

PROGRAMME AND BOOK OF ABSTRACTS



**„THE 1ST EUROPEAN SWAN CONFERENCE.
SWAN ECOLOGY AND BIOLOGY“
08-11.10.2008. DAUGAVPILS, LATVIA.**



**"THE 1ST EUROPEAN SWAN CONFERENCE.
SWAN ECOLOGY AND BIOLOGY,"
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Programme

October 8, 2008

ARRIVAL TO CONFERENCE

13.00-17.00 **REGISTRATION** (*Daugavpils University, Parādes street 1*)

October 9, 2008

08.00 - 9.00 **REGISTRATION** (*Daugavpils University, Parādes street 1 - 1st floor*).

09.00 - 10.00 **OPENING CEREMONY** (*Daugavpils University, Parādes street 1 - room 115*).

Speech of Daugavpils University rector Arvīds Barševskis

Speech of the Ministr of Environment of the Republic of Latvia Raimonds Vējonis

Speech of Latvian Environmental Protection Fund Administration director Sandra Bērziņa

10.00 - 10.25 **Historical review of presence, status, distribution and research of three swan species in Latvia**
(*R. Matrozis/Latvian Ornithological society, Latvia*).

10.25 - 10.50 **Distribution, total number and choice of habitat of the Whooper Swan *Cygnus cygnus* breeding population in Latvia in 2000 - 2007**
(*D. Boiko/Natural History Museum of Latvia, Latvia*).

10.50 - 11.15 **Expansion and present status of Whooper Swan *Cygnus cygnus* in Poland**
(*M. Wieloch, A. Sikora /Ornithological station miz pas, polish swan study group, Poland*).

11.15 - 11.40 **Colonial breeding swans in Roskilde Fjord, Denmark**
(*P. Andersen-Harild /Denmark*)

11.40 - 12.30 **Demography status, dynamics and low reproductive performance in an Italian mute swan population**
(*N. Ventolini /Department of Biology, University of Trieste, Italy*)

12.30 - 13.30 **LUNCH**

13.30 - 13.55 **Incubation intensity in the Mute Swan *Cygnus olor***
(*A. Czapulak/Department of Avian Ecology, Wrocław University, Poland*)

13.55 - 14.20 **Internationally important staging sites of swans in Lithuanian coastal wetlands**
(*S.Švažas, L.Raudonikis/Institute of Ecology of Vilnius University, Lithuania*)

14.20 - 14.45 **Breeding ecology of the Mute Swan (*Cygnus olor*) in southern Bohemia (Czech Republic) in 1999-2001 - breeding biology, hatching success and survival rate of the young**
(*J. Mourkova/Zoology, Faculty of Science, Charles University, Prague, Czech Republic*)

14.45 - 15.10 **Behaviour of the breeding mute swans *Cygnus olor* during moulting period**
(*A. Czaplak/ Department of Avian Ecology, Wroclaw University, Poland*)

15.10 - 15.35 **COFFEE BREAK**

15.35 - 16.00 **First results on AI seroprevalence on Mute Swans in Belgium**
(*D. Vangeluwe/Institut Royal des Sciences Naturelles de Belgique, Belgium*)

16.00 - 16.25 **Specificity of ecology of swans in territory of Dagestan, Russia**
(*E. Vilkov/Caspian Institute of Biological Resources, Russian Federation*)

16.25 - 17.00 **POSTER SECTION**

Status of the Mute Swan (*Cygnus olor*) on Lake Balaton
(*P. Szinai, L. Nagy/ Balaton Uplands National Park Directory, Hungary*)

Population of mute and whooper swans at the Southern-eastern Caspian sea coast (2007-2008)
(*S.I. Zakaryaeva, A.V. Belousova, M.L. Milutina/Hazar Nature Reserve, Turkmenistan*)

Heavy metals and radioisotopes in eggshells of Mute Swans (*Cygnus olor*) from Lublin region (east Poland)
(*I. Kitowski, A.Komosa, G.Grzegorz/Sklodowska University, Lublin, Poland*)

17.00 - 18.00 **FREE TIME**

18.00 **DEPARTURE FOR WELCOME PARTY WITH SAUNA**

October 10, 2008

08.30 - 08.55 **Staging and wintering swan populations in Sweden**
(*L.Nilsson/University of Lund, Sweden*)

08.55 - 09.20 **The distribution of wintering Bewick's Swans in the Netherlands in an international perspective on from 1990, and polder Wieringermeer(Netherlands) in particular, as an important staging and wintering area**
(*W.Tijsen/Netherlands*)

09.20 - 09.45 **Foraging behaviour, disturbance and collision risks of Bewick's Swan (*Cygnus columbianus bewickii*) and Bean Goose (*Anser serrirostris*) wintering near a wind farm in Wieringermeer, the Netherlands**
(*C.Fijn Ruben, S.Dirksen/Bureau, B.V Waardenburg /Consultants for environment & ecology,Netherlands*)

09.45 - 10.10 **COFFEE BREAK**

10.10 - 10.35 **Incidence of shotgun pellets in Bewick's Swans *Cygnus columbianus bewickii* and Whooper Swans *Cygnus cygnus* wintering in the UK**
(*J.Newth/ Wildfowl & Wetlands Trust, United Kingdom*)

- 10.35 - 11.00 **Bewick's Swan survival estimates for individuals identified by both natural and artificial markings**
(*E.Rees/Wildfowl & Wetlands Trust, United Kingdom*)
- 11.00 - 11.25 **Avian influenza outbreak in wintering flock of the Mute Swans from Toruń- a case study**
(*M.Wieloch, R.Włodarczyk,P.Szeleszczuk/Station miz pas, Polish swan study group, Poland*)
- 11.25 - 11.50 **To ring or not to ring- some notes about Mute Swan ringing**
(*R.Włodarczyk/Univeristy of Lodz, Poland*)
- 11.50 - 12.15 **Migration of Mute Swan in Belarus by analysis of ringing data**
(*I.Bohdanovich/Belarus National Academy of Sciences, Belarus*)
- 12.15 - 13.15 **LUNCH**
- 13.15 - 13.40 **Winter movements of Mute Swans *Cygnus olor* from Riga city and its surroundings wintering places**
(*R.Matrozis, D.Boiko, M.Kalniņš/Latvian Ornithological society, Latvia*)
- 13.40 - 14.05 **Wintering grounds of the non-breeding Mute Swans from river Bzura valley**
(*R.Włodarczyk, B.Kielak/ Univeristy of Lodz, Poland*)
- 14.05 - 14.30 **Preliminary results of ringing of the Whooper Swan *Cygnus cygnus* breeding in Poland and the origin of birds ringed abroad and recovered in Poland**
(*M.Wieloch, S.Czyż /Ornithological station miz pas, Polish swan study group, Poland*)
- 4.30 - 14.55 **Results of the ringing of Whooper Swan *Cygnus cygnus* in Latvia**
(*D.Boiko/ Natural History Museum of Latvia, Latvia*)
- 15.00 **EXCURSION AROUND DAUGAVPILS**
- October 11, 2008**
- 07.00 - 16.00 **Field excursion to the lake Lubāns and Nagļi fish ponds**
- 17.00 **Closing ceremony and discussions about the next meeting**

ABSTRACTS



FORAGING BEHAVIOUR, DISTURBANCE AND COLLISION RISKS OF BEWICK'S SWAN (*CYGNUS COLUMBIANUS BEWICKII*) AND BEAN GOOSE (*ANSER SERRIROSTRIS*) WINTERING NEAR A WIND FARM IN WIERINGERMEER, THE NETHERLANDS

R.C. FIJN, K.L. KRIJGSVELD, W. TIJSEN, H.A.M. PRINSEN, S. DIRKSEN

Wieringermeer is one of the major wintering areas for Bewick's Swan, and also Bean Goose, in Europe. Each year 25 to 33% of the Bewick's Swan population wintering in Europe is present for some time in the area to feed on crop remains, mainly sugar beets, left after harvesting. Wieringermeer is also one of the main areas for the production of wind energy in the Netherlands with many wind turbines.

