Avocetta N° 22: 74-77 (1998)

Short communications

Migration patterns of the Common Sandpiper *Actitis hypoleucos* and its habitat choice during migration in northeastern Slovenia

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Abstract - During the years 1985-1996 migration patterns of Common Sandpiper *Actitis hypoleucos* and its habitat choice were studied on Dravsko polje in northeastern Slovenia. The peak period in spring is in the second half of April, whereas the peak period in autumn is less pronounced. The majority of Common Sandpiper seen during the migration were recorded in drained fishponds. During the autumn migration single bird occur more frequently then flocks, whereas differences during spring period was not significant.

The Common Sandpiper *Actitis hypoleucos* is distributed across the whole Europe and majority of Asia (Cramp and Simmons 1983, Colston and Burton 1988). The majority of the European populations winters in Africa (Cramp and Simmons 1983, Colston and Burton 1988, Newton 1995). Habitat selection of Common Sandpiper has been described in detail for breeding areas (e.g. Glutz von Blotzheim *et al.* 1977, Cramp and Simmons 1983, Holland and Yalden 1991). On the other hand, little quantitative data is available on habitat selection of Common Sandpipers during migration and their occurrence during migration in Central Europe.

The aim of the present article was to describe habitat selection of Common Sandpipers migrating through Dravsko polje and to present their migration pattern.

Field data were gathered on Dravsko polje (approximately 46°25'N, 15°45'E) in northeastern Slovenia during twelve years (1985-1996). The main land-use was intensive arable farming, the principal crops being maize, sugar beat, wheat and potatoes. The area belongs to the sub-Pannonic phytogeographical area (Marinček 1987). The climate is modify Continental: mean annual precipitation 1000 mm with an average + 8 °C (Furlan 1990). Details of the study area and habitats can be found in Vogrin and Šorgo (1995), Vogrin (1997a), Vogrin (1997b), Vogrin (1998).

Flocks of Common Sandpiper were divided into five categories: 1 specimen, two specimens, 3-5 specimens, 6-10 specimens and > 10 specimens. Data are grouped into 10-day periods (decades).

Habitat types where Common Sandpipers occur were divided for further statistical analyses into four categories: drought fishponds, stand waters (reservoirs, gravel and clay pits, also ponds filled with waters) canals and streams, arable land (fields, pastures).

Statistical analyses were performed with non-parametric tests (Chi-square, Mann-Whitney U test and Kruskal-Wallis 1-way Anova), since data were not normally distributed (Sokal and Rohlf 1995). All statistical tests were performed with the SPSS 6.0 statistical package. A P-value < 0.05 was considered significant.

The Common Sandpiper does not breed in the study area, however it is common visitor during spring and autumn migration. In spring the first Common Sandpipers appear in the first week of April, followed by peak migration in the second half of April (Fig. 1). The highest daily count during spring was 20 individuals. Autumn migration start in first decade of July and is less pronounced then spring passage. During the peak period flocks with up to 23 individuals was observed. Differences between decades (only decades with at least 10 observations were taken into account) according to the flocks size of the Common Sandpiper is highly significant (Kruskal-Wallis test, Chi-square = 32.10, df = 7, $P < 0.001$), whereas differences among spring decades (Mann-Whitney U test, U = 199.0) and among autumn decades (Kruskal-Wallis test, Chi-square = 2.02, df = 5) are not.

The majority of Common Sandpipers seen during migration were recorded in drained fishponds (59%). Common Sandpipers occurred very rarely on running waters and arable lands.

