

Insights from longitudinal patterns of local extinction and colonization in giant pandas

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Abstract

With the Sixth Mass Extinction becoming an increasingly intractable juggernaut, it is vital to understand the patterns and drivers of local extinction and colonization events of at-risk species under global change. Here, we examine whether observed local colonization and extinctions of giant pandas (*Ailuropoda melanoleuca*) during three time periods (1985-1988, 1998-2002, 2011-2014) are correlated with protected area status, local rarity and abiotic factors (i.e., climate and land-use variables). We observed a decreased rate of local extinction and a relatively stable rate of local colonization through time, and found that (i) local extinctions were more likely and local colonization less likely in areas with high local rarity, harsh abiotic (e.g., low proportion of forest cover) and unprotected area status, and (ii) the relative importance of these factors changed over time. These findings provide insights into the factors governing panda recovery and showcase how conservation action can reverse fortunes and facilitate species recovery.

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