

The Corncrake (*Crex crex*) in Russia (West Siberian Plain)

Yury S. Ravkin

1. Introduction

Currently, corncrake (*Crex crex*) is listed as a species with considerably decreased numbers (BUXTON 1990, COLLAR & ANDREWS 1988; CROCKFORD et al. 1996). I reviewed this species, using data accumulated in the data bank of the laboratory for ecological monitoring between 1959 and 1991. Some data is provided by published literature (BURSKY & VAKHRUSHEV 1983, DANILOV et al. 1984, KOSLOV 1988, KUCHERUCK et al. 1975, PANTELEYEV 1972a, 1972b, RYZHANOVSKY et al. 1978, STOPALOV 1986, TOROPOV et al. 1986).

2. Development of knowledge about the corncrake in Russia

Censuses were performed in all subzones of natural zones from arctic tundra to the steppe (RAVKIN et al. 1984). Counts began on 16 June in tundra and forest-tundra, 1 June in northern taiga and from 16 June in all the other areas. Censuses were continued until 31 August. Totally, the results of 1230 sites, studied in the first half of summer and of 1095 sites, censused in the second half have been used (before and after 15 July, in tundra before and after 31 July). The total length of censused routes was about 40,000 km. Studied areas and years are shown in Fig. 1. Birds were counted along constant, but not strictly fixed routes of unlimited transect width in the morning from five until nine a.m. The estimation per area in terrestrial areas and on lakes was made separately, according to the mean group distance from the observer (RAVKIN 1967). Along rivers the indices of bird abundance were counted along 10 km of shoreline (5 km length of river).

The overall abundance of corncrake was defined as the product of sums of mean indices of abundance (separately for the first and second half

of summer during all studied years) for each habitat per occupied area (for rivers - per the river network and total area of subzone, zone, etc).

3. Distribution and important areas of the corncrake population

Habitat area was measured on the map of "Vegetation of West Siberian Plain". Estimates for numbers were calculated only within the outline of this map. Image distortion is regarded as being negligible ($\pm 2\%$) and was therefore not corrected. Data on summarised areas of large lakes and density of river networks were taken from the monograph 'West Siberia' (ANONYMUS 1963) and areas of settlements - from The Land Management of Regional Agriculture and Forest Department.

Corncrake is encountered in tundra and forest tundra zones, but in northern taiga it was recorded only from meadows in the flood basin of the Ob river. In the first half of summer 0,07 individuals/km² were recorded and from then the number of calling males doubled. It is common in all types of landscape from the middle taiga to the steppe (dry valleys, flooded bogs, flood basins).

In middle taiga, dry valleys are mainly occupied by dark-coniferous and mixed forests. Extra-flooded bogs usually represent raised and transitional bogs and rarely fens. Flood basins are meadow-sors with territorially small willow stands and birch-aspen forests on natural levees. In this subzone, corncrake is the most numerous in flood basins (1), scarce in flooded bogs (0,1) and extremely rare in dry valleys (0,006).

Dry valleys of southern taiga are covered mainly by secondary small-leaved forests with frequent fells and burns. A part of the area, particularly on the upper flood basin terraces, is ploughed. Bogs

are mainly raised and transitional. Marshes are more frequent, compared to the middle taiga. Flood basins are similar to those of the middle taiga. Corncrake, as in the middle taiga, shows preference for flood basins of large rivers, but its abundance here is four times as much as in the middle taiga. Compared with middle taiga, it is more frequent, though still scarce outside the flood basins (0,3 and 0,5 in dry valleys and bogs, respectively).

In subtaiga forests fields, mixed with coppices, and original young forests cover most of the subzone. Bog marshes dominate there. Flood basins are dryer and partly ploughed, though great mar-

shes are frequently encountered in the terrace-adjacent area. As before, corncrake is the most abundant in flood basins (6), but it is two to three times less numerous outside, though in contrast to the taiga subzone, it is a common bird here (3 and 2 in dry valleys and bogs, respectively).

