International Annual Bewick's Swan Age Count, 3-4 December 2016

Dear observers,

As was announced to you in early November, we organize the 35th Annual Bewick's Swan Age Count this coming weekend, 3-4 December 2016. We kindly invite you to participate. The age count will be held in the Baltic Republics (Estonia, Latvia & Lithuania), Poland, Germany, Denmark, The Netherlands, Belgium, France and the United Kingdom. Moreover, we will ask colleagues from Greece to join in and count the flocks that recently came to winter in the Evros Delta. This year, our Newsletter is somewhat shorter than last year, but we hope you will enjoy reading!

Bewick's swan pair with three small hatchlings, on a pond in the tundra of Kolguyev Island, Russia.
Photo: © Helmut Krückenberg

Monitoring a vulnerable arctic swan species

For conservation purposes, we monitor the NW-European population of Bewick's Swans in detail. This is important because the population of this arctic breeding species is historically small, and current trend analyses show that the population is in strong decline. In fact the population is down from 30,000 birds in 1995 to probably less than 18,000 now (Rees & Beekman, British Birds 2010, Beekman et al. *in prep*.). Recent information shows that Bewick's Swan numbers show an increase in southern parts of Europe (to 400 birds in the Camargue in France and more than 8,000 (!) birds in the Evros Delta in Greece). Perhaps we are currently witnessing a partial shift in the winter distribution of this species, but a serious decline in numbers of the population is evident.

Huge flocks of Bewick's swans feeding on flooded rice fields in Turkey, just across the Greek border. Roost counts revealed a new record of 8,400 Bewick's swans in the Evros Delta in February 2016.
Photo: © Jan Beekman

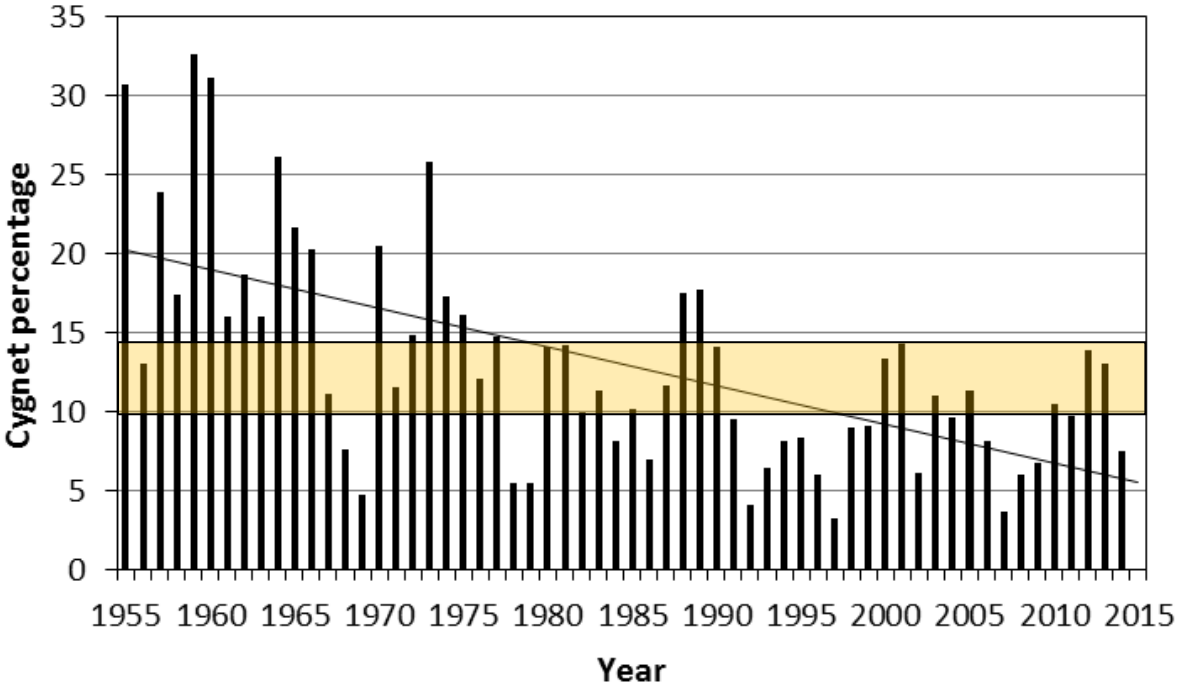
The results of the International Bewick's and Whooper Swan population Census held in January 2015 are currently being collected and will be used to further analyze the most recent trends in distribution and numbers. National coordinators of the International Waterbird Census are encouraged to send the census data from their countries as soon as the data are complete.