A Before/After – Control/Impact set-up was used to determine effects (impact) of wind turbines on foraging swans and geese. Spatial usage, foraging behaviour and numbers of wintering swans and geese were recorded before construction in 2000/2001 and afterwards in 2006/2007. Flight paths to and from night roosts were recorded visually and using radar. Collision risks were calculated based on regular searches for corpses in the area and the fluxes from observations of flight paths.

The food-availability on the different agricultural plots seemed to be the main factor explaining the numbers and distribution patterns of swans and geese in the area. However, in circumstances with equal food-availability early in the season swans and geese showed a preference for foraging areas further away from the turbines indicating some disturbance caused by turbines. Nevertheless, in the course of the season areas closer to the wind turbines were increasingly used for foraging. Collision risks of Bewick's Swans and Bean Geese were close to zero and thus substantially lower compared to other bird species. Probably the gregarious way of living in alert flocks prevent these birds to be surprised by turbines in the air. Avoidance behaviour was observed with the birds navigating effortlessly around and through the lines of turbines.

In conclusion, this study shows that the disturbance of swans and geese in this area caused by wind turbines is restricted to early in the season. No barrier effects for flying swans and geese were found and the risk of collisions is minimal. Consequently, the availability of sugar beet remains seems to be the main factor explaining the distribution of Bewick's Swans in Wieringermeer rather than the presence of turbines.

This study was financed by ECN Wind Energy Facilities and Dutch utility Nuon.

INCIDENCE OF SHOTGUN PELLETS IN BEWICK'S SWANS *CYGNUS COLUMBIANUS BEWICKII* AND WHOOPER SWANS *CYGNUS CYGNUS* WINTERING IN THE UK

J. NEWTH

X-rays taken over several years of Bewick's Swans *Cygnus columbianus bewickii* and Whooper Swans *Cygnus cygnus*, caught at wintering sites in the UK, were used to determine the incidence of lead shot in the swans' body tissues, and thus the level of illegal hunting of the two species. Of 732 Bewick's Swans X-rayed from 1970 – 2007, 31.1% were found to be carrying shotgun pellets, compared with 13.6% of 397 Whooper Swans x-rayed from 1988 – 2007. The proportion of Bewick's Swans with embedded pellets varied over the decades, but was high throughout the study: 1970s = 34.1% (s.e. \pm 2.2, n = 390); 1980s = 38.8% (s.e. \pm 1.8, n = 80); 1990s = 27.1% (s.e. \pm 5.2, n = 255), and 2000-2007 = 22.0% (s.e. \pm 4.0, n = 41). The highest annual levels were recorded in birds X-rayed in 1975 (40.5%), 1988 (42.5%) and 1996 (40.7%). Nevertheless, the lower proportion of birds recorded with pellets in the 1990s and 2000s suggests a decrease in illegal hunting pressure on this species in more recent years. The percentage of Whooper Swans carrying shotgun pellets was consistently lower than for Bewick's Swans, and proved relatively constant over time at 14.5% (s.e. \pm 3.5, n = 131) in 1988 – 89; 13.2% (s.e. \pm 0.2, n = 266) in 2006 – 07. The paper describes the incidence of shotgun pellets in further detail, including controlling for the age of the swans, variation in the number of pellets recorded, and any evidence for the pellets affecting the body condition of the birds. Although the location of illicit hunting could not be determined, this issue is also discussed.

STATUS OF THE MUTE SWAN (*CYGNUS OLOR*) ON LAKE BALATON

L. NAGY, P. SZINAI

Lake Balaton is the largest freshwater lake in Central Europe. The total area is 59,800 ha. It is situated in elevation 103 m - 106 m, the geographical coordinates: 46°50'N 017°45'E. The lake surface at medium water level is 594 km², its water volume is 2 billion m³, the average depth is around 3 m and the maximum depth is 11 m. The length of the shore is 235 km, of which a stretch of 107 km has been artificially built. The rest of the shore has been left in original conditions. The area of different types of threatened reed belt vegetation is 2036 ha. The reed beds covering the bays at the northern part of the lake are mostly in natural status with zonations.

Lake Balaton was designated according to Habitats Directive and Birds Directive in 2004 and it has an important role as a part of the European Ecological Network, and it is listed as Ramsar Site.

The species has been colonising the lake since 1982. The lake has nationwide importance in of breeding number of Mute Swan. The total Hungarian breeding population monitored between 260-400 pairs between years 2002-2007. During this period Lake Balaton was the most important breeding site in Hungary. Breeding numbers: in year 2002 were 43 pairs, 2003 - 38 pairs, 2004 - 45 pairs, 2005 - 56 pairs, 2006 - 36 pairs and 2007 - 73 pairs. 13-14 % of the total Hungarian population bred on Lake Balaton. Most of the breeding sites situated close to the northern shore of the lake because reed beds covering the bays at the northern part of the lake are mostly in natural status with zonations. The wintering sites of breeding Mute Swans from Lake Balaton are mainly in Croatia (mostly the Reservoirs of Water Power Plants situated on River Drava), partly in Slovenia (along River Drava) and partly in Serbia (Vojvodina, along River Danube). In spite of the mass ringing and colour-ringing efforts we have no birds recovered further than Central Croatia.

The importance of the lake in case of moulting groups is Central European. The lake holds the most important moulting site in Hungary but according the ringing recoveries birds from Croatia, Slovakia, Austria, and Poland regularly joined to the moulting groups respectively. The moulting numbers were between 350 and 900 individuals. The lowest numbers were 350 individuals in 2002, the highest numbers in 2004. The average number of moulting individuals is around 600 individuals. The largest moulting groups are close to the towns of Keszthely, Révfülöp and Balatonfüred where food given by tourists is available. The largest moulting groups are close to 200 birds. The wintering sites of moulting birds are also mainly in Croatia (mostly the Reservoirs of Water Power Plants situated on River Drava), partly in Slovenia (along River Drava) and partly in Serbia (Vojvodina, along River Danube).

Lake Balaton as a wintering site for this species is not especially important, because its surface is partly or totally covered by ice. Only during mild winters swans could overwinter in this site. The largest numbers during winter censuses were around 500 individuals (November, 2004). Wintering birds are coming from the local populations and also from northern areas (mainly from Poland).

