



# The migration of Broad-billed Sandpiper *Limicola falcinellus* during May 1992 in the Sivash, Ukraine

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During May 1992 the spring migration of the Broad-billed Sandpiper in the Sivash, Ukraine, was studied. The numbers increased rapidly from some tens early May up to an estimated 6,000 in the last ten days of May. The birds preferred mudflats in the eastern part of the area which proved to be rich in benthic fauna. In the central Sivash, lower numbers were found and only pelagic prey was available. The Sivash can be considered as one of the most important stop-over sites for the Broad-billed Sandpiper during spring migration, for at least 30% of the European population was found to be present.

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## INTRODUCTION

The Sivash, 2,500 km<sup>2</sup> in area, is situated in the northern part of the Crimea between the Black Sea and Azov Sea (Figure 1). The area consists of an extensive system of lagoons and marshes, in which the water salinity varies from brackish to hypersaline. In a few places fresh water flows into the lagoons. The water depth does not exceed 1.5 m and due to this shallowness, the lagoons warm up quickly in spring. Recent studies have suggested the Sivash to be an important stopover site for waders, especially for Broad-billed Sandpiper *Limicola falcinellus* (Chernichko *et al.* 1991; WIWO 1990). During spring 1992 a research project was carried out in the Sivash, which included waterbird counts, feeding ecology studies of waders and macrozoobenthos sampling. Special attention was given to the Broad-billed Sandpiper since its migration ecology is relatively unknown. This paper details the numbers of the Broad-billed Sandpiper using the Sivash as a stopover site.

## METHODS

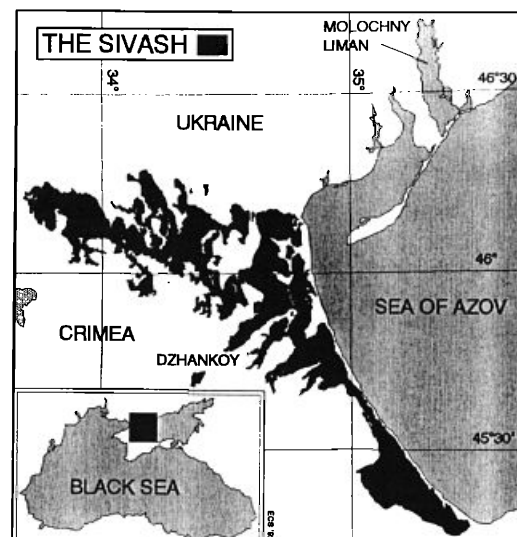
Between early April and the end of May all waterbirds were counted weekly in the central and eastern Sivash covering an area of about 15% of the total Sivash. Counting the entire Sivash on a regular basis with a team of four persons proved to be impossible due to the large size of the area. On the selected counting route approximately 30% of all waders present in spring could be expected according to earlier studies (Chernichko *et al.* 1991). Additionally, several localities were surveyed every 2-3 days in order to study marked birds and to get an impression of local bird movements.

During the weekly counts the most important habitat types

were included in 14 counting sites, e.g. clayey or sandy mudflats, shallow or deeper lagoons, brackish, saline or fresh waters and marshes with or without reedbeds. In the last ten days of May - the peak migration period of the Broad-billed Sandpiper - approximately 40-50% of the Sivash was surveyed to find the key sites and to get an estimate as complete as possible of the total numbers present. The survey concentrated on the central and eastern Sivash as the numbers were expected to be highest in these areas.

Between 4 and 25 May, 329 Broad-billed Sandpipers were captured. All birds were ringed with a metal ring on the tarsus, 101 birds were dyed with picric acid on the underparts and individually colour marked with three additional PVC rings on the legs.

Figure 1. Location of the Sivash, Ukraine.





## NUMBERS AND DISTRIBUTION

Figure 2 shows the numbers during May at two frequently counted sites in the central Sivash (locality codes SC 21 and SC 22; Figure 2a) and in the eastern Sivash (SE 41; Figure 2b). The first Broad-billed Sandpiper was observed on 4 May, but only after 15 May did numbers increase significantly, up to peak numbers in the last ten days of May.

Figure 2. Numbers of Broad-billed Sandpipers in the central Sivash (a) (locality SC21/22) and in the eastern Sivash (b) (locality SE 41) in May 1992 (cf. Figure 3).