Flock size of the Common Sandpiper during migrations through Dravsko polje is presented in Fig. 2

Accepted 15 May 1998

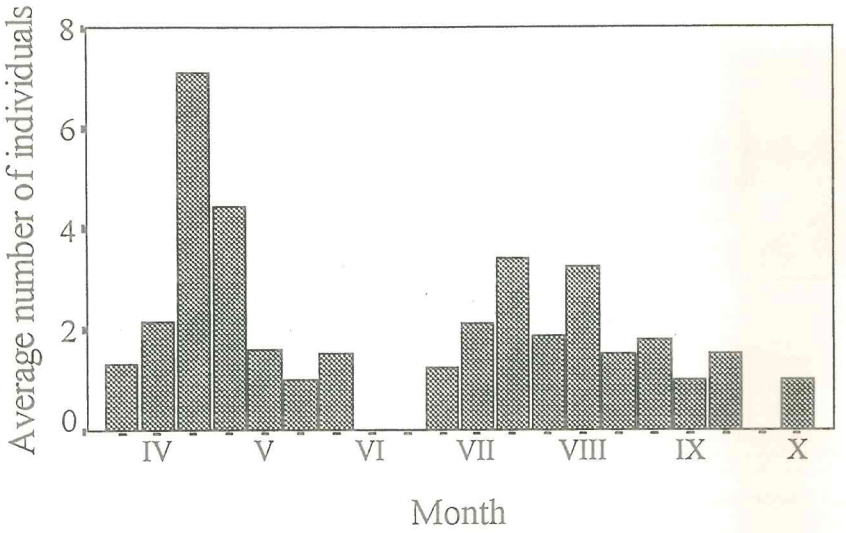

Fig. 1. Migration pattern of Common Sandpiper *Actitis hypoleucos* over Dravsko polje in northeastern Slovenia. Data are grouped into 10-day periods (decades).

(spring) and Fig. 3 (autumn). Significant differences were found during autumn period (July - September) (Chi-square = 78.64, df = 4, $P < 0.001$), whereas differences during spring period were not significant (Chi-square = 6.06, df = 4).

According to the above results, Common Sandpipers during migration occurred mainly in the empty ponds and reservoirs. For migrant waterbirds the key factors which influence habitat selection are availability of food, safe roosting sites and the extent of disturbance (e.g. Myers 1984, Ens *et al.* 1990). In empty ponds, when the water level falls, aquatic prey become more concentrated and thus more available. This concentration, in turn, may attract more avian predators (Hafner *et al.* 1982, Kersten *et al.* 1991). Such species is also the Common Sandpiper which is visual surface-foraging wader (Ntiamoa-Baidu *et al.* 1998) and feed mainly with invertebrates (e.g. Cramp and Simmons 1983, Colston and Burton 1988).

Fishponds on Dravsko polje usually drained each spring (March - May) or in autumn (September - November) during main migration period of Common Sandpiper at least in spring. The fish are then harvested with the use of a seine net over a number of days. The pond is reflooded with water from neighbouring pond or canals. During this time the drained fishponds are very attractive also for other waders (pers. obs.). For importance of drained fishponds for waterbirds see also e.g. Rundel and Fredrickson (1981), Bukacinska *et al.* (1996).

In general, the Common Sandpiper migrate mainly singly or in small groups (Cramp and Simmons 1983). Aggregations in flocks with more than 20 specimens occur rarely (Glutz von Blotzheim *et al.* 1977, Cramp and Simmons 1983). This holds true in my study area as well. However single bird occur more frequently in autumn than in spring (see results and Figs. 2 and 3). The similar patterns described Cramp and Simmons (1983). Aggregations on Dravsko polje occur only in drained ponds.

Flocking in waders is very widespread and probably functions mainly as an anti-predation strategy (e.g. Myers 1980, Buchanan *et al.* 1988). For example, raptors have a great influence of waders mortality, at least during winter (e.g. Page and Whitacre 1975, Whitfield 1985, Cresswell and Whitfield 1994). Other authors, e.g. Wolff (1969) and Goss-Custard (1977) however reports that the major source for flocking in waders is determined by the distribution and abundance of their prey, what is, probably the case of Common Sandpiper in the study area. In fact more flocks were observed in spring then in autumn, what is coincide with main time of pond draining.

