

**Breeding-range changes of Red-rumped Swallow in Yugoslavia** Since the 1950s, the Red-rumped Swallow *Hirundo daurica* has been recorded in increasingly greater numbers throughout Europe far outside the borders of its usual breeding area (e.g. Dymond *et al.* 1989). This has coincided with northward expansions of the breeding range.

Prior to this range expansion, the Red-rumped Swallow bred in Yugoslavia only in the south, in Montenegro (Grossmann 1910; Rohaček 1916; Reiser 1933) and Macedonia (Makatsch 1950)(fig. 1). A scatter of

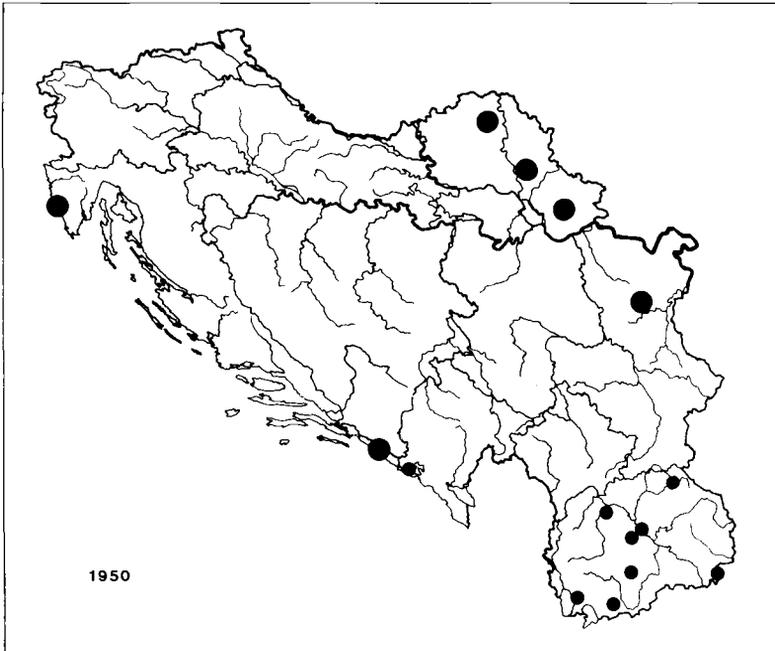


Fig. 1. Breeding distribution of Red-rumped Swallow *Hirundo daurica* in Yugoslavia up to 1950. Small dots show breeding records; large dots indicate non-breeding records

non-breeding records outside the breeding range, in Dalmatia (Tutman 1956), Istria (Bernhauer 1957) and Serbia (Matvejev 1957; Antal *et al.* 1971), was the first indication of a spread (fig. 1). Range expansion developed in two main directions: in the eastern part (Serbia), through river valleys to the north, and along the Adriatic coast to the northwest.

The first evidence of a spread to the northwest was from southern Dalmatia on the Adriatic coast (Géroudet 1960; Tutman 1980; Grünhagen 1988) and to the north from the extreme south of Serbia (Vasić *et al.* 1980)(fig. 2). Up to 1980, the range extension in the eastern part of Yugoslavia included the discovery of breeding localities in southern and eastern Serbia, and in the western part new breeding localities in Herzegovina (Obratil 1976, 1982)(fig. 2).