STAGING AND WINTERING SWAN POPULATIONS IN SWEDEN

L. NILSSON

The populations of staging and wintering Mute Swans and Whooper Swans in Sweden have been monitored within the framework of the International Waterfowl Counts. The paper will analyse changes in numbers of the swan populations based on counts in September and January for the Mute Swan and January for the Whooper Swan. Since the start of the counts in 1967, both swan populations have shown markedly increasing trends in the annual indices. These trends will be discussed against the background of count data from other countries. In the Whooper Swan marked changes in the habitat choice of wintering swans have been registered over the years, the swans being more and more terrestrial in their habits using different agricultural crops. Earlier analyses of this pattern will be updated and the effect of these changes on the possibilities to monitor swans through the standard waterfowl counts will be discussed. Finally, the changes in winter distribution of the two swan species in relation to the series of mild winters in recent years will be addressed.

BREEDING ECOLOGY OF THE MUTE SWAN (*CYGNUS OLOR*) IN SOUTHERN BOHEMIA (CZECH REPUBLIC) IN 1999-2001 - BREEDING BIOLOGY, HATCHING SUCCESS AND SURVIVAL RATE OF THE YOUNG

J. MOURKOVA

Population of the Mute Swan was studied in two areas in southern Bohemia (40 fishponds in the middle Vltava basin, about 300 fishponds in the Třeboň basin). Breeding attempts were recorded at approximately 10 % of the ponds. Clutch size of 1 - 8 eggs (and 11 eggs in one case) with the median of 6 eggs ($n = 44$ nests) did not differ from older data (population boom in the years 1980-85) from the Czech Republic. First eggs were laid from the second ten-day period of March to the first ten-day period of May. A larger proportion of the population began to breed significantly earlier in the season than in older studies from the Czech Republic. In addition, egg and clutch parameters were analysed. Egg size, clutch size and clutch volume were found to be negatively correlated with laying date. Loss of the whole clutch was found in 29 % of 70 nests, draining of the fishpond (35 %) and vandalism or presumable vandalism (25 %) being the main causes. Predation was not found as a primary cause of clutch loss. Hatching success was 87 % per successfully breeding pair (at least 1 cygnet hatched), 62 % per breeding pair. Hatching success was higher in larger eggs ($r = 0.54$; $n = 20$; $p < 0,05$). No correlation between hatching success and the number of eggs in the clutch or laying date and the expected hatching date was found. The mean clutch size was 5.03 ($n = 42$ clutches). Survival rate was high, 87.3 % of the hatchlings were observed alive at the age of 6 weeks. Daily survival rate was constant throughout the first 6 weeks. Daily survival rate of individual hatchlings was positively correlated with brood size. The mean number of cygnets at hatching was 5.37 per successful nest, that at the age of 6 weeks 4.71 per successful nest ($n = 20$ nests).

INCUBATION INTENSITY IN THE MUTE SWAN *CYGNUS OLOR*

A. CZAPULAK

The study was carried out in 2004 and 2005. The presence or absence of the female on the nest was determined based on temperature changes recorded by data logger. It was placed in dummy egg and the date, time and temperature were stored in the logger's memory every 24 seconds (in 2 cases every 64 seconds). In total data loggers were placed in 10 nests (6 in 2004 and 4 in 2005). The period of monitoring varied from 6 to 34 days but for seven nests its length was longer than half of the incubation period. The average intensity of incubation for these seven females was 92.6% and the average number of recesses during incubation was 3.3 per day. The number of recesses was up to 8 per day. The incubation intensity (excluding the first and last days) significantly decreased whereas the average number of recesses increased as the incubation progress. There was the tendency to decrease the mean incubation intensity with the increase of the mean air temperature during the incubation period. The average break in incubation was 29 minutes (max. – 84 min.). Recesses were made through the whole day (including night), but mainly they were made in afternoon. Early breeding females tend to make breaks in midday whereas the later breeders in afternoon. In some cases the male was on the nest during absence of his mate and sometimes he covered eggs. Changes of the temperature indicate that he did not incubate actively but covering of eggs may limit the decrease of egg temperature.

DEMOGRAPHY STATUS, DYNAMICS AND LOW REPRODUCTIVE PERFORMANCE IN AN ITALIAN MUTE SWAN POPULATION

N. VENTOLINI

Mute swans were introduced in Northern Adriatic beginning from 1981 to encourage the settlement of the species. Previously, the presence was irregular and occurred mainly in the winter. In the last 20 years the population of Friuli Venezia Giulia region has numerically consolidated (711 individuals, January 2007). At the same time mating pairs have constantly increased (65 in 2007). The aim of this study is the analysis of population status and breeding parameters. Regular censuses have been conducted from 2005 to 2007. The permanent population averages 350 individuals. Between winter and spring the population decreases because of the dispersal of wintering swans. The lowest number of individuals has been recorded during spring when the area is populated by mating pairs and immatures. In the summer, population increases due to the cygnets' birth and for the arrival of individuals coming from other areas joining the local moulting flocks. Autumn is the highest annual peak (about twice the spring population), determined by the additional arrival of about 250 mute swans that migrate from Central-eastern Europe to winter along the coast line. Population structure is heterogeneous: 50% permanent individuals, 30% erratic, 20% fledged young. About 11% of the neck-ringed sample (N=179) moved to an area between Croatia and the Baltic Sea, showing a north-north east migration route. Adult and immature males moved farther than juveniles and females. Breeding success is very low, the "bottleneck" being determined early by a high nest desertion (25.3%) and successively by a high brood's loss (47.8%). The number of fledged young (1.1 per pair) is the lowest compared to other European and North American populations. The study area appears to be unfit to raise broods. Main reasons, in most of breeding sites, are the localized distribution of trophic resource and the limited access to fresh water. Territorial pairs raised more chicks to fledging (1.53) compared to those nesting colonially (0.31) in Valle Cavanata Natural Reserve, where cygnets survived no longer than 1 week. Families' movements and habitat peculiarities were monitored in Valle Cavanata colony in 2007 and 2008. Breeding pairs are highly aggressive (more than 80% of pairs involved) and the consequent Yellow-legged gull predation (about 80% of cygnets) is the last but determinant factor of an intrinsic ecological inadequacy and of the relative low success. Natural and artificial non tidal islets, fresh water (even if scarce and localized), the protection effect of the reservation and the concomitant presence of a Yellow-legged gull (*Larus michahellis*) colony (600-900 pairs), seem to be falsely attractive and misinterpreted signals of the breeding habitat quality. Polish morph was observed in 28% of chicks in the entire study area. They had a 23% higher survival rate compared to grey chicks in monotypic broods, but the same rate in mixed families.

BEHAVIOUR OF THE BREEDING MUTE SWANS *CYGNUS OLOR* DURING MOULTING PERIOD

A. CZAPULAK

Behaviour of breeding pairs of the Mute Swan *Cygnus olor* was studied in the nature reserve "Przemków Ponds" in 2004 – 2005. In total 15 breeding pairs were observed, including two failed pairs. Females initiated moult from 20th June to 30th July, males from 15 July to 31 August. The difference in moult initiation dates between females and males within pair with cygnets varied from 22 to 66 days but in pairs without young it was less than 10 days. We analysed data in relation to four periods: both parents are able to fly, female is flightless and male is able to fly, both birds are flightless, female is able to fly but male not. In general there were no differences in the time budgets of males and females among periods when at least one parent was not able to fly. But males when females were not able to fly spent twice more time on vigilance than during periods were females were before or after moult. Females before moult spent more time for foraging than during moult. The proportion of foraging was negatively related to brood size and positively to the date of moult initiation. The proportions of the lack of activity (e.g. resting, sleeping, etc.) in the time budget of both sexes were significantly lower for birds with cygnets than for breeding birds without young.

