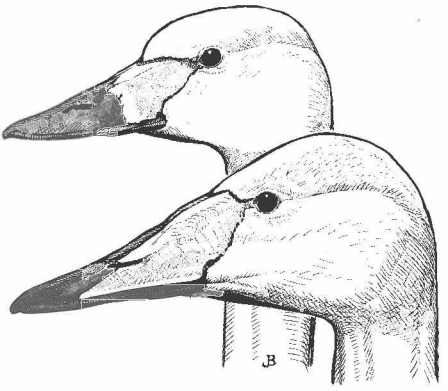
# Bewick's and Whooper Swans *Cygnus columbianus bewickii* and *C. cygnus*: the 1993-94 season



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The first migratory swans to reach a Wildfowl & Wetlands Centre at the start of the 1993-94 winter were eight Whoopers that arrived at Martin Mere on 26 September. One of these - a bird originally ringed at Caerlaverock as a cygnet in January 1993 - did not remain long but moved to Welney, where it was next seen on 27 September. The build-up in numbers of Whooper Swans was slow in early October but an influx occurred later in the month as cold northerly winds encouraged a movement of birds from Iceland. The first Bewick's Swan of the winter reached Martin Mere on 13 October, ten were recorded at Welney on 15 October, seven at Slimbridge on 18 October and a single bird at Arundel on 20 October. The Arundel bird had been ringed in Russia in 1992 and was returning for its second consecutive winter to the Arun valley.

The upward trend in the numbers of Whooper Swans wintering at WWT Centres continued during the 1993-94 season. A record count of 856 Whooper Swans, seen on the Welney reserve during the 1992-93 winter, was exceeded by a total of 924 at the site on 6 February 1994. The record for the whole of the Ouse Washes was also broken when 986 were present on 22 February, of which 723 were at Welney. A total of 650 Whooper Swans at Martin Mere on 18 February fell just short of the site record of 666 seen during the 1992-93 winter. Bewick's Swan numbers, on the other hand, were lower than in recent winters. The highest count on the East Anglian Washes during the season was 4804 birds on 31 January, of which 3514 were on the Ouse Washes and 1290 on the adjacent Nene Washes. This gives some cause for concern since the Ouse Washes is the single most important wintering area for the species in western Europe and, even allowing for a transfer to the Nene Washes, the count represented a drop of several hundred birds from the 5100 recorded at the site in February 1993. Similarly, at Martin Mere the peak count of 582 Bewick's Swans on 23 January (including 58 on the Ribble estuary) was the lowest peak winter count since the 1987-88 winter, whilst the peak count of 313 at Slimbridge on 27 January was the lowest peak count since 1988-89. Poor breeding success for the Bewick's Swan population in the last three years may account for some of this decline, since there is no immediate evidence to suggest that a higher proportion of the population is remaining in the Netherlands over winter. The next international Bewick's Swan census, scheduled for the 1994-95 winter, should confirm the species' current status in northwest Europe.

The proportion of Bewick's Swan cygnets recorded at Welney and Martin Mere indicated that 1993 was another poor breeding season with some 7-10% juveniles present in the population, well below the average of 15-16% cygnets recorded during the 1970s and 1980s. The proportion of cygnets at Slimbridge was higher, however; 14.4% of all Bewick's Swans recorded at the site during the winter were juveniles, suggesting a bias in the distribution of family parties throughout the wintering grounds. The Whooper Swans fared better, with estimates ranging from 11-14% juveniles in the herds at Martin Mere, Caerlaverock and Welney.



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**Review of the season at WWT Centres**

*Slimbridge*

The first seven Bewick's Swans arrived at Slimbridge on 18 October, an average date, and included a bird named Saturday who had been ringed at the site as a cygnet during the 1978-79 winter. Thereafter numbers built up slowly, reaching 29 by 25 October. The main movement of swans to Slimbridge occurred during November with numbers rising from 36 on 1 November, to 65 on 16 November and 127 on 29 November. Amongst these arrivals were Pedro and Weaver with their family of three cygnets. Pedro used to be a regular visitor to Welney before he paired with Weaver, who has shown particular allegiance to Slimbridge.

