

Forest corridors prove critical to biodiversity and pollination success in the tropics

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The curved bill of the green hermit (*Phaetornis guy*), which is restricted to forested habitats, effectively extracts nectar from a *Heliconia tortuosa* flower. Credit: Matt Betts, Oregon State University

As tropical forests become increasingly broken up by roads, farm fields,

pastures and other developments, corridors of trees provide vital pathways for pollinators and contribute to a rich diversity of plant species, scientists have confirmed.

A study at the Las Cruces Biological Station in Costa Rica shows that when forests are linked by continuous corridors of trees, pollination has a greater likelihood of success. In contrast, when patches of forest are isolated from each other, pollinators are less abundant and plants frequently fail to reproduce.

More than 94 percent of flowering [tropical plants](#) and 75 percent of the world's leading food crops require pollination by animals such as bees, bats and hummingbirds.

Researchers have found that forest corridors enable specialized hummingbirds that prefer such landscapes to travel longer distances from one patch of trees to another, increasing pollen exchange between forest patches. Such patches not only harbor more hummingbirds but also display greater rates of pollination than plants in areas that are isolated from each other.

These are among the results published today in the *Proceedings of the Royal Society B*, a technical journal, by scientists from the College of Forestry at Oregon State University and the Georg-August University Gottingen in Germany.

"This work presents tropical forest landowners with a simple, relatively inexpensive solution to enhancing biodiversity and [pollination](#) of native forest plants—connect forest patches with hedgerows and wooded corridors," said Urs Kormann, the lead author of the study and a postdoctoral researcher at Oregon State. "This may complement national parks."

"Wooded corridors remain abundant in many tropical landscapes," said Matthew Betts, co-author and assistant professor at Oregon State. "But as agricultural land use is expanding rapidly, quick action will be required to avert the disappearance of corridor elements between fragments. Otherwise, there may substantial losses of connectivity between [forest](#) remnants, leading to accelerated biodiversity loss."

The researchers performed field experiments and conducted observations to arrive at their findings. They measured rates of hummingbird visits to feeders and to live plants (*Heliconia tortuosa*) placed in [forest patches](#). They tracked the flow of pollen from one patch to another and evaluated the presence of two groups of hummingbird species, one that prefers forested habitats and one that does not.

"Simple wooded corridors can boost landscape connectivity for pollinators and animal-pollinated plants," the researchers wrote. "Our findings may also apply to other organism groups that move along corridors, potentially providing other ecosystem services."

More information: Corridors restore animal-mediated pollination in fragmented tropical forest landscapes, *Proceedings of the Royal Society B: Biological Sciences*, [rspb.royalsocietypublishing.org1098/rspb.2015.2347](https://royalsocietypublishing.org/doi/10.1098/rspb.2015.2347)

Provided by Oregon State University

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