

18 / 2023

Swan News

Newsletter of the IUCN SSC Swan Specialist Group



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ABOUT THE SWAN SPECIALIST GROUP



The IUCN SSC Swan Specialist Group (SSG) is a global network of over 300 swan specialists from 38 countries who undertake monitoring, research, conservation and management of swan populations.

The SSG strives to facilitate effective communication between members and others with an interest in swan management and conservation world-wide, in order to improve national and international links for cooperative research, to identify gaps in knowledge and to provide a forum for addressing swan conservation issues.

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Opinions expressed in articles in this newsletter are those of the authors and do not necessarily represent those of the Swan Specialist Group or the IUCN Species Survival Commission (IUCN SSC).

Citation

Mitchell, C.D., Brides, K. & Newth, J.L. (ed). 2023. Swan News issue no 18 / December 2023. Newsletter of the IUCN SSC Swan Specialist Group. 36pp.

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EDITORIAL

Greetings, and welcome to the Swan News number 18 for 2023. I trust that we have some interesting content again. Many thanks to all who contributed.

As a field biologist, not a research scientist, I have an abiding interest in ensuring that the people actually managing wildlife have access to the best information available, so that they can (potentially) make the best decisions possible to enhance actual conservation. To that end, I wanted to mention several articles I read in recent years that are germane to that discussion. Hopefully they will be of interest to you also.

First are two short articles about how spending time in the field, or wetlands in the case of swans, is critical to understanding the species and environments that we manage and study. Fredrickson (2020) and Holt (2022) both make cogent arguments for this. I have also experienced this. Time “in the field” is necessary for much data collection of course, but also for the opportunity to make personal observations and increase understanding. It also provides us with irreplaceable insights into swan ecology and behaviour, and the environments they inhabit. This is important information to pass on to others who have not had, and may never have, the same experiences. Seemingly simple things like having proper equipment, how to approach a swan nest or handle eggs, how to capture and handle a swan, and more, are all things people should be able to learn from people who have done it. I’ve shown many people how and why I do certain things afield, and have learned from others what they do, and why. In the end, we benefit, but more importantly so do the swans, and swan conservation.

On a similar note, Montgomery *et al.* (2023) make an intriguing argument that marking and telemetry research does not always actually contribute to positive conservation action. The costs and risk to wildlife resulting from such research should make us all want to maximize the actual conservation benefits. I think that most SSG members marking or monitoring swans using telemetry do apply those data to actual conservation management, but it is something to always keep in mind.

These papers reinforce the idea that research should inform management. In my experience even theoretical research can do so. The other, often unspoken, part of that is that research scientists need to endeavor to inform managers of what they’ve learned. Publishing papers isn’t enough. The information needs to get to the right people. That’s part of the Swan Specialist Group’s purpose:

“The SSG strives to facilitate effective communication between members and others with an interest in swan management and conservation world-wide, in order to improve national and international links for cooperative research, to identify gaps in knowledge and to provide a forum for addressing swan conservation issues.”

<https://swansg.org/about-us/>

Please make sure that your knowledge, experience and data do contribute to actual on-the-ground conservation. On a much, much sadder note, we, and Trumpeter and Bewick’s Swans, lost three long-time friends this year. Our In Memoriam gives brief glimpses into John E. Cornely, Ruth Shea and Yuri Nikolaevich Mineev’s lives and contributions.

Best wishes to you all,

by **Carl D. Mitchell**

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Trumpeter Swans (Photo: R. Goodall)

ANNOUNCEMENTS



Update regarding the Swan Symposium Proceedings (*Wildfowl* Special Issue No. 7)

Following the highly successful 7th International Swan Symposium / 26th Trumpeter Swan Society Conference held in Jackson, Wyoming, USA in October 2022, we are pleased to report that a number of papers have been submitted for publication in the proceedings of the meeting, which will appear as *Wildfowl* Special Issue No. 7.

Due to various personal circumstances (including a major bereavement), publication of the Special Issue – originally intended for this November/December 2023 – is delayed by a few months. This year's standard issue of the journal (*Wildfowl* 73) has been published online, with print copies being mailed before Christmas, but the Special Issue has had to be rescheduled for publication in 2024.

We must apologise for the delay, but please be assured that *Wildfowl* Special Issue No. 7 will be published in 2024. Further information will be provided on the Swan SG website in a few months' time.

by **Eileen Rees, Preben Clausen and Craig Ely**

The 2022 Report IUCN SSC Swan Specialist Group

The 2022 report is now available online at:
<https://www.iucn.org/our-union/commissions/group/iucn-ssc-swan-specialist-group>



Mute Swan cygnet (Photo: R. Włodarczyk)



Results of the international age count of the Northwest European Bewick's Swan, 17/18 December 2022

For more than 40 years now, age counts to assess breeding success in NW-European Bewick's Swans have been carried out annually in November and December. This survey is part of the monitoring activities of the Swan Specialist Group in NW-Europe. In 2023, Wim Tijssen retired as coordinator and handed the organisation over to Nikolas Prior from the German Federation of Avifaunists (DDA) in Germany and Kees Koffijberg from Sovon Dutch Centre for Field Ornithology in the Netherlands. The next count is scheduled for mid-December 2023 and this contribution looks back at the results from 2022.

Results for December 2022

In some parts of the wintering range, conditions in December 2022 were dominated by snow-covered fields. Especially in Schleswig-Holstein in Northern Germany, currently one of the core regions for wintering swans in NW-Europe, observers had some trouble locating the swans (Figure 1). Overall, 9,965 Bewick's Swans were sampled in seven countries, of which 9,455 were aged. This is approximately 75% of the last known population size recorded in January 2020 (Rees *et al.* in prep.). Coverage was rather good and lack of data from Estonia, Latvia and Lithuania is likely the result of no swans being present in those countries during the time of the survey (they do support large numbers during autumn or spring staging). Some gaps were also encountered in other countries, but with such a large share of the flyway population covered, the results will mirror productivity in 2022 well enough.

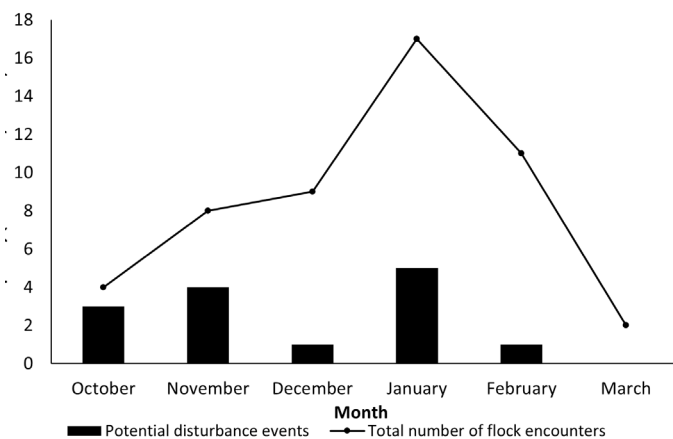


Figure 1: Conditions during the age count in December 2022 were quite exceptional and partly dominated by heavy snow, as shown here for Schleswig-Holstein in Germany, 17/12/2022 (Photo: Rüdiger Wittenberg).

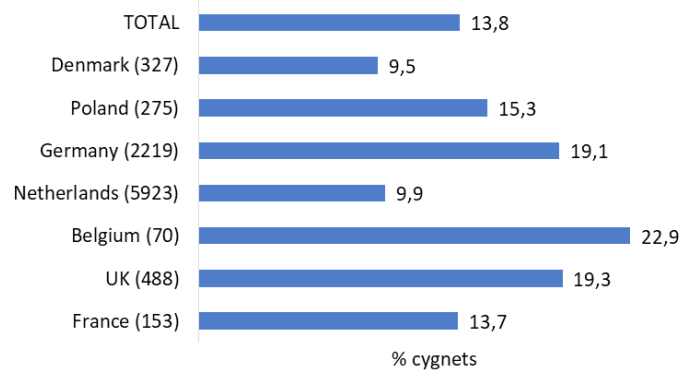


Figure 2: Percentage of cygnets per country in December 2022. Countries ranked from north(east) to south(west). Number of aged birds per country given in brackets.

Overall, the juvenile percentage was 13.8% (Figure 2), slightly higher compared to that recorded in 2021 (11%). However, there was considerable variation between countries. Flocks sampled in Denmark and in the Netherlands contained fewer successful broods than elsewhere, while in Belgium and UK, above average juvenile proportions were recorded. The highest proportion of juveniles was recorded in Germany. The low number of young observed in the Netherlands is likely due to habitat preferences: many swans were counted here on the so-called Border Lakes between the provinces Flevoland and Gelderland, where they feed aquatically on submerged vegetation. Such flocks always contain fewer broods than birds feeding on agricultural fields. These patterns have been observed in previous years and also show how important it is to collect data in all parts of the wintering range and in different habitat types.

Long-term trends

It is well known that the long-term decline of the NW-European flyway population has been associated with a decline in breeding success (*e.g.* Nuijten *et al.* 2020). Low breeding output has also prevailed in the past decade (Figure 3).

However, since 2019, there seems to be some upward trend and the juvenile percentage recorded in December 2022 was the highest in the current data series (which covers the years in which the network of the count was extended to countries outside the Netherlands). In the years of peak abundance of Bewick's Swans around 1995, multiple years had more than 15% cygnets, some even more than 20% (based on data collected in the Netherlands, but then also supporting a much larger share of the flyway population than today).

Brood size

Average brood size (the number of cygnets per successful pair) was 2.0, which is similar to that recorded in 2021 (2.1). The frequency of brood sizes recorded is highly similar to the previous year, with most pairs (62%) accompanied by two or three cygnets (Figure 4). There seems to be some variation among countries, with higher average brood sizes observed in Germany (2.2 young/pair) compared to the UK (1.8) and the Netherlands (1.9). In Poland, Belgium and France brood sizes as high as 2.6-2.7 were observed, albeit these figures come with small sample sizes and thus may not be representative.

