

## Whooper Swan *Cygnus cygnus* research programme

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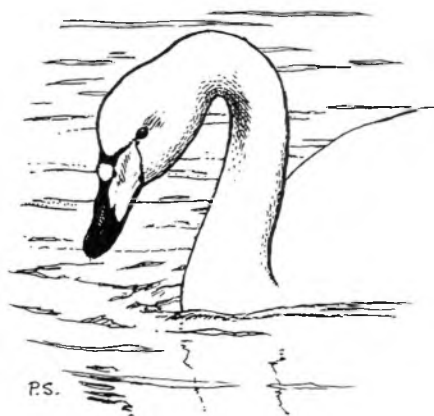
Whilst the resident British Mute Swan *Cygnus olor*, and also the migratory Bewick's Swans *C. columbianus bewickii*, have been the subjects of detailed research projects in recent years, comparatively little is known about the Whooper Swan *C. cygnus* population that breeds in Iceland and winters in the United Kingdom. In 1988, therefore, The Wildfowl Trust organised three expeditions to Iceland to make a preliminary study of Whooper Swans at their nest sites. The main aims were to compare the breeding success of swans nesting in the highlands of Jokuldalur, east Iceland, with those in the more temperate lowlands at Skagafjordur on the north coast; to estimate the proportion of swans contributing to the breeding population at each of the two study areas; and to determine the survival rate for the cygnets at each stage of their development. The last aspect of the study involved ringing the breeding adults and their young so that individuals could be identified in the wintering range and the proportion of the juveniles that survived autumn migration ascertained.

When the first team arrived in Iceland in early May, Icelandic colleagues reported that the spring thaw was later than usual and that the swans were correspondingly behind with their breeding programme. An aerial survey of the lowlands at Skagafjordur on 11 May revealed that of 378 birds in the area only 54 (14%) were nesting, with a further 72 (19%) apparently defending nesting territories. On the ground pairs of swans were found to be still prospecting for nest sites in mid-May. By 26 May the number of birds with clutches at Skagafjordur had risen to 80 (21% of the 378 swans counted), with a mean clutch size of 4.6 eggs per pair. The Jokuldalur area did not thaw until the end of May and a survey of the nests made from 10 to 21 June showed that the highland birds had laid, on average, one egg less than those

in the lowlands, with a mean clutch size of 3.8 eggs ( $n = 47$ , S. Thorisson pers. comm.).

During the August expedition, led by Dr Jeff Black, records made on the number of cygnets present in each family showed that, despite the difference in clutch sizes between the two study areas, the brood sizes were very similar with an average of just over three young per family at both Skagafjordur and Jokuldalur. Weights and measurements taken upon catching the birds suggested that the cygnets were smaller in the highlands, however, and further analysis will show whether the Jokuldalur cygnets were less likely to survive the first winter. A survey of Skagafjordur found that the number of birds in the area had fallen from 378 in May to 195 in August but the proportion of non-breeding swans, observed mainly in large flocks on areas of open water, was similar on both occasions (66.7% in spring and 62.9% in summer). The summer flocks included a number of birds that had attempted but failed to breed, however, and it seems likely that many of the extra swans seen in May were highland breeders waiting for their nest sites to thaw.

A total of 157 swans (including 26 broods) was ringed at Skagafjordur and 208 (including 23 broods) at Jokuldalur. A further 19 (including one individual which was fitted with a radio transmitter) were marked by Icelandic ringers at Alftar Os, west Iceland, and 40 more in the Myvatn area (S. Thorstensen pers. comm.). The swan with the radio transmitter was reported on Colonsay in late October before spending most of the winter on Benbecula, northwest Scotland. One of the swans ringed at Jokuldalur turned up at Nissum Fjord, Denmark. Sightings of ringed birds throughout the British Isles suggested that the swans migrated on a broad front, with birds from Skagafjordur generally moving to Irish sites whilst those



from Jokuldalur in eastern Iceland occurred more frequently in England and Scotland. Individuals from 15 of the 26 ringed lowland broods and just six of the 23 ringed highland broods were reported in Britain or Ireland by the end of the 1988–89 winter.

The study was made with the support of

the University of Iceland and we hope that it will lead to further collaboration on detailed research into the Icelandic-British Whooper Swan population. A return visit to the swans' breeding areas is planned for 1989 to examine aspects of site fidelity of swans marked during the 1988 season.

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