**Introduction**

* Protected areas (PAs) as the backbone of global response to biodiversity crisis.
* Recent demonstration of the efficacy of PA for preserving biodiversity accounting for the confounding effects of PA site accessibility and habitat conditions.
* Analysis does not consider a second essential component of PA response, the connectivity of PA.
* In fact, the results presented in Brodie indirect support the importance of PA connectivity and its potential confounding effects on the efficacy estimate. The authors’ secondary analysis show that large PAs create spillover effect on surrounding unprotected locations suggesting they act as biodiversity reserves. Similarly, the residuals of the PA efficacy model has a spatial structure that underestimates biodiversity levels closer to PAs.
* Replicating and extending the work of the original authors, we assess the effect of connectivity to PA on three facets of vertebrate biodiversity (SR, FR, PD) and as a moderator of previously observed PA efficacy.
* Insert Fig. 1 showing PA effect and connectivity effect.
* For birds, we found …PA diminishes with inclusion of connectivity
* For mammals, we found…

**Methods** (3000 word limit)

Replication Data

Data used were from Brodie et al. (2023)…

Variables

Describe construction of the connectivity measure

Statistical Approach

Describe construction of the connectivity measure

**Extended data figures and tables**

Extended Data Fig 1 Sensitivity of PA and connectivity estimates to dispersal distance selection

Extended Data Fig. 2