
Protecting the evolutionary and functional diversity of birds and mammals

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Abstract

Facets of diversity beyond species numbers are increasingly recognized as important in maintaining intact and functional ecosystems. However, most conservation is still focused on target species rather than more broadly defined biodiversity. Here, we analyze how well the current protected area system protects different facets of bird and mammal diversity across the globe and how much better we could do with an expansion of protected areas. As is, there are big gaps in the coverage of diversity in protected areas, but disproportionately large gains could be made by expanding protection. For an additional 5% of the land area under protection, the amount of diversity protected could be tripled for any one facet of bird or mammal diversity. Further, the same areas are often priorities for multiple diversity facets and for both birds and mammals (greater than 60% overlap in some cases). Overall, priorities are the most similar for species and phylogenetic diversity and the least similar for functional diversity. We also show that priorities differ for different conservation objectives, which highlights the critical need to clearly define our conservation objectives and use the metrics that best represent them.

Keywords: functional diversity, phylogenetic diversity, conservation, birds, mammals

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