Data about migration patterns and habitat choice of the Common Sandpiper in the Central Europe are scarce. According to Glutz von Blotzheim *et al.* (1977), Cramp and Simmons (1983) spring migration occur mainly in April and May, whereas autumn migration occur from the end of June to August. This pattern in general hold true in my study area as well. Dimitrijević (1977) gathered some quantitative data of Common Sandpiper during migration in Vojvodina (northern Serbia). In Vojvodina, Common Sandpiper reach spring peak migration at the end of April, whereas the peak autumn

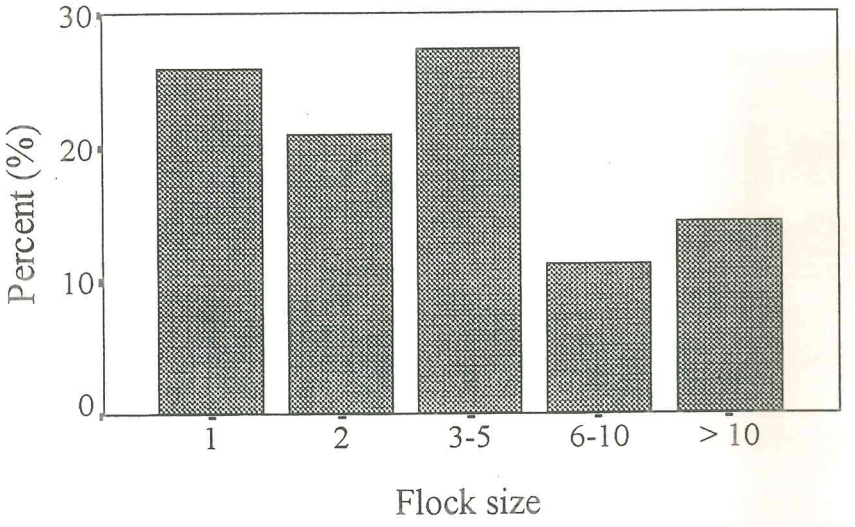

Fig. 2. Distribution of Common Sandpiper *Actitis hypoleucos* in flocks in percentages during spring migration on the Dravsko polje.

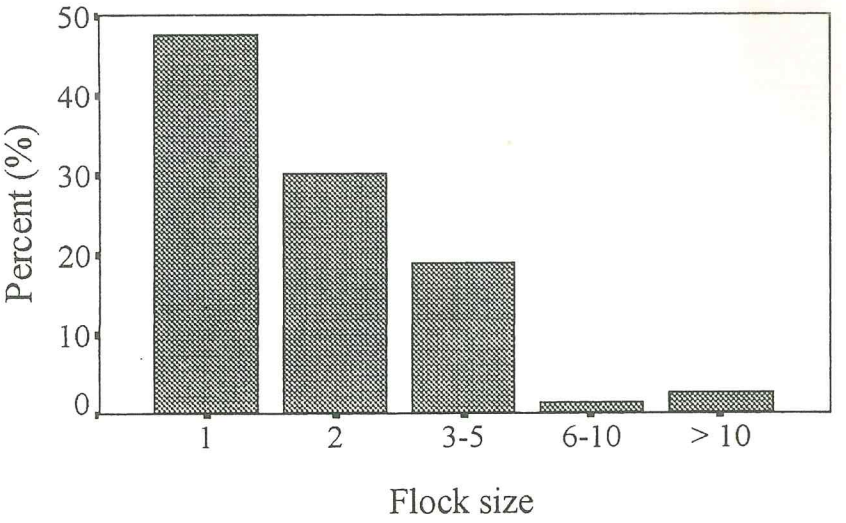

Fig. 3. Distribution of Common Sandpiper *Actitis hypoleucos* in flocks in percentages during autumn migration on the Dravsko polje.

migration is at the end of July and in August. Such pattern is very similar to my results. Nevertheless, the numbers of Common Sandpipers in Vojvodina during autumn migration are higher then during spring migration, meanwhile on Dravsko polje I got the opposite results. Number of individuals occurred on the Dravsko polje and time of migration were similar to the results obtained by Winkler and Herzig-Straschil (1981) in the Burgeland, Austria between 1963 - 1972.

Acknowledgements - I wish to express gratitude to my wife Nuša and to Marjan Vogrin for their help during research work. An anonymous reviewer made constructive criticisms of this paper.

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