Numbers rose further in December, reaching 145 on 2 December, but then declined as the swans moved *en masse* to feed and roost on floodwater at Walmore Common on the northern side of the River Severn. Up to 93 Bewick's Swans were recorded at Walmore on 16 December and numbers at Slimbridge remained at around 120 for much of the month. Sub-zero temperatures towards the end of December resulted in the swans returning to Slimbridge for a few days, since the floodwater at Walmore was now frozen, and counts at Slimbridge reached a total of 222 by midday on 26 December. The swans soon returned to Walmore, however, following a rapid thaw, and 122 present on 28 December proved to be the highest count of the winter at that site. Around 200 swans remained at Slimbridge in the New Year since the birds departing for Walmore were replaced by new arrivals in the area. Amongst these late arrivals were several family groups including Casino with her mate Punter and three cygnets. Now in her twenty-third year, Casino was the oldest swan to return to Slimbridge during the winter. Three other female swans - Prongy, Flue and Lyre - have each reached 26 years of age, but none of these was observed during the 1993-94 season.

The influx of swans to Slimbridge continued during January due both to a period of freezing weather conditions on the continent encouraging the birds to move further west, and to the slow return of swans from Walmore as the flood levels diminished. Numbers at Slimbridge rose from 213 on 10 January, to 253 on 19 January and to 313 on 27 January. The latter count was the highest, slightly below the maximum count for the previous winter of 329 swans recorded on 4 February 1993.

No swans were seen at Walmore Common after 27 January, probably due to the absence of flood-water. Most of the swans which had been there were subsequently identified at Slimbridge but others moved elsewhere, including a small flock which appeared near Upton-on-Severn. Numbers at Slimbridge dropped to 224 on 2 February, then remained at around 230 for most of the month. Mass departures occurred earlier than in recent winters, however, with numbers falling rapidly to 199 on 28 February, 80 on 3 March, 35 on 14 March and 7 on 21 March.

Whooper Swans are rare visitors to Slimbridge so the adult bird that arrived on 27 February and then remained with the Bewick's Swans for the rest of March was most welcome. This bird often joined two captive Whooper Swans in the collection and was remarkably tame.

A total of 368 individual Bewick's Swans was recorded at Slimbridge during the winter, indicating that turn-over at the site was lower than usual. Some 53 (14.4%) of the birds were juveniles, which suggests that 1993 was a fairly poor breeding season, but it was still an improvement on 1992 which was the worst breeding season on record. The mean brood size was 2.12 cygnets per family which was also higher than the 1.88 cygnets per family recorded in 1992-93. The proportion of new birds at the site was an average figure; 173 (54.9%) of the adults and yearlings had been recorded at Slimbridge in previous years.

Swans that had been ringed elsewhere but which were identified at Slimbridge during the course of the winter included Pedro from Welney, two birds originally marked at Martin Mere, and four birds that had been fitted with neck-collars in Russia. These included one bird (148P) which later moved to Welney and a second (409P) which had been seen at Martin Mere earlier in the winter. A further 50 swans ringed at Slimbridge were not seen at the site during 1993-94 but were reported elsewhere. These included one at Walmore Common, 12 at Welney, five at Martin Mere, two at other sites in England, three in Ireland, 23 in The Netherlands, one in Germany, one in Denmark and two in Russia. One of the swans observed in the Netherlands, named

Cry, is now in her twenty-fourth year and is the oldest Bewick's Swan known to be alive.

*Welney*

The first arrival of migratory swans occurred on 27 September when a pair of Whooper Swans was observed feeding on the shallow floods of the Washes. This pair had been recorded at Martin Mere on the previous day. There were no further arrivals until 9 October when four more Whooper Swans landed on the reserve. New Whooper Swans reached the site almost daily thereafter, with 126 present on 17 October and 320 by the end of the month. Bewick's Swans made their first appearance on 15 October, when seven individuals were seen, and numbers increased rapidly reaching 116 on 20 October and 1122 on 30 October.

During October, the swans fed mainly on stubble fields that had been left as set-aside areas. They also fed on the remains of the sugar beet crop, since the fields had not been ploughed due to the unusually wet autumn. The sugar beet provided a useful food supply for the swans throughout the winter and on occasion mixed flocks of Whooper and Bewick's Swans, numbering over 2000 birds, gathered on a single beet field close to the reserve.

