

Postbreeding Migration of the Reed Warbler *Acrocephalus scirpaceus* in the Northeastern Part of the Czech Republic

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Abstract: Literák, I., Honza, M. and K. Pavelka (1995): Postbreeding migration of the reed warbler *Acrocephalus scirpaceus* in the northeastern part of the Czech Republic. *Vogelwarte* 38: 100–105.

Between 1979 and 1990, a total of 10,550 Reed Warblers was netted at two sites in the north-eastern part of the Czech Republic during their postbreeding migration. Retraps represented 21.4%. Adult birds made up 19.1% and 32.4% of the populations at sites with the large and small reedbed areas respectively. In both locations number of Reed Warblers varied 2.8 times during different years. The passage of adult Reed Warblers peaks in the second half of July, that of juvenile Reed Warblers in the first ten day period of August. Reed Warblers moved in westerly to south-westerly direction. The site with a small reedbed area cannot be considered as a significant source of migratory fat for this avian species.

Key words: Reed Warbler, *Acrocephalus scirpaceus*, migration, fat deposition.

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1. Introduction

Reed Warbler migration in central Europe has been studied by Zink (1973), Štancl (1980), Hájek (1981), Grill and Zwicker (1982), Hachler et al. (1983), Kurzac (1986), Spina (1986, 1989) and Schlenker (1988). Schlenker (1988), who analysed migration of Reed Warbler populations at the Lake Neusiedl in Austria, concluded that intensive ringing of Reed Warblers in central Europe and in Moravia will be necessary to answer some questions, e. g. on the borderline between populations migrating in westerly to south-westerly direction and those migrating in south-easterly direction.

In 1979–1990, we netted and ringed birds during their postbreeding period in reedbeds of northern Moravia and the Czech part of Silesia (north-eastern part of the Czech Republic). Because we captured over 10,000 birds of Reed Warbler *Acrocephalus scirpaceus*, we decided to make an analysis of some of their migration characteristics.

2. Material and Methods

In 1979–1990, mist netting and ringing of Reed Warblers in reedbeds was carried out in Heřmanice and Bartošovice (fig. 3). The two sites lie along the upper reaches of the Odra river in the northeast section of the Czech Republic. During the postbreeding migration, mist nets were placed in standard straight lines (150 m, 1 line per site).

Heřmanice (19.52 N 18.20 E) is a pond lying in the immediate vicinity of the town of Ostrava and its heavily industrialized suburbs. It extends over an area of about 100 ha and is surrounded by large areas of reedbeds (about 40 ha). Birds were captured continuously from 1979 to 1990.

Bartošovice (49.40 N 18.03 E) is a site with two ponds of a total area of 104 ha. In 1986, reedbeds extended over about 40 ha there. During the netting period, their area was gradually reduced to about 2 ha only, which were located immediately next to the netting lines at the Dolní Bartošovický pond.

The length of the netting periods varied during different years. In order to assess the situation at the two sites during different years, a common interval between July 15 and August 28 was selected. At that time, netting in Heřmanice took place during 1983–1985, 1989, and 1990; in Bartošovice it was carried out regularly every year, i. e., from 1986 to 1990. Birds were always captured during daylight.

To complement the data on migration, reports on recoveries of birds ringed in the upper Odra reaches on other occasions were also used.

The accumulation of migratory fat in birds was monitored between 1987 and 1990 in Bartošovice. It was used a fat index of 0 to 5 (Busse & Kania 1970). Accumulation of migration fat was recorded in 469 controlled birds. Changes in the values found in the retraps were expressed as values from -5 to +5.

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3. Results

21.7% of 7,279 birds trapped in total in Heřmanice, and 21.1% of the total of 3,271 birds trapped in Bartošovice were retraps (i. e. birds caught the next day and later after their ringing). The percentages of retraps did not differ significantly in these locations (χ^2 -square = 0.478 df = 1 P>0.05).

19.1% of the total of 5,700 newly ringed Reed Warblers in Heřmanice were adults, and 80.9% juveniles. 32.4% of the total of 2,581 of birds ringed in Bartošovice were adults, and 67.6% were juveniles. The percentage of adult birds in Heřmanice was significantly lower than that in Bartošovice (χ^2 -square = 174.78 df = 1 P<0.001).