HEAVY METALS AND RADIOISOTOPES IN EGGSHELLS OF MUTE SWANS (*CYGNUS OLOR*) FROM LUBLIN REGION (EAST POLAND)

I. KITOWSKI

Mute Swans may be used as biomonitors of environment contamination. Determination selected heavy metals as well as natural and anthropogenic isotope level in eggshells of Mute Swan from Lublin region was the main aim of our study. Gamma spectrometry with germanium detector and atomic absorption spectroscopy were used in our study. Samples of eggshells after mechanical cleaning, drying and crushing down to a few millimeter grains were submitted to spectrometric measurement. Heavy metal (Cu, Zn, Cd, Pb, Cr, Ni) concentrations were determined after mineralization with nitric acid. Studies carried out on Mute Swans of Lublin region showed increased level of lead in eggshells of Mute swans in two fish ponds in comparison with samples of this same species from other fish ponds. This reflects the observed high intensity of hunting activities there. Lead can get in to Mute Swans through lead bullets or fishermen's lead weights. Probably bullets of hunters are also sources other heavy metals (Cr, Ni) found in eggshells of Mute swans. Activity concentrations of gamma radiating isotopes obtained are only slightly above a natural background level, and also ¹³⁷Cs median concentration is low: 1.175 Bq/kg. This is a proof that eggshells of Mute Swans of Lublin region are rather non-contaminated. This study was supported by Polish Ministry of Education and Science (Grant 3T09D09129).

INTERNATIONALLY IMPORTANT STAGING SITES OF SWANS IN LITHUANIAN COASTAL WETLANDS

S. ŠVAŽAS

The system of Lithuanian coastal wetlands (total area - about 40,000 hectares) includes the northern part of the Curonian Lagoon and the Nemunas River delta with adjacent floodplains. It is one of the very few natural or moderately changed estuaries, remaining in the Baltic Region. The whole territory is distinguished by very mosaic habitats (freshwater delta, brackish lagoon, vast seasonally flooded meadows, rivers, lakes, pools, raised bogs, fishponds, swamp forests). Aerial and land-based counts of staging swans in this territory were implemented in 1989-1999 and in 2004-2008. The largest concentrations of staging Whooper Swans *Cygnus cygnus* (6,800 birds) were recorded in the flooded meadows surrounding the Nemunas River delta in March 1999. Up to 4,300 staging Whooper Swans were counted there in March 2004-2008. Staging flocks of Whooper Swans exceeding the Ramsar threshold (up to 800 birds) in spring were recorded also in the northern part of the Curonian Lagoon. During the last 20 years Lithuanian coastal floodplains annually supported up to 10% of the whole NW Europe population of Whooper Swan during the spring passage and were among the most important staging sites for this species in Europe. Only small staging flocks of Whooper Swans (up to 400 birds) were recorded in the northern part of the Curonian Lagoon during autumn migration in October-November 2004-2007. Coastal flooded meadows of the Nemunas River delta annually supported internationally important staging concentrations of Bewick's Swan *Cygnus columbianus bewickii* during the spring migration, with up to 1,900 birds counted in March 1999. Large flocks of Bewick's Swans exceeding the Ramsar threshold (up to 700 birds) in March-April were recorded also in the northern part of the Curonian Lagoon. During the autumn migration up to 300-400 staging Bewick's Swans were regularly counted in the northern part of the Curonian Lagoon in October 2004-2007. Exceptionally high staging concentrations of Bewick's Swans (3,200 birds) were recorded in this area in October 1992. During the last years the northern part of the Curonian Lagoon regularly supported staging concentrations of Mute Swan *Cygnus olor* of the national importance, with up to 500 birds counted during the spring and autumn migration. The shallow and brackish Curonian Lagoon is also the key staging site of non-breeding Mute Swans in the region, with up to 400 birds annually counted in May-June 2004-2008. Internationally important staging sites of swans in Lithuanian coastal wetlands are included into the national network of protected territories and into the "Natura 2000" network of the European Union. The Nemunas River Delta Regional Park is the designated Ramsar site since 1993. However certain important staging sites of Whooper and Bewick's Swans are threatened by recent changes of land use in coastal floodplains and by rapidly increasing recreational activities in the Curonian Lagoon.

POPULATION OF MUTE AND WHOOPER SWANS AT THE SOUTHERN-EASTERN CASPIAN SEA COAST (2007-2008)

A. BELOUSOVA

The winter surveys were made in turkmen coast of Caspian Sea in 2007-2008: avia survey, which was funded by the Project UNDP/GEF/Ministry for Nature Protection of Turkmenistan "Conservation and sustainable use of globally significant biological diversity in Hazar Nature Reserve on the Caspian Sea Coast", was in January, 20-21, 2007 and ground censuses – in November 2007 and in February 2008. The north part of Turkmendashi gulf (from Saimonova bay to Dagada Island) was observed from the car also in the end of April and in the middle of August 2008. Two species of Swans were found: Mute and Whooper and there was no Bewick's Swan during the surveys. Due to literature sources Bewick's Swan is very rare species, which does not occur every year (Karavaev, 1991). Only one Bewick's was counted during winter surveys in Gorgan Bay (Ramsar wetland, Iran) during winter censuses 2002 – 2007 (Rabiee, K. & Moghaddas, D., pers.com. 2008). The maximum of Mute population was in January 2007 (about 7500 birds). The extremely cold winter 2007-2008 (with three weeks of temperature –30 C and frozen nearshore water of Turkmendashi gulf and other shallow bays) caused the redistributions of waterbirds, especially, species that feed on shallow zones, among them, swans. Therefore the number of Mute in February 2007 was much less then in 2008 (about 3000 birds). Mutes occur in Turkmen zone of Caspian Sea also in summer. For example, eight small flocks (in average – 7 birds in flock, in total – 60 swans) were encountered in the end of April 2008 and five birds (mostly in pairs) were seen at the Turkmenbashi gulf to the east from Turkmenbashi city in the middle of August 2008. The summer staging of 30-40 Mutes was observed in Turkmenbashi gulf every year during the last several years (Shcherbina, pers.com. 2008). The number of the species in the Southern-Eastern Caspian Sea usually is rather low in winter (Karavaev, 1991). Population of Whooper was 12 birds in January 2007 and about 200 in February 2008. Two yearling Whoopers (with grey patches in feathers) were seen with group of six Mutes in the sea shore near Karadag ridge n in the end of April 2008. One Whooper (possibly, molting or injured) was found in the same place in the middle of August 2008. The total wintering populations of Whooper and Bewick's Swans are still in question, therefore it is very important to continue the studying of the swans' populations, especially, in the territory of Hazar Nature Reserve.

PRELIMINARY RESULTS OF THE RINGING OF WHOOPER SWAN *CYGNUS CYGNUS* IN LATVIA

D. BOIKO

407 Whooper Swans were ringed in Latvia in years 1987 – 2007. 403 birds had neck collars and 4 – only aluminium rings. Most of them (321) were ringed as nestlings, 18 as breeding birds, 55 as moulting birds, 7 as wintering birds and 4 as birds of uncertain status.

A total of 3387 recoveries were received in the analysed period: 1886 recoveries from Germany, 1121 - from Latvia, 183 - from Poland, 113 – from Estonia, 38 – from Finland, 18 from Lithuania, 11 from Netherlands, 9 from Sweden, 5 from Denmark, 4 from Switzerland and 1 from Russia.

