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Marine Iguanas Podcast and Scientist Interview

Amblyrhynchus cristatus

No iguana wants to be cooked alive on a hot rock and then served up as dinner for a Galapagos hawk. But it turns out the marine iguanas have a strategy that warns them of the presence of hawks they can't see. They learned to tune in to a kind of police scanner...the alarm calls of mockingbirds.

Transcript

Ari: I'm Ari Daniel Shapiro, and this is the One Species at a Time, the story of Earth's biodiversity, one organism at a time.

Today, we're heading off the coast of Ecuador, to the Galapagos Islands, smack on the Equator. The shores of these islands are home to a kind of lizard called a marine iguana.

Romero: And sometimes they look more like dinosaurs than others. On some islands, they'll be very small: 8, 10 inches long. And on other islands, where they can get very big, where there'll be 6, 7 feet long, where they really look like dinosaurs.

Ari: Michael Romero from Tufts University isn't kidding. Go check 'em out on our website: eol.org/podcast. You'll see. Huge spines that run from their heads all the way to the tips of their meaty tails. They're scaly flesh looks like bronze chainmail.

These marine iguanas don't have to worry much about being eaten. Except on a few of the islands. Like the one where Maren Vitousek has lived for up to 3 months at a time. She's from the University of Colorado in Boulder, and she's seen these brown Galapagos hawks perch on the cliffs overlooking the iguanas. They just watch and wait. They're checking out which iguana would make for a good meal.

Vitousek: When they do pick one, they swoop down very, very quickly and land right on top of the iguana. The small iguanas, they're able to pluck right off of the rocks and they fly off and eat them. The larger females, they're actually not able to pull off immediately. Both male and female adults have very strong claws that they're able to hang onto the rocks with. When the hawks light on a bigger individual, they'll actually sit there for a while and seem to be pushing

the iguanas down into the rocks, and the rocks are quite hot. And so the marine iguanas overheat and they lose their muscle tone.

Ari: It's like the hawks are cooking the iguanas. And once they've gone limp, the hawks just fly off with them. The hawks aren't afraid of people so Vitousek's seen iguanas get eaten only 5 to 10 feet away from her.

Vitousek: It's fairly gruesome. Marine iguanas, they're quite well protected. They have very, very strong scales across their body, across all of their back and their tails and their heads. And I don't think that the hawks are able to tear through that skin. And so they have to be able to turn them over on their backs and start eating from the stomach.

Ari: The whole thing doesn't sound very pleasant from the iguana's perspective. Cooked on a rock, flown through the air, flipped over, and eaten through the belly. But iguanas can't exactly outrun a silent hawk. And it's hard for the iguanas to see them coming. Which is why Vitousek and her team were surprised by something that they began to notice.

Vitousek: When iguanas were behind rocks, when we knew that they didn't have a direct visual path to the hawks, they would still run away from the presence of hawks. We couldn't figure out how the marine iguanas were able to tell that there were hawks on the other side of this rock.

Ari: They puzzled it over for a while, watching again and again as the marine iguanas would scramble away well before the hawks appeared. And then, an idea came to one of the people on the team. Perhaps their escape had something to do with another kind of bird called the Galapagos mockingbird. These little brown birds also get eaten by the hawks. So if they see a hawk coming, they vocalize.

Vitousek: They have this pretty distinctive shrill alarm call.

Ari: The mockingbirds use this alarm call to warn one another of a hawk. Vitousek and her team wondered whether maybe, just maybe, the iguanas were eavesdropping. Maybe they were using the mockingbird alarm call too. So they tested it. They recorded mockingbird alarm calls and mockingbird song, which sounds completely different.

Vitousek: And so we wanted to see whether the marine iguanas would be able to distinguish between these two types of noises. And so we played these back to groups of iguanas and found that they did in fact, they were able to distinguish between these two types of calls. And they increased their vigilance behavior: they raised their heads and looked around and alerted when we played back the alarm call <faint alarm call>. But not when we played back the song <faint song>.

Ari: Once Vitousek knew what to look for, the whole picture made sense. The hawks appeared on the cliffs. Which triggered the mockingbirds to alarm call. Which tipped the iguanas off to look around for the hawks and scatter once they'd spotted them. Vitousek loves the Galapagos for exactly this reason. It's filled with unexpected surprises. You never know what's gonna happen.

Vitousek: We had a hawk one year that was particularly curious and the hawk would fly right in and once tried to grab the sunglasses off of my head.

Ari: Maybe next time she'll pay closer attention to those mockingbirds.

Meet the Scientist

Meet Maren Vitousek, the scientist featured in the Marine Iguana podcast:



Where do you work?

University of Colorado, Boulder, Colorado, USA as a Postdoctoral Research Associate. (As of 2013, Vitousek is a professor at Cornell University).

What do you study?

I study relationships between behavior and physiology, and how these processes can affect survival and evolution.

What are three titles you would give yourself?

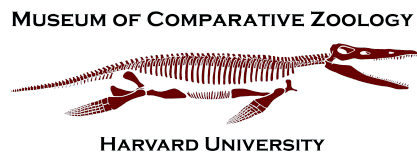
Physiological ecologist, evolutionary biologist, mother.

What do you like to do when you are not working?

Hiking, camping, skiing, and spending time with my family.

What do you like most about science?

My favorite part of science is the thrill of discovering new information about the way the world works. I also love the adventure and challenge of field work, and the process of sharing these discoveries with the rest of the community.



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