The purpose of age counts

Every five years we monitor population size, and each year after the birds have arrived to the wintering grounds in W-Europe, we monitor breeding success. This is ongoing since 1982 and shows that there is strong variation in the number of cygnets raised each year, as well as in the number of successful breeding pairs.

Age counts are an important tool to understand fluctuations in population size. Together with data on mortality (by means of ring studies), we are able to make a population model and relate fluctuations with e.g. weather conditions in the Arctic breeding grounds, food conditions on stop-over sites etc.

Breeding success over the past decades has been very poor, on average ca. 7% juvenile birds in the population. In 25 years, not more than seven (!) breeding seasons have produced sufficient young to compensate for annual mortality. As a result – with an adult mortality loss of 12% per year- the population size has on average declined by 5% each year. Not only low breeding success accounts for the decline in numbers. Bewick's Swans are still being hunted at a high level, given the fact that some 30% of birds captured and X-rayed in the UK carry gunshot in their bodies (Newth *et al*., Biological Conservation 2011).



Negative trend in annual breeding success (% cygnets) in Bewick's Swans, 1955-2013. The orange bar indicates overall annual mortality. (Beekman & Nolet, *in prep*.).

Conservation action

The NW-European population of Bewick's Swans is relatively small and thus vulnerable. Fortunately, the population is among the best-monitored waterbird populations, as population size is monitored every five years and breeding success is monitored on an annual basis. The results of this long-term monitoring programme are currently being analysed and have been presented at the Fifth International Swan Symposium in Maryland, USA, in February 2014. The conclusions will be used to help the implementation of the AEWA Bewick's Swan Action Plan. Meanwhile, it is important that monitoring of population size, breeding success and survival rates continues, so that we can come to a population model that will help understand which factors drive the population. Continued monitoring of population trends and demographic parameters is considered an essential priority to help protect the species.

Mixed flock of Whooper and Bewick's swans on a lake in Estonia.

Results of the 2015 age counts

In December 2015, 11,300 Bewick's Swans were aged, a very good response, so a great thank you to all volunteer and professional observers! Flocks were checked for cygnet percentages and brood sizes. The sample size was very good, some 70% of the current population was checked. Unfortunately the average cygnet percentage was again rather poor at 9.3%, by far not enough to compensate for average annual mortality, which is estimated at about 12% (WWT). In February 2016 we were also able to make an age count in the Evros Delta in Greece, with a good sample size of 1,660 Bewick's Swans. These birds are feeding on inundated rice fields on the Turkish side of the river Evros and showed a similar percentage of juvenile swans as Bewick's in NW-Europe, namely 7,8%. These figures can however not simply be added to those from the NW-European winter population, as we are not yet 100% sure about the origin of the birds in Greece and Turkey. In the table below you will find the results per country.

Country	Total number of swans checked	Number of adult birds	Number of cygnets	Cygnet percentage
Estonia	0	-	-	-
Latvia	0	-	-	-
Lithuania	0	-	-	-
Poland	527	466	61	11,6
Denmark	419	379	40	9,5
Germany	4814	4333	481	10,0
Netherlands	4609	4267	342	7,4
Belgium	280	231	49	17,5
France	0	-	-	-
UK	655	582	73	11,1
Total NW-Europe	**11304**	**10258**	**1046**	**9,3**
Greece & Turkey	1660	1530	130	7,8
Total SE-Europe	**1660**	**1530**	**130**	**7,8**

Of 382 successful pairs and 727 cygnets observed, the number of cygnets that they raised (brood size) was determined. So this was done for nearly 70% of all cygnets (total 1046), a figure that is already better than in 2013 and 2014 (40% and 60% respectively). Thank you all for making this effort! We hope to still improve this figure in the near future and we need your help. Please take some time to determine brood size, also if flocks are large!

