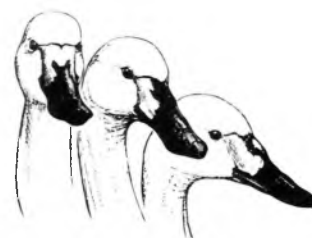


## Migration of Bewick's Swans *Cygnus bewickii* and Whooper Swans *C. cygnus* wintering in Japan through Sakhalin Island and adjacent territories, U.S.S.R.



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The island of Sakhalin (Fig. 1) is located on the main migration route of two species of swans - Bewick's Swan *Cygnus bewickii* and Whooper Swan *C. cygnus*. However, until quite recently there was only fragmentary information in the literature concerning the migration patterns of swans in this part of their range. Gizenko (1955)

periods. Migration of swans was investigated at the same time as studies of other waterfowl.

We explored the Gulf of Aniva, Busse lagoon and Lake Tunaycha in the extreme south of the island and Pil'tun Bay in the northeast of Sakhalin; the whole northern part of the island was simultaneously surveyed from a helicopter



Figure 1. Map showing location of Sakhalin Island, Far Eastern USSR.

isolated two migration routes by swans moving across Sakhalin in spring: the first follows the west coast of the island, the second passes across the Gulf of Aniva, Busse lagoon, and along the east coast to the Gulf of Terpenie (Fig. 2).

### Methods

An attempt was made to discover where the swans stop off during their spring migrations on Sakhalin, and to ascertain the timing of movements and stopovers and the relative numbers involved. This study was preceded by expeditions to western Kamchatka, the South Kuril Islands and South Ussuriland during the spring and autumn migration

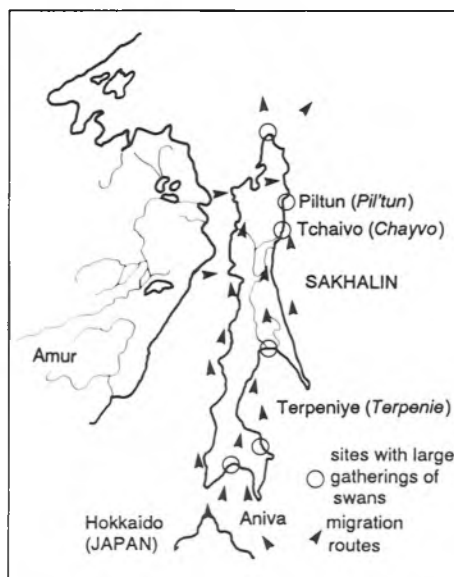


Figure 2. Map showing migration routes and main flocking sites of swans on Sakhalin.

(five recording flights). The fieldwork was carried out between 16 April and 15 May 1987 and 3 May to 1 June 1988. Radar data were obtained for the 1987 study period from Yuzhno-Sakhalinsk municipal airport and further information was supplied, in response to an enquiry, by Sakhalin zoologists and hunting experts.

### Results

Swans arrive in the southern part of Sakhalin by

the end of March or beginning of April. Thus, the first flock arrived in the Gulf of Aniva on 28 March in 1978, and on 4 April in 1987. The largest gathering of swans occurs in the shallowest part of the Gulf of Aniva - 'bukhta Lososey' or Salmon Bay. The bed of this bay is covered with silt and there is a rich growth of eelgrass *Zostera* spp. Great numbers of swans and ducks congregate on the few ice-free patches, most of the bay being frozen over in April. On 21 April 1987, there were at least 1,000 Whooper and Bewick's Swans in the bay, and on 22 April 3,000 birds were recorded there. Also on 22 April, east of Korsakov, a flock of seven swans was seen flying in the direction of the large gathering. On 25 April, the total in Salmon Bay had reached 3,800-4,000 swans, 25% of which were Bewick's Swans. Swans continued to arrive and a peak of 6,000 was recorded in Salmon Bay on 1 May 1987, when approximately the same number of ducks of various species was also present.

Radar observations confirm the first movement of swans. On 24 April 1987, the first flocks flew over a flooded valley to the east of the Yuzhno-Kamyshevoy mountain range, the birds moving from southeast to northwest at an altitude of 600 m. Six flocks consisting of 16-23 birds and five flocks of 5-7 birds were counted between 10.30 and 10.50 h on 27 April 1987 near Solovievka settlement on Salmon Bay. Having flown up from the bay and gained a height of 200-300 m, the swans headed north along the valley to the east of the above-mentioned mountain range. The night-time air temperature was 0°C, rising to 7°C by day. On 29 April 1987, at 08.15 h, two flocks of swans were recorded flying northeast at Yuzhno-Sakhalinsk airport. A mass movement of swans took place in the vicinity of the airport at 02.05 h, the birds heading north at a height of 150 m. On this day, the temperature reached 16°C. During the first week of May, almost all the swans left the Gulf of Aniva.