During winter season most of the ringed birds were observed in the eastern part of Germany and in the western and northwestern parts of Poland. Rarely Whooper Swans were observed in the western and southern parts of Germany, Switzerland, Netherlands, Denmark and Sweden. In summer months the ringed birds were observed in Poland, Latvia, Estonia, Finland and Russia.

The study was supported by the Environmental Protection Fund of Latvia and Natural History Museum of Latvia.

MIGRATION OF MUTE SWAN IN BELARUS ACCORDING TO ANALYSIS OF RINGING DATA

I. BOHDANOVICH

About 360 recoveries of Mute Swan in Belarus were analysed since 1982. This includes both Belorussian recoveries abroad and foreign recoveries in Belarus. Majority of Mute Swans in North-Central Belarus are connected with the Baltic States, but in Southern Belarus the population is mainly connected to Poland and Hungary.

THE MUTE SWANS (CYGNUS OLOR) OF ROSKILDE FJORD, DENMARK

P. ANDERSEN-HARILD

Study area:

Roskilde Fjord is a brackish lagoon situated about 30 km to the West of Copenhagen, Denmark. The IBA covers about 125 km² of brackish water (salinity about 12-15 o/oo) and includes also some freshwater lakes and saltmarshes. 95% of the IBA is also designated as a SPA according to the birds' directive of 1979. In the area about 25 uninhabited small islands holds great numbers of breeding waterfowl, mainly gulls with a maximum of 22.000 breeding pairs in 1988. The islands were protected in 1984 and landing prohibited in the period 1.4.-15.7.

The fjord has extensive areas of shallow water. The vegetation is mainly *Zostera marina*, *Ruppia maritima*, *Potamogeton pectinatus*, *Zanichellia palustris* and the green algae *Ulva lactuca*. Compared to the situation 100 years ago the vegetation today is limited to the more shallow areas - < 2 m, and in recent years the vegetation of *Zostera* due to pollution from agriculture has disappeared in vast areas. In a period in the 1960ies and 1970ies the green algae *Ulva* was rather common, but the construction of urban sewage water treatment plants *Ulva* has now reduced the biomass of this free floating algae.

Mute Swan breeding population:

More than 97% of the breeding pairs of Mutes breed in colonies. Colonial breeding was first recorded in the 1950ies when the breeding population of Mute Swans in Denmark in general was growing rapidly (being nearly extinct in the 1920ies). Since then the number of breeding pairs in Roskilde Fjord has increased reaching a maximum of 900 pairs in 1993 (about 25% of the Danish population). Since then the number has decreased to 250 in 2008. The production of cygnets is now low: 1.4 cygnets/pair in 1990 as a maximum. In 1996 not one single cygnet survived to fledging and in 2002-2007 the average production was 0.1 – 0.3 cygnets/pair. Most breeding pairs and a high proportion of the cygnets spend the whole year in Roskilde Fjord.

Moulting population:

The first count of moulting swans in Denmark was done in 1968. This year 800 moulted in Roskilde Fjord, mainly in the southern part. The maximum population of moulting swans was counted in 1989 with 4200 birds. Until 1995 numbers were in the order of 3500-4000 birds. But since then reduced to about 2500 with a minimum of 2000 in 2008. Moulting swans are now scattered all over the fjord in minor flocks. Moulting birds come partly from the local breeding population partly from southern Sweden.

Population in winter:

Roskilde Fjord is an important winter-quarter for swans from eastern Denmark and southern Sweden. Number of Mute Swans reached a maximum of 7000 in 1990 and 1993. In recent years numbers have been lower caused by lower cygnet production locally and by milder winters not forcing Swedish birds to leave domestic waters.

Causes for the decreasing population:

Roskilde Fjord is a recreation area for the 1+ mio people living in the Greater Copenhagen area. Boating, windsurfing, canoeing (also in winter), kite surfing and speed boating have increased ten-fold during the last 10 years disturbing also the waterfowl. The protection of the islands during the breeding season is however in general respected.

Due to pollution from agriculture the area covered with submerged vegetation has decreased especially in winter and spring. As a consequence swans (both Mute and Whoopers) are now in increasing numbers grazing on agricultural fields in winter and spring. Avian flue was found in the area in spring 2006 and a few scores of Mute and a few Whoopers may have been affected and eventually died, but the general effect on population level is ignorable.

Roskilde Fjord is polluted with several toxic chemicals: heavy metals, TBT and others. The effect on the ecosystem is unknown, but abnormal development of *Zoarces viviparia*, low or missing production of tern chicks (*S.paradisaea* & *hirundo*) and a general low standing biomass of fish causes concern. The ability of swan families to keep the brood stay together is also remarkable. All these facts leads to the conclusion that the ecosystem of Roskilde Fjord is in a state which causes concern and should introduce programs trying to identify the basic – but mostly unknown - causes for the ungoing collaps of the ecosystem in SPA Roskilde Fjord. But the (un)responsible governmental and regional authorities neither react nor act!

THE DISTRIBUTION OF WINTERING BEWICK'S SWANS IN THE NETHERLANDS IN AN INTERNATIONAL PERSPECTIVE ON FROM 1990, AND POLDER WIERINGERMEER(NETHERLANDS) IN PARTICULAR, AS AN IMPORTANT STAGING AND WINTERING AREA

W. TIJSEN

The Netherlands is the main wintering area's for the NW-European population of Bewick's swans. Up to 70% of the population is principally using agricultural area's, especially for the remains of harvested sugar beet in autumn and early winter. Later on in winter the birds change food to grass and use other, again mainly agricultural and wide open areas. In the last 15 years the distribution-pattern in the Netherlands has changed under the influence of the declining population. We will show trends and try to explain why some staging areas became more or less important.

Polder Wieringermeer, in the province of North-Holland, has become one of the important staging and wintering areas, despite the decrease of the population. Between 25% and 33% of the population is using the polder on a certain moment, especially by swans wintering in the United Kingdom. We try to explain the increase of swans for this polder and the need for habitat protection of agricultural areas.

Specially now we know that the international sugar market is changing, with less output of sugar by the growth of sugar beet on the world wide sugar market, which will affect the foraging opportunities for Bewick's swans. So maybe it is time to find a way to encourage farmers for another way of harvesting sugar beet, for instance by un-ploughed harvested sugar beet fields for a short period. This could be paid by the European government in a "farming for nature" subsidizing-schedule to stop the decreasing population of Bewick's swans. Besides this, it's important to do not only area planning and protection in Nature 2000 areas (mainly the roosting places for example in the Netherlands), but also to protect the important foraging agricultural area's on the migration route and in the wintering places.

DISTRIBUTION, TOTAL NUMBER AND CHOICE OF HABITAT OF THE WHOOPER SWAN (CYGNUS CYGNUS) BREEDING POPULATION IN LATVIA IN 2000 - 2007

D. BOIKO

The first *Cygnus cygnus* nest was found in year 1973 in the western part of Latvia in fish pond near Kazdanga. In 1975 the nests were found in 3 places (all in fish ponds) in the western part of Latvia. In the first "Latvian breeding bird atlas 1980 – 1984" we can find information about 10-20 breeding pairs. Most of them were breeding in fish ponds. Several pairs were also observed in high bogs and lakes.