Bewick's swan family

Brood size is an important demographic parameter, needed to calculate the number of successful breeding pairs each year. The annual number of successful pairs tells us more precisely what processes take place in the arctic breeding range in Russia and at stop-over sites during spring migration.

Average brood size was 1.90 cygnets / family. 75,6% of the pairs just raised 1 or 2 cygnets. Pairs with 3 and 4 cygnets comprised 23,0% of all swan families and only 5 broods of 5 cygnets were observed. We estimate that some 750-850 pairs have bred successfully in 2015, somewhat more than in 2014 (600-650), but much less than in 2013 when we estimated the number of successful pairs at 1,100!

For comparison, in the Evros Delta in Turkey we counted 69 broods in February 2016, together with our colleagues from Greece. Brood size ranged from 1-4 cygnets with an average of 1.88 cygnets per successful pair, rather similar to brood sizes in NW-Europe. The age count results from Turkey do not differ very much from those in NW-Europe. Interestingly, during our 2016 expedition we read one neck collar on the Turkish rice fields of a bird that was ringed in the Netherlands the winter before. So there is exchange between NW-European and SE-European winter flocks and this could mean that birds in the Evros Delta originate from the same breeding range as the NW-European Bewick's Swans, as was also confirmed by three observations of neck collars in earlier years, but it is too early to draw final conclusions about the origin of the Evros Bewick's Swan winter flock. We hope to continue our studies in 2017 and to catch swans in order to equip them with satellite transmitters.

Bewick's swans 175E, ringed on a harvested sugar beet field in the Netherlands on 26 December 2014, and resighted on a flooded rice field in Turkey on 12 February 2016. *Photo © Gerard Müskens.*

As we know by now, annual variation in brood size is rather strong and has a significant correlation with overall breeding success or cygnet percentage. In years with very poor breeding success, average brood sizes are around 1,5-1,6 cygnets per successful pair. In such years, even broods with 4 cygnets are rare. In years with good breeding success, brood sizes can be as high as 2,0-2,1 cygnets per successful pair. In such years you may be lucky to encounter a brood of 5, 6 or even 7 cygnets. Let us keep our fingers crossed for this year!

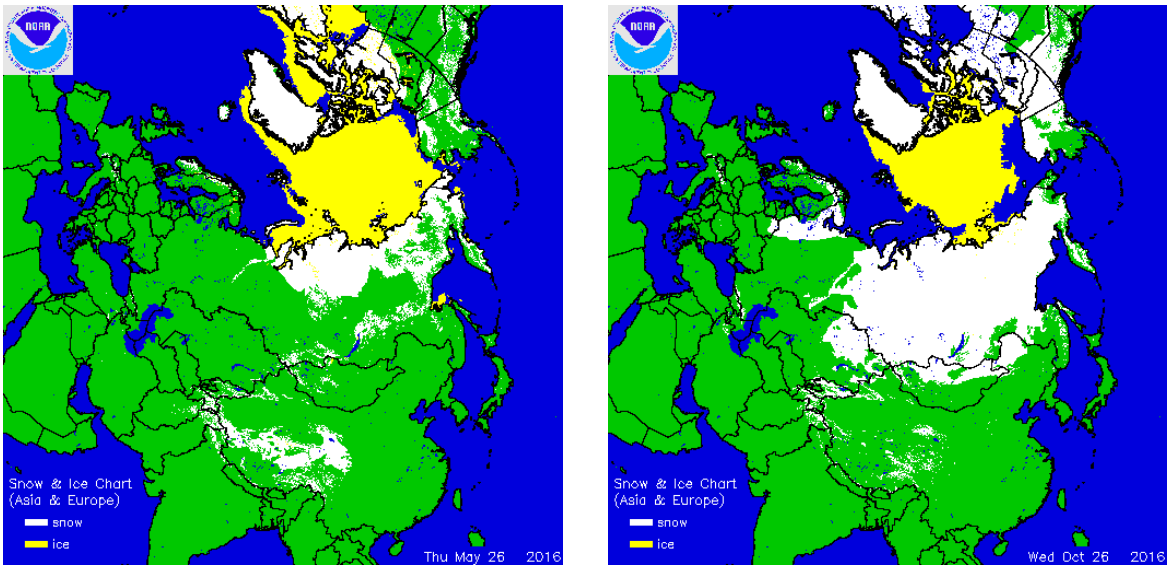
Timing of migration, habitat selection and diet choice

