

Research synthesis: The general performance of interhabitat corridors

ANY RESTRICTIONS ON FREE MOVEMENT ACROSS A

landscape can threaten species survival—both plant and animal. Habitat fragmentation, usually a result of habitat loss, can weaken a species group by dividing it into isolated subpopulations. While the causes of habitat fragmentation are generally outside of a resource manager's sphere of influence (urbanization, agricultural development, tectonic movement, rise in sea level via climate change), popular conservation practices promote the use of corridors to mitigate the effects. Through creation of artificial corridors or maintenance of natural ones, dispersal of species between habitats can occur and the accompanying gene flow between subpopulations can extend species viability—supposedly.

The analysis highlights the effectiveness of land-made corridors over that of man-made ones.

Citing an increase in use of corridors for conservation purposes, “despite a lack of consensus on their efficacy,” Gilbert-Norton et al. (2010) sought a practical overview of corridor success by scrutinizing the results of 20 years of corridor use in linking habitat patches.

Using a variety of data collection methods across a diverse set of corridor experiments, the study sought to answer the question: Do corridors increase movement between habitat patches for a diverse set of organisms across a wide range of ecosystems? The authors conclude that yes, creating and maintaining corridors are “ultimately worthwhile.” The collation of data from 78 pertinent experiments from 35 studies indicated that movement between habitats is approximately 50% greater in patches connected by corridors than in patches without corridors.

The methods used to compare and contrast corridor experiments began with keyword searches of scientific and bibliographic databases, and continued with mathematical models reflecting hierarchical dependence. Many variables were considered for experiments deemed worthy of inclusion in the study: animal and plant corridors, controlled and uncontrolled distance between habitat fragments, and preexisting corridors versus manipulated ones. Types of corridors that are most effective and species most likely to use them are qualified throughout the study. For instance, the analysis highlights the effectiveness of land-made corridors over that of man-made ones.

The authors note that, although relevant data suggest that invertebrates and plants benefit from corridors, most manipulated corridors are created for terrestrial vertebrates, adding that general information on which particular species are most likely to benefit from corridors would be of great use to land managers and conservationists. Because pollination and seed dispersal are aided by avian and nonavian vertebrates and insect vectors, some evidence suggests that plants are more likely than animals to move through corridors. However, before findings can be generalized into practices, a more complete understanding of the relationship between connectivity and dispersal mechanisms is required.

The real-world applications of this analysis are clear: natural, preexisting corridors are more highly trafficked than experimen-

tal manipulations and the conservation of natural corridors seems generally more beneficial to habitats than the creation of manipulated ones.

The authors conclude by noting that while corridors promote movement between habitat patches, more long-term studies are required to determine whether that movement actually reduces population extinction.

Reference

Gilbert-Norton, L., K. H. Beard, R. Wilson, and J. R. Stevens. 2010. A meta-analytic review of corridor effectiveness. *Conservation Biology* 24(3):660–668.

—Jonathan Nawn, Mindi Davis, and Jeff Selleck