

Symposium 25 Population regulation in heterogeneous landscapes: a means for predicting the consequences of environmental change

Introduction

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Habitats vary in quality as a result of variation in food abundance, nesting site quality, predation and diverse other factors. This symposium aimed to identify individual and population responses to such variables, and from them to develop a better understanding of the factors regulating the natural populations of birds. Accordingly it sought answers to a range of questions: how do birds respond to habitat heterogeneity and variation in quality? Do birds move in response to quality differences? What is the effect of competition for food or territory? What happens to those that cannot find food or territory? With such information it is then possible to create predictive models of population demography; and these then can be used to predict shifts in population size should habitat vary as a result of environmental change.

Two of the five papers offered are published here. Nicholas Rodenhouse and Richard Holmes incisively dissect out the mechanisms regulating bird populations, demonstrating the important role of site-dependence and carefully explaining procedures for its identification and why it

needs to be distinguished from 'crowding' in conservation management. Jo Ridley and colleagues outlined progress towards developing a model for predicting population sizes and regulation in cooperatively breeding groups of birds, using as their test species the endangered Seychelles warbler.

Of the remaining three papers, all reported as orals, William Sutherland and Hanna Kokko dealt with the prediction of bird population responses to novel conditions, such as could arise from environmental change. Henrik Smith and colleagues considered the effects of interference and competition in heterogeneous landscapes, developing a model to predict outcomes with implications for bird monitoring and habitat evaluation. Hanna Kokko and colleagues then carried on the theme of competitive effects in a study of a colonially breeding seabird, the Common Guillemot. Their model of costs and benefits predicts that the frequency of fighting for good nest sites should increase at higher population densities. The abstracts of all three oral papers are published in the Abstract volume for the Congress.