Of 90% of all swan flocks the habitat/food type was recorded. Bewick's Swans show a high variation in habitat / food choice, also between years. They prefer aquatic, submerged vegetation, but when these are depleted later in autumn, or when confronted with raised water levels, the swans often switch to arable land and (flooded) meadows. Bewick's Swans can be rather opportunistic in their food choice, closely following continuous changes in land use and subsidized crops, as well as variable weather conditions. Snow cover was not an issue in habitat choice, because temperatures were well above 0°C in December 2015.

Food choice is clearly determined by the swans' preference, but also by availability of e.g. crop left-overs, which in turn are determined by date of ploughing by farmers and by arrival date of the swans themselves. In recent years, farmers may plough early and swans may arrive late, so that they have difficulty finding crop left-overs. Similarly, for submerged vegetation, Bewick's Swans may find pondweeds and stonewort depleted by other herbivorous waterfowl such as Mute Swans, Coot etc when they arrive to their winter quarters in late November. So, climate change and slower autumn migration may lead to a mismatch in timing when swans are confronted with depleted or disappeared food sources. However, they also meet new crops in Germany, such as corn/maize, of which the crop area has increased enormously. In that way, Bewick's swans may be attracted to other food sources in other regions or countries, which may eventually lead to changes in migration routes.

Breeding success in 2016, a sneak preview

Winter 2015-2016 was rather mild throughout Europe. Many Bewick's Swans stayed in Germany during the winter, instead of migrating further tot their traditional wintering areas in the Netherlands and UK. Satellite images showed us that spring was very early in the Baltic region too. In mid-March the Finnish Gulf was free of ice and in late April, the White Sea was almost snow and ice-free too. We suppose Bewick's Swans were able to migrate northwards rather early, but they then were probably held up by cold weather and snow conditions in the tundra in the first half of May. By the last week of May the Pechora Delta in Russia became free of snow and ice. That's an early date dates for arrival the onset of egg-laying in Bewick's Swans. We do not know how strong this effect has been, but we expect that the swans could make an early start in 2016, with relatively large clutches. First winter snow cover in the tundra came not until the second half of October, so cygnets definitely had enough time to fledge and prepare for autumn migration to the southwest. Never to our knowledge did the swans have such a long snow and ice-free season.



Snow and ice cover in Eurasia, on May 26th and October 26th 2016. *Maps by NOAA Snow& Ice Satellite Services.*

Autumn migration and current weather conditions

The breeding range along the coasts of the Barentz Sea started to become snow covered only in the last days of October. The first Bewick's swan returned to the Netherlands on 27 September 2016. By October 14th, some 60 birds were seen in Lauwersmeer, in the northern part of the Netherlands, feeding on pondweeds Potamogeton. However, these birds moved on rapidly due to raised water levels, and numbers remained very low in the Netherlands. In early November, with the very first cold spell, we have got large flocks moving in and about 4,000 Bewick's Swans were feeding on Chara in the Border Lakes, but with few families.

Photo © Fred Visscher

Temperatures are slowly dropping in late-November, but they will rise again to average temperatures next weekend. We know that many birds are still in Germany and even further northeast. We do however expect the Bewick's swans to continue to move to The Netherlands and the UK. Therefore, observers in all countries are encouraged to go out and find lots of Bewick's Swan flocks. Please take notice not only of the number of cygnets in flocks, but also take some time, if possible, to record brood sizes. Also, it is important to count as many flocks as possible, of all different sizes and in an wide range of habitats and crops. Especially small flocks often consist of family-parties with young and are easily overlooked.

We wish you lots of success this coming weekend or later a bit later if necessary. Thank you in advance for your efforts, which we highly appreciate. We look forward to the reports of your field trips, either the coming weekend or in the days around the weekend. Please send your results to the addresses below.