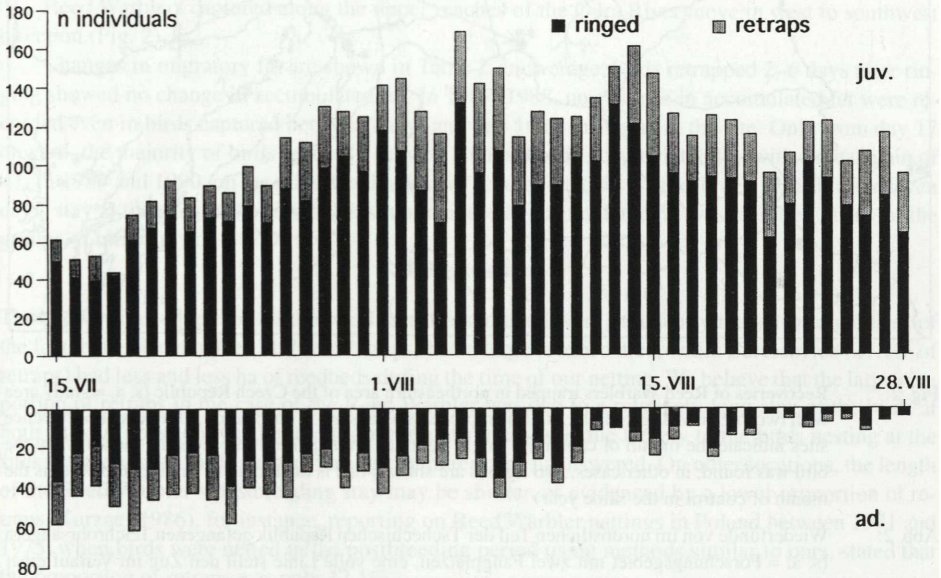


Fig. 1: Dynamics of postbreeding occurrence of Reed Warblers in Heřmanice and Bartošovice. Pooled results from 1983–1985, 1989 and 1990 (Heřmanice) and from 1986–1990 (Bartošovice), n = 6418

Abb. 1: Tagessummen der in Heřmanice und Bartošovice gefangenen Teichrohrsänger, n = 6418

Table 1: Total numbers of Reed Warblers captured between 15 July and 28 August.

Tab. 1: Gesamtzahlen der jeweils im Zeitraum vom 15. Juli bis 28. August gefangenen Teichrohrsänger.

	1983	1984	1985	1986	1987	1988	1989	1990
Heřmanice	831	898	633	x	x	x	911	327
Bartošovice	xx	xx	xx	801	713	625	289	390

x netting not extended over the entire period
 xx no netting
 x Fang nicht im ganzen Zeitraum
 xx kein Fang

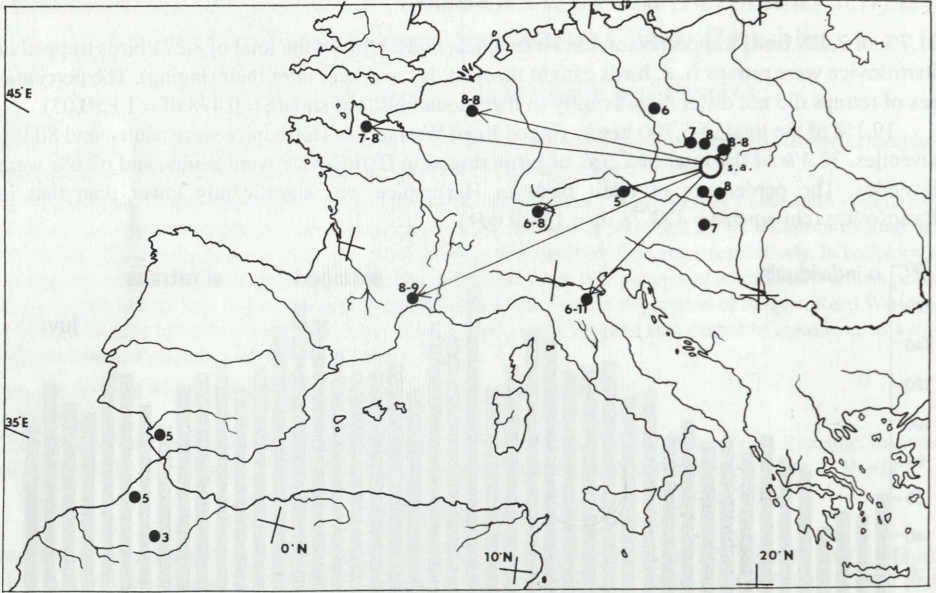


Fig. 2: Recoveries of Reed Warblers trapped in northeastern area of the Czech Republic (s. a. = study area with two sites investigated, the full line represents a passage in one season, numbers at occurrence sites indicate the month of capture, a single figure at finding sites represents the month when the bird was found, in other cases, two figures are shown: one is the month of ringing, the other is the month of control in the same year)

Abb. 2: Wiederfunde von im nordöstlichen Teil der Tschechischen Republik gefangenen Teichrohrsängern (s. a. = Forschungsgebiet mit zwei Fangplätzen, eine volle Linie stellt den Zug im Verlauf einer Saison dar, die Zahlen am Vorkommensort geben die Fangmonate dar; erste Zahl: Beringungsmonat, zweite: Monat des Kontrollfanges in derselben Zugperiode)

Table 2: Changes in migratory fat accumulation of recaptured Reed Warblers in Bartošovice (n = 469).