Heavy rainfall caused extensive flooding on the Washes from mid-October until the end of February, similar to the bank-to-bank flooding also experienced in the area in 1992-93. The spits and islands used by the swans as roosting and preening areas in drier winters lay under several feet of water, and flood depths approached record levels. Many of the Bewick's Swans, therefore, transferred to the adjacent Nene Washes to roost, and this latter site recorded its highest ever counts for the species during the winter. The swans slowly returned to the Ouse Washes from the Nene towards the end of February as flood levels finally began to subside.

Numbers of both Bewick's and Whooper Swans remained fairly low on the Welney reserve during the first half of the winter. A total of 2864 Bewick's Swans was counted on 28 November but numbers then fell to 2593 on 11 December. Whooper Swan numbers continued to rise slowly reaching 460 on 14 November and 560 on 11 December. The proportion of juveniles in the flocks of both species was low. Of 977 Bewick's Swans whose ages were determined on 16 January, 71 (7.3%) were cygnets. Whooper Swans fared a little better, with 47 (13.4%) cygnets amongst 350 birds whose ages were determined on 2 December.

Counts of both species on the reserve increased in the New Year. Whooper Swan numbers rose to 775 on 30 January and to 924 on 6 February. The latter count was a new record for Welney and indeed for the Ouse Washes as a whole. Numbers continued to increase in the area during February however, and 986 Whooper Swans were present on the Ouse Washes on 22 February, of which 723 birds were at Welney. This is the largest concentration of Whoopers ever recorded in England and Wales. Bewick's Swan numbers on the reserve rose to 3210 on 3 January, the highest count of the winter for the site. Numbers in the surrounding area continued to rise, however, as a period of very cold weather on the continent encouraged birds to move westwards. A total of 4804 Bewick's Swans was counted in the region on 31 January of which 3514 were on the Ouse Washes and 1290 on the nearby Nene Washes.

There were fewer swan deaths resulting from collision with power lines in the Ouse Washes area during the 1993-94 winter than in recent years. This may be due to one or a combination of factors, including fitting bird deflectors to the local supply lines, to the swans spending more time feeding on fields some distance away from the National Grid lines, and to the comparatively fog-free conditions. A scheme to mark the earth wire of the National Grid line with large deflectors, to make it more visible to flying swans, is planned to begin in May 1994.

The bulk of the Bewick's Swans remained at Welney until the end of February, with 2602 counted on the reserve on 28 February. A mass exodus occurred during the first two weeks of March, however, including one large flock which was heard leaving under clear skies at midnight on 5 March. Numbers continued to diminish rapidly to 536 on 9 March and 136 on 13 March. With a shorter distance to travel to their breeding grounds in Iceland, the Whooper Swans remained at Welney in large numbers well into March; 800 were still present on 20 March.

A total of 116 Bewick's Swans was identified by ring number in the Welney area during the course of the winter; 11 were origi-

nally ringed at Welney, 21 at Slimbridge, 28 at Martin Mere, one at Caerlaverock, 16 in The Netherlands, two were ringed on spring migration in Estonia and 37 were ringed in Russia. A further three Bewick's Swans ringed at Welney were observed wintering elsewhere - Pedro at Slimbridge, Airport at Martin Mere and Snailwell in The Netherlands. A total of 79 Whooper Swans was identified by ring number at Welney during the winter including six which had been ringed at Welney in previous winters, four ringed at Martin Mere, 12 ringed at Caerlaverock and 57 marked in Iceland.

*Martin Mere*

The first migratory swans of the winter, three Whooper Swans, arrived at Martin Mere on 26 September, an early date, and included a ringed bird (JXN). They did not stay, however, and two of these birds appeared at Welney the following day. The next Whooper Swans arrived on 7 October, and numbers built-up more quickly than in previous winters with 137 being present on 15 October, 428 on 22 October and 483 by the end of the month. The first Bewick's Swan arrived on 13 October, an early date; there were 22 by 22 October and 251 (including ten juveniles) by the end of the month. Counting the swans roosting on the reserve was difficult since some left before first light and returned after dusk. One Bewick's Swan, marked with a neck-collar in Russia in 1992, arrived on 30 October but remained for only eleven days and was subsequently observed in Northern Ireland. The same bird returned to Martin Mere on 15 January, however, and stayed for another week.