Each year from April to July of 2000 -2007 expeditions were organised to gain data about *Cygnus cygnus* breeding places. Information about the project was published in several newspapers in order to attain additional data from the public. Majority of nesting places which were found in May were rechecked in July to clarify the number of cygnets.

From 2000 - 2007 data about 232 different *Cygnus cygnus* nests/families were collected. Most of them were found in the western part of Latvia (211) and only some in the eastern part of Latvia (21). *Cygnus cygnus* selects following habitats for breeding (n=202): ponds (101 or 50%), fish ponds (60 or 29.7%), beaver dams (28 or 13.9%), lakes (9 or 4.5%), draft bog (2 or 0.9%), high bog (1 or 0.5%), pit (1 or 0.5%).

In total about 200 C. cygnus pairs were breeding in Latvia in 2000 - 2007 of those 90.9% of breeding population was found in W part of Latvia.

The study was supported by the Environmental Protection Fund of Latvia and Natural History Museum of Latvia.

PRELIMINARY RESULTS OF RINGING OF THE WHOOPER SWAN CYGNUS CYGNUS BREEDING IN POLAND AND THE ORIGIN OF BIRDS RINGED ABROAD AND RECOVERED IN POLAND

M. WIELOCH, S. CZYŻ

In Poland 135 Whooper Swans and 3 hybrids (Whooper Swan x Mute Swan) were ringed in years 1983 – 2007. Among this number 119 birds had neck collars, 3 – leg plastic rings and 13 – only aluminium rings. Most of them (103) were ringed as nestlings, 12 as breeding birds, 3 as moulting birds and rest as birds of uncertain status and out of the breeding season. A total of 763 recoveries were received in the analysed period (656 recoveries from Poland, 107 recoveries from abroad). These recoveries concern 107 birds (70 recovered in Poland, 37 recovered abroad). Birds ringed as nestlings in Podlasie (E Poland) were recovered mainly to the west of ringing place (W Poland and Germany), those ringed in NW Poland were recovered in Germany, Latvia, Estonia and Finland, and those ringed in southern part of Poland were recovered in Germany, Latvia, Finland, Czech Republic, Hungary and Romania.

Distance between breeding and first wintering places of young birds from Poland became shorter from east to west.

In Poland, of 301 recoveries, about 108 birds ringed abroad were obtained. During winter those recovered were ringed as breeding or wintering in Germany, Finland, Estonia and Latvia. During spring and summer the origin of birds occurring here were similar.

EXPANSION AND PRESENT STATUS OF WHOOPER SWAN *CYGNUS CYGNUS* IN POLAND

M. WIELOCH, A. SIKORA

The Whooper Swan is an extremely scarce breeder in Poland. Its occurrence is spotty, mostly in the northern and western parts of the country.

During the last years the species has occupied almost all regions of the lowland part of the country. The first case of breeding was found in 1973 at Biebrza Marshes, and after a decade, a few nests were found in Lower Silesia. At the end of the 20th century the breeding population in Poland was estimated at 15-18 pairs, in 2003 – 20-25 pairs and in 2007-2008 – 40-50 pairs.

In 2007 according to data of the Monitoring of Rare Species program (national project realized in years 2007-2008 founded by the Chief Inspectorate of Environmental Protection) the breeding population of the Whooper Swan was estimated at 40-50 pairs for the whole country. The species was most numerous in Pomerania – 9 pairs, Warmia and Masuria – 6 pairs, Podlasie – 9-11 pairs and Lower Silesia – 13-17 pairs. Nests were built mainly on fish ponds (ca 70% nests), and more rarely on lakes (15% nests). Over half of the broods (52%) were successful with an average 3.6 young/nest. The number of young in the brood numbered between 1 and 7, and most often one pair reared 3 or 4 young.

Since 1995 three cases of mixed clutches between the Whooper and Mute Swans were found in Poland and more cases of accompanying the breeding pair of the Mute Swan by the Whooper Swan. In one case 3 adult Whooper Swans reared brood of 7 young.

During the breeding season non breeding pairs and small flocks of moulting birds have been found in many places. In the Barycz Valley (Lower Silesia) the number of non breeding birds in 2007-2008 was estimated at 50-60 individuals.

The number of non-breeders and the many suitable places for nesting suggests that the species will enlarge its breeding numbers in the future.

AVIAN INFLUENZA OUTBREAK IN WINTERING FLOCK OF THE MUTE SWANS FROM TORUŃ- A CASE STUDY

M. WIELOCH, R. WŁODARCZYK, P. SZELESZCZUK

Year 2006 was the most important in terms of detected number of HPAI cases in Europe among wild birds. The most affected species was the mute swan, with many dead birds observed mainly in Germany. In Poland first case of H5N1 virus isolated from dead mute swan was observed at 2 March in Toruń city. The virus was found in two dead birds that belong to local wintering flock. The birds from the flock used bank of the river, commonly visited by the public. Toruń city has about 200 000 inhabitants so local veterinary service decided to separate birds from the people. As a result the whole flock (112 individuals) was caught and shut into the cage built at the river bank. Birds stayed there for one month. During that time future of the birds were lively discussed among government, nature protection organizations and veterinary service. Due to threat of flood at 3 of April government decided to release 79 birds. Another 32 individuals whose showed presence of the virus in the blood were put down. This story showed that we need ready measures for the future. Story from Toruń revealed poor coordination between local authorities, veterinary service and ornithologists. It was also the first case where wild birds were put down in order to prevent more severe outbreak of the virus.

TO RING OR NOT TO RING - SOME NOTES ABOUT MUTE SWAN RINGING

R. WŁODARCZYK

Mute Swan is regarded as a tame bird that can be easily approached. According to many ornithologists collecting recoveries from that species is highly effective. Such situation is truth but mainly at the coast and in countries where mute swans behave as domestic animals (mainly Western Europe). In central and eastern part of the continent this bird stays often at large waterbodies far from humans making reading rings very difficult.

I analysed results of 13 years of mute swan ringing. During that time 2300 birds were captured from which 2120 were ringed. Ringing activity was the most intensive at three periods of year: wintering, moult and breeding. Each period differ in the amount of effort necessary for obtaining satisfactory results: good number of birds ringed. Moreover, each group of birds can differ in recovery rate. Till July 2008 I obtained 3312 recoveries (recovery rate: 1,44). For 639 breeding birds ringed (both cygnets and their parents) I got 1205 recoveries (recovery rate: 1,88). Ringing of 795 moulting birds resulted in 1271 resightings (recovery rate: 1,6). Finally, 647 of wintering birds ringed gave 786 recoveries (recovery rate: 1,21). Bearing in mind that ringing of breeding pairs seems to be the easiest type of mute swan catching (flightless cygnets and one of the parents), focusing on breeding period seems to be the most effective way of ringing.

Size and visibility of ring is an additional factor that affects recovery rate. This factor can be controlled by a ringer. European ringing centres use usually aluminium rings. Their height varies from 10 mm up to 20 mm. Ring size influences size of inscription. It varies between 2 and up to 10 mm. The bigger the inscription the better. Visibility can be increased by dyeing the inscription. After introduction of rings painting by Polish Ringing Centre (year 1998) recovery rate increased considerably. Shape of the ring can also affects recovery rate as it act on visibility of inscription. Oval ring can move around the bird's leg making reading impossible. Lack of lock can increase possibility of loosing the ring. To summarize, the best results can be obtained using at least 20 mm oval rings with painted inscription of 10 mm in size.

