubek et al. 1998). Until 31 October 2006 we have no reports from Finland Whooper Swans with a neck collar seen in Latvia.

In March some of our birds started to migrate in the East and North-East direction but others still remained in wintering places.



**Fig. 3.** Winter recoveries of Whooper Swan *Cygnus cygnus* ringed as cygnets in Latvia (x - December, □ - January, O - February).

Ten birds in April were observed in Poland in Wartha Mouth National Park or near this location. Seven birds in April were observed still in wintering sites in Germany but eight of young birds were observed already in Latvia 0 to 117 km from their hatching sites.

In May twelve young birds were observed near their hatching sites (0 to 38 km). Four of them were observed there already in April.

Moulting non-breeders were ringed mostly in Kuldiga district in Skrunda fish ponds. In total 28 birds were ringed in Skrunda fish ponds: two in 2003, seven in 2004, and 19 in 2005. The majority of birds were ringed in August.

The number of moulting non-breeders in Skrunda fish ponds was 60 - 70 birds in 2003 - 2005. In autumn (September and October) 53 % of ringed non-breeders were observed in the ringing location. After draining of fish ponds (early and middle October) birds left area. At the end of September and early October 167 % of ringed non-breeders were observed outside Skrunda fish ponds in Saldus district in the Sātiņi fish ponds (distance 24 km).

At the end of October and November the first birds arrive in wintering sites in Germany near Elbe and Oder River banks. We have just one observation in December and two observations of two birds in January from the western part of Poland at the Milicz fish ponds.

During spring migration (March) birds fly to the East and North-East. Six birds were observed in the Wartha Mouth National Parki in Poland where they have not been observed in winter.

In April we received records of two birds: the first from Milicz fish ponds where a Whooper Swan with neck collar 1C01 was observed each spring in April and May (distance 664 km. South-West direction), the second are from Konicpol fish ponds (distance 674 km. South-West direction). We have no other observations of birds ringed as moulting birds and observing during migration in April.

**Table 3.** Whooper Swans *Cygnus cygnus* ringed as cygnets in Latvia and observed in Finland during migration in the 2<sup>nd</sup> and 3<sup>rd</sup> autumn

Neck collar	Ringing date	Observation date	Distance from ringing place (km)
1C23	26 July 2004	24 October 2006	668
1C74	29 July 2005	4 October 2006	569
1C81	29 July 2005	3 October 2006	699
1C98	30 July 2005	2 October 2006	716
1C98	30 July 2005	3 October 2006	716
1C98	30 July 2005	8 October 2006	716
1C99	30 July 2005	2 October 2006	716
1C99	30 July 2005	3 October 2006	716
1C99	30 July 2005	8 October 2006	716
2C18	1 August 2005	18 October 2006	655
2C18	1 August 2005	4 October 2006	662
2C18	1 August 2005	5 October 2006	662

#### *Distribution of non-breeders during summer*

In June 2006 we have records of ten birds ringed in summer 2005 as cygnets in Latvia. One bird was observed in Poland in 2 June 2006, 416 km South-West from the hatching site. In Latvia we observed seven birds (all in Skrunda fish ponds). Four of them were ringed in the previous summer in the same location. Others were observed 15 to 17 km from hatching sites. Six of them were observed in the Skrunda fish ponds in 5 June 2006 and in 13 June 2006 five of them observed 250 km North-East in Estonia in Matsalu Bay. In the same location in Estonia in June 2006 three more Whoopers were recorded (ringed in summer 2005 in Latvia as cygnets). For two of them these were first observations. In 2 June 2005 one bird (ringed in Latvia in 2004 as a cygnet) was observed 465 km from the ringing place in South Finland (Fig. 2).

During autumn migration six birds were observed in Finland. Ringing and recovery dates as well as distance from ringing place to observation site in Finland (all these observations are of birds in the 2<sup>nd</sup> and 3<sup>rd</sup> autumn) are shown in Table 3.

The autumn observations from Finland, Latvia and Estonia in June show that our young birds after first and second wintering fly far away from hatching locations to the North. A bird with neck collar 1C23 in 24 October 2006 was observed in Finland and on the next day, in Western Estonia at a distance of 455 km. Until now this is the longest distance covered in one day.

The number of sight records of cygnets ringed in Latvia in 2004 - 2005 and seen after one year (September 1 till August 31) is very high – 79 % of all ringed cygnets, compared to 47 % in Finland (Ohtonen 1996) and 62 % in Iceland (Gardarsson 1991). This suggests that our Whooper Swan cygnets have a comparatively low mortality, which may be because they have enough time after hatching to remain in the breeding location and to grow up – about two months. In Finland cygnets fledge in September and they have only few weeks to start migration (Haapanen 1991).

Ohtonen (1996) found that two birds ringed as cygnets in Finland were recorded in

the NE direction from the ringing site: one ringed in 3 October 1989 was found dead in 23 June 1991 in Finland 338 km North-East of the ringing site; the second ringed in 13 September 1987 was found dead in 16 June 1990 590 km North-East from the ringing site in Murmansk region in Russia. Both of these recoveries and our observations show that birds in their second summer fly in the North and North-East direction from their ringing locations. Possibly this migration direction is genetically determined, as North regions are their historical homeland. Haapanen (1991) considers north regions to be superior for moulting, but for breeding there is too short a time even if the habitats are suitable.

Up till now we have no recoveries in July and August (this is the time when birds moult) from Latvian Whooper Swans ringed as cygnets neither from abroad nor in the well known Whooper Swan moulting ground in Latvia – in the Skrunda fish ponds.

