

# Mapping the distributions of restricted-range birds to identify global conservation priorities

Michael J. Crosby

## 9.1 Introduction

The conservation of biodiversity has become one of the major environmental issues of the late twentieth century. It is predicted that the uncontrolled exploitation of natural resources can soon lead to a mass extinction of species (see, e.g., Myers, 1979; Wilson, 1988). In the past, the efforts of conservationists mainly focused upon a small number of species, typically large, charismatic and threatened animals. It is now clear that initiatives directed only toward these species cannot adequately address the more fundamental problems associated with general biodiversity loss.

Biodiversity is the total variety of life on earth. Our comprehension of this variety is limited, since only about 1.4 million of an estimated 5 to 30 million species on the earth are described (Wilson, 1988). How do we approach the conservation of this biodiversity when it is so poorly understood? Resources could be devoted to taxonomic research in order to rapidly advance our knowledge of all biodiversity (May, 1990), but, essential as a continuing role for taxonomy certainly is, the limited time available is such that any useful results would appear too late to solve the problem. It is clear that a strategy to conserve overall biodiversity must be based largely upon

information that we already possess on the better known groups of plants and animals.

Biodiversity is not distributed evenly. Some parts of the world are much richer in species than others, and some places support concentrations of species which are found nowhere else. On the basis of vertebrates, swallowtail butterflies and higher plants, 12 'megadiversity' countries have been identified (McNeely *et al.*, 1988; Mittermeier, 1988). These countries by themselves account for up to 70% of the world's diversity of species. The botanical 'hotspots' analysis of Myers (1988, 1990) emphasized the importance of narrowly distributed species as well as high diversity, and resulted in the identification of 18 'hotspot' areas which support 20% of the world's known plant species in approximately 0.5% of the world's land surface. While interesting at the global level, however, neither of these approaches is based upon sufficiently detailed distributional information to enable a focus beyond the country or 'hotspot' level.

Many countries, principally in the tropics, contain large numbers of species with small geographical ranges. Concentrations of these restricted-range endemics are found on certain islands or island groups or in discrete areas of a particular habitat or grouping of habitats in continental regions. These 'habitat islands' are usually associated with a mountain range, river valley, coastal lowland strip or other geographical feature. Those species which are confined to a certain vegetation zone and unable to disperse through surrounding areas, are particularly vulnerable to habitat modification and destruction. The areas where restricted-range species are concentrated are therefore of particular conservation concern. They contain a significant proportion of all biodiversity concentrated into a relatively small portion of the world's land area, when habitat destruction can lead to mass extinctions of species.

## 9.2 Context of this study

The BirdLife Biodiversity Project (ICBP, 1992; Stattersfield *et al.*, in prep.) started in 1988, with the aim of identifying important areas for the conservation of biodiversity at the global level. Birds were used here as indicators to identify areas that support concentrations of restricted-range species, which are known here as Endemic Bird Areas (EBAs). An extensive literature review also investigated the congruence between the locations of EBAs and documented centers of endemism of other major plant and animal groups.

The methodology of this Biodiversity Project is based upon studies of the restricted-range bird species of sub-Saharan Africa by Hall and Moreau (1962) and of Colombia and Ecuador by Terborgh and Winter (1983). Terborgh and Winter covered all species with ranges estimated to be below 50 000 km<sup>2</sup>. This definition was applied throughout the world by the Biodiversity Project. Detailed information on the distribution of all restricted-range bird species was collated. The results of the project can therefore be summarized at the global and regional levels, and also used at the local level in the planning and development of conservation projects managed by members of BirdLife International's global network.

Birds are used as indicators because they are one of the most extensively studied of the major animal and plant groups. Most of the world's bird species are already described. New bird species are currently being discovered at a rate of only 2.4 per year (Vuilleumier *et al.*, 1992) while 12.6 new mammal species have been described per year since 1982 (Wilson and Reeder, 1993). The study of birds provides a truly global perspective since they have dispersed to and diversified in virtually all regions of the world and all terrestrial habitat types and altitudinal zones. They are generally the easiest of the major animal groups to record in the field and they lend themselves particularly