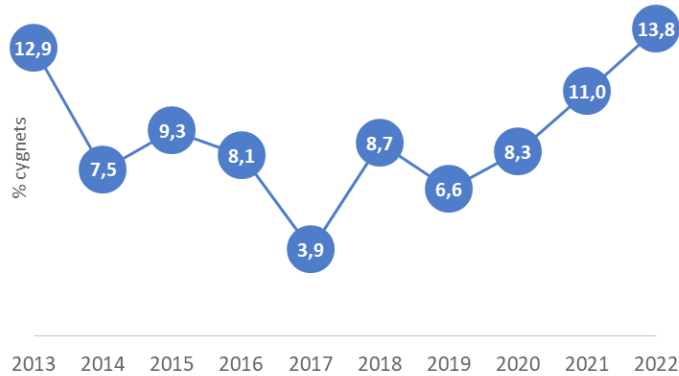


Figure 3: Overall percentage of cygnets in international age counts in 2013-2022

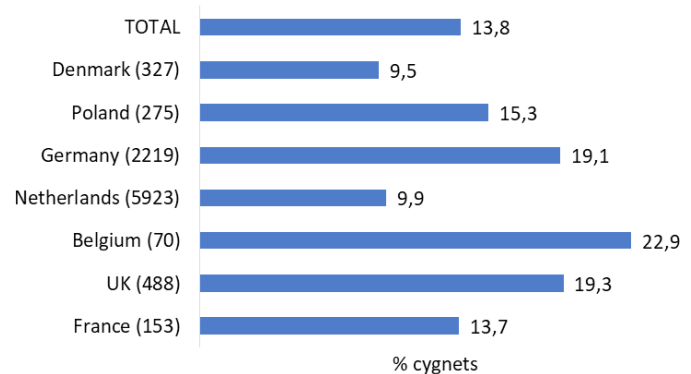


Figure 4: Brood size as recorded in December 2022 (n 361 broods).

Outlook for December 2023

At the time of writing, no information regarding conditions in the breeding areas in NW-Russia in summer 2023 are available, but some arctic-breeding goose species (Dark-bellied Brent Geese, Greater White-fronted Geese) from the same region have returned with above-average numbers of young in October-November. In the Baltic-North Sea flyway of Greater White-fronted Geese, summer 2023 will be among the best two, or even the best, breeding seasons since 2005 (> 20% juveniles). We know that the breeding success in Bewick's Swans this season was not very high, and late arrival in autumn 2023 was not a result of many young. In Schleswig-Holstein in Germany, Bewick's Swans were also late to arrive. However, so far, few cygnets have been observed, but this is a common pattern in the first-arriving flocks.

Wintering conditions in parts of the swan's range currently resemble those of December 2022, with heavy snow cover in parts of Northern Germany, following a cold spell which hit the countries around the Baltic Sea as early as 20-25 November. A closer look at the German NABU-website here: <https://zwergschwan.de/karte-senderschwaene>, which nicely shows the movements of swans equipped with GPS-transmitters, showing the responses of the swans to this weather change.

Meanwhile milder conditions prevail and will likely see the return of more usual movements towards the scheduled count on 16/17 December 2023. Besides snow, other parts of the range, e.g. the western part of Germany, the Netherlands and Flanders in Belgium, have seen exceptional amounts of precipitation in the past few months. This has resulted in high water tables in waterbodies, preventing swan access to submerged vegetation. Moreover, many cultivated fields with potatoes or sugar beets have still not been harvested, or harvest remains could not be ploughed, as heavy machinery is not able to access the fields. Many fields, both crops and grassland, are inundated. The resultant variation in food availability may affect the swan's distribution in these regions in winter 2023/24.

Collecting age data in such large parts of the wintering range of Bewick's Swans has only been possible by the joint-effort of all coordinators and counters in the field. We have no complete overview of all people involved and we are a bit reluctant to mention only those we know of. So, a huge thank you goes to all who contributed over the years.

by **Nikolas Prior, Kees Koffijberg and Wim Tijssen**

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Hybridization between Trumpeter Swan and Mute Swan in the wild

Hybridization among swan species is a relatively rare event, especially when compared to the behaviour of geese and ducks (Brazil 2003). Though Trumpeter Swans have hybridized with Whooper Swan (*Cygnus cygnus*), Mute Swan (*Cygnus olor*), Tundra Swan (*Cygnus columbianus*), and, remarkably, Canada Goose (*Branta canadensis*) in captivity (Banko 1960), it has hybridized only with Tundra Swan and Mute Swan in the wild (Irons *et al.* 2010; Mlodinow *et al.* 2023).

In general, hybridization in the wild occurs more frequently where a species is rare, often at the edge of its range; some individuals of that rare species will be unable to find a conspecific mate and then turn to the next best option – a mate from a closely related species (Hubbs 1955; Mayr 1967; Short 1969; Wirtz 1999). There are three known instances of a wild Trumpeter Swan hybridizing with a wild Mute Swan, and in all three instances, the Trumpeter Swan has been the “rare” species and the Mute Swan the established species.

The first known case of a Trumpeter and Mute Swan hybridizing comes from Nanaimo, Vancouver Island, British Columbia. A wild male Trumpeter Swan had taken up year-round residence at Nanaimo in 1990, and in 1998, it paired with a female from the local introduced Mute Swan population, with the pair remaining together until the Mute Swan’s demise in 2005; during that time, they raised young several times, perhaps up to 15 in total (West 2007, Trumpeter Swan Society 2023). One hybrid was still at this location as of March 2023, but no hybrids from this pairing have apparently been found elsewhere (Mlodinow *et al.* 2023).

The second known instance comes from Wye Marsh, along Georgian Bay in southern Ontario, where three yearlings were detected during the winter of 2002-2003, with one remaining until 2005 (Juliana Kee, personal communication, Kyna Dawn, personal communication). Though Mute Swans were well-established in the region, Trumpeter Swans were still relatively scarce in the area at that time, with only 303 in Ontario as of 2000 (Lumsden & Drever 2002).

The third known successful mating of these two species occurred in Monroe County, Pennsylvania, where a Mute Swan/Trumpeter Swan pair was noted during the winter of 2021–2022; during the ensuing summer, they hatched four young, three of which apparently fledged (Mlodinow *et al.* 2023). Again, this was a circumstance in which the Mute Swan was well-established, but Trumpeter Swan was locally uncommon or rare (Mlodinow *et al.* 2023).

Alas, there is little evidence of what a Trumpeter Swan x Mute Swan actually looks like. The only well-photographed bird was at Nanaimo (see <https://macaulaylibrary.org/asset/530510421>).

It had yellow flecking just proximal to the nostrils and pink just proximal to the nail of the bill, characters present in neither parent. One would be hard-pressed to separate this bird from a Whooper Swan x Mute Swan cross, except that a hybrid involving Whooper Swan would typically have more yellow on the bill; interestingly, Whooper Swan x Mute Swan also have pink just before the nail, a feature lacking in both parental species (Mlodinow *et al.* 2023). The call of the Trumpeter Swan x Mute Swan hybrids at Wye Marsh hybrid was described as being more similar to that of Mute Swan than that of a Trumpeter (Juliana Kee, personal communication, Kyna Dawn, personal communication).

Many thanks to Carl D. Mitchell, Juliana Kee and Kyna Dawn for providing information used in this article.

by **Steven G. Mlodinow**

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Wild Hybrid Mute x Trumpeter Swans

I read about the rarity of hybrid swan offspring. We have a strange mating on Story Lake in northeast Indiana, USA of just such a pair.

For the past thirty years, we had a pair of Mute Swans on the lake. Almost every year they produced a clutch of between 5-7 cygnets. March 2022 was the last sighting of the pen after their annual return. The cob came back at the end of that month by himself.

The summer of 2022 was tumultuous for the cob. His normal routine of chasing off Canada Geese, nesting, and protecting a clutch was amiss. As often happens, a young Mute Swan came back (possibly from last season's brood-mate) and he drove it off. Late spring, a group of Trumpeter Swans stopped by the lake. While he spent time chasing the group away, one Trumpeter gained his favour. She stayed with the cob, periodically leaving for a couple days before returning. If other swans accompanied her, they were chased off. By late summer, the cob and his new friend were clearly together. When they left for open waters in the late winter, we wondered if either or both would return.

In early March of this year, the cob returned, followed by four Trumpeters, three of which he drove away. The pen remained. In a few weeks we noticed the cob missing for periods of time, yet the pen was hanging around our basin. Soon, the cob returned, and the pen disappeared. In the past, the cob chose a spot in the channel between the two basins of the lake. We suspected there was a nest, and a boat ride to the channel showed the pen sitting on a refurbished earlier nest. A few weeks later, we were able to glimpse five hybrid cygnets emerge from under the pen.

Of the five cygnets, three are very healthy and now making strides at flying. Two were undersized, one of which is now catching up in growth compared to the others. The runt of the brood appears weak and avoids going into the water as much as it can. It will walk along the beach to join the family, or simply wait for them to return. Four were born grey, and one white. Two of the biggest greys appear larger than the pen. The white one was the first to fly, and constantly exercises its wings.

This brood is much friendlier than the Mute Swan broods were. While we've fed the swans crackers and whole corn over the years, we only rarely hand fed the Mutes, except the cob who is eager to accept handouts. This hybrid brood comes out of the water and pesters the presenter for crackers, even tapping me on the shoulder if ignored. As is typical, they are shifting from crackers to whole corn in their late stages of growth.

It's been extremely interesting to watch this rare event unfold, and we can't help wondering how the cygnets will fare in the wild. I've included a couple of pictures of the family, but if you would like to see more, we've kept a running narrative with numerous photos of this hybrid group on our Facebook page: Story Lake in Photos and Prose <https://www.facebook.com/StoryLake>

Actually, our tracking of the swans' activities goes back to 2007 with the original 'The Swans Saga of Story Lake.'

by **Dennis Sheron**



Wild hybrid Mute x Trumpeter Swan pair and four of five young cygnets (one leucistic), 4th June 2023 (Photo: D. Sheron)



Wild hybrid Mute x Trumpeter Swan pair and five cygnets (one leucistic), 4th June 2023 (Photo: D. Sheron)



Wild hybrid Mute x Trumpeter Swan pair and two hybrid cygnets, 9th September 2023 (Photo: D. Sheron)

Trumpeter Swans with Canada Goose goslings

I have an interesting story for you from Fish Lake State Wildlife Area in Burnett County, Wisconsin, USA. I have followed and tracked swans for over 25 years, but this is a first for me.

The swan pair were busy building a nest on Daniel's Flowage. A road grader came by the flowage and was digging up the sides of the gravel road. This scared the swans and they left the nest. Shortly after my friend saw Canada Geese on the nest but eventually the swans took over the nest and nested there.