Tab. 2: Änderungen des Fettscores bei den wiedergefangenen Teichrohrsängern in Bartošovice (n = 469).

Day of occurrence at the site	Year	2-6	7-11	12-16	≥ 17
Changes in fat accumulation (as median)	1987	0 (91) ⁿ	0 (40)	0 (18)	+1 (13)
	1988	0 (74)	0 (58)	0 (27)	+1 (19)
	1989	0 (17)	-1(14)	0 (12)	-1 (12)
	1990	0 (47)	-1(11)	0 (6)	0 (10)

ⁿ

ⁿ = No. of specimens

The numbers of birds captured during different years are shown in Table 1. Data from the years studied show marked differences. In both locations the number of Reed Warblers trapped annually varied by a factor of 2.8, with maxima of 911 birds in Heřmanice in 1984, and 801 birds in Bartošovice in 1986. In 1989 and 1990, when netting was carried out simultaneously at both sites, the number of birds captured were substantially different: 911 and 327 in Heřmanice, and 289 and 390 in Bartošovice, respectively.

The pattern of Reed Warbler occurrence in Heřmanice and Bartošovice are shown in Fig. 1. The passage of adults peaks in the second half of July, followed by a marked drop during August. The passage of juveniles peaks in the first ten day period of August.

Reed Warblers captured along the upper reaches of the Odra River move in west to southwest direction (Fig. 2).

Changes in migratory fat are shown in Table 2. In average, birds retrapped 2–6 days after ringing showed no change in accumulated fat. In 1987–1988, no changes in accumulated fat were recorded even in birds captured between day 7 and day 16 of their stay at the site. Only from day 17 onward, the majority of birds regularly showed an increase in accumulated fat, with a mean gain of +1. In 1989 and 1990, on the other hand, a loss in accumulated fat was recorded in birds after seven days' stay at the site. In those two years, no increase in accumulated fat was recorded in any of the groups of birds.

4. Discussion

The proportions of retraps on the two locations surveyed were practically the same, regardless of the fact that Heřmanice (21.7% of retraps) had a large reedbed area, while Bartošovice (21.1% of retraps) had less and less ha of reedbeds during the time of our netting. We believe that the large proportion of retraps in the case of the Reed Warbler was due to a relatively long stay of the birds at both sites. A question whether the proportion of retraps was due largely to the birds nesting at the sites surveyed or to birds passing through them remains unanswered. On other locations, the length of the Reed Warbler's postbreeding stay may be shorter, as evidenced by a lower proportion of retraps. Kurzac (1986), for instance, reporting on Reed Warbler nettings in Poland between 1971 and 1975, when birds were netted in the postbreeding period using methods similar to ours, stated that the proportion of retraps was only 12.1%.

The proportion of adult birds was different in Heřmanice and Bartošovice (19.1% and 32.4% respectively). If we compare it with the figures calculated for the Sedge Warbler *Acrocephalus schoenobaenus* (17.8% and 7% respectively) (Literák et al. 1994), we may conclude that the adults-to-juveniles ratio of the two species was similar on a location with a large reedbed area, but different on a location with a small reedbed area. The small reedbed area in Bartošovice seems to have been as little attractive for adult Sedge Warblers at the time of migration as it was for adult and juvenile Reed Warblers during their passage. During their postbreeding migration, juveniles of the two species cover shorter distances and stay longer at resting places than adults (Insley and Boswell 1978). That distorts the final adults-to-juveniles ratio at Heřmanice to about 1:5, which is less than could be expected for a ratio after successful nesting, which may, e. g., be 1:1.45 at southern Moravian sites (Hudec 1975). A more realistic 1:2 adults-to-juveniles ratio was found in Bartošovice.

