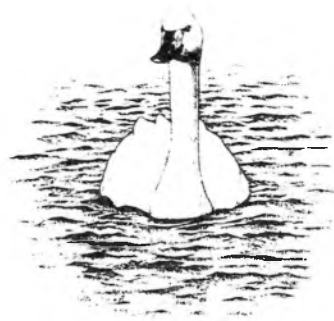


Numbers and distribution of Mute Swans *Cygnus olor*, Whooper Swans *C. cygnus* and Bewick's Swans *C. bewickii* in the Black Sea area of the Ukraine, USSR.



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Three species of swan inhabit the Ukrainian Black Sea area: Mute Swan, Whooper Swan and Bewick's Swan. Mute Swans are most numerous and are observed throughout the year. Around 650-660 pairs of Mute Swans nest in the Ukrainian Black Sea area, mainly on the Danube and Dniester deltas with a few on the Dnieper river. In 1984-88 winter populations varied between 1,435-25,400 Mute Swans and 650-1,660 Whooper Swans, numbers fluctuating with the weather. Up to 10-50 Bewick's Swans have been seen, only during severe winters.

Winter distribution

Most swans overwinter in the internationally important Tendra and Yagorlitski bays in the Black Sea State Nature Reserve (Fig.1.). Smaller numbers inhabit Karkinitiski and Dzharylgach bays, but when these freeze they move to Tendra and Yagorlitski bays where a small area of ice-free water enables a few swans to remain even during very cold weather. In warm winters when the bays are almost ice-free the swans do not congregate in large flocks (Sabinevski 1965, 1977, Sabinevski & Ardamatskaya 1984).

The Azov-Black Sea population of swans tends to be relatively sedentary with only small numbers migrating to the south, to the Danube delta, the Balkan peninsula, Greece and Turkey (Kostin 1979). As a result there is high mortality during severe winters. For example in 1984/85 more than 17,000 swans, mainly juveniles, died during the winter when the bays were ice-bound for three months up to April 1985. During normal winters 3,000-4,000 swans die in the Black Sea area (Ardamatskaya 1969, 1975, Ardamatskaya & Fedorenko 1969). These are usually juveniles or sick birds and are found dead from October onwards. Since 1977, ecological disturbance as a result of hydrological and hydrochemical changes and water pollution has coincided with records of Mute Swans dying from aspergillosis, caused by the fungus *Aspergillus fumigatus*. During the severe winter of 1984/85 swans were observed feeding on winter crops, rice fields, coastal steppe and even eating fish. Such behaviour is very uncommon for Mute Swans and Whooper Swans during

normal winters (Ardamatskaya & Lisenko 1980).

The maximum number of swans is usually recorded after the thaw. After the severe winter of 1984/85 many Mute Swans did not return to their nest-sites but remained in the wintering and moulting grounds. As a result fewer swans were counted during the winter of 1986/87.

Moulting distribution

Large numbers of moulting swans congregated in the eastern area of Karkinitiski bay during the nineteenth century (Kessler 1860, Nickolski 1891). Numbers increased in the shallow areas of Tendra and Yagorlitski bays during the 1970s. In the early 1980s the largest moulting flocks were 100-3000 birds in the mouth of the Danube, 10,000-25,000 in Tendra, Dzharylgachski and Karkinitiski bays and 400-500 in eastern Sivash. From 1985-89 the moulting flocks were smaller and more dispersed as a result of the severe winter of 1984/85.

The majority of swans in the moulting flocks are immature and non-breeding birds. Moulting extends over more than three months, from June to October, with the peak from late July to end August. By September most swans have finished their moult but a few remain during October. The last to be recorded in Tendra Bay was on 11 November 1969.

A ringing study of these flocks commenced in the Black Sea Nature Reserve in 1957 and in Karkinitiski Bay in 1959. Between 1974-76 moulting swans were marked with numbered, coloured neck bands and plastic leg rings fol-