I first saw the swans nesting on 1st May and have been following them ever since. My friend sent me a photo wanting to know if Trumpeter Swan cygnets were yellow, because she saw two yellow birds on the nest on 6th June. I told her they were not cygnets but looked to be goslings. So apparently the geese had laid eggs when they were on the nest during the swans absence (known as egg dumping).

She later sent me a photo of one of the parents out in the open water with the two goslings. On 7th June I went there and now the cygnets were hatching. Both parents took turns with the goslings as the other parent was trying to coax the cygnets off the nest. Eventually two cygnets joined the goslings and three cygnets remained on the nest.

On 10th June, the parents with five cygnets and now only one gosling moved across the road into a water filled ditch by Astrup Flowage. The remaining gosling disappeared sometime thereafter.

by **Kathy Java**



Trumpeter Swan with two Canada Goose goslings, 7th June 2023 (Photo: K. Java)



Trumpeter Swan pair with two cygnets and one Canada Goose gosling, 7th June 2023 (Photo: K. Java)

Quantifying alert and flight initiation distances in Whooper Swans and Bewick's Swans

All wild birds, their nests, eggs and young are legally protected in England and the devolved administrations of Wales, Scotland and Northern Ireland.

Intentional or reckless disturbance of a wild bird when it is building or using a nest or when it is rearing dependent young is an offence in Northern Ireland. Protection from disturbance is only afforded to the populations of species' the legislator in England, Wales and Scotland considers to be vulnerable to disturbance (*i.e.*, "Schedule 1 birds").

It is also an offence to intentionally or recklessly disturb species that are the reason for the designation of land that is of special interest (*i.e.*, at a Site of Special Scientific Interest (SSSI) in Great Britain or an Area of Special Scientific Interest (ASSI) in the Isle of Man and Northern Ireland). For those SSSIs/ASSIs that underpin the designation of sites formerly part of the European Union's Natura 2000 network – *i.e.*, Special Protection Areas (SPAs) – disturbance of mobile species on land or

water beyond the designated site boundary must also be considered when the ecological role of such land is significant in maintaining the integrity of the SPA.

For infrastructure developments, consideration of disturbance and the relevant legal protection afforded to the sensitive species is considered when applying for consent, either through the Environmental Impact Assessment (EIA) process or through the appropriate assessment process in relation to sites included in the National Site Network, formerly part of the Natura 2000 network. Both EIA and appropriate assessment are evidence-based assessments although these frequently have been based on scant scientific evidence with respect to predicting impact magnitude, significance and mitigation effectiveness (Hill & Arnold 2012; Hunter *et al.* 2021). It is recognised however that there are very limited quantitative studies related to the disturbance of birds (Ruddock & Whitfield 2007; Goodship & Furness 2022)

and in particular the activities related to infrastructure development (pers. obs.). Professional judgement is often relied upon in the absence of empirical evidence.

This study describes the findings of surveys conducted over the winter of 2021/2022 to record empirical evidence of disturbance events for Whooper Swans *Cygnus cygnus* and Bewick's Swans *Cygnus columbianus bewickii*. The study area was centred on a section of a proposed water pipeline route in Norfolk, England between approximately 52°31'24.79"N, 0°24'57.42"E and 52°23'0.92"N, 0°24'12.63"E. The area was considered by Natural England, the government's adviser for the natural environment in England, to be land outside the Ouse Washes SPA that provides a significant ecological role (foraging habitat) in supporting those Whooper Swan and Bewick's Swan that are the reason for the designation of the Ouse Washes site. The evidence collected during this study, together with existing published data, was intended to inform avoidance mitigation for the construction phase of the proposed water pipeline.

Methods

Observations were made of Whooper and Bewick's Swans using arable farmland on one day in October 2021, then two days a month from November 2021 to March 2022, inclusive. Public roads were driven across the study area on each survey visit and safe vantage points were used to scan for the presence of swans and if present, search for potential disturbance events.

All observations were made from a car or small commercial van using a pair of Kowa 8x32 SV II binoculars and a window mounted Swarovski HD 80 telescope with a 20–60 zoom lens. Counts and bird behaviour notes were recorded using ESRI's FieldMaps for ArcGIS (Esri 2022) on a Samsung A20e mobile phone.

The following information was recorded during each survey visit: species name, count, date, time of observation and notes on bird behaviour. The digital maps were marked-up with the approximate location and additional information of potential disturbance events, together with flight lines of birds leaving a site when potentially disturbed. Survey date, start time, finish time were recorded with a score (1–3) for cloud cover, rain, wind and visibility that best reflected the conditions across each survey (BTO 2018). Habitat type was recorded using the habitat coding system developed by Crick (1992) and used by the British Trust for Ornithology (BTO) (BTO 2015).

Prominent landscape features (e.g. farm buildings, tree lines and drainage ditches) were used to map as accurately as possible the central position of each swan flock encountered. The distance separating a swan flock and the source of a potential disturbance event was measured on aerial imagery in ArcGIS FieldMaps to the nearest five metres.

In the absence of any disturbance, the behaviour of swans was attributed to either "feeding" or "resting" (i.e. roosting, loafing or preening) when the majority of birds

in a flock were engaged in the behaviour. Behavioural responses by swans to potential disturbance events were categorised using a scale based on that used in Ross & Liley (2014) (Table 1). Where a flock exhibited more than one response, the response of the majority of the birds is recorded, with a "secondary response" recorded for the minority of the birds in the flock.

Swan flocks were recorded when encountered at any time during a survey. On some occasions flocks were encountered more than once during a survey visit but to avoid double counting only the first encounter was used when determining the total number of flock encounters per survey visit.

One potential disturbance event was incidentally documented during a site visit on 16 February 2022. This potential disturbance event was included with the survey data.

Results

Observations were made in suitable weather conditions, i.e., avoiding heavy rain, strong winds or poor visibility, on 11 dates between 20th October 2021 and 24th March 2022. A total of 51 flock encounters was recorded during the survey period comprising 43 Whooper Swan flocks and eight Bewick's Swan flocks respectively. The total number of flock encounters increased each month from October to a peak in January (Figure 1). Flock encounters declined rapidly with only two encounters on 10th March 2022 followed by no encounters on 24th March 2022.

The majority of flocks were feeding at the time they were first observed (n = 44). Of those flocks where the majority of the birds were resting (n = 5), four Whooper Swan flocks were recorded in the morning (08:00–11:00 h GMT) and one Bewick's Swan flock was recorded in the afternoon (12:55 h). The behaviour of two flock encounters was not recorded because there were no safe places to stop and observe the birds.

Flocks were observed most frequently in autumn sown cereals (51%) and fields classified as 'bare ground/ploughed' (19%), of which one field was confirmed as a harvested sugar beet field. The use of stubbles was recorded in October (n = 3), November (n = 4) and February (n = 1). Of the total number of flock encounters, maize and potato stubble accounted for 8% and 6% respectively, with one stubble field too distant to be identified with certainty (2%). Owing to an absence of safe vantage points or because of distance and no land access, 12% of field crops could not be identified with certainty. One encounter with a resting flock was on a field with standing water (2%).

Flocks encounters in autumn sown cereals contributed to a larger proportion of flock encounters in the period from January to March inclusive (70.0%) compared to October to December inclusive (23.8%).

By contrast flock encounters in stubbles and 'bare ground/ploughed' contributed to a larger proportion of

flock encounters in the period from October to December inclusive (66.7%) compared to January to March inclusive (19.0%).

Disturbance events were recorded 14 times in relation to Whooper Swan ($n = 14$) and Bewick's Swan ($n = 3$). The most disturbance events occurred in January ($n = 5$) (Table 2). Five potential sources of disturbance were observed: car, van, quad bike, tractor and 360 excavator. No disturbance responses were observed in relation to the operation of 360 excavators undertaking drainage ditch clearance work ($n = 3$) at distances of 185 m, 200 m and 450 m respectively. A tractor and flatbed trailer on a farm track resulted in no disturbance response for Whooper Swan flocks at a distance of 280 m and 505 m. On average quad bikes on public roads initiated a disturbance response at the greatest distances, followed by vans, cars and tractors (Table 3).

The greatest response to a potential disturbance event was the dispersal of a large flock of resting Whooper Swan (c. 2,000 individuals) in November by a quad bike on a minor public road passing within 135 m. In this event the entire flock took flight and flew away. Two other events resulted in swans flying off following heads-up alert behaviour, one event in October and one in January. In both cases only a part of the flock flew away, with 14 of 29 Whooper Swan (48.3%) flying away as a result of a delivery van and driver exiting the vehicle at a distance of 475 m in October and eight of 150 Bewick's Swan (5.3%) flying away as a result of the surveyor's car stopping at a distance of 220 m in January.

Discussion

The abundance of Whooper Swan and Bewick's Swan within the study area followed the expected pattern of occurrence on the Ouse Washes (Robinson *et al.* 2004). The peak feeding time, i.e. from one hour before dawn, up to three hours after dawn (Rees *et al.* 2005) coincided with the majority of observations made in this study. This, plus the fact that the majority of birds will be engaged in feeding throughout the day (Rees *et al.* 2005) reflects the fact that in all but four flock encounters in this study the majority of birds were engaged in feeding.

Analysis of crop use in the wider area of the Ouse Washes mirrors field use by Whooper Swan and Bewick's Swan in this study. Post-harvest remains of Maize *Zea mays*, Sugar Beet *Beta vulgaris* and potato *Solanum tuberosum* are typically used in autumn and early winter (October–December inclusive) with fields of autumn sown cereals used for grazing later in the main winter period (January–March inclusive) as the post-harvest resource is depleted (Wood *et al.* 2019, 2021). The use of autumn sown cereal fields is likely to relate, in part, to foraging for post-harvest remains of potato and sugar beet because it is a common agricultural practice to sow Winter Wheat *Triticum aestivum* after the potatoes or Sugar Beet have been harvested.

There is very little published empirical evidence relating to the disturbance of Whooper Swan (Goodship & Furness 2022) and Bewick's Swan by human activities. Of the evidence that does exist, most relates to a single person walking towards the target species (Møller 2008; Jiang & Møller 2017; Díaz *et al.* 2021;). Research by Mayer *et al.* (2019) investigated the effect of a single person in small motorboat approaching Whooper Swan in Norway during spring and winter, whilst the effects of a broader range of human activities on non-breeding Whooper Swan was reported by Rees *et al.* (2005) in a multi-year study conducted in an area of Scotland. In the study by Rees *et al.* (2005) the effects of pedestrians and farm work on foot, cyclists, anglers, wildfowling, helicopters and aircraft, cars, vans, tractors and other farm vehicles were all assessed.

