

Wildlife Corridors Benefit Plant Biodiversity, Native Plants

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Wildlife corridors appear to support not only wildlife but also plants —especially the oft-threatened native variety.

A six-year study at the world's largest experimental landscape devoted to the corridors — links between otherwise isolated natural areas — has found that more plant species, and specifically more native plant species, persist in areas connected by the corridors than in isolated areas. The results suggest that corridors are an important tool not only for preserving wildlife but also for supporting and encouraging plant biodiversity.

“From the perspective of whether corridors are an important conservation tool, the big question is whether they preserve a large diversity of species,” said Doug Levey, a UF professor of zoology. “The answer, for plants anyway, appears to be yes.”

Levey co-authored a paper on the study set to appear Friday in the journal *Science*.

In recent decades, many states and communities have set aside land for wildlife corridors. They are even planned on a regional scale, with one proposed corridor, for example, stretching 1,800 miles from Yellowstone National Park to the Yukon Territory.

The rationale behind the corridors is that linking natural areas allows plants and animals to spread across them, helping them to thrive,

reducing localized extinctions and increasing biodiversity. But until recently, scientific evidence for that rationale was surprisingly slim, with most corridor studies conducted on very small scales.

Levey and his colleagues' massive outdoor experiment at the Savannah River Site National Environmental Research Park on the South Carolina-Georgia state line is steadily filling in the holes in scientists' knowledge.

The site consists of eight sets of five roughly two-acre clearings in the forest. In each set, a corridor connects the central clearing to one peripheral clearing, with the others remaining isolated. Plants and animals thrive in the clearings, which consist of longleaf pine savannah, an endangered habitat. They do not do well in the areas of surrounding forest. The difference between the habitats is similar to the difference between the urban and natural areas, where corridors are most often used.

In two earlier papers, the researchers concluded that corridors encourage the movement of plants and animals across the fragmented landscapes. They also found that bluebirds transfer more berry seeds in their droppings between connected habitats, suggesting that the corridors could help plants spread.

The latest research tackled a much broader question: Do corridors increase plant biodiversity overall? To get at the issue, researchers Ellen Damschen and Nick Haddad, of North Carolina State University, did a detailed census of evenly distributed plots in six sets of connected and unconnected patches. They started in summer 2000 and returned every year through 2005 except for 2004, when a fire burned the landscape.

The site was set up in 1999, when forest service loggers carved out the plots, and there was little difference among plot covers just one year later in 2000. But a different pattern became clear in ensuing years. Not

only were there more plant species in connected plots than unconnected ones, there were more native species.

“They started with the same diversity and then diverged,” Levey said. “Native species definitely benefited, and yet there was absolutely no evidence that exotic species benefited.”

The difference arose because unconnected patches gradually lost native species, whereas the natives persisted in connected patches. Over the five years, the unconnected patches lost about 10 native species. Meanwhile, the corridors seemed to have no impact on the number of exotic or invasive species in the connected and unconnected patches.

“It seems that exotic species either were already everywhere and did not rely on corridors for their spread, or they remained in one place,” Damschen said in an e-mail.

Levey said the scientists think that invasive species, which by definition are good at spreading, are little affected by corridors. Native species, by contrast, are less invasive and so assisted more by the corridors. “It may be that corridors play to the strengths of native species,” he said.

Levey said the National Science Foundation recently renewed a five-year grant to continue research at the site, committing about \$500,000 for another five years.

Source: University of Florida

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