

Amazonian 'lookout' birds help other species live in dangerous neighborhoods

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A new San Francisco State University study shows that alarm-calling birds like this dusky-throated antshrike (*Thamnomanes ardesiacus*) help their neighbors live in "risky" parts of the Amazonian rainforest. Credit: Eliseo Parra

Usually, birds of a feather flock together—but in the Amazon, some flocks feature dozens of species of all shapes and colors. A new study by San Francisco State University biologists singles out one reason why these unusually diverse flocks exist: lookout species that call in alarm when they spot dangerous predators.

Researchers have pondered the existence of these mixed-species flocks for decades, especially because of their stability. "You come back to the same habitat after 20 years, and the same flocks are using the same areas of the forest," explained San Francisco State Professor of Biology Vance Vredenburg. "It defies a lot of expectations."

But scientists did have a few clues. One ubiquitous group of [flock](#) members are species whose calls alert their neighbors to the presence of threats like hawks or falcons. "People have thought for a while that maybe these 'sentinels' promote the ability of

other species to use risky parts of the forest," said lead author Ari Martinez, who was a postdoctoral researcher at SF State during the study. By opening up new habitat to their neighbors, they might also bring together species that would normally flock on their own.

To put that idea to the test, the team captured alarm-calling dusky-throated antshrikes (*Thamnomanes ardesiacus*) from eight mixed-species flocks in southeastern Peru and kept each bird in an aviary for several days.

After the team removed the antshrikes, birds in each flock responded in a matter of hours. In three flocks, birds retreated to areas of denser cover at the same vertical level in the forest, while in another the members joined new flocks high in the canopy, another area that affords more cover from predators. Birds in control flocks, where the researchers captured antshrikes but immediately released them, tended to stay out in the open. The team reported their results today in the journal *Ecology*.

The results support the idea that alarm-calling species might allow their neighbors to live in dangerous neighborhoods. "These flocks occupy a middle layer of the rainforest that's not quite the ground and not quite the canopy," explained coauthor Eliseo Parra, a lecturer and researcher at San Francisco State. "A lot of literature suggests that this area is more dangerous. There are more opportunities for a predator to be hidden and still have a quick flight path." Remove the antshrikes and their former flockmates are left exposed, so they retreat to safer habitats.

Another consequence of the removal is that almost all of the members of mixed-species flocks spent less time with the bulk of the flock. "Some species would retreat to one habitat, and some individuals to another," said Parra. "From an anecdotal perspective, you no longer saw a flock."

Even if they don't look the part, this makes alarm-calling [birds](#) similar to "keystone species" that have an unusually big effect on their environment, like beavers and wolves. Antshrikes may not have a large impact on their physical environment, but they influence the behavior of many other species by creating a safe zone from predators. "It's a way that [species](#) diversity might be maintained in the forest," said Martinez, adding that this could make them valuable targets for conservation efforts.

More information: *Ecology* (2018).
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