In the forest steppe, the portion of ploughed area is still greater than in subtaiga forests. Within the forest steppe, the Ob flood basin looks like the subtaiga one, though more humid, not being influenced by drying, observed below the Novosibirsk Power Station, built on the border of the forest steppe and subtaiga forests. Pine and birch-pine forests are distributed along supraflood

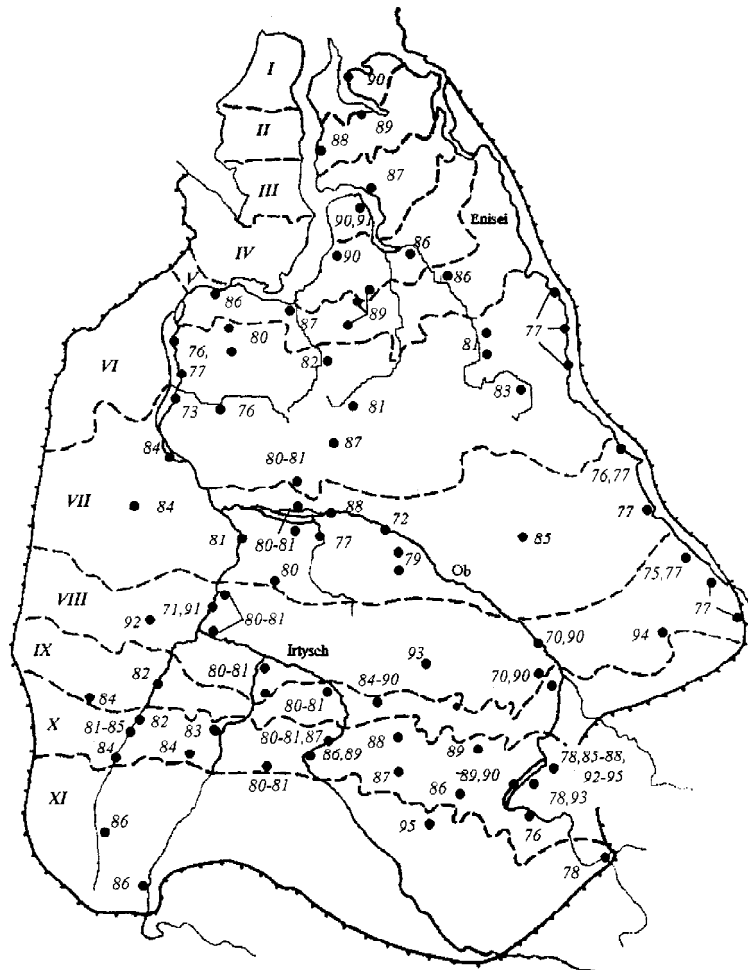


Figure 1: Studied areas and years of censuses. I - arctic tundra; subarctic tundra; II - northern mossy; III - low bush; IV - southern bushy; V - forest-tundra thin forests; VI - northern taiga; VII - middle taiga; VIII - southern taiga; IX - subtaiga forests; X - forest-steppe; XI - steppe; 63-95 - years 1963-1995.

basin terraces of the Ob river valley and hollows of the ancient flow. Corncrake is less abundant there, than in the subtaiga zone. In the flood basin it is found with equal abundance as in southern taiga: one to five times less numerous; it is rare outside the flood basin (0,4). In the steppe, which occupies a very limited area in the Russian part of the West-Siberian Plain, flood basins of large rivers are missing, since the Ob and Irtysh rivers flow within the forest-steppe. In steppe-zones this bird is the most abundant on marshes (4), mainly presented in flood basins, rarer on meadow-reed-grass bogs. Dry valleys are almost completely ploughed, with primary vegetation, kept as small patches.

On average on the West Siberia Plain, corncrake is common in flood basins of larger rivers (2), scarce in dry valleys and extraflooded bogs (0,3 and 0,2) and very rare on the shores of lakes and settlements (0,02 and 0,03). Average maximal abundance for subzones and zones is characteristic of subtaiga forests (2), decreasing northwards and southwards (in southern taiga - 0,4; middle - 0,1; northern - 0,001; southwards in the forest steppe - 0,5; in steppe - 0,02).