In this study quad bikes on public roads initiated alert behaviour at the greatest distance (650 m). Whilst there is some published evidence on the disturbance effects of quad bikes on waterfowl (WWT Wetlands Advisory Service 2003), no published empirical evidence has been found relating to Whooper Swan and Bewick's Swan. Flight initiation caused by a parcel delivery van stopping and a driver exiting the vehicle (475 m) is a substantially greater distance compared to published empirical distances in the non-breeding season by Rees *et al.* (2005) for vans (combined with tractors and other farm vehicles, 190.0 ± 67.8 m, $n = 5$) and pedestrians (197.4 ± 18.4 m, $n = 57$) and by Møller (2008) for pedestrians (150 m for Whooper Swans; 200 m for Bewick's Swans).

A review conducted by Goodship & Furness (2022) recommended that a non-breeding season buffer zone for Whooper Swans should be in the order of 200–600 m to protect foraging and roosting birds from pedestrian activity. For cars, alert and flight initiation distances in this study are comparable with that published by Rees *et al.* (2005), i.e. 168.0 ± 44.1 m ($n = 5$).

By contrast to cars and vans in this study, tractors had the smallest alert response distance with no flights initiated. Rees *et al.* (2005) combined flight initiation responses to tractors into “vans, tractors and other farm vehicles combined” but no other published empirical evidence was found relating to tractors and agricultural machinery. No behavioural responses were observed in this study in relation to 360 excavators undertaking ditch clearance although the distance separating the excavators and swan flocks was greater than the distance at which displacement is likely to occur (100 m) (IECS 2007 in NIRAS Consulting Ltd. 2015). In all three observations of 360 excavators the machine was accompanied by a small van or 4x4 vehicle. In these cases, disturbance and displacement may have already occurred when the machine operator arrived on site by vehicle and walked to and from the excavator. It is at this point that disturbance responses are likely to be at its greatest (Cutts *et al.* 2013). Rees *et al.* (2005) concluded that Whooper Swans were less tolerant of pedestrians than vehicles, and that pedestrian access should be limited or screened.

The study area is a largely open landscape with little public access other than agricultural activities and traffic on minor public roads. Rees *et al.* (2005) observed that Whooper Swan alert distance decreased when the frequency of previous disturbance events in the same day increased but that landscape openness reduced alert distances overall. Whilst swans in the study could be more sensitive to potential disturbance events because the study area is relatively undisturbed, the openness of the habitat may allow them to identify and observe a threat over a much greater distance before displaying alert behaviour or initiating flight. Observations of Whooper Swan behavioural responses align with the qualitative assessment that the species' overall sensitivity to disturbance is likely to be "medium" (Goodship & Furness 2022). Despite the limited evidence base regarding the distances within which a behavioural response by Whooper and Bewick's Swan is likely to be initiated by human activity, this study broadly accords with evidence in the published literature.

It is recommended that future studies use laser range finders to measure the distance between the potential disturbance source and the receptor more accurately. Based on the published literature and this study the recommended non-breeding season buffer zone of 200–600 m would likely protect foraging and roosting birds from pedestrian activity as well as the use of cars, vans, tractors, 360 excavators and for the most part quad bikes. It is recommended that the use of quad bikes within at least 650 m of foraging Whooper and Bewick's Swans is limited.

When it comes to assessing the behaviour of individual species to potential sources of disturbance, this study and the few published quantitative studies suffer from very small sample sizes.

To remedy this, we would encourage environmental consultants and developers to publish quantitative studies relating to behavioural responses of birds to potential sources of disturbance. I agree with Goodship & Furness (2022) that collating evidence into one open-source database would be incredibly beneficial. It is only with a scientifically robust and publicly available evidence base that precautionary and proportionate management decisions can be taken that would ensure that the relevant species protection legislation can be upheld.

Acknowledgments

This work was carried out by the Strategic Pipeline Alliance, an alliance of Anglian Water, Farrans, Mott MacDonald Bentley, Costain and Jacobs. The author would like to thank Jamie Dunning for his valuable feedback on this paper.

by **Tristan D. Folland**



Wintering swan flock in Texel, Netherlands (Photo: R. Brouwer)

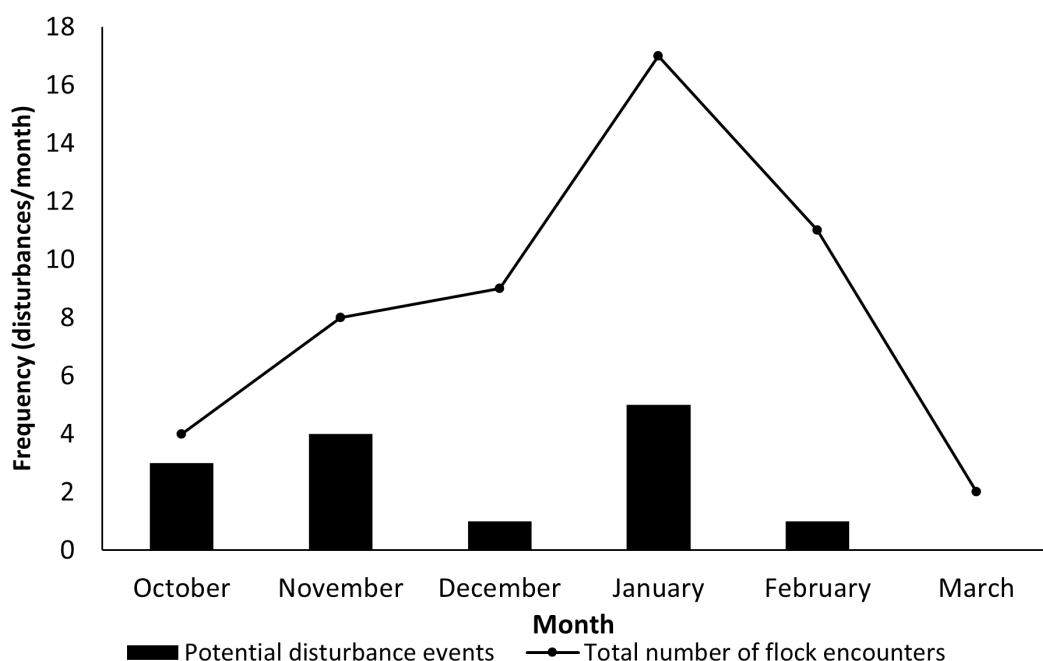


Figure 1: Total number of monthly flock encounters and potential disturbance events observed between 20th October 2020 and 24th March 2022.

Table 1 - Behavioural response categories following potential disturbance event (based on Ross & Liley 2014).

Category	Broods
0	No observed response
1	Heads up alert posture, then resumed previous behaviour.
2	Alert posture, birds walked/swam short distance then resumed previous behaviour.
3	Birds flew off but landed within the same field and resumed previous behaviour.
4	Birds took flight and changed location.

Table 2 - Potential disturbance events observed between 20th October 2021 and 24th March 2022. The swans' activity was classed as "feeding" in each case before the disturbance.

Event No.	Date (time)	Species	No. swans	Potential disturbance source	Distance to swans (m)	Response category (secondary response)
1	20/10/2021 (am)	Whooper Swan	341	Operational 360 excavator	420	0
2	20/10/2021 (pm)	Whooper Swan	17	Operational 360 excavator	185	0
3	20/10/2021 (pm)	Whooper Swan	29	Parcel delivery van; driver outside vehicle	475	1 (4)
4	11/11/2021 (am)	Whooper Swan	1,100	Tractor with harrow and tractor with seed drill in field	30	2 (3)
5	11/11/2021 (am)	Whooper Swan	2,000	Quad bike, followed by tractor movement and arrival of car	135	4
6	11/11/2021 (pm)	Whooper Swan	70	Tractor and trailer	280	0
6	11/11/2021 (pm)	Whooper Swan	102	Tractor and trailer	505	0
7	21/12/2021 (pm)	Whooper Swan	220	Tractor with plough (n = 2)	135	0
7	21/12/2021 (pm)	Bewick's Swan	5+	Tractor with plough (n = 2)	135	0
8	20/01/2022 (am)	Whooper Swan	449	Quad bike	650	1
8	20/01/2022 (am)	Bewick's Swan	30	Quad bike	650	1
9	20/01/2022 (pm)	Whooper Swan	317	Car	150	1
10	20/01/2022 (pm)	Bewick's Swan	150	Car	220	1 (4)
11	28/01/2022 (am)	Whooper Swan	122	Car	100	2
12	28/01/2022 (am)	Whooper Swan	122	Operational 360 excavator	200	0
13	16/02/2021 (am)	Whooper Swan	2	Postal van	80	1
14	25/02/2022 (am)	Whooper Swan	13	Car and tractors with high-sided trailer	20	2

Table 3 - Potential disturbance events observed between 20th October 2021 and 24th March 2022. The swans' activity was classed as "feeding" in each case before the disturbance.

Source	No. events	No. response events	Min. response distance (m)	Max. response distance (m)	Mean response distance (\pm s.d.) (m)
360 excavator	3	3	N/A	N/A	N/A
Car	3	0	100	220	157 (\pm 60)
Quad bike	2	0	135	650	393 (\pm 364)
Tractor	4	1	30	135	83 (\pm 74)
Van	2	0	80	475	278 (\pm 279)

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Individual responses to climate warming drive Bewick's swan range shift in the Western Palearctic

Many migratory birds are shifting their range towards higher latitudes or elevations in response to ongoing climate warming (Chen *et al.* 2011). Although such responses have been studied extensively for the breeding season, much less research has gone into the effects of climate change during the non-breeding season. Since autumn migration is not targeted towards reaching some predetermined breeding site in time, but maximising survival until the next breeding season, there is likely much more flexibility to respond to climate warming in the non-breeding season. This is especially the case for birds that do not have winter territories and whose foraging and habitat requirements allow a wide geographic range to be used during non-breeding, such as waterfowl using wetlands and agricultural land.

