Abstract

An urban satellite roost in the town of Břeclav (southern Moravia, Czechoslovakia) was used every night in the period from 10. XII. 1983 till 5. IV. 1984 by varying numbers (one to 190) of wintering rooks (*Corvus frugilegus* L.). Daily counts of the roosting birds within a period of 74 days from 16. XII. 1983 until 27. II. 1984 (the range 6 to 134 birds) were correlated with 33 environmental variables, and tested by different univariate and multivariate statistical techniques (correlation, simple linear regression, stepwise and optimal multiple regression, principal component analysis, cluster analysis, partitioning with subsequent analysis of variance, analysis of contingency tables). Greater numbers of the birds roosted when the soil temperature was very low, the river frozen over, horizontal visibility poor, relative humidity of the air high, cloud cover high and/or increasing, windspeed low and snow cover present; the counts were also affected by the day length. The clusters of meteorological factors (as revealed by principal component analysis and cluster analysis), significantly correlated with higher counts of roosting birds, were: "temperature" (low), "humidity" (high), "windspeed" (low) and "soil surface state" (snow or ice). A set of multiple regression equations was proposed that could predict the numbers of roosting birds.

Variability of the roosting site within a small park during the observation period was explained by behaviour of the birds in selecting microclimatically sheltered sites: they chose preferentially the leeward side of the roost when cold northerly winds stronger than 3 m/s blew.

The results of this study support the "energy saving" hypothesis. Energy conservation is probably the ultimate factor in the roosting and feeding behaviour of wintering rooks.

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Introduction

The life history of birds during the winter season is, in general, investigated much less thoroughly than that of their breeding period. However, high concentrations of some species of birds in urban centres during the winter warrant investigation for a number of reasons. A remarkable form of the birds' assemblies in the urban areas is communal roosts (on trees or even on build-