In May two birds ringed as moulting non-breeders were observed in the ringing site in Skrunda fish ponds and one in Satini fish ponds. In June this number increased to nine birds and decreased in July (time when birds moult) to two birds.

There was a resighting from Finland in 21 July 2006 when a pair of birds was observed and one of the partners had a neck collar with code 1C66. This bird was ringed in 22 July 2005 as a two-year-old male, and was observed also in Latvia in 14 May 2006 in the Satini fish ponds. Probably this bird occupied a breeding territory. The distance between ringing and recovery locations is 620 km. Whooper Swans start breeding at the age of three or four years (Cramp et al. 1994). This means that before breeding Whooper Swans occupy potential breeding territory and protect it to breed during the next years.

A bird with neck collar 1C01 ringed in 09 August 2003 as three-year-old non-breeder (moulting) female in Skrunda fish ponds was observed each year in the Milicz fish ponds in Poland: in 2004 from 10 April to 30 May, in 2005 on 4 June and from 30 October to 20 November, in 2006 from 31 July to 19 November. In summers 2004 and 2005 this bird moulted also in the Skrunda fish ponds and was observed there till early October. Perhaps in 2006 it bred unsuccessfully in the Milicz fish ponds or nearby (observed pair without cygnets), which might explain why in summer 2006 it was observed in Poland but not in Latvia. There are about 20 to 50 moulting Whooper Swans in Milicz fish ponds each summer (Wieloch, personal communication). This may be a bird from the Polish Whooper Swan population, which each year moults in Latvia when we ringed it in summer 2003.

In summer 2005 in the Skrudas fish ponds a Whooper Swan with yellow neck collar and code 3R03 moulted. This bird was ringed in the central part of Poland in 20 August 2004 as a cygnet (649 km from ringing site). Later after moulting this bird was observed in Poland in the Milicz fish ponds. Unfortunately, we subsequently not observed this bird in Latvia. This is the first observation in Latvia of a Whooper Swan ringed in Poland. Perhaps, some of the moulting birds in Skrunda fish ponds are from the Poland Whooper Swan population. This means that other cygnets fly great distances for moulting to Finland or Russia, but some birds, for example from Poland, to Latvia. More studies are needed for clarification.

Brazil (1983) calculated that in the first ten months after ringing of moulting birds in Iceland he obtained recoveries from 48 % birds. In Latvia during the first year after ringing we achieved 86 % of all ringed moulting non-breeders. It is possible that 24 years ago in Iceland the recording intensity was less intense or that the optics were insufficient for observations.

## Conclusions

The majority of Whooper Swans ringed in Latvia (cygnets and moulting non-breeders) winter in Eastern Germany along the Rivers Elbe and Oder banks or near them. A few birds have been observed also in Western Germany, Poland, Denmark and The Netherlands. They arrive to wintering sites using the southern coast of the Baltic Sea.

Some observations during migration in Estonia and Finland provide evidence that part of our Whooper Swans moult in Finland and perhaps in Russia.

## Acknowledgements

The study was supported by the Environmental Protection Fund of Latvia, Natural History Museum of Latvia, and the European Social Fund to the University of Daugavpils 2004/0003/VPD1/ESF/PIAA/04/NP/3.2.3.1/0001/0003/0065. Much thanks is given to my scientific adviser, prof. Jānis Viksne. Artūrs Laubergs, Jānis Bisters, Aigars Lamberts, Linda Madžule, Matīss Žagars, Oskars Keiņš, Ilja Boiko, Juris Lipsbergs, Ruslans Matrozis, Maria Wieloch, Trinus Haitjema, Pelle Andersen-Harild, Radosław Włodarczyk, Axel Degen and many others are acknowledged for assistance in the field and useful discussions about the study. Many thanks go to numerous observers who sent me the recovery data.

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## **Ar kakla gredzeniem 2003. - 2005. gadā Latvijā iezīmēto ziemeļu gulbju *Cygnus cygnus* izplatība telpā un laikā**

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### **Kopsavilkums**

No 2003. līdz 2005. gadam Latvijā ar kakla gredzeniem iezīmēja 149 ziemeļu gulbjus *Cygnus cygnus*. No tiem, 113 mazuļus, 29 neligzdojošos pieaugušos gulbjus spalvu maiņas laikā un septiņus pieaugušos gulbjus ligzdošanas laikā. Iezīmēšanai izmantoja zilās krāsas kakla gredzenus ar baltas krāsas ciparu un burtu kodu. Šai rakstā apkopota informācija, ko autors ir saņēmis laika posmā no 2003. gada 14. augusta līdz 2006. gada 31. decembrim. Kopumā saņemti dati par 1329 kakla gredzenu nolasījumiem. Latvijas ziemeļu gulbji ierodas ziemošanas vietās novembrī un decembrī. Lielākā daļa no šīm ziemošanas vietām atrodas Vācijā gar Elbas un Odras upes krastiem, kā arī Polijā netālu no Odras upes. Dažus putnus novēroja arī Dānijā, Holandē un Vācijas rietumu daļā. Attālums starp gredzenošanas un ziemošanas vietām bija 623 - 1189 km. Jūnijā putni, kas bija gredzenoti iepriekšējā gadā kā mazuļi Latvijā, ir novēroti Igaunijā un, rudens migrācijas laikā, Somijā. Visi šie novērojumi liecina par to, ka mūsu ziemeļu gulbji maina spalvas tālu uz ziemeļiem no Latvijas. Nepieciešami tālāki pētījumi, lai atrastu tam pierādījumus.