Winter range shifts have been described in various migratory species (*e.g.* Austin & Rehfish 2005; Visser *et al.* 2009) including the Bewick's Swan (Beekman *et al.* 2019; Nuijten *et al.* 2020). However, these studies used bird count or ring resighting data, making it difficult to examine in detail how individuals respond to annual climatic variation, and especially to temperature throughout their autumn migration. On the other hand, some tracking studies have looked at drivers of autumn migration (*e.g.* Xu & Si 2019), but not in the context of range shifts at a larger scale.

In a recent study (Linssen *et al.* 2023), we used multi-year GPS tracking data to study how autumn-migratory movement and annual winter distance from the breeding grounds relate to temperature in the Northwest European Bewick's Swan. The Bewick's Swan's winter range in Northwest Europe has shifted more than 350 km closer to the breeding grounds since 1970 due to "short-stopping", *i.e.* the ceasing of autumn migration at increasingly north-eastern latitudes and longitudes (Nuijten *et al.* 2020). We examined (1) to what extent temperature drives migratory movement throughout the autumn season, and thus short-stopping (2) to what extent individual flexibility in annual winter distance is related to winter temperature and (3) whether these effects can explain the observed winter range shift.

Bewick's Swans were caught using cannon nets while flock-feeding on the wintering grounds in the Netherlands, between the winters of 2009/10 and 2020/21, and equipped with GPS-GSM transmitter neckbands. First, we looked at autumn migration tracks (October-December) to see how migratory movement is driven by temperature and wind (see Beekman *et al.* 2002) throughout the autumn season. The swans generally moved further away from the breeding grounds with lower temperatures, and especially so with beneficial winds early in the season. Later in the season, the effect of wind disappeared and swans only moved further substantially with temperatures below freezing. This suggests that temperature can drive

movement away from the breeding grounds through different mechanisms during early and late autumn, with the frost effect only becoming apparent later. The effect of wind assistance eventually disappearing completely, implying that wind is used only to facilitate migration towards a destination, whereas temperature co-determines that destination.

Second, we used the GPS tracks to test the relation between temperature and annual distance from the breeding grounds during midwinter (December-January). Individual swans were highly variable in their annual winter distance: on average, the various annual winter locations of an individual stretched roughly 300 km. There was a strong relationship between winter temperatures and winter distances: for every 1°C increase in mean winter temperature, the GPS-tracked swans spent their winter on average 118 km closer to the breeding grounds. At the same time, individuals were highly consistent in their annual breeding location. Whether this means that the Bewick's Swan is less flexible in adapting to climate warming in the breeding range, is a subject for further study.

Previous research showed how expansions in both the breeding and non-breeding ranges of migratory birds were driven by shifts in the numbers of individuals of subsequent generations using different locations, whereas the individuals themselves were very consistent in their space-use over the years (Gill *et al.* 2019). In contrast to the notion that migratory waterfowl are generally site-faithful in winter, our results show that range shifts in these birds can be driven by flexible responses to changing environmental conditions at the individual level. Future analyses of GPS tracks will include data from young birds in combination with their parents, to unveil age-related differences in flexibility, and examine to what extent migratory habits are transferred from parent swans to their offspring.

by **Hans Linssen** and **Bart Nolet**



Bewick's Swan (Photo: J. Bull)

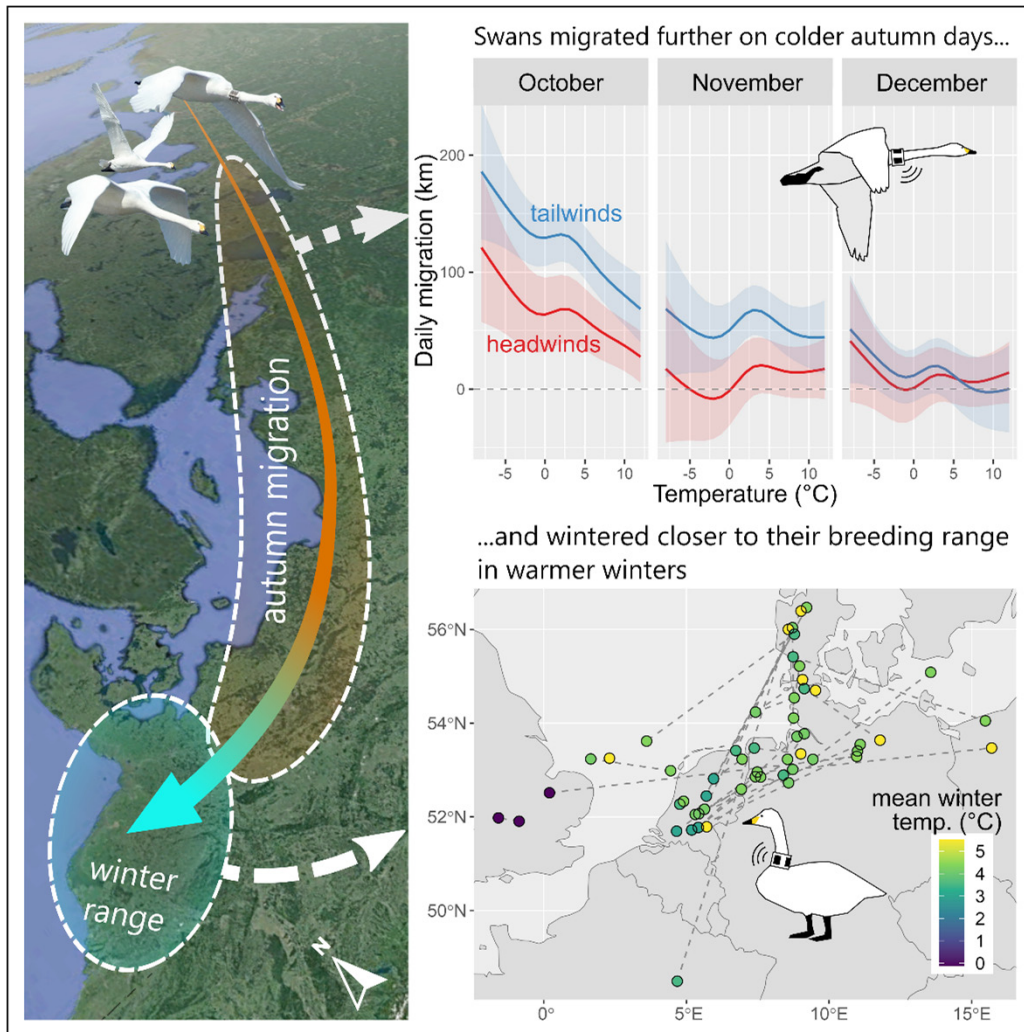


Figure 1: Overview of our study

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Interchange of individuals between two Whooper Swan populations, and its effect on population size estimates

Population delineation based on sound knowledge of movements, distribution and numbers where two populations of the same species may occur is an important prerequisite in population monitoring. In Europe, two populations of Whooper Swan *Cygnus cygnus* occur, namely the Iceland population which breeds in Iceland and winters chiefly in Britain and Ireland, whilst the Northwest Mainland European (NWME) population winters in western continental Europe and breeds primarily in Fennoscandia, European Russia and the Baltic States (Rees et al. 2019).

Over 18,000 Whooper Swans have been marked, either with colour-marks or with metal rings in Europe, of these 12,324 (67.4%) were marked in the range of the Icelandic population, whilst 5,954 (32.6%) have been marked on mainland Europe (Brides et al. 2023). Our recent study used ringing, re-sighting and recovery information to determine the level of movement of individuals between the two populations and to assess the extent to which this interchange affects total population estimates.

Birds were assigned to the biogeographical population (Iceland or NWME) in which they were ringed. Of >18,000 Whooper Swans ringed in 17 European countries, 172 individuals (0.94%) were later found outside the nominal range of their assigned biogeographical population. The proportion of ringed swans from the Icelandic population that were subsequently found 'out of range' did not differ significantly from the proportion recorded for the NWME population, indicating no directional bias in population interchange.

The study updates previous estimates of the number of Icelandic Whooper Swans from the population that winter in mainland Europe (given as up to 600 birds in the 1990s; Gardarsson 1991, Cranswick et al. 1996) and the estimates of Finnish-breeding birds wintering in southern Britain each year (at least 200 birds; Laubek et al. 1998). The estimate of 600 birds amounted to 3.3% of the numbers reported for the Icelandic population in 1991 (18,035 individuals; Kirby et al. 1992), whilst 200 Continental birds migrating to Britain represented 0.03% of the total NWME population size at that time (59,000 individuals in the mid-1990s; Laubek et al. 1999).

Assuming that the probabilities of appearing out of range reported here for ringed individuals are indicative of movements for the whole population, the estimates of the numbers of individuals wintering out of range are now 340 (95% CI 272–408) and 434 (347–520) for the Icelandic population in 2015 and 2020 respectively. In contrast, 1,106 (831–1384) out-of-range individuals were estimated for the NWME population in 2015, whilst more recent census data have yet to be reported. Hence our revised estimates are lower for the Icelandic population (3.3% down to 1.0%) and higher for the NWME population (0.03% up to 0.80%).

