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Bats Reseed Lost Forests

Every year, millions of acres of tropical rain forest are cleared for -timber and agriculture in Central and South America. But efforts are in-creasing to reforest these barren lands, and bats and artificial roosts may play a vital role.

Detlev Kelm of Ger-many's University of Erlangen-Nurem-berg says that while the commitment to reforestation is growing throughout much of the tropics, we still lack practical and cost-efficient methods for kick-starting the pro-cess of forest regeneration. He used a Bat Conservation International research scholarship to explore and test some possibilities.

The first step in regrowth on open land is seed dispersal. In tropical environments, fast-growing, light- and heat-tolerant pioneer plant species play a dominant role in restoring vegetation. Fruits of such plants are the main food source of tropical bats that feed on the fruit and nectar and disperse seeds.

Although these bats still seem to be abundant in the New World tropics, their local distribution depends on the availability of suitable daytime roosts, and most of the relevant bat species prefer caves or, especially in lowland areas, hollow trees. But very few old trees become large and hollow enough to serve as day roosts. Since loggers typically remove the largest trees, many areas now lack sufficient natural roosts, so bat densities decline even though food sources could support many more bats.

Kelm's project, begun in 2000, designed artificial bat roosts for fruit-eating bats that live in tree hollows. Then he installed the roosts in a lowland area of Costa Rica, where dominant land uses are ranching and farming. The roosts proved highly attractive to bats, which moved into most of them within a few weeks, and these roosts have been permanently occupied for over three years.

The main resident is the short-tailed fruit bat (*Carollia perspicillata*). But nectar-feeding bats such as the brown long-tongued bat (*Glossophaga commissarisi*), which is an important pollinator for a great number of plants, tiny common big-eared bats (*Micronycteris microtis*) and frog-eating bats (*Trachops cirrhosus*) have also been recorded.

An analysis of bat droppings collected from inside the roosts revealed seeds of more than 40 different plant species, most of them fast-growing pioneer plants. The study showed that, on average, 10 short-tailed fruit bats bring more than five grams of seeds into their roosts every night. That's an average of more than 2,000 individual seeds! Since bats from these roosts defecate even more seeds while flying to and from feeding areas, their potential contributions to reforestation are enormous.

Bats clearly can be major players in launching the regrowth of tropical forests in cleared areas, and Kelm has shown that artificial roosts can be effective in helping bats to recolonize areas where natural roosts are scarce. The next step is to install these artificial roosts across fragmented tropical landscapes, thus encouraging bats to help us in our reforestation efforts.



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