Swan movements over Sakhalin were thus not only along the coast but also across lowlands of the interior. Starting in Salmon Bay, the migration route skirts Yuzhno-Sakhalinsk to the west, continues to Sinogorsk and Dolinsk and reaches the Sea of Okhotsk near Starodubskoe-Sovetskoe. There, it apparently merges with a smaller flow whose route follows Busse lagoon, Lake Tunaycha and the east coast of the island. A flock of some 80 swans is present every April at Lake Tunaycha; the birds have no fear of man and are fed by the inhabitants of Okhotskoe settlement.

In the north of Sakhalin, Pil'tun and Chayvo

Bays attract large numbers of swans. Helicopter surveys covering an area of 86 sq km around the northwest part of Pil'tun Bay were carried out on 8 May 1987 and revealed the presence on ice-free water of 5,000 swans in groups of 50-200 or up to 3,000 (one group). Counts on 17 May 1988 showed at least 2,000 swans on Chayvo Bay and 1,600 on Pil'tun Bay. Mass movement was recorded in the period 6-10 May 1987 from an observation point at Cape Potchembagsh in Pit'lun Bay. The whole bay was iced over apart from a strip 10-100 m wide along the shore. At night, slight frosts prevailed; by day, the air warmed to 5-10°C. The winds were predominantly from the south and of moderate strength, but the migrating swans encountered northerly winds and completely windless conditions. Flocks of swans were recorded during the day from 07.20 to 22.00 h; no migration was recorded at night. Peak movements were from 08.00 to 09.00 h and from 20.00 to 22.00 h, while the least movement was observed from 15.00 to 17.00 h. Both single-species and mixed-species flocks were noted, these comprising 3-5 or up to 60-70 birds. The average flock-size varied between 12.33 and 18.95 birds on different days, the overall average being 15.26 birds. All the swans were heading north at an altitude of 20-60 m. Over four days, 3,200 swans were recorded and of the 461 specifically identified, 35% were Whooper and 65% Bewick's Swans. On 14 May 1987, 1,439 swans flew north past the Cape Potchembagsh observation point. No such heavy movement to the north was recorded in early May 1988. Swans were present in large numbers on the surface of the bay and there were local movements to the north and south. Mass migration took place over Pil'tun Bay during the night of 20/21 May 1988, but pairs and small flocks were noted up to the last days of May. An aerial survey of the whole coastal region of northern Sakhalin on 27 May 1988 revealed only seven birds. There were formerly Whooper Swan breeding sites in these places (Gizenko 1955).

Migration routes which follow the west and east coasts of Sakhalin merge in the north of the island and a continental route passing across Lake Khanka and the Amur lowlands probably joins them there as well. Thus, on 25 May 1988, a flight of 100 swans was observed moving from west to east in Vostochnaya Bay, near the town of Okha.

Formerly, the number of swans migrating across Sakhalin was estimated at 5,000 birds (Gizenko 1955), but more than 30 years later we estimate it to be not less than 15,000 birds:

Japanese ornithologists have claimed an even higher figure of 30,000 birds. There would thus appear to be strong evidence of an increase in the swan population of the Far East. Ringing has shown that these swans mainly migrate across Sakhalin to winter on the Japanese islands of Honshu and Hokkaido and nest in the northeast of Asia, on lakes along the Kolyma valley and in the Chaun lowlands (Kishchinski 1979, Kondratiev 1984, Ostapenko 1985). On 20 May 1979, in the mouth of the Val River (Chayvo Bay), a bird was found which had been ringed as a juvenile in the Chaun district of Chukotka. The Bewick's Swans nest in the tundra zone, while the Whooper Swans crossing Sakhalin probably nest in the south of Magadan region and Yakutiya. A Whooper Swan ringed as an adult on 14 February 1970 in Ibaraki prefecture

(Japan) was found in the settlement of Sangalak 70 km from Srednekolymsk on 25 May 1973. It is worth pointing out that only Whooper Swans migrate along the Kuril Islands chain to Kamchatka, but both Whooper and Bewick's Swans (the total number not exceeding several hundred birds) traverse northern Kamchatka, following the Penzhina River valley and Parapol'ski dol (dale). The Penzhina valley is probably a link route for Bewick's Swans migrating between Sakhalin and Chukotka, but the Kolyma valley is undoubtedly the main route for both species of swans.

The American Tundra Swan *Cygnus c. columbianus* Ord. sometimes occurs on Sakhalin. One such was shot in the Gulf of Aniva in April 1948 (Gizenko 1955), and single birds of this sub-species are recorded annually in Japan.

## References

- Gizenko, A.I. 1955. *The birds of Sakhalin region*. Moscow, USSR Academy of Sciences. (In Russian).
- Kishchinski, A.A. 1979. Migrations of Bewick's Swans. In: A.A. Kishchinski (Ed.) *Migration of birds in Eastern Europe and Northern Asia*, 75-79. Moscow. (In Russian).
- Kondratiev, A. Ya. 1984. The migrations of east Siberian Bewick's Swans *Cygnus bewickii jankowskii* Alph. and their wintering in Japan. *Zool. Zh.* 63 (12):1834-1847.
- Ostapenko, V.A. 1985. Migration routes and migration patterns of birds in Soviet East Asia. M.Sc. Dissertation, Moscow. (In Russian).

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