Population switching by Whooper Swans in western Europe occurs consistently, but currently at very low levels. Our results reinforce the view that such levels of population interchange are unlikely to have caused major inaccuracies or biases in the total numbers recorded during the coordinated censuses used to estimate population size.

by Kane Brides

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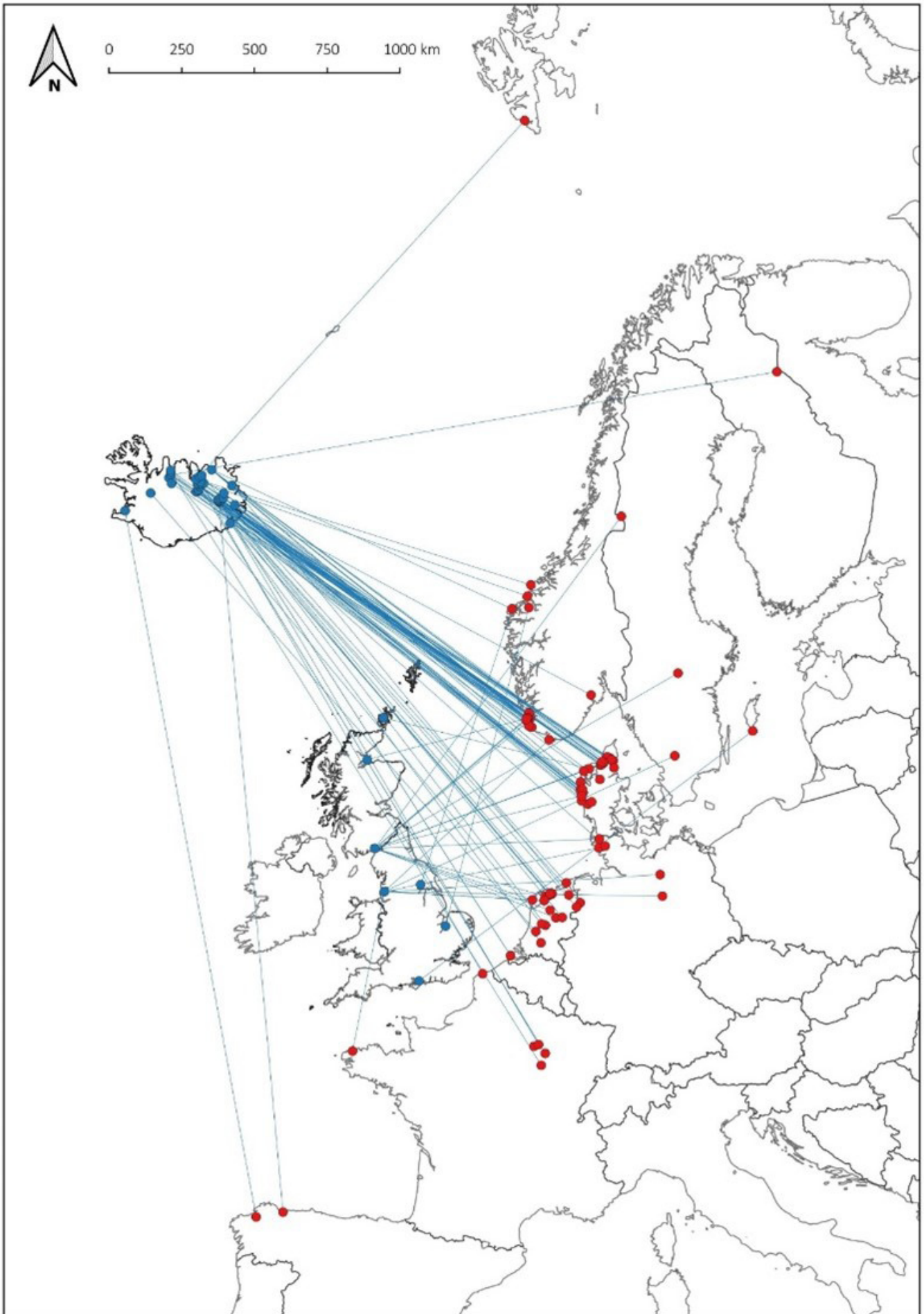


Figure 1: Ringing locations (blue) and re-encounter locations (red) of Whooper Swans ringed in Iceland, Britain or Ireland and subsequently recorded outside the range of the Icelandic population.



Dynasties, divorce, and 10,000 swans: 60 years of WWT's unique Bill Pattern Study (by WWT, 7th December 2023)

A scientific study into Bewick's Swans, birds which can be identified as individuals through the unique markings on their bills, is celebrating 60 years of drama and discovery this winter.

Carried out by WWT, the charity for wetlands and wildlife, the study began when founder Sir Peter Scott realised the potential research value of being able to identify individual swans returning to spend the winter at WWT Slimbridge using just their unique bill patterns.

These observations were formalised into a scientific study which has been repeated every winter since 1963. As they arrive in the UK from Arctic Russia on their annual 3,500 km migration, every adult swan that visits the reserve is given a name and their bill pattern is logged, allowing researchers to follow the long lives of each bird and the dynasties of swans that came before them.

Up to 200 swans are identified each year, with WWT scientists having recorded 10,000 individual swans throughout the course of the study. Believed to be one of the longest single species study ever undertaken, researchers have monitored breeding success as well as observing some unusual behaviours, such as pairs of swans, usually renowned for their lifelong partnerships, 'divorcing' and later returning with new mates.

Each individual arriving at WWT Slimbridge is named and has its own fascinating story. Whether it's Casino, one of the founding members of the 'Gambling Dynasty' who lived to 27 years old and produced 34 cygnets, or Sarindi and Saruni, who unusually divorced but returned happily with new partners, or Turlach and Tramore and their cygnets who are the family that currently rules the roost at Slimbridge.

However, the population of these beautiful birds has plummeted in recent decades, following a series of poor breeding seasons. The Bewick's also face pressure from the loss of healthy wetland habitats across their migratory route, as well as the impact of climate change, lead ammunition poisoning and illegal hunting.

Dr Julia Newth, Ecosystem Health and Social Dimensions Manager at WWT said:

"Having watched the Bewick's return to Slimbridge year after year, this study has a special place in my heart. Every year when the first swan touches down, it feels like seeing old friends again."

"Each new year brings a new generation and new findings that update the study to show in real time what is happening to these swans and engages people in wanting to protect them from the ever-growing threats they face - from the loss of healthy wetland habitats along their migration routes, climate change, illegal hunting and lead poisoning."

Source: <https://www.wwt.org.uk/news-and-stories/news/dynasties-divorce-and-10000-swans-60-years-of-wwts-unique-bill-pattern-study>



Bewick's Swan bill pattern study, drawings of individual swan bills by Sir Peter Scott (Photo: WWT).



Warming climate and storms see Bewick's make latest arrival since 1965

(by **WWT**, 16th November 2023)

Today the first of this year's Bewick's Swans have arrived at WWT Slimbridge, the latest they have arrived since 1965. Experts are linking their delayed arrival to climate change, combined with a mixture of stormy and mild weather in recent weeks.

The family of Bewick Swans who have arrived have landed three weeks later than they did in 1965, and almost a week later than last year, when they arrived overnight on 10 November. They have completed an epic 3,500 km annual migration from Russia's arctic tundra.

As climate change warms the arctic tundra where Bewick's Swans breed, it is likely that birds are leaving their summer haunts later, with many travelling less far west than in previous generations.

Milder conditions caused by climate change in Europe may mean we see fewer of these birds flying to the UK in the colder months, with their winter strongholds moving steadily east.

Research has already shown that their wintering range has shifted more than 350 km closer to their arctic breeding grounds since 1970, driven by increasing temperatures.

This year's first arrivals, were Maisie and her partner Maifield and their two cygnets, who all touched down on 16 November. Maisie first wintered at WWT Slimbridge in 2014 and has returned to the reserve every year since. In 2016 she arrived with her new mate Maifield.

After coupling up the pair brought their first two cygnets back to Slimbridge in 2020, three more in 2021, two more last winter and another two this year. Maisie also featured in the film *Flight of the Swans*, a story of hope and discovery looking at how communities across 11 countries, from the Arctic to the UK, are working hard to protect Bewick's Swans and wetlands.

Kane Brides, Senior Research Officer at WWT said:

"For the second year in a row we're seeing Bewick's Swans returning later than we would expect, with Maisie and Maifield being the latest first arrival on record since 1965.

"Bewick's Swans are a bird that holds special importance to WWT, appearing on our logo and being the subject of a 60-year single species study which has allowed us to track the species' fortunes in the UK in minute detail for decades.

"If more individuals end up 'short-stopping' their autumn migration, it's possible that in decades to come we might no longer expect to see Bewick's Swans at WWT Slimbridge, a tangible impact of climate change playing out right before our eyes."

Source: <https://www.wwt.org.uk/news-and-stories/news/warming-climate-and-storms-see-bewicks-make-latest-arrival-since-1965>

Protecting the world's wetlands – milestone lead shot ban comes into force in EU (by WWT, 15th February 2023)

Following years of campaigning by WWT, BirdLife and other international partners, it is now illegal to use lead gunshot in and around wetlands in all 27 EU countries as well as Iceland, Norway and Lichtenstein.

The new law, which came into full effect on 15 February 2023, will not only help protect the health of wetlands, but should save the lives of millions of birds. This important milestone marks the end of a two year transition period to allow countries to ditch lead for non-toxic ammunition.

Waterbirds are particularly susceptible to lead poisoning as they ingest discarded lead shot while feeding and mistake the small pellets for grit which they select to help grind up their food.

Lead's toxic influence also extends to other wildlife as poisoned birds, weakened by lead, are easy targets for predators and scavengers such as eagles and vultures which then also succumb to its harmful impacts. And people are not exempt from the risks – they become exposed to lead when eating game meat contaminated with fragments of lead shot.

After years of campaigning, the world is finally wising up to the harm caused by lead. Over the last two decades, WWT has undertaken and shared scientific research which has helped reveal the true extent of the problem and the barriers to change, while pushing for a transition away from lead.

Dr Julia Newth, Ecosystem Health & Social Dimensions Manager at WWT:

“This EU law is a huge leap towards ending lead ammunition poisoning of wildlife in Europe. There is no safe level of lead – it has polluted wetlands for more than a century, creating a toxic environment for those that depend on them. This milestone recognises that it is time to clean up our act. This ban must be fully enforced by EU countries to ensure their wetlands are healthy for wildlife and future generations”.

While this ban will reduce the exposure of lead to wildlife and people, it will not eliminate it as lead shot remains legal outside of wetland areas. Waterbirds such as Bewick's Swans, which are declining rapidly in Europe, will continue to be poisoned as they often spend large proportions of their day feeding away from wetlands where it remains legal to shoot with lead in most places. Lead shot poisoning remains a risk to other predators and scavengers, and game birds which often end up on the dinner table.

Given these continued risks, the European Chemicals Agency has proposed a second restriction on the use of lead for outdoor shooting outside of wetlands and lead fishing weights and lures, in all EU countries.

The UK has already banned lead fishing weights and WWT's research has shown the positive impact that this has had on Mute Swans. There are partial restrictions on lead ammunition currently in place in the UK but, like in mainland Europe, the poisoning continues since wetland species continue to ingest lead shot when feeding in non-wetland areas where it is mostly legally permitted and compliance with regulations is poor.

The UK's Health & Safety Executive, as part of the UK REACH process, has recently recommended further restrictions on the use of lead ammunition over all types of landscape in England, Scotland and Wales. WWT will continue pushing for a move away from lead ammunition in order to ensure healthier wetlands globally.