Whooper Swan numbers rose steadily during November, reaching 624 on 22 November. During the day some of these birds flew to fields adjacent to the reserve where they fed together with Bewick's Swans; others used fields near the Ribble estuary. Most of the fields were barley stubble, with swans feeding both on grain left after harvesting and on sprouting cereal shoots. They also fed on the remains of the potato and carrot harvests, on re-sown grass fields and on newly-sown winter wheat.

Bewick's Swan numbers rose slowly reaching 240 on 12 November, 275 on 19 November, and 399 were present by the end of the month. Birds continued arriving during December, with numbers reaching 469 on 21 December. By the end of month the two species had largely separated into discrete flocks. The majority of the Bewick's Swans fed on sprouting stubble fields and harvested potato fields near the Ribble estuary, whilst the Whooper Swans stayed closer to the reserve feeding on grain distributed every morning and evening on the mere itself, and on resown grass and harvested potatoes on adjacent fields during the day. It has long been suspected that some Bewick's Swans remain on the Ribble estuary overnight rather than returning to Martin Mere to roost; this was confirmed on 26 December when 92 birds were observed roosting on the River Ribble. Bewick's Swans were also observed roosting on the River Douglas, a tributary of the Ribble, later in the season.

The arrival at Martin Mere of 50 tons of waste potatoes, donated by local farmers in the New Year, altered the behaviour of both species of swan. The Bewick's Swans abandoned the fields near the Ribble and the majority remained on the reserve to feed on potatoes during the day, where they could be observed at close quarters from the hides. Smaller numbers of Bewick's Swans also joined a large flock of Whoopers feeding nearby on a harvested potato field. A group of around 20 Bewick's Swans used a field at Marshside near Southport at the end of January and early February. This field had been a favourite haunt of the species in the 1960s and early 1970s, and the swans may have been attracted to it this winter by extensive flooding due to unusually heavy rainfall.

The number of Whooper Swans rose slightly in the New Year reaching 630 on 23 January, 651 on 3 February (including six birds on the Ribble) and 655 on 18 February (including five birds on the Ribble). The latter count proved to be the highest of the winter and was only slightly below the reserve record of 666 recorded in December 1992. Amongst the arrivals was the Whooper Swan named Vanda, who was nursed back to health after breaking her leg at Martin Mere in January 1991, and who now has spent four successive winters at the site. Of 589 Whooper Swans whose ages were determined on 11 January, 104 (17.7%) were cygnets. The Bewick's Swans were difficult to count accurately at roost, due to their tendency to fly to the fields before first light and to return after dark but,

on 23 January, 524 were present on the reserve during the day and a further 58 were on the Ribble estuary. The combined total of 582 birds was the highest of the winter, but was well below peak counts made in the area in recent years. Of 458 Bewick's Swans whose ages were checked on 15 January, 45 (9.8%) were cygnets, with a mean brood size of 2.3 cygnets per family. During the latter part of January the swans spent most of their time feeding on grass fields on the reserve, such as Outer Vinson's and Plover Field.

The Bewick's Swans at Martin Mere started their spring migration very early this season. On 3 February there were 284 Bewick's Swans in the area, but numbers then declined to 230 on 8 February and to 86 on 10 February. Just five Bewick's remained on the reserve on 1 March, although these were joined by 14 individuals seen approaching at high altitude from the northeast during mid-morning. These swans soon moved on, however, and only a single bird remained until 10 March. A flock of Bewick's Swans that roosted on the River Douglas and fed on the adjacent salt marsh stayed slightly later, with 49 present on 3 March and 11 on 5 March, finally departing by 10 March. Some of the ringed Bewick's Swans observed at Martin Mere during the winter were subsequently observed at Welney and at sites in the Netherlands and Denmark, as they began their migration towards the breeding grounds in arctic Russia. Some 575 Whooper Swans were still present on 3 March but they, too, started moving away, so that counts at Martin Mere decreased gradually to 545 on 8 March and to 510 on 17 March, a high number for so late in the season.

