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**Modeling the effects of fragmented habitats on Costa Rican jaguar populations.**

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From the introduction: In recent years, biodiversity in Costa Rica has suffered a dramatic decline, due largely to habitat loss and fragmentation. In particular, this has had a severe effect on jaguar (*Panthera onca*) populations, which require vast expanses of territory in order to thrive. One of the most promising solutions proposed for fragmented ecosystems (both Costa Rican and otherwise) is that of connecting viable habitat patches with “corridors.” However, habitat restoration is often expensive, and corridor efficacy is not well known. Costa Rican jaguars in particular have been studied empirically for many years, but there have been no attempts to model the population mathematically to our knowledge. This makes it difficult to predict the effects of conservation policy on population levels. The objective of this study is to lay the framework for a model of Costa Rican jaguar populations and subsequently examine the effects of wildlife corridors on population dynamics in patchy habitats. We will first explain the structure of our population model, both for a single patch and two-patch habitat. We then implement and analyze the model deterministically and stochastically. We will compare the effects of patch connectivity and carrying capacity on jaguar populations and suggest future directions for study.

*Classification:* M60 I70 K90

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