

Use of Space and Habitat by the Corncrake (*Crex crex*, L.) in the Lower Valley of the Oder *

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Aims of study

The aim of the present study was to examine the use of space and habitat by corncrakes, so as to obtain information about the characteristics of potential breeding habitats. The investigations were carried out in 1998 and 1999 in the Unteres Odertal National Park. The area provides accommodation for Germany's most significant population of corncrakes. Calling sites and representative random areas were compared with one another according to different vegetation parameters. The choice of area was restricted to water meadows, which are characteristic of the area under investigation. Over the two-year period, 30 birds (26 young males, 2 young females, 2 young birds) were fitted with transmitters and subjected to telemetry tests. So as to examine the effect of mowing on the reproductive cycle of the corncrake, counts of corncrakes and simultaneous records of agricultural usage were carried out in an area of 2000 hectares at ten-day intervals. We also investigated the reaction of individual birds to mowing.

Arrival

In 1998 the first corncrakes were registered on 29.4, in other words comparatively early. In mid-May in two areas each measuring about 1000 hectares in size, a maximum of 65 or 22 simultaneously calling corncrakes were heard. As birds are still passing through at this time and as corncrakes also call during the rest period, it is possible that these birds were included in the count. This means that the callers heard do not necessa-

rily belong to the breeding population of the lower Oder valley. A late second calling maximum, as described by SCHÄFFER (1995), was not noted. Instead of this, at the beginning of June there was a rapid fall in the number of callers.

Vegetation structure

Comparison of the vegetation structure of the calling sites with that of random sites showed that calling areas dry up significantly more quickly (Mann-Whitney-Test: $p \leq 0.01$) and also have a higher growth of vegetation (Mann-Whitney-Test: $p \leq 0.001$). Thus at the time of settling all calling sites and their surrounding area ($n = 10$, for every 5 recording points) already had a minimum vegetation height of 40 cm with an average growth height of 60 cm, whilst the random areas ($n = 7$, for every 10 recording points) had corresponding measurements of only 25 cm with an average of 45 cm. As the random areas include a cross-section of all the habitat types in the area, it can be concluded that the corncrake prefers to settle on surfaces with a higher average growth of vegetation. The amount of ground cover also varied. Thus in the early stages of settlement at the beginning of May, the calling sites and their surroundings showed an average of 63 % (random areas 49 %), but at least 45 %, cover. From the middle of May they already had a coverage of 83 %, corresponding to the seasonal average value of SCHÄFFER (1999). The random areas, with 74 %, were significantly less covered (Mann-Whitney-Test: $p < 0.05$). As the coverage of the actual calling sites at the beginning of May was also significantly higher than at a distance of 20

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m (Mann-Whitney-Test: $p \leq 0.05$), it can be assumed that the calling site is deliberately sought out as the place with the best cover within the patch and the area, provided that it can be easily penetrated and passed through. Because, owing to the shyness of the female, a habitat analysis of the actual breeding site is not possible, but the corncrake nests are usually very close to the calling sites (<100 m [STOWE & GREEN 1997; SCHÄFFER 1999]), the vegetation structural data recorded for them presumably also apply to the breeding habitat of the corncrake. The day-time and night-time habitat types, that were investigated using the day-time locations of birds selected for telemetry studies ($n = 739$) and the night-time calling registrations ($n = 220$), are not distinguishable from one another. Reed and canary grass meadows were, at 43 %, the most densely populated. On land left fallow for a long time, by comparison with the farmed meadows, more mixed vegetation was used, consisting of acidic and sweet grass and weeds (29 % : 14 %), but less sedge (10 % : 16 %), reeds (5 % : 11 %), and bushes (1 % : 7 %).

Home range

To calculate the „home-range“ values only those corncrakes were taken into account from at least 10 undisturbed locations, including locations unaffected by mowing. The areas of activity identified varied between 0.4 and 16.1 hectares. An average „home range“ amounted to 6.3 hectares ($n = 18$), based on average on 17.6 locations in 15.7 days. OTTVALL & PETERSON (1998) reached a similar result during investigations in Sweden. Bearing in mind activity range values that were underestimates due to far shorter location periods, our values are also comparable with those of STOWE & HUDSON (1991). Females and paired young males occupied a tendentially smaller „home range“. Particularly striking was the overlap of activity ranges of several males at one point, where in one case a nest and in two cases females were found within the overlap area. Such an overlap could be an indication of breeding activity.

Affection by mowing

By the middle of June, 28 % of the area under investigation had been mown or grazed. However 39 % of the corncrake patches were affected by this from mid-May; this was too high a proportion. Early mowing of the reed and canary grass meadows, which represent the most important calling place habitat for the corncrake in the area under investigation was a decisive factor in this situation. The immediate reaction of the corncrakes to mowing varied considerably. Some of the birds left the meadow even at the initial stage while the turning places were being mowed, others rushed about, panic-stricken, over the remaining, ever smaller area, before they too flew away. The different behaviour of the birds might indicate that there is a connection between pairing status and the time of flight. Birds that had already paired would, it seems, leave the meadow later, or, as in the case of a certain paired young male in the Oder valley, would, in extreme cases, be killed by the mowing machinery. Yet as the pairing status of the birds is generally not known, further investigations are needed into the reaction of corncrakes to mowing.

Resume

The breeding incidence of the corncrake in the lower Oder valley is of European-wide significance. Owing to the new data on the choice of habitat of the corncrake in the Oder Valley and on its behaviour during mowing, by comparison with former practice improved protection and management measures are possible. It is now necessary that these results should be exploited as quickly as possible.

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