

# Mammals in fragmented forests die out within 25 years

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Forests around the world are being diced into smaller and smaller fragments. Now it turns out the animals living in these tiny patches are more vulnerable than anyone knew. A case study in Thailand suggests that the native mammals can go extinct in just 25 years.



That's worrying, because [small fragments like this are becoming the norm](#) all around the world. The new study shows they need to be linked up to create larger reserves, says [William Laurance](#) from James Cook University in Cairns, Queensland, Australia.

Laurance's study began when Thailand flooded a vast area of rainforest to build a hydroelectric dam in 1986. Poking above the waters of the new Chiew Larn reservoir were 100 islands of pristine tropical rainforest. Laurence identified 16 islands, varying in size from 0.3 to 56.3 hectares, and studied how quickly the small mammals there became extinct.

Five years after the flooding, the nine fragments under 10 hectares in size had already lost almost all their small mammals. On average they had just two species left, whereas the larger islands had seven to 12 species.

When researchers revisited the islands 20 years later, they found the larger ones had met the same fate. The only mammal left in any abundance was the [Malayan field rat](#), an invasive species that doesn't venture far into larger forests, but had evidently colonised the islands. The native species had declined so much that on many islands the team could only find a single individual.

"It's a very striking and catastrophic decline of biodiversity," says Laurance.

## Isolated habitats

Laurance thinks several factors contributed to the extinctions. Because the islands were isolated, there was no way for animals from one island to move to a neighbouring island if the population there declined for any reason. The populations became inbred, with little genetic diversity. What's more, the native animals faced competition from the rats.

The most worrying thing, Laurance says, is that habitat fragmentation seemed to allow the rats to invade. "It raises the scary prospect that, if invasions accompany fragmentation, we could see more severe effects than we realised."

"This is the most catastrophic example of species loss that I've ever seen in any of these kinds of studies," says [Raphael Didham](#) of the University of Western Australia in Perth. "I think it raises a lot of concern."

Ecosystems around the world are being sliced to pieces as farming and other human activities carve into once-pristine habitats. "Small fragments are the future," says Laurance. That means the rate of collapse seen in Thailand could be replicated elsewhere, if the fragments are isolated enough.

"There's some parts of the world where forests are mostly dominated by fragments," says Laurance. For instance, about 90 per cent of South America's Atlantic forest has been destroyed, and what remains is mostly patches with an average area of 60 or 70 hectares. Laurance says similar situations exist in Madagascar and the Philippines.

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