

Bird-slaying snakes ravage island forests too: study

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The venomous brown treesnake can grow up to three metres in length

A non-native snake species that has already wiped out most of Guam's tree-dwelling birds is also decimating the Pacific island's forests, researchers said Wednesday.

Growth of new trees on the US island territory may have dropped by as much as 92 percent due to the snake's presence, they reported in the

journal *Nature Communications*.

The findings show that the devastation wrought worldwide on island wildlife by invasive species—especially snakes, rodents and mosquitoes—may be far greater than previously suspected, the authors warned.

"The full impact of the brown treesnake invasion, and the loss of birds, is still unfolding," said Joshua Tewksbury, a professor at the University of Colorado and senior author of the study.

"But our results clearly suggest that the indirect effects are going to be large, potentially affecting forest composition and structure."

Birds play a critical role by eating and spreading seeds from tropical trees.

Probably arriving on Guam via a cargo ship just after World War II, the venomous, brown treesnake—scientific name *Boiga irregularis*—hunts at night and can grow up to three metres in length.

By the mid-1980s, the snake had eliminated 10 of 12 forest bird species native to the island, including the Guam kingfisher and the Guam flycatcher.

The flycatcher is now extinct globally.

One doesn't have to be a scientist or a bird watcher to notice that something is awry, said the study's lead author, Haldre Rogers, an ecologist at Iowa State University.

Rewired ecosystems

"When you're on Saipan"—a neighbouring island where the treesnakes have so far been held at bay—"there is constant bird chatter," she said.



Birds play a critical role by eating and spreading seeds from tropical trees

"On Guam, it's silent—it is really an eerie feeling."

Rogers and her team ran two experiments to quantify the impact of avian extinctions on the spread and growth of [tropical trees](#).

In the first, they placed shallow, hula hoop-sized baskets underneath two species of trees throughout the forests of Guam and three nearby islands where treesnakes have not invaded.

Some 70 percent of Guam's forest trees produce small fruit, and the researchers wanted to see how many of the seeds dropped to the ground.

On Guam, fewer than 10 percent of the seeds were transported beyond the immediate vicinity of their parent trees, they found.

On the snake-free islands, at least 60 percent of the seeds—eaten by birds and delivered elsewhere in their poop—were scattered far and wide.

"Aside from fruit bats, which are also nearly extinct on Guam, nothing else can disperse seeds," Rogers said.

In the second experiment, the scientists found that seeds passing through the digestive tracts of birds were two to four times more likely to germinate.

Enzymes in bird guts probably helps break down hard, outer coatings, the scientists speculated.

Overall, the absence of birds on Guam reduced the dispersal and viability of seedlings from the two tree species used in the experiment by 61 to 92 percent, they concluded.

Islands are especially vulnerable to invasive critters.

More than half of Hawaii's native [birds](#) have been wiped out, for example, mostly by mosquitos carrying avian malaria and small pox.

The new study shows that damage extends even further in what ecologists call a "cascading" effect, resulting in the disruption of entire ecosystems.

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