Thanks to abundant source data, the Reed Warbler migration dynamics ascertained in our surveys are sufficiently representative to characterize the main course of the Reed Warbler migration in a specific part of central Europe. Hachler et al. (1983) assumed that autumn migration of the Reed Warbler on the territory of the former Czechoslovakia reached the highest level in the first ten days of September. Our results, however, indicate that migration of juvenile birds peaks probably a month earlier, and migration of adult birds even earlier, in the second half of July. This would be in agreement with a finding that west and north European populations begin to leave their nesting areas in mid-July, and that, e. g., in Germany, the peak is reached in early August (Insley and Boswell 1978, Barlein 1981, Dowsett-Lemaire and Dowsett 1986). In central Poland, too, the numbers

of adult Reed Warblers begin to dwindle from mid-July, and the migration of juvenile birds peaks in the 1st or 2nd third of August (Kurzac 1986). At the Lake Neusiedl, juvenile birds stay three weeks or more on the location before they leave for overwintering grounds in the south-easterly direction. The migratory „wave“ cannot be overly extensive because the populations of the Reed Warbler nesting on the territory between the westerly and northerly directions from the Neusiedl Lake migrate to overwintering grounds in the westerly to south-westerly directions. In northern Italy, the dynamics of postbreeding occurrence of Reed Warblers is different (Spina 1986, 1989). In August, the number of birds, evidently nesting on advantageous locations in Italy, begins to decrease and the number of birds that only pass through Italy and replenish their depleted reserves of energy on suitable locations does not begin to increase before September. This „wave“ peaks in mid-September, and another decrease in the number of birds follows. The last specimens of the Reed Warbler can still be spotted there in late October. In Italy adult birds also set out on their journey earlier than the juveniles.

In their postbreeding migration, central European Reed Warblers move in two different directions. A part of them migrate in the westerly to south-westerly direction, others in an south-easterly direction (Cramp 1992). The migrational divide is partially given here (fig. 2). At the level of the 50th parallel, populations up to the 18th meridian clearly prefer the westerly or south-westerly directions. This is in contradiction to the theory proposed by Hájek (1981) that the 17th meridian constitutes the dividing line between the south-westerly and south-easterly directions of migration. This may be true only for southern Moravia at the level of the 49th parallel. South of the 48th parallel at the Lake Neusiedl, however, Reed Warblers between the 16th and 17th meridian migrate exclusively in the south-easterly direction (Schlenker 1988). We therefore believe that the natural borderline is the range of the Western Carpathians, whereby the populations nesting west or north of that range migrate in the westerly to south-westerly direction, while the populations nesting south of that range migrate in the south-easterly direction.

The quantity of fat accumulated by Reed Warblers was probably affected by the diminishing area of reedbeds in Bartošovice. The difference in fat accumulation by Sedge Warblers (Literák et al. 1994) confirms that trophic strategies of migrating Reed and Sedge Warblers are different (Bibby and Green 1991). At the same site and in the same period, fat accumulation was also monitored in Sedge Warblers and the gains were observed regularly from day 5 of their stay at the site. In Reed Warblers, on the other hand, in 1987–1988, when the land improvement project (i. e. reduction in the area of reedbeds) was in its initial stages, fat accumulation was observed only in birds that stayed at the site for 17 or more days. This can be explained by the fact that Reed Warblers replenish their fat more slowly than Sedge Warblers. In 1989–1990, when the area of Bartošovice reedbeds had been reduced to about 2 ha, no group of birds showed any increases in accumulated fat and in some groups, in fact, the amount of accumulated fat decreased. From this we deduce that in those two years, the Bartošovice site had lost its importance for migrating Reed Warblers as a source of energy reserves for further migration. This assumption was indirectly confirmed by significantly smaller number of Reed Warblers netted there in 1989 and 1990 compared to a similar period in 1986–1988. A negative impact of land improvement measures in reedbeds for the Reed Warbler was also stressed by Franz (1989).

5. Zusammenfassung

Im Zeitraum 1979 bis 1990 wurden an zwei Orten im nordöstlichen Teil der Tschechischen Republik 10550 Teichrohrsänger gefangen. 21,4% davon waren Wiederfänge. Der Anteil an Altvögeln betrug auf dem Fangplatz mit der größeren Schilffläche 19,1%, auf dem Fangplatz mit der kleineren Schilffläche 32,4%. Die Anzahl der in einzelnen Jahren gefangenen Teichrohrsänger unterschied sich auf beiden Fangplätzen um das 2,8fache. Der Zug gipfelt bei Altvögeln in der zweiten Julihälfte, bei Jungvögeln in der ersten August-Dekade: Die Zugrichtung war westlich bis südwestlich. Der Fangplatz mit der kleineren Schilffläche scheint für die Anlagerung von Zugfett nicht geeignet zu sein.

6. References

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