Dr Newth added:

“This is an important milestone in our campaign to protect and improve wetlands for nature, for wildlife and for people. Further regulations on lead ammunition in the UK and EU will help us to leave the toxic legacy of lead well and truly behind.”

Source:

https://www.wwt.org.uk/news-and-stories/news/protecting-the-worlds-wetlands-milestone-lead-shot-ban-comes-into-force?utm_source=Supporter+newsletter+%289+March+2023%29&utm_campaign=fd70761cd6-EMAIL_CAMPAIGN_2023_03_08_04_58&utm_medium=email&utm_term=0_-fd70761cd6-%5BLIST_EMAIL_ID%5D



Pathways to lead ammunition poisoning (credit: WWT)

Fall 2023 surveillance for Highly Pathogenic Avian Flu in wild birds underway: positive findings are widely distributed (by Bill Moritz, 15th November 2023)

Following the Implementation Plan for Avian Influenza Surveillance in Waterfowl in the United States: Summer 2023 – Spring 2024, fall activities began in September. Between 9/1/23 and 11/3/23, approximately 286 positive cases in wild birds have been identified. Surveillance includes both hunter-harvested birds and recovered mortality/morbidity birds.

Collaborating entities include the U.S. Department of Agriculture (USDA) Animal and Plant Health Inspection Service (APHIS) Wildlife Services (WS) National Wildlife Disease Program (NWDP) and Veterinary Services (VS); the U.S. Department of the Interior (DOI) U.S. Geological Survey (USGS) and U.S. Fish and Wildlife Service (USFWS); and the National Flyway Council. The Implementation Plan supports the collection of biological samples, diagnostic testing, data management, and analysis of data obtained by USDA-APHIS-Wildlife Services (WS), other Federal agencies, State wildlife agencies, Universities, and Tribal cooperators.

Outbreaks of HPAI in commercial and captive flocks have also been detected. Between 9/1/23 and 11/6/23, thirty-one commercial flocks and 24 captive flocks have been identified as infected with HPAI in at least 16 states.

Avian influenza is caused by influenza Type A virus (influenza A). Avian-origin influenza viruses are broadly categorized based on a combination of two groups of proteins on the surface of the influenza A virus: hemagglutinin or “H” proteins, of which there are 16 (H1-H16), and neuraminidase or “N” proteins, of which there are 9 (N1-N9). Many different combinations of “H” and “N” proteins are possible.



Swabbing a Northern Pintail (Photo: U.S. Geological Survey, Public Domain)

Each combination is considered a different subtype, and related viruses within a subtype may be referred to as a lineage. Avian influenza viruses are classified as either “low pathogenic” or “highly pathogenic” based on their genetic features and the severity of the disease they cause in poultry. Most viruses are of low pathogenicity, meaning that they causes no signs or only minor clinical signs of infection in poultry.

The current Highly Pathogenic Avian Flu outbreak began in March 2022. More than 16 million chickens, turkeys, ducks and other birds in Iowa — and 63 million birds nationally — in affected flocks have been destroyed in an attempt to contain the disease, according to the U.S. Department of Agriculture data.

Source: <https://wildlifemanagement.institute/outdoor-news-bulletin/november-2023/fall-2023-surveillance-highly-pathogenic-avian-flu-wild-birds>

Blackfoot Challenge Montana Trumpeter Swan Monitoring

(by **Blackfoot Challenge**)

From 2005-2020, 214 Trumpeter Swans were released in the Blackfoot through a partnership between the U.S. Fish and Wildlife Service and the Blackfoot Challenge. Between five and 43 birds were released each year. We released young swans that have been raised in captivity at a special facility and have not yet learned to fly. They spend the summer on the wetland in the Blackfoot where they are released and they bond to the place where they learn to fly, so they are likely to return here in the spring during migration. Each swan is marked with a red and white leg band that has a unique number and letter code so individuals can be identified. Swans that are at least a year old are also fitted with a matching neck collar, which is much easier to read.

Since 2005, there have been over 3,500 sightings of swans reported by biologists and almost 100 additional observers, and at least 35 marked swans have been seen in the watershed in years after their release. Several of these are observed in the watershed each year, and they are nesting and raising their own young here.

Source: <https://blackfootchallenge.org/swan-monitoring/>

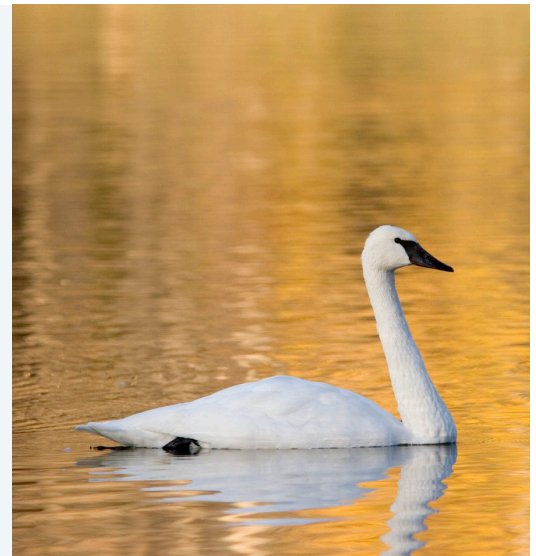


Presentations at the 7th International Swan Symposium and 26th Trumpeter Swan Society Conference

(by **Ricketts Conservation Foundation**)

Videos of presentations at the 7th International Swan Symposium and 26th Trumpeter Swan Society Conference held last October in Jackson, Wyoming, USA should be available soon at the Ricketts Conservation Foundation website:

<https://rickettsconservation.org/project/the-swan-project/>



Tundra Swan (Photo: M. Gocke / Ricketts Conservation Foundation)

Utah Wildlife Board votes to prohibit harvest of Trumpeter Swans

(by **Utah Division of Wildlife Resources**, 9th June 2023)

Salt Lake City - The Utah Wildlife Board approved some changes to upland game hunting and waterfowl hunting - including making it illegal to harvest Trumpeter Swans.

In 2019, swan regulations changed to expand the hunting boundaries in Box Elder County and to increase the total number of swan permits offered in Utah to allow for additional hunting opportunities. Since that change, the Utah Division of Wildlife Resources has had to close the swan hunting season early for the last four years, due to the federal quota of 20 Trumpeter Swans being met.

Utah is one of only nine states in the U.S. that allows hunting for swans. Due to the low population size of Trumpeter Swans in the Greater Yellowstone area, the U.S. Fish and Wildlife Service sets the annual harvest quota (currently 20 birds) for the number of Trumpeter Swans that can be harvested in Utah.

In an effort to prevent the swan hunting season from having to close early, the Utah Wildlife Board voted to prohibit the harvest of Trumpeter Swans in Utah. Only Tundra Swan hunting permits will be issued to hunters, and it will be illegal to harvest a Trumpeter Swan. Hunters will still be required to check in any harvested swans at a DWR office. Trumpeter Swans will be seized, and the hunter may face a citation.

In December 2021, the Utah Wildlife Board voted to mandate a waiting period for anyone who harvests a Trumpeter Swan. The waiting period prevents hunters from obtaining another swan permit in Utah for five years, for adults, and for three years, for youth. That waiting period is still in effect, in addition to the new rule approved Thursday.

"We have seen a higher number of Trumpeter Swans harvested the last four years because there are more migrating through Utah than in previous years," Utah Division of Wildlife Resources Migratory Game Bird Program Coordinator Jason Jones said. "We are hopeful that this change will prevent hunting opportunities from being taken away due to the early-season closures."

Source: <https://wildlife.utah.gov/news/utah-wildlife-news/1691-wildlife-board-prohibits-trumpeter-swan-harvest-and-approves-changes-to-upland-game-and-turkey-hunting.html>



Changes to waterfowl and swan hunting (Photo: Utah Division of Wildlife Resources)

New Iceland Whooper Swan colour-marking effort

(by Kane Brides, Sverrir Thorstensen, Scott Petrek and Stephen Vickers)

The Iceland Whooper Swan has been intensively studied through a long-term life history study undertaken by the WWT in collaboration with Sverrir Thorstensen, Ólafur Einarsson, the Icelandic Institute for Natural History (IINH) and the Irish Whooper Swan Study Group. The study commenced in 1989 which saw several thousand birds captured and ringed both on the breeding/summering grounds in Iceland and also at wintering sites in Britain and Ireland.

In 2021 the WWT announced its termination in the involvement of the study to prioritise work effort in other areas of wetland conservation. This, twinned with a reduction in catching effort in Iceland, Britain and Ireland in recent years, has seen fewer colour-marked Whooper Swans in the population.

In an attempt to bolster the numbers of Whoopers colour-marked and to continue collecting data to contribute to the demographic monitoring of the population, the Waterbird Colour-marking Group have teamed up with Sverrir Thorstensen to continue catching and colour-marking birds in Iceland. The group's activities sees targeted catch effort taking place at non-breeding moulting flocks in northern Iceland along with the capture of family groups consisting of breeding pairs and their cygnets.

August 2023 saw the first fieldwork expedition of the new colour-marking study with Kane Brides, Scott Petrek



Moulting Whooper Swans caught for colour-marking in Iceland, August 2023 (Photo: K. Brides)

and Stephen Vickers travelling to Iceland to work with Sverrir Thorstensen. Overall, 480 Whooper Swans were caught of which 42 were recaptures (from previous catches) and 438 were new birds which have been ringed with white leg rings (black lettering). Sightings of birds carrying white colour-rings should be reported to www.waterbirdcolourmarking.org (report a bird page), where on submission of sightings to this platform, observers are instantly provided with life histories and a map of movements.



Whooper Swan family in Iceland (Photo: S. Dench)



John Edgar Cornely, Ph.D. (1946 – 2023)

by Gary Ivey

Loss of a Trumpeter Champion

John Edgar Cornely, 77, of Larkspur, Colorado, passed away on 13th October, 2023, after a long battle with cancer. He was born on 26th March, 1946, in Beloit, Kansas. In 1968, he received a B.A. in Biology from Hastings College and then served 4 years in the U.S. Air Force. He earned an M.Sc. in Zoology on woodrats at Texas Tech University, followed by a Ph.D. in Zoology from Northern Arizona University, studying the ecology of coyotes in and around Joshua Tree National Monument.

