
Investigating protected areas effectiveness using North-American Breeding Bird Survey

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Abstract

Protected areas are one of the main tools for conserving biodiversity worldwide, yet their effectiveness in doing so has been studied to a limited extent. Previous studies mainly used pairwise comparisons between a protected versus an unprotected site, but the choice of the unprotected control site is often poorly defined and thus rather subjective, which can introduce important biases (*e.g.*, differences in altitude, productivity, or habitat). In practice, the choice of the control is key, as it is tangled with the very definition of protected areas effectiveness. For example, very different conclusions will be obtained when considering as the control for a protected forest an unprotected cultivated area that was previously a forest, or an unprotected forest with higher intensity of human activities, or an unprotected forest with similar level of human activities.

In this talk, I will argue that large biodiversity monitoring datasets provide a major opportunity for investigating protected areas effectiveness at large scales, as analysing these datasets forces us to define together control site and expected effects. I will illustrate this using an analysis of the effectiveness of North-American protected areas in conserving bird biodiversity. We found no effects of protected areas on species richness or total abundance. However, we show that in a given habitat, protected areas favour species typical from this habitat (*e.g.*, forest species are more abundant in protected forests than in unprotected forests), making the assemblage more typical. Moreover, we show that protected areas are beneficial to species that avoid human presence, hence effective in protecting species that are potentially the most affected by human activities.

I will conclude that measuring protected areas effectiveness is not only crucial in order to understand how they are affecting biodiversity, but also to think about the expected effect of conservation in a context of biodiversity crisis.

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