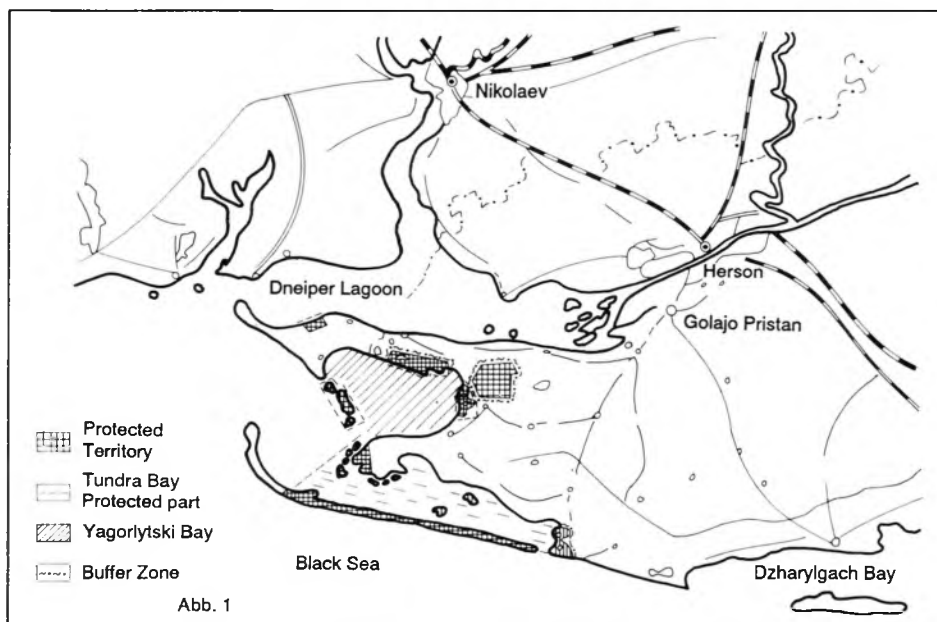


Fig. 1. Map of the Black Sea State Reserve region

lowing the method described in Sladen (1973). The regional and seasonal distribution of ringed swan recoveries are summarised in Table 1, from records published in Kostin (1968, 1979) and Ardamatskaya (1975). Usually swans move within 300-800 km. between their wintering and moulting grounds (Kostin 1979) but during severe winters they may move 1000-1500 km. or more (Table 1).

Analysis of ringing and re-sighting data has provided information about the degree of independence of the Azov-Black Sea population. There have been many retraps in the Black Sea Nature Reserve of swans ringed in Karkinitiski Bay and vice versa. This suggests that the birds share common moulting grounds.

Judging from the distribution of sightings of

ringed birds there are no permanent contacts between the Azov-Black Sea populations and the northern Caspian populations. Swans moulting in the Tendrovski Bay were never seen on the Caspian Sea and birds which were ringed there were not seen in the Black Sea Reserve. Some birds ringed in the Karkinitiski Bay were sighted on the coasts of the Caspian Sea. In recent years swans from the Caspian Sea were observed more frequently in the Black Sea Reserve (Ardamatskaya 1975, Kostin 1979).

In this connection it is interesting that a Mute Swan which was ringed in August 1975 in the Tendrovski Bay was caught on a lake in Kirgizia in March 1976. It can be assumed that some birds which moult on the Black Sea in their first years later nest to the east of the Caspian Sea.

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Table 1. Geographical and seasonal distribution of ring returns of Mute Swans ringed in the Black Sea Reserve.

Area	No. of returns by month												Month unknown	Total no. returns
	J	F	M	A	M	J	J	A	S	O	N	D		
Tendrovski Bay	6	1	-	-	-	-	19	20	6	1	-	-	-	53
Yagorlytsk Bay	3	3	-	-	-	-	-	-	-	-	-	-	-	6
Dzarylgachski Bay	-	-	2	-	-	-	-	1	-	-	-	-	-	3
The Crimea Karkinitiski Bay	1	1	1	-	-	-	1	1	2	-	-	-	1	8
The Crimea The Black Sea	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Inland waters in Kherson region	-	-	-	-	-	-	-	1	1	-	-	1	-	3
Krasnodar Territory	-	1	1	1	-	1	-	-	1	1	-	-	-	6
Dniester Delta	-	-	-	-	-	-	-	-	-	1	-	-	-	1
Odessa region Danube	1	3	3	4	1	1	-	-	-	-	1	-	-	15
Kirgizia	-	-	1	-	-	-	-	-	-	-	-	-	-	1
Outside the USSR:														
Romania	-	1	3	-	1	-	-	1	1	1	-	-	-	8
Bulgaria	-	1	-	-	-	-	-	-	-	1	-	-	-	2
Greece	1	-	-	-	-	-	-	-	-	-	-	-	-	1
Turkey	-	1	-	-	-	-	-	-	-	-	-	-	-	1
TOTAL	12	12	12	5	2	2	20	23	12	5	1	1	1	109

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