WINTERING GROUNDS OF THE NON-BREEDING MUTE SWANS FROM THE RIVER BZURA VALLEY

R. WŁODARCZYK, B. KIELAK

We present information about winter distribution of ringing recoveries obtained from non-breeding birds caught at moulting sites from fish ponds situated in river Bzura valley, central Poland. In years 2000-2007 more than 750 non-breeding mute swans were ringed. The analysis was based on 373 recoveries (190 direct and 183 indirect ones) collected during winter months (XII-II). The majority of birds choose south and south-western direction during migration. Only some individuals fly toward north-western part of Poland. The main wintering grounds were situated within the country, at upper Wisła river valley. More distant wintering grounds were positioned along river Danube and its tributaries. Another important wintering area of studied population was lower Wisła river valley and Warta river. Only a few birds used traditional wintering areas of the polish population – German and Danish Baltic coast. The mean distance covered during migration was 273 km. The longest length of migration was 795 km. There were no sex related differences in direction of migration or distance traveled. The mean gravity points for each winter month did not differ significantly. Weather conditions appeared to be not correlated with distance of migration or position of wintering grounds. However, the length of migration was different among analysed wintering seasons. Birds did not show attachment to their wintering grounds. Some of them spend winter at the same location during few seasons. Other spend each winter in different location. Sometimes the difference in the position of two consecutive wintering grounds was 600 km or more.

HISTORICAL REVIEW OF PRESENCE, STATUS, DISTRIBUTION AND RESEARCH OF THREE SWAN SPECIES IN LATVIA

R. MATROZIS

Information about wild swans can be found in the first written descriptions of the nature of Latvian territory. Fischer (1784, 1791) and Beseke (1792) included in bird lists an unknown swan species *Anas cygnus*. The second author described breeding of swans in some lakes of western Latvia, where many adults and young swans have been killed by humans during moulting time for their features and gives also the receipt how to prepare swan's meet to be eaten.

In the 19th century in different publications can be found information about swan breeding in western and eastern parts of Latvia. Some authors suggest that it is Whooper swan (Plater 1852, Lowis 1893), some other thought that it can be Mute swan (Meyer 1815, Goebel 1873). There is no special description of these breeding birds to be sure about the species. Later Transehe (1965) supposed that it could be Mute swan, because this species nowadays breeds in a large numbers in described lakes. Also nowadays Whooper swan is mostly breeding in single pairs in small lakes and ponds. Anyway, this question needs to be discussed after reviewing of all possible information resources.

At the same time there is small amount of information about occurrence and numbers of swans during the 19th century. In some publications the authors have described an unknown swan species, or mentioned only Whooper swan observations, because it was known like the only wild swan. For example, Mute swan was known as domestic bird species, which can be only found in city parks and rich houses ponds, like decoration element. Merkel (1862) has described a Whooper swan, which was found in Latvia, like a new bird species, giving a new name – *Cygnus flaviceps*, which nowadays are just synonyms. It was established that during the 19th century the authors in their publications used different swan scientific names, which nowadays are synonyms: for Whooper swan – *Cygnus musicus* Bechstein 1809, for Bewick's swan – *Cygnus minor* Pallas 1811, and for Mute swan – *Cygnus gibbus*.

At the end of the 19th century in some publications we can find information only about Whooper swan, that it is quite common on spring and autumn migration. Schweder (1894) has published the first information about occurrence of Bewick's swan. The author described all bird specimens, which can be found in collection of museum of Riga Natural Research Society at that time. There was only one Whooper swan's skin (from 1852) and short information about Bewick's swan: it is rare migrant (irrgast), no one this bird skin presented in the museum collection. Only in the beginning of the 20th century was published correct information of some this swan observation in 1902-1903. Many years later, Transehe (1965) in his book about Latvian birds, mentioned the first known Bewick's observation in Latvia in 1875.

During the first part of the 20th century amount of information about swans much increased. In 1930-ties wild Mute swans observed in some places in Latvia and the first breeding attempt established in 1935 on lake Engure. During the next ten years the breeding of this species was approved in three water bodies in western part of Latvia.

In 1923 the Independent Latvian Parliament accepted the local "Hunting law". This law protected all swan species from hunting during breeding period from 15th May till 15th July. In all other time swans could be hunted in all places. Despite of the limitation, swan hunting was not very often, because of behavior of swans – they often became in trouble when hunters moved their directions and mostly swans fled away. There can be found only some printed publications, where hunters described their lack hunting getting some swans shot. The situation changed then 1-3 pair of Mute swans started to breed on lake Engure. Under the described law, any swans could be hunted after 15th of July, when all young swans is still unflyable. On the first years some breeding birds were shot on their nests during protective time and in one case a hunter was punished paying money for illegal hunting. Next years to protect these breeding birds some publication were printed asking not to shot swans at all to help them increase breeding population of this gracious bird in Latvia.

The real increase of Mute swan population started after 1957, when all three swan species have been declared as protected species with total hunting protection during the whole year. Till the end of the century Mute swans increased their breeding population from some tens till 600 pairs. The breeding swan's counting has been carried out in 1964, 1972, 1974, 1978, 1987, 1992 and 1997. Much information about swan distribution and numbers collected during the first Latvian breeding bird atlas 1980-1984. At the moment Mute swans like breeding species occurred in the whole Latvian territory. The first breeding populations have been established in western part of Latvia, and they increased the area to east direction.

The second breeding swan species – Whooper swan started to breed in small fishponds of western part of Latvia in 1973. Till 1992 the total population did not exceed 25-50 pairs. In 1990-ties very rapid increase of breeding swan numbers observed in western part and the first breeding pairs found also in the eastern part. Nowadays, the total Latvian population is estimated to 150-200 pairs and it is the biggest one in all Baltic States and Eastern Europe. In western Latvian regions breeding pairs' density is more than 5 for 5km².

Latvia is situated on the migration way of northeast populations of Whooper and Bewick's swans. There are known many places where hundreds or sometimes more than one thousand birds of both swan species observed during resting and feeding time. Many of such places nowadays are under the State protection. The local farmers have a chance to get financial compensations if wild birds, including swans, damage their agricultural fields.

The wintering of all three swan species has been detected only in the 20th century. The first wintering attempts of Mute swan described in the 1930-ties, but the increasing of numbers has been in the 1970-ties, when hundreds of swans stayed for whole winter periods. In the 1990-ties and after 2000 from 200 till 5100 Mute swans have been counted in the middle of January. Whooper swans on wintering have been found quite rarely from 1940-ties, but from 1980-ties this swan became regular wintering species, with maximum numbers of 200 swans in mild winters. In the 1990-ties and later some single Bewick's swans observed in the winter period.

As result of growing the breeding populations of both swan species, there have been established many places where non-breeding swans stayed for moulting. Mute swans prefer mostly big lakes near the seacoast, large fish ponds and Riga bay seacoast, where regularly some thousands swans moulting. Only three fishponds for moulting used of Whooper swans, with total numbers from 50 till 100 birds annually. Occasional observations of single Bewick's swan in summer time observed from 1990-ties.

Despite of law protection of all swan species, every year some tens of swans have been illegally hunted or killed by humans. Many of such cases happened in cities or villages, where Mute swans very often have feeding from people and due to that become not aggressive and come to humans. But this does not make negative impact on the swan population and it should be classified as except to the rules. Annually some tens of swans, mostly Mute and Whooper, have been reported as killed by electrical wires around water bodies or on their migration routes, small numbers died from natural animals, or during cold winter periods. In very rare cases swans were killed by lightning stroke or after oil pollution on the seacoast or inland waters.