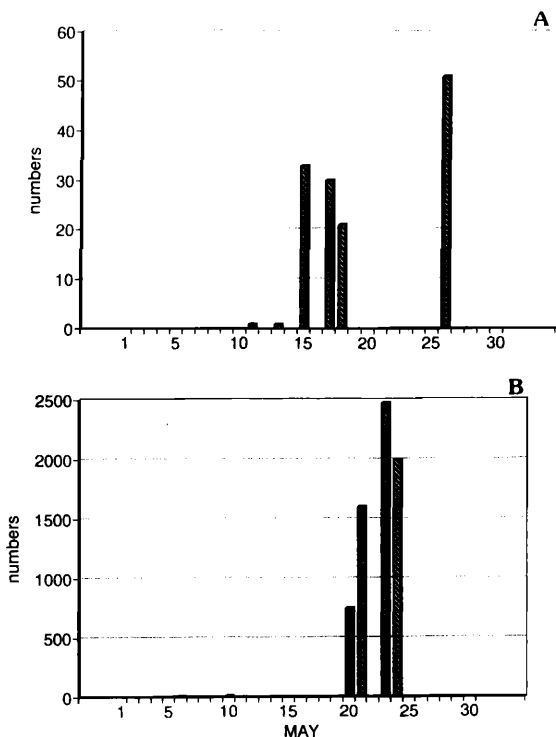


Figure 3 shows the distribution of maximum numbers counted in the last ten days of May in 40-50% of the Sivash area. The total number counted was 4,200-5,100 individuals. The broad range of the total number counted in the last ten days of May was caused by the relatively long counting period during which movements of birds were possible. Moreover, numbers increased during the counting period. For these reasons the number in the counted area is more likely to be near the upper limit of the range (5,000).

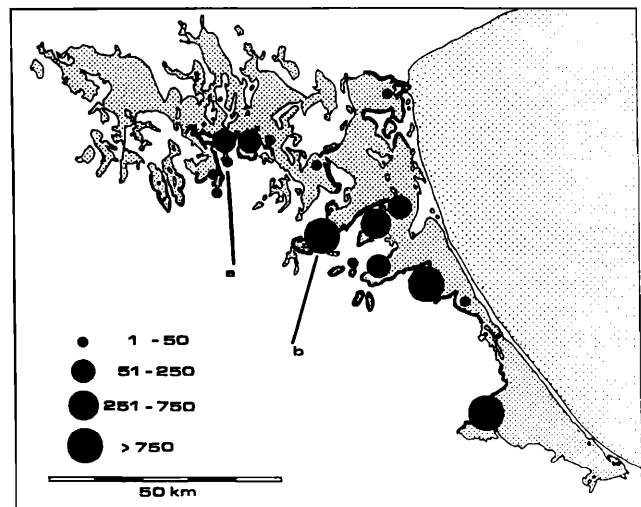
Most striking was the preference for mudflats in the eastern part of the area, and in contrast with the relative low numbers found in the central Sivash. Other wader species, like Dunlin *Calidris alpina* and Curlew Sandpiper *C. ferruginea* were more evenly distributed. Moreover, the numbers in the central Sivash changed rapidly at a local level, supposedly caused by birds searching for more suitable feeding sites. The westernmost part of the Sivash is highly saline. Few suitable wader sites are available in this area, and the numbers of Broad-billed Sandpipers are expected to be low.

Due to insufficient transport facilities and (too) early departure from the area, it was not possible to gather sufficient information to estimate turnover and length of stay. One bird colour-marked on 6 May was still present on 20 May at the same locality, suggesting a high site fidelity. Although information on the length of stay is scarce, circumstantial evidence suggests a rather long stay and consequently a low turnover. As far as is known so far, the Broad-billed Sandpiper uses the Sivash as a final stopover site on its migration towards the breeding grounds. Preliminary data on weight increase and feeding rates suggest that Broad-billed Sandpipers may need at least several days to put on enough fat in order to successfully complete their migration (van der Have *et al.* 1993 in prep.).

If the turnover rate is assumed to be relatively low and the area covered is corrected for, then 6,000 individuals is a conservative estimate of the total number of Broad-billed Sandpipers present in the Sivash during the last ten days of May 1992.

