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Sanctuaries in the Rainforest

The rainforests of the Malay Peninsula host a remarkable diversity of animals and plants. And flying mostly unnoticed among the tigers, monkeys and Asian elephants that attract conservation headlines are at least 120 species of bats. More than a quarter of them are listed as threatened or endangered, mostly because they are losing habitat in the ancient forests.

Great expanses of the region's rainforest have given way in recent years to timber, rubber and oil-palm plantations that have fueled rapid economic development. Bats and other wildlife increasingly must survive in modified landscapes, often depending on scattered, isolated fragments of undisturbed forest. Their success can depend on our understanding of the size, conditions and connections they require in these sanctuaries â€“ and on our willingness to use that knowledge.

The good news, says Matthew Struebig of the University of Kent and Queen Mary University of London in the United Kingdom, is that responsible companies and government agencies are very much aware that adverse impacts of their activities can come at a price in unwelcome public attention and in reduced sales. Some of them are making active commitments to minimize damage.

One way to limit damage to biodiversity is to retain forest fragments and connect them by preserving wooded corridors in and around the plantations. But while this subject has been studied in considerable depth in the New World tropics, very little data on biodiversity and forest fragments are available for Southeast Asia.

With support from a Bat Conservation International Student Research Scholarship, Struebig has worked to fill this information gap. He studied how insect-eating bats utilize forest fragments and the potential impacts on bat communities in Malaysia. After 18 months of fieldwork, he feels he has achieved his goal of providing science-based guidance for oil-palm plantations.

Struebig's research focused on a 1.4 million-acre landscape of forest and rubber and oil- palm plantations that surround the protected Krau Wildlife Reserve on the Malay Peninsula. He visited 27 forest fragments, sampling bat diversity using harp traps set across trails, streams and old logging skids. He captured a total of 2,857 bats representing 28 species of insectivorous bats.

He found, not surprisingly, that small fragments hosted few bat species, while larger ones â€“ of more than about 865 acres â€“ supported bat assemblages that were very similar in composition to those of the undisturbed forest of the reserve. The fragments' isolation from each other and from intact rainforest seemed to have little influence on species diversity.

Bat species that typically roost in foliage or tree cavities were more heavily impacted by fragmentation than cave-roosting species. Species that roost in caves, on the other hand, were relatively abundant in forest patches.

Among other results, he also found through genetic analysis that populations from small fragments showed reduced levels of genetic diversity, suggesting potential inbreeding effects from population fragmentation and/or that gene dispersal (through contact with other populations) was limited.

Struebig's research culminated in a set of recommendations to help land managers conserve bat diversity in

modified landscapes.

You can help BCI's Student Research Scholarship program support young scientists and vital research around the world, as well as other urgent bat-conservation issues, at www.batcon.org/donate.

BCI Members can read the full story on Matthew Struebig's important research in the Summer 2011 issue of BATS magazine.

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