

RESULTS OF A SURVEY OF CORNCRAKE *CREX CREX* IN LATVIA, 1989 - 1995

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ABSTRACT. During the breeding seasons of 1989-1995, Corncrake surveys were carried out in Latvia. Calling males were counted along permanent routes during two nights each season. During the study period, 25 routes, with a total length of 1 184.4 km, were covered in habitats suitable for Corncrakes. Eight categories of habitat, including “unknown” were registered. Habitat was determined for 805 (out of 959) calling Corncrakes. The previous estimate of the Corncrake population in Latvia was 3 000-10 000 but this study suggests that the recent population is $\geq 22\ 000$ calling males. The preferred habitat for Corncrakes in Latvia is floodplain meadow, but more than 40 % of males were recorded in hay meadows.

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INTRODUCTION

Although the Corncrake *Crex crex* is designated as a globally threatened species (Collar et al. 1994), it is common in Latvia. Previous opinions about the status of the Latvian Corncrake population (Transehe 1965, Vīksne et al. 1983) were not based on the results of specific counts and were more or less subjective. The necessity to document the development of the Corncrake population in Latvia was the main objective for starting the survey presented here in 1989.

MATERIAL AND METHODS

Data were collected along 25 routes in the territory of Latvia during seven breeding seasons, 1989-1995 (Fig. 1). Routes were not chosen randomly, but according to availability of observers and followed cart roads. The lengths of routes were 2.8-30.8 km (mean 8.4 km) and were only situated in habitats suitable for Corncrakes.

Figure 1 Corncrake survey routes in Latvia

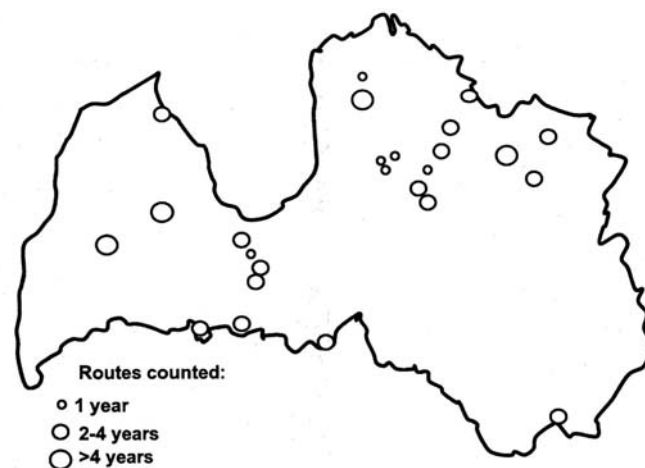


Fig. 1. Corncrake survey routes in Latvia

The area covered by a route was determined using 1:50 000 maps, assuming that Corncrakes can be heard at a distance of 1 km from the census route and excluding forest, open water and villages. The areas covered by routes were thus 0.82-28.57 km² (mean 7.35 km²). Only the length but not the area of each habitat could be determined, because observers did not indicate habitat borders on maps.

Calling Corncrakes were counted along routes in June during the night in normal weather conditions (without rainfall, strong wind or frost). Two counts per season were recommended, but in 35 % of cases, only one count was carried out. Each Corncrake observation was recorded in one of the following habitat categories: (1) pastures, (2) hay meadows, (3) corn fields, (4) floodplain meadows, (5) long-fallow and ditch slopes, (6) clear cuts in forests, (7) other, (8) unknown (too distant to determine habitat type). Information on areas of suitable habitats for Corncrakes in Latvia was obtained from the Latvian Agricultural University.

RESULTS

Habitat selection of calling males

Habitat was recorded for 805 out of 959 Corncrakes. During the study period, 1 184.4 km were covered in habitats suitable for Corncrakes. Forest clear cuts were omitted from further analyses, because only 2 km of census were carried out in this habitat. All Corncrake records for which habitat was noted were included in analyses, and this included individual Corncrakes that may have been recorded twice in a single year (if there were two counts per year in that route). Therefore, the results represent only choice of a calling site by males, but not densities in each habitat. The actual and expected (according to habitat proportions along routes) numbers of Corncrakes recorded in each habitat type are shown in Table 1.