A total of 86 Whooper Swans was identified by ring number during the course of the winter, including 29 originally ringed in Iceland, ten ringed at Caerlaverock, one ringed at Welney and 46 ringed at Martin Mere. Prior to their arrival at Martin Mere, eight of these swans had been observed in the north of Ireland and three in Scotland (one in Caithness and two at Caerlaverock), giving some indication of the migratory routes taken by these birds. A further 101 Whooper Swans were ringed for the first time at Martin Mere during the winter. Eleven Whooper Swans that had been ringed at Martin Mere in previous winters, but not seen at the site during 1993-94, were reported elsewhere during the season. These included two nearby in Cumbria, one at Caerlaverock, three at Welney, four in Ireland and one in Iceland. Some 135 Bewick's Swans were also identified by ring number at Martin Mere during the winter. Of these 116 had been ringed at the site in previous years (including three of the seven birds ringed in January 1987), eight at Slimbridge, two at Welney and nine in Russia. A further three Bewick's Swans were newly ringed at Martin Mere during the winter. Eighty-one Bewick's Swans ringed at Martin Mere in previous winters, but not seen at the site during 1993-94, were reported elsewhere during the season. These included 20 on the Ouse and Nene Washes, one at Slimbridge, six at other sites in England, one in Scotland, seven in Ireland, 38 in the Netherlands, three in Germany, four in Denmark and one in Russia.

*Caerlaverock*

The first Whooper Swan of the winter arrived at Eastpark Farm, Caerlaverock, on 28 September where it joined an injured bird that had spent the summer on the reserve. Only ten birds were present on 7 October but there was a large influx mid-month, with numbers rising to 71 on 14 October, and to a minimum of 129 birds on 24 October. The birds were very mobile in the area during this period, feeding at a number of different field sites away from the reserve, and sometimes roosting on the nearby River Lochar. Unusually heavy rainfall early in the winter had caused flooding on the surrounding fields and the swans dispersed widely to feed on these floods, often roosting on adjacent pools such as Cowan's Pond. Roost counts at Eastpark, therefore, varied from day to day throughout the winter. Numbers continued to increase in November, with the roost count reaching 143 on 15 November, but more typically only around one hundred Whoopers roosted on the ponds at Eastpark every night.

There was a further build-up of Whooper Swans in the area during December, with 157 present on 6 December and 163 on 26 December, including 24 (14.7%) cygnets. Towards the end of December, part of the flock began feeding on an oilseed rape field on a nearby farm at Newfield, which attracted large numbers of swans until the end of January; over 150 birds were present

on some days. A further 15-20 swans also frequented a field on Thwaite Farm near Ruthwell. On clear nights the swans would desert the Folly Pond roost to feed on the rape under moonlight, often returning to the pond only to feed on the grain distributed at midday.

Numbers in the Caerlaverock area continued to rise during January and 174 swans were counted on 19 January, including 160 nearby on Newman's Pond, and just 14 at Eastpark. The swans returned to Eastpark Farm in larger numbers at the end of January; 149 were present on 28 January and around 150 were seen during the first week of February. Swans continued to leave the reserve during the day, however, to feed on adjacent farms, including 43 at Gullyhill Farm on 11 February. Cold weather in mid-February caused more birds to use the reserve, with counts of 162 on 15 February and 175 on 18 February, the highest count of the winter. Around 140 were present on most days towards the end of the month, and numbers diminished further to 138 on 5 March. There was a slight increase, to 151, on 10 March as some birds returned to the reserve prior to departure for their Icelandic breeding grounds. On 26 March, 120 Whooper Swans were still present.

Of the 138 ringed Whooper Swans observed at Caerlaverock in the 1993-94 season, only 11 had been ringed at other sites. Of these, four had been ringed at Martin Mere and the remainder in Iceland. A further 34 birds were ringed for the first time at Caerlaverock during the winter. Forty-two Whooper Swans caught at Caerlaverock in previous years, but not seen at the site during 1993-94, were reported elsewhere. These included two at flocks nearby in Dumfries, nine elsewhere in Scotland, one in Northumberland, five at Martin Mere, ten at Welney, one in Wales and 14 in Ireland. Bewick's Swans now only visit Caerlaverock in very small numbers, so it was pleasing that two ringed birds were observed during the season. One of these was from Martin Mere and the second had been ringed at Caerlaverock in 1990.