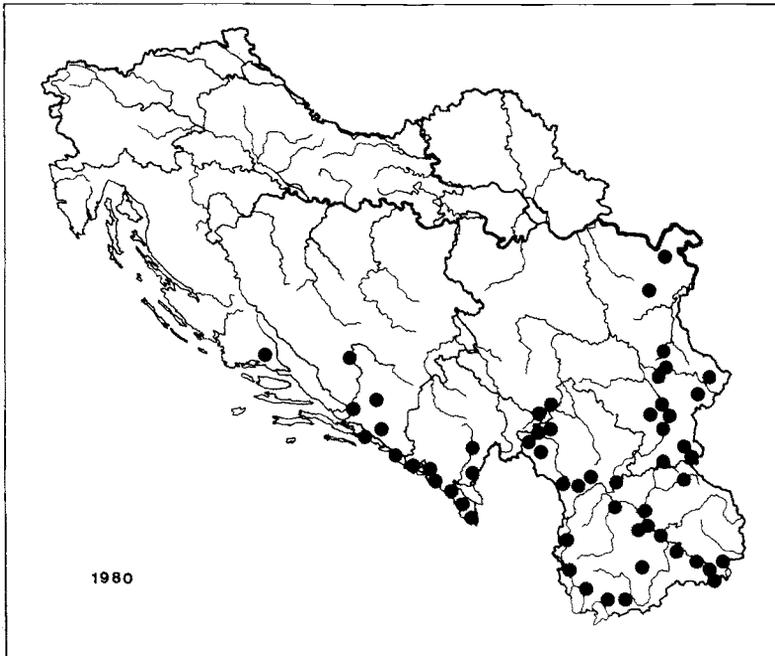


Fig. 2. Breeding distribution of Red-rumped Swallow *Hirundo daurica* in Yugoslavia up to 1980. Dots show breeding records

Since 1980 (fig. 3), there has been further range extension, in eastern Yugoslavia in western Serbia (Marinković & Vuinović 1986; Mikuska *in litt.*) and in western Yugoslavia across the Adriatic coast up to the Italian frontier in Slovenia. Further new breeding localities were found on the Adriatic coast, in northern Dalmatia, showing northwesterly penetration from the former breeding range. In southern Dalmatia, the number of Red-rumped Swallows also increased. Only two new breeding localities were discovered on the part of the Adriatic coast between north Dalmatia and Istria, but previously we recorded the first nest in Istria in 1987 and soon after that discovered other new breeding localities in Istria (Stipčević

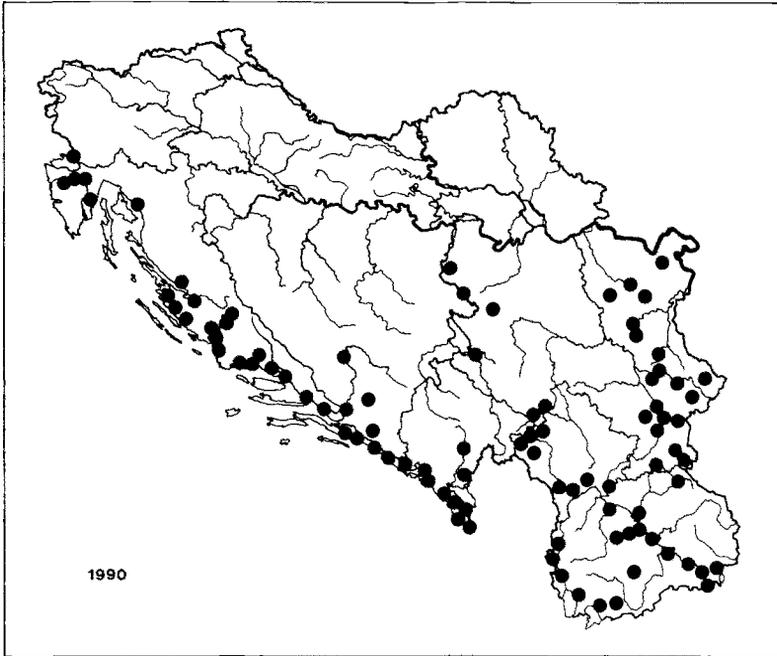


Fig. 3. Breeding distribution of Red-rumped Swallow *Hirundo daurica* in Yugoslavia up to 1990. Dots show breeding records

& Lukač in press). Recently, Red-rumped Swallows have also been discovered breeding in Slovenia (Ota 1989).

By 1990, following this expansion, the breeding range of the Red-rumped Swallow in Yugoslavia covered southern, eastern and western Serbia, Herzegovina, Dalmatia, part of the Adriatic coast north from the Velebit mountain coastal area, central and eastern Istria and the southwestern part of Slovenia. Considerable range expansion is obvious since 1980 in the western part of Yugoslavia, and most recent discoveries of breeding localities reveal that this spread is still continuing.

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[This contribution was submitted in August 1990 and accepted for publication in November 1990. Eds]