4. Size and development of the national corncrake population

A total of 765,000 individuals was estimated in the West-Siberian plain during the first half of summer. The error, due to sampling and extrapolation is $\pm 30\%$ (calculated after RAVKIN & CHELINTSEV 1990) and nonsymmetric interval at 95 % confidence level is 515,000 - 1,240,000 specimens. Therein, 66 % of the total number inhabit dry valleys, 18 % - flood basins of the Ob and Irtysh river and 16 % - extraflooded bogs.

In subzones, the majority of corncrake were observed in subtaiga forests (52 %) fewer - in southern taiga (23 %) and forest steppe (16 %). For middle taiga these records are even smaller (8 %), being insignificant (by 0,1 %) for northern taiga.

The same routes were censused in the northern forest steppe of Priobie in 1978 and 1993, and in the northern steppe of the Ob-Irtysh riverline in 1981 and 1995. On average, the abundance of

corncrake in mentioned areas and years was equal (by 0.3 individuals/km² and by 0). In the low-mountains of North Altai, the number of corncrake kept constant during the nesting period from 1979 to 1983.

In southern taiga of West Siberia, birds, including corncrake, were censused in the 60s (1967, 1968 and 1970) and 1990-1991 along the same routes. During this time interval, the landscape of habitats didn't change greatly. In Priirtysh areas, felled in the 50s and overgrown now by bushes, birch and aspen, birch and aspen young forests (pole stands) have been formed. These forests also occupied the Ob-Irtysh riverlines on the pine-fir taiga areas, felled five years ago and now infected by bombyx and overgrown by bushes. After land reclamation of one of the open marshes, young pine-birch forests appeared there. In birch-aspen forests, due to young growth, mixed dark-pine young forests have been patchily formed.

In the flood basin of the Ob river meadows, alternating with bushes, oxbow lakes and boggy areas were changed by open vast dry valley-like meadows. The 90s were characterised by increased mean summer temperatures, decreased precipitation, flow intensity and greater soil dryness. Simultaneously, decreasing numbers of most resident and migratory birds (except for *Fringilla coelebs*) have been recorded there. It may be due to several abnormally dry years and disturbed normal invertebrate reproduction. Probably anthropogenic influence didn't cause this decrease in nesting areas. Thus, it was observed in waterfowl species, most of which are sensitive to anthropogenic influence (SHOR & RAVKIN 1995).

The total number of corncrake in the first half of summer in southern taiga in the 90s was 6,5 times lower than in the 60s, on the average for summer - 8 times (differences are reliable at 95 % level of confidence).

On average, estimates for first half of summer as well as for the second half of summer were considerably underestimated, because the adult males, which had stopped calling, as well as females and young corncrakes were generally not censused. This data may be used only as relative

estimates of population changes. The decreased abundance was observed for all groups of landscapes. In the first half of summer, the population of this bird made up 1,000 specimens: in the 60s - 221, in the 90s-34, on average for summer - 164 and 20 (the degree of error due to sampling and extrapolation for the first half of summer is ± 36 and ± 58 % respectively, the 95% confidence limits amount to 139-354 and 17-56, on the average for summer - the error is ± 31 and ± 56 %, confidence level in the 60th - 109-246 and in the 90th 11-39).

Conclusion

In conclusion, in the 90s as compared with the 60s, the southern taiga of West Siberia was characterised by great and certain decrease in corncrake numbers. But, on the whole, for the West Siberia plain there is no reason to suggest a great decrease in corncrake numbers to the present or in the near future. This species is not considered as especially protected and special protective measures in West Siberia are not worthwhile.

Yuri S. Ruskin
Head of Laboratory of Zoological Monitoring
Institute of Animal Systematics and Ecology,
Siberian Branch of Russian Academy of Sciences
11 Frunze Str., Novosibirsk, 630091 Russia
e-mail: zm@zoo.nsk.su

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