

routes in autumn, we are led to think that the *C. c. bewickii* passing through Lake Inawashiro are probably none other than those which had been bred along the coast of the Arctic Ocean. But it never migrates straight from there to wintering regions in Japan.

There are seasonal differences on the long routes from the Arctic Ocean and there are resting places on the way to control and modulate these differences. On the wintering routes, there are resting places such as the Ob, Yenisei, Lena, Sungari and other rivers, and marshes in northern Manchuria; and, on departure routes, marshes and the Amur and Ussuri Rivers.

In many breeding places, wild swans are seen to establish separate territories, yet we feel it strange that at Lake Inawashiro two separate groups are observed never to join one another. Probably congregation of western and of eastern *C. c. bewickii* causes this separation.

Summary

Wild swans have increased rapidly in the last ten years at Lake Inawashiro, a site where conditions are different from those in other wintering regions. The author reports on the current situation and the relationship between meteorology and migratory behaviour of swans wintering at Lake Inawashiro.

Editorial note

The paper presented to the Symposium had originally been published in 1978 and contained many meteorological maps which cannot be published in the Proceedings. Full texts can be obtained from the author.

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NECK-BANDING OF SWANS IN JAPAN

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In the years 1975 to 1979 inclusive, 91 *Cygnus cygnus cygnus* and 19 *Cygnus columbianus bewickii* were marked in Japan with neck-bands. These included 23 and 10 juveniles respectively. *C. c. cygnus* was marked at six locations in Hokkaido and Honshu, *C. c. bewickii* at Lake Kutcharo. Soviet scientists also marked 43 birds

of this species near Tchaun Bay, USSR. The neck-bands of 16 *C. c. cygnus* dropped off and 11 birds were found dead. For *C. c. bewickii* these figures were 1 and 8.

Resightings were made of 43 *C. c. cygnus* (47%), 7 Japanese-banded *C. c. bewickii* (37%) and 12 Soviet-banded *C. c. bewickii* (28%). Some individuals were resighted in several successive winters.

Editorial note

The paper presented at the Symposium included a number of tables and maps, full texts of which can be obtained from the author.

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TRADITIONAL RETURN OF *CYGNUS COLUMBIANUS COLUMBIANUS* TO WINTERING AREAS IN MARYLAND'S CHESAPEAKE BAY

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Introduction

The continental population of *Cygnus columbianus columbianus* has averaged about 105 000 birds during the 1955 to 1977 period (unpubl data, US Fish and Wildlife Service (USFWS) Migratory Bird Management Office (MBMO), Laurel, Maryland), including about 56 000 swans in the Atlantic Flyway. Other than limited hunting seasons in some western states and subsistence hunting by natives in northern Canada and Alaska, swans have been completely protected from legal hunting for over 60 years.

Wintering waterfowl in the United States are surveyed each January by the USFWS in co-operation with the states. Survey procedure and documentation of results varied during the 1940s. Beginning in 1953, survey results have been summarized annually in the 'Special Scientific Report - Wildlife' series. The survey provides the only annual population estimate for *C. c. columbianus*.