Table 1. Habitat selection of Corncrakes in Latvia; n = 803; ϕ test, $v_1 = 1$, $v_2 = \infty$

Habitat	Length (and % of total) of route, km	ϕ (route), $\beta > 0.95$	Numbers (and %) of Corncrakes observed	ϕ (Corncrakes), $\beta > 0.95$	P
Floodplain meadows	134.8 (11)	$0.618 \leq \phi \leq 0.759$	229 (28)	$1.056 \leq \phi \leq 1.197$	***
Hay meadows	446.2 (38)	$1.251 \leq \phi \leq 1.392$	327 (41)	$1.314 \leq \phi \leq 1.455$	ns
Pastures	135.2 (11)	$0.619 \leq \phi \leq 0.760$	69 (8)	$0.524 \leq \phi \leq 0.666$	ns
Long-fallows	132.0 (11)	$0.610 \leq \phi \leq 0.751$	47 (6)	$0.418 \leq \phi \leq 0.559$	ns
Corn fields	306.4 (26)	$0.997 \leq \phi \leq 1.138$	122 (15)	$0.730 \leq \phi \leq 0.871$	*
Other	29.8 (2)	$0.248 \leq \phi \leq 0.389$	9 (1)	$0.142 \leq \phi \leq 0.283$	ns
Total	1184.4		803		

Corncrakes were present in all habitat types, but floodplain meadows were preferred significantly ($p < 0.001$, ϕ test) while cornfields were avoided ($p < 0.05$, ϕ test). Corncrakes showed no statistically significant preferences for any of the other habitat types. The most commonly used habitat, however, was hay meadows with more than 40 % of registrations from this habitat type. Habitats referred to as "other" were nettle *Urtica dioica* stands, gardens and tilled crops overgrown with weeds.

Population estimate for Latvia

Two methods were used to estimate the size of the Latvian Corncrake population. First, the maximum number of Corncrakes registered in each habitat was calculated (if there were two counts per year) and divided by the length (km) of the route in each habitat. Then, these habitat-specific densities were multiplied by the total area of each habitat in Latvia (Table 2).

Table 2. Calculated Corncrake population in different habitats in Latvia

Habitat	Density, males/km ²	Total area in Latvia, km ²	Calculated number of Corncrakes, n	Calculated number of Corncrakes, %
Floodplain meadows	1.89	646	1 221	7.8
Hay meadows	0.96	7 448	7 129	45.7
Pastures	0.60	5 970	3 595	23.0
Long-fallows	0.51	1 470	751	4.8
Corn fields	0.58	4 891	2 834	18.2
Other	0.27	262	70	0.5
Total		20 687	15 600	100.0

Second, for twenty routes the maximum number of Corncrakes recorded was divided by the maximum route area as determined from a map (see also Materials and Methods). This density (1.774 ± 0.675 calling males/km²; S.D.= 1.401) was subsequently multiplied by the area of all suitable habitats in Latvia (20 687 km²). For four routes, it was impossible to determine the area they covered, and for the remaining route, the density was too high to be compared with that in other routes (by Dickson's test).

The estimated population based on the first method yielded 15 600 calling males, whereas that based on the second method yielded 22 700 – 50 500.

DISCUSSION

Criticisms of the method

Some aspects of the method could have influenced the results. First, the “length of a route in a habitat” is hard to use in calculations and estimates, because it cannot be assumed identical to “area of a habitat”. Second, the routes were not chosen randomly and therefore it is hard to be sure how representative the results are for all of Latvia's territory. Third, different routes were counted in different years. Fourth, in 35 % of cases only one count was performed per year, which means that Corncrakes that may have been present but did not call on the count night were lost for analysis. Finally, the area of suitable habitats for Corncrakes in Latvia may no longer be accurate.

Habitat use and population estimate

Comparison of the coverage of each habitat in Latvia and that covered by routes revealed significant differences. Floodplain meadows ($p < 0.001$, ϕ test) and long-fallows ($p < 0.01$, ϕ test) were over-represented, while pastures were under-represented ($p < 0.001$, ϕ test). This means that the estimate may be too high. However, as already mentioned, the situation may have changed by now in the direction of lands with weak agricultural impact.

A previous Corncrake population estimate for Latvia was 3 000 – 10 000 calling males (Strazds et al., 1994). According to this study, it is 15 600 – 22 700 (50 500). However, since the former estimate excluded Corncrakes in unknown habitats, it can be supposed that the recent population is $\geq 22\ 000$ calling males.

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