With all best wishes,

Jan Beekman & Wim Tijsen

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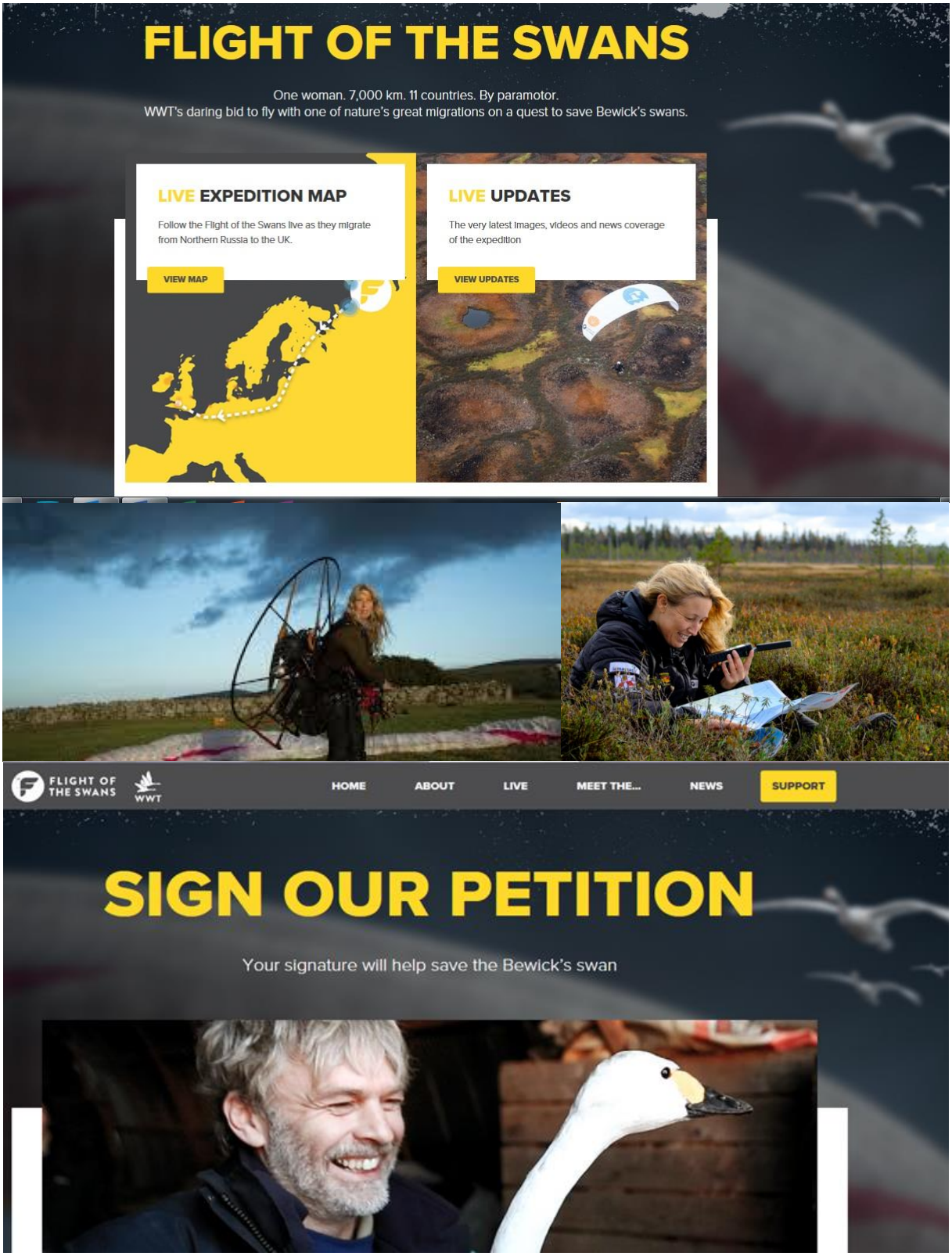
Finally, we'd like to draw your attention to the WWT expedition 'Flight of the Swans', the epic journey by paramotor following the Bewick's Swans on their autumn migration from the Russian tundra's to their winter range in The Netherlands and the United Kingdom. A brave endeavour by nature conservationist Sacha Dench. See www.flightoftheswans.org. Please visit the website and give your support by signing the petition!



Paramotorist / nature conservationist Sacha Dench (WWT) on migration with the Bewick's swans over the Russian tundra near Kolokolkova Bay near the Barentz' Sea coast, late September 2016. Note the swan flocks on water in the distance. Photo: © WWT.