The ringing of Mute swan in Latvia was started in 1951 and till 2008 totally have been ringed more than 2100 swans. In 1974-1977 and 2004-2008 were used also 152 neck collars. More than 13700 recoveries have been received. Whooper swan firstly ringed only in 1988, but after starting of special ringing project in 2003, during the next five years have been ringed 500 swans, using plastic neck collars. More than 3500 recoveries have been received. In 1993 the only Bewick's swan has been ringed. During the migration time tens of Whooper and Bewick's swans, which have been ringed abroad using neck collars, recovered in Latvia.

During the second part of the 20th century lots of information have been collected and partly published about swan migration places and its timing, ringing results, breeding ecology, information about wintering and moulting, illegal hunting, mortality and other. Despite of that, there is a very huge potential for researchers. The main idea of this presentation is to collection all known information about our knowledge of the swans in Latvia, and to give some new ideas and directions for next swan studies.

WINTER MOVEMENTS OF MUTE SWANS *CYGNUS OLOR* FROM RIGA CITY AND ITS SURROUNDINGS WINTERING PLACES

R. MATROZIS, D. BOIKO, M. KALNIŅŠ

Latvian territory is situated on the north-east part of breeding and wintering area of Mute swan. The number and distribution of wintering swans are mostly dependent of winter severity conditions. In mild winters total quantity of wintering swans in Latvia can reach more than 5100, but in severe winters – do not exceed 200 swans. In December and January thousands of Mute swans stay in Latvia till water bodies are freezing and after move to other places, where they spend the rest part of winter season.

In Riga city and its surroundings during winter periods swans can stay and spend the whole winter season only in some water bodies, which are not freezing due to artificial water condition regulation, mostly because they are situated near hydro-power stations and water collectors. There are from 50 till 400 swans stayed during winter periods in 1990-ties and 2000-ties. The numbers of wintering swans decreasing from its maximum in winter 1992/93.

During 21 winter seasons (from 1987/88 till 2007/08) swan ringing and recovering project has been carried in Riga city and its surroundings. Totally 587 swans have been ringed using aluminum rings on a leg and in 2004-2008 also 77 neck plastic collars. Each winter season from 1 till 98 swans were ringed.

At the same time totally 4958 recoveries of ringed swans have been received from the study area - from 6 till 1098 recoveries per one winter season. Also 151 recoveries of ringed swans received from other places, including aboard. Totally 646 ringed swans have been involved in the study.

In Riga and its surroundings each winter season have been ringed or controlled from 9 till 153 swans (they have at least one observation during winter period in the study area). Many of them during the same winter period moved to other, mostly unknown, wintering places. Only for some of them has been received information from their wintering places outside the study area.

This report presents the received information about the longest distances of swan winter movements to places, which situated more than 100 km from previous wintering place. There are seven recoveries of ringed swans, which during one winter season moved to south, south-west or west direction for 115, 217, 217, 276, 439, 739 un 805 km (to Latvian, Lithuanian, Polish and Denmark wintering places). Six of them were adult birds, but one – first year old swan. The only one recovery of swan, which moved back for 196 km to north-east direction, from its wintering place in Lithuania to the study area, where it has been observed.

There can be different reasons of swan long distance movements to other wintering places – cold weather conditions, other swan aggressive behaviors on wintering places, lack of acceptable wintering places in a short distance and breeding swan movements to their breeding place or its surroundings.

SPECIFICITY OF ECOLOGY OF SWANS IN TERRITORY OF DAGESTAN

E.V. VILKOV

The paper offers the summarized information on ecological peculiarities of swans in Dagestan in different periods of their biological cycle. In addition to the author's data of observation in Dagestan lagoons (1995-2008), respondents' information (game keepers, hunters, local residents) and data from literary sources of 1952-2008 were used.

It is established that Dagestan plays an important role in preservation of Palearctic areals of swans (mainly of Caspian composites), particularly in the crucial moments of their biological cycle (in periods of migration and wintering). The importance of this region is especially obvious in severe winters when increased freeze-up of the Caspian Sea makes masses of swans gathered for wintering migrate in the southern direction in search of backup winter tracts. The most comfortable ecological niches for strongly pronounced weather migrants like swans are found on the territory of Dagestan.

At present three species of swans are found in Dagestan – mute swan, hooping swan and small swan (*Cygnus olor*, *C. Cygnus* and *C. bewickii*). In conditions of desert-steppe habitats of low-lying Dagestan ecological peculiarities of swans such as mobility, lability of territorial connections and nomadism can be regarded as an answer to the inconstancy of the habitat characterized first of all by sharp synoptical fluctuations. These are periodical droughts in summer, snowstorms and nipping frosts in cold winters, atmospheric precipitates and floods that provoke appearing of temporary lakes, submergence of islands and an accelerated process of seral transformations in ponds.

In this paper for the first time the specific character of territorial distribution of swans in key biotopes of low-lying Dagestan is described and main-line trackage of flight over the plain and mountain regions of the republic is discovered. Places of swans' meeting in mountain regions are marked. Each of the three swan species has got description of their status, periods of flight, wintering and nesting (for mute swan) and the protective status. The longstanding dynamics of trends in population of mute and hooping swans revealed and interpreted in the light of multiple-factor effects allows to judge the present state of the model group of birds on considerable part of the Palearctic territory (mainly of the Caspian composites).

It was revealed that with the appearance of lagoons the peculiar "graduated" or "cascade" migration became more apparent. Such migration may be interpreted as an adaptive reaction of migrating birds to positively changed conditions on the flight routes. As a result, the observed transformation in the migration behaviour stereotype makes it possible for migrants not only to rest and spare energetical expenditures but to replenish them on intermediate stops while moving from wintering areals to nesting places. This factor is of great importance for swans because quality of conditions in places of wintering and migrational stops exercises an immediate effect on the future successful propagation in reproductive points of the areal.

Key words: swans, habitat, population development, the western coast of the Middle Caspian Sea, climate, migration, wintering, reproductive period.

BEWICK'S SWAN SURVIVAL ESTIMATES FOR INDIVIDUALS IDENTIFIED BY BOTH NATURAL AND ARTIFICIAL MARKINGS

E. REES

Bewick's Swans *Cygnus columbianus bewickii* wintering at Slimbridge, Gloucestershire have been individually identified both by their natural markings (variation in their unique bill patterns) and by plastic leg-bands since the 1960s. Survival modelling, undertaken to determine long-term trends and annual variation in Bewick's Swan survival, therefore also considered whether survival estimates differed between marked and unmarked birds wintering at the site. Preliminary analysis of the re-sightings data indicates that un-ringed birds (i.e. the ones never caught) have lower annual survival than birds ringed in their first year at Slimbridge. Swans ringed in their second or subsequent winters at Slimbridge have the highest survival rates, probably reflecting their survival to the time of ringing. Life-history comparisons for birds known to have bred show that, although un-ringed swans typically had larger accompanying broods in autumn, their shorter life-spans resulted in their life-time reproductive success being lower than that of ringed birds. The study highlights the importance of ensuring that marked individuals are a representative sample of the population, and the avoidance of bias due to catching techniques.