*Arundel*

The Arun valley is a traditional wintering site for Bewick's Swans, with the swans spending most of their time on the Pulborough Brooks section of the valley. They do visit pools in the Trust's waterfowl gardens, however, and also use the wild area at Arundel during the course of the winter. The first Bewick's Swan to arrive at Arundel this winter had been marked with a neck-collar (109P) in Russia in 1992. It landed on the main pool on 20 October and remained for its second consecutive winter in the area. Small numbers of Bewick's Swans roosted on the reserve in December, but dispersed during the period of exceptionally deep and extensive flooding during the first half of January. They returned as the floods receded towards the end of the month and up to 46 birds roosted on the reserve for most of February.

**International research projects**

*Iceland*

Surveys of clutch size and fledging success of Whooper Swans nesting in the two main study areas (Skagafjordur in northern Iceland and Jokuldalsheidi in eastern Iceland) were made for the sixth consecutive year. Birds breeding at the Skagafjordur lowlands seem to have had a good breeding season, with a mean clutch size of 4.5 eggs in spring and mean brood size of 3.8 cygnets in summer. Moreover, comparatively dry conditions in spring resulted in many more pairs than usual nesting in the lowlands, apparently due to the greater availability of potential nest sites which had been under water in earlier years. The pairs nesting in the highlands at Jokuldalsheidi were less successful, however, with a mean brood size of only 2.7 cygnets in summer.

A new project investigating the mechanics and aerodynamics of flight in swans was initiated in 1993. Fieldwork will concentrate on the migration of Whooper Swans between Iceland and the British Isles. Transmitters will be attached to selected adults in Iceland and their movements tracked by satellite until the arrival of the birds in the wintering range. This project should tell us a great deal about the timing and speed of this impressive journey which, according to current scientific theory, lies near the mechanical limits of flight.

*Russia*

The collaborative study of the breeding ecology of Bewick's Swans continued for the third successive summer at Khabuicka in the Nenetski State Game Reserve, close to the Pechora Delta in northeast European Russia. A team of scientists from The Wildfowl & Wetlands Trust and the Russian Research Institute of Nature Conservation arrived in late May to find the study site unrecognisable under a blanket covering of snow, in places up to 2 m deep. Seventy five swans were already present, the majority actively defending their territories prior to food and nest-sites becoming available. The late spring meant that nesting was a week later than in 1992. A total of 21 nests was recorded by mid-June, compared with 30 in the same region in 1992. Mean clutch size was also low at 3.1 eggs per nest compared to 4.1 eggs in 1992 and 3.9 eggs in 1991. Together with Russian and Dutch colleagues, observations were made upon mating frequency, aggressive interactions, feeding rates, reactions to potential predators, incubation behaviour and habitat quality.

A second expedition returned to the area in August to record brood size of pairs seen earlier in the season. Arctic Foxes *Alopex lagopus* were scarce this summer and the consequently low predation meant that average brood size in August was very similar to 1992 despite the lower initial clutch size. Some 83 swans in the Khabuicka area were caught and ringed by the team of British, Russian, Dutch and Danish scientists. Resightings of the ringed families during the 1993-94 winter, following their migratory flights from the Russian breeding grounds, will enable us to estimate the mortality rate of the cygnets. The study aims to identify the importance of factors, including habitat, behaviour and climatic variables, thought to influence the reproductive success of the Bewick's Swan population; this, in turn, should provide us with a valuable tool for ensuring its long-term conservation.

A total of 65 different Bewick's Swans, ringed in Russia over the last three summers by the international team, was reported from the British Isles during the winter. These included 37 birds seen at Welney, nine at Martin Mere and four at Slimbridge. Many more have been recorded on the continent, mostly in the Netherlands but also in Germany, Denmark, Sweden, Estonia, Poland and, for the first time, in the Camargue in southern France.

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