Figure 3. Distribution of counted maximum numbers of Broad-billed Sandpipers (dots), and the area counted (bold line) during the last ten days of May 1992.

a = study site SC21/22; b = study site SE41.



## BEHAVIOUR AND FEEDING ECOLOGY

Broad-billed Sandpipers in the eastern Sivash were feeding on open mudflats in large, compact flocks often mixed with other waders (mainly *Calidris* species). The birds preferred the waterline of recently exposed mudflats. In the central Sivash, the birds were feeding solitarily or in loose groups mixed with *Calidris* species in shallow lagoons at the waterline, but more frequently up to belly-deep in the water. Single birds, or small flocks were also observed foraging in marshes with sparse and low vegetation or on temporarily inundated steppe. When disturbed the birds flocked together and flew away in dense formations similar to waders like Dunlin. During flight they usually separated from other species, while calling intensively. The birds were observed foraging the



entire day, but the observation of faecal excretion of captured birds during the night suggested nocturnal feeding as well.

Macrozoobenthos sampling showed the mudflats in the eastern Sivash to be rich in benthic fauna mainly Ragworms *Nereis diversicolor* and bivalves like *Abra ovata*. The mudflats in the central Sivash contained only Chironomid larvae and larvae of other insects in very low densities. Broad-billed Sandpipers were feeding predominantly on Ragworms in the eastern Sivash, and in low numbers on planktonic Brine Shrimps *Artemia* in the central Sivash (van der Have *et al.* 1993 in prep.)

## THE SIVASH, AN IMPORTANT SPRING STAGING SITE FOR THE BROAD-BILLED SANDPIPER

The Broad-billed Sandpiper has a limited breeding range which stretches from south-west Norway and central Sweden through the northern half of Finland into the Russian Kola Peninsula (Cramp & Simmons 1983). The total breeding population is estimated to be 10,200-11,200 pairs (Piersma 1986). It winters mainly along the coasts of the Arabian Peninsula (Cramp & Simmons 1983).

The numbers found during the spring survey in the Sivash are without precedent in Europe and even exceed the maximum numbers found in the Persian Gulf. The maximum numbers counted in the Persian Gulf during autumn migration and winter were respectively 4,050 at Khor Dubai in October 1986 and 1,682 at Oman in January 1990 (Uttley *et al.* 1988; Perennou *et al.* 1990).

Numbers found during spring migration in the eastern Mediterranean rarely exceeded some tens at one locality: 125, May 1987, Çukurova deltas (van der Have *et al.* 1989); 50, May 1990, Lake Manzala (Meininger & Atta 1993). The species was absent in May 1990 in steppe lakes north of the Caspian Sea (Peter Barthel in litt.). Other parts of the northern Black Sea coast, especially the north-eastern parts are also expected to be important stopover sites for the Broad-billed Sandpiper in spring. Recent controls in the Sivash of Broad-billed Sandpipers ringed in Sweden, Turkey, Egypt, United Arab Emirates (Chernichko unpubl.), Finland and Poland (this study) link the Sivash with the Scandinavian breeding areas as well with the wintering population in the Persian Gulf.

These data and the results of our study show that the Sivash area is an important spring staging site for the Broad-billed Sandpiper population wintering in the Persian Gulf, migrating through the Middle East and the eastern Mediterranean and breeding in northern Europe. At least 30% of the European breeding population was found to be present in spring 1992. The large, shallow, and brackish lagoons of the Sivash provide a rich food supply for the Broad-billed Sandpiper at the right time (end of May) and in the right place (midway their breeding and wintering places).

The Broad-billed Sandpiper has a small population size, a restricted breeding and wintering range, and is dependent

on a few suitable areas during migration. Habitat reduction at key sites like the Sivash, can affect the population size significantly. The Sivash is recognized as an important area for several globally threatened species and for waterfowl using the area during migrating in large numbers. The area is indicated as a Ramsar site but only small parts of the area are currently under protection as strict nature reserves (Grimmett & Jones 1989).

On account of the large wader numbers and importance for the Broad-billed Sandpiper in particular, the wetland parts of the whole Sivash are in need of full protection.

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