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Using a bird community index to evaluate national parks in the urbanized national capital region

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Abstract Land managers and conservationists face two challenges in protecting land: first balancing human needs against conservation goals, and second demonstrating protected areas are meeting those goals. In this paper, we address the second challenge, using the National Parks of the highly urbanized mid-Atlantic as an example. We detail a comprehensive measure of overall ecosystem integrity, the bird community index, and demonstrate how it relates to the underlying habitat structure. We use community bird data collected from point counts to generate a single, comprehensive metric that we show is significantly correlated to habitat features, making it an effective tool for evaluating ecological integrity. Next, using the metric, we compare bird communities within and outside of protected status, and find that National Parks maintain higher integrity bird communities. This result provides evidence that even smaller parks in highly urbanized areas afford a conservation benefit. More broadly, we find that this rapid and cost effective assessment tool, the bird community index, shows great promise in helping land managers evaluate protected areas.

Keywords Birds · Ecological integrity · National Parks · Protected · Community

Introduction

Land conservation and protection is often at odds with pressures for food production, living space, transportation, and various other human needs. In urban areas, where land is at a greater premium, there are inevitable tradeoffs in land use decisions, and a balance between maximizing protected areas and meeting human needs is most challenging. Despite these obstacles, world governments have successfully protected between 10.1 and 15.5 % of the total terrestrial habitat (Chape et al. 2005; Soutullo 2010; Armsworth et al. 2011), a large step in meeting conservation needs. After land is protected, however, a second challenge emerges. How do

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