Although John was a mammologist by education, he became a waterfowl biologist in 1978 when he accepted the job as Supervisory Refuge Biologist at Malheur National Wildlife Refuge in eastern Oregon. That is also where he became a Trumpeter Swan enthusiast, as his duties included overseeing the restoration flock at Malheur. He left Malheur in 1981 to work at Finley National Wildlife Refuge, another waterfowl-focused job, but Malheur never left him. He continued to be involved in Malheur issues throughout his life.

John was a long-term member of The Trumpeter Swan Society (TTSS), joining in the early 1980s. After he retired from the U.S. Fish and Wildlife Service (Service), he served as the Executive Director from 2007-2013. Before that, John served on the Society board from 1993-1999. He continued working with TTSS as the Senior Conservation Advisor and on the Conservation Committee after retiring as Executive Director.

In 1988, he transferred to Denver to become Migratory Bird Coordinator in the Service's Mountain and Prairie Region where he led its migratory game and nongame bird programs. Greater Yellowstone Rocky Mountain Population Trumpeter Swans in that region were under his purview and he was a leader in working towards their conservation. He also was involved with issues concerning restoration of the High Plains flock located in South Dakota and Nebraska.

John was instrumental in the development of plans for four North American Waterfowl Management Plan Joint Ventures and represented the Service in the Pacific and Central Flyways. He was a major participant in developing and updating past and existing Flyway Management Plans for Trumpeter and Tundra Swan populations across all four Flyways. John was also an avid historian of conservation matters, recording and archiving oral histories of the early years of the North American Waterfowl Management Plan.

In 2014, Dr. Cornely was awarded The Trumpeter Swan Society's prestigious *George Melendez Wright Trumpeter Swan Conservation Award* to recognize his lifetime contributions to Trumpeter Swan conservation. A highly respected colleague, John has been integral in the evolution, growth, and success of The Trumpeter Swan Society.

He will be greatly missed.



Yuri Nikolaevich Mineev (1937 – 2023)

by Anna Belousova

The eminent Russian ornithologist – Yuri Nikolaevich Mineev - passed away on 13th December 2023 at the age of 86 years. Yuri was based at the Institute of Zoology of the Komi Republic, where he was Doctor of Biology, Chief Researcher at the Animal Ecology Department, and Honorary Scientist of the Komi Republic.

He undertook extensive research on a range of waterbird species across European Arctic Russia, and his 1989 paper entitled "Distribution and numbers of Bewick's Swans

Cygnus bewickii in the European Northeast of the USSR", published in the proceedings of the Third International Swan Symposium held at Oxford, UK (Wildfowl Special Supplement No. 1: 62-67) remains an important reference to this day.

Yuri Nikolaevich is an amazing example of a scientist who combined the unique experience of long-term field research with a broad and deep analysis and understanding of the natural changes. The length of his

expedition routes, the incredible amount of data collected and analyzed were amazing. Yuri Nikolaevich was a very careful and sincere person - everyone who communicated at least once with him respected and trusted him.

I have always considered Yuri Nikolaevich one of my teachers, because in 1993, on an expedition to Lake Khabuika (in the Nenets Autonomous Okrug), it was he who revealed to me his methods for surveying birds and data analyses. For Yuri Nikolaevich everything was important - all nests encountered must be described, the nest's material and biotope studied, the sizes of the nest and eggs measured. All these studies resulted in many papers and books. And what an outstanding cook he was! No one will ever be able to cook such delicious dishes in the field, alas.

I know that Yuri Nikolaevich's favorite song was "There is only a moment between the past and the future" and, indeed, the life of each of us is a moment, but what is important is what a person brings to this world during this short moment of his stay on Earth. Yuri Nikolaevich illuminated the lives of so many people, set an example of absolute scientific honesty, purity and nobility and became a friend and a teacher.

Yuri Nikolaevich was a remarkable natural historian, with great insight into the swans' distribution, behaviour and breeding ecology. His studies of waterbirds in the European

Russian Arctic have provided invaluable information on their status and distribution in the late 20th to early 21st century, which will continue to be an important resource into the future.

Our thoughts and condolences go to Oleg and the rest of Yuri Nikolaevich's family at this time



Ruth Elizabeth Shea (1952 – 2023)

by **Susan Patla** and **Gary Ivey**

The Trumpeter Swan lost one of its most ardent and energetic champions with the sudden passing of Ruth Shea on 25th February 2023. Known by many as the "Swan Lady," and working as a scientist, historian, and conservationist, she inspired and taught many over the last 40 years. The full extent of her knowledge, activism and influence is difficult to grasp as her energy seemed as boundless as the many people she interacted with over the decades. One never came away from a conversation with Ruth without new ideas and renewed optimism.

Ruth was born on 14th May, 1952. A biology major at Muhlenberg College, Ruth transferred to the University of Montana at Bozeman, where she earned her BSc. degree in Wildlife Management. Ruth completed her Master's thesis on "*The Ecology of Trumpeter Swan in Yellowstone National Park and Vicinity*" at the University of Montana, Missoula, in 1979. This was only the first step in her life-long work dedicated to the study and conservation of Trumpeters in the Greater Yellowstone region and beyond.

In 1979, Ruth attended her first meeting of The Trumpeter Swan Society (TTSS) and began a long association with this nonprofit organisation. TTSS, based in Plymouth, MN, was founded in 1968 by a small group of dedicated people to assure the vitality and welfare of wild Trumpeter Swans throughout North America. Ruth joined the TTSS board of directors in 1986-1988 and again from 1993-

1998, serving as board president during 1997-1998. In 1999, she was hired as TTSS's first Executive Director and served in the role until 2007. In 2007, she returned to the board as Treasurer until 2014. She also worked for many years as the TTSS's Greater Yellowstone Trumpeter Swan Coordinator. Through TTSS, Ruth met and worked with swan biologists and advocates throughout the region, country and world.

From the 1970s onwards, Ruth worked for several different agencies including U.S. Fish and Wildlife Service (USFWS), U.S. National Park Service, and the Idaho Department of Fish and Game. She also served as Affiliate Faculty for the Department of Biological Sciences at Idaho State University, Pocatello, ID. A valuable contribution resulting from her passion for compiling information was the publication of the "*The History, Ecology and Management of the Rocky Mountain Population of Trumpeter Swans (1931-86)*". Ruth worked on this, along with co-authors E.O. Garton and I. J. Ball, while employed for the USFWS Cooperative Research Unit, Missoula, MT 1984-86. The first edition came out in August 1987, and the second edition (July 2013) was published as Volume 34 (1) of *North American Swans*, a bulletin of The Trumpeter Swan Society. This 278-page volume, consisting of chapters by various authors, summarizes data and management actions for RMP Trumpeter

Swans which would have remained scattered otherwise in a bewildering variety of unpublished agency reports as well as published papers. It remains available online at Barnes and Noble: <https://www.barnesandnoble.com/w/the-history-ecology-and-management-of-the-rocky-mountain-population-of-trumpeter-swans-edward-o-garton/1134663859?ean=9781484867211>

Ruth's work on swan conservation issues ranged widely and included field work, countless meetings, long library investigations, and many public presentations. During the 1990s, she and her late husband, Rod Drewien, were lead players in major efforts to change the limited wintering distribution of RMP to points south and east of the traditional Henry's Fork of the Snake River. This required capturing swans by airboat in sub-zero conditions and arranging translocations of hundreds of birds. The project was considered a failure at first as most swans did not continue to winter where they were originally moved. However, over time, it proved very successful, as significant numbers of RMP trumpeters now winter in a much larger area including southern Idaho, Oregon, and Utah.

An important part of Ruth's work as a representative of TTSS was to track Pacific Flyway issues and help with development of Flyway Management Plans which drove conservation actions by state and federal agencies. She worked on swan hunting issues as well as advising agencies and NGOs on Trumpeter Swan management and restoration programs. She also assisted in planning several TTSS conferences and in editing conference proceedings. One important focus of her work was to understand and promote the key role that regional National Wildlife Refuges play in Trumpeter Swan restoration in an era of ever declining refuge budgets.

Ruth was very interested in the history of Red Rock Lakes National Wildlife Refuge in Montana. She discovered the key role that George Melendez Wright, the first Wildlife Chief of the National Park Service, had in establishing this



refuge in the Centennial Valley of Montana to protect swans that left the safety of Yellowstone. After her research which included contacting his living relatives, she led an effort to establish the "George Melendez Wright Conservation Award" as the highest award to be presented by the Board of the Society.

Ruth was an active and engaged member of the Greater Yellowstone Trumpeter Swan Working Group (GYTSWG) that began meeting annually in 1997 and continues to the present day. Comprised of state and federal wildlife biologists, NGOs and interested citizens from around the region, the GWTSWG compiles and reviews swan productivity data, shares results of ongoing management activities, and provides recommendations on releases of captive-raised swans to the Pacific Flyway. In addition to her dedication to record keeping, she provided an unmatched historic perspective on swan biology and management. Ruth's hand was often the first to shoot up after any talk. She would ask questions or provide comments that often led to greater understanding for us all.

After leaving TTSS, Ruth started a new group, the Northern Rockies Trumpeter Swan Stewards (NRTSS) to help keep regional nesting populations secure, based out of the Northern Rockies Conservation Cooperative (Jackson, WY). Ruth planned to provide the upcoming new generation of swan stewards with greater knowledge of swan ecology and the tools to conserve or improve swan habitat. She believed strongly that the continued restoration of Trumpeter Swans in the Greater Yellowstone and in the western states would depend in the future on long lasting private-public partnerships. Although Trumpeter Swan as a species is now considered secure in North America, a real conservation success story, the regional population she understood remains vulnerable.

In October 2023, Princeton University Press published *Yellowstone's Birds*. Ruth was one of the co-authors for the chapter on Trumpeter Swans. Doug Smith, retired park biologist, and a dear friend and colleague of Ruth's provided these final thoughts:

"Trumpeters had no greater friend and her passion seeped through on every conversation we had - through the phone and gushing in person. She taught and schooled me like no other and I cherish our conversations. And at the heart of her love was Yellowstone swans - she told me her love formed there watching them alone at Grebe Lake as a young woman. I never forgot that and had that thought in my mind whenever I did anything with swans in the park. I refer to her writings frequently and still learn from them."

"She had many unfinished plans and ideas to execute. Her passing is tragic and too soon. And swans have lost one of their most important voices. This is a void that will be hard to fill. For her, we all need to work harder for the swans. She would want that and it will respect her legacy"



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Bewick's Swan (Photo: J. Bull)