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Martens Podcast and Scientist Interview

Martes martes and Martes foina

On the forested mountain slopes of the Basque country, we follow two Spanish biologists on the track of a pair of secretive mammals. Pine and stone martens are elusive carnivores that make their homes among the moss-covered, ancient oaks, leaving few clues to their presence. Determining just how changes to the forest are affecting the two species requires some scientific detective work—and the willingness to gather some rather smelly data.

Transcript

Ari: For the Encyclopedia of Life, I'm Ari Daniel Shapiro. And this is: One Species at a Time.

It's not often you get to see two grown men get excited over finding a pile of feces on the ground. But a few months ago, I saw exactly that. I was in the wet forested mountains of northern Spain, in the Basque country.

The two men were Javier López de Luzuriaga and Aritz Gonzalez <slow>, and they study martens – small, bushy, large-pawed carnivores. They look a bit like weasels, and they're really elusive. Luzuriaga – a freelance field assistant – has been working with martens for 4 years, and he says he's seen the animals just twice.

Luzuriaga: The first time I was in these mountains, I heard some noise. The marten was walking two meters from me.

Ari: What did that feel like?

Luzuriaga: It was… impresionante, ¿no?

Gonzalez: Exciting.

Luzuriaga: Exciting.

Ari: Exciting because most of the time, all these two get to see is evidence the martens have left behind. Like the feces lying on the muddy trail. Gonzalez – a zoologist at the University of the Basque Country – squats down to get a better look.

Gonzalez: K, this is a very good quality sample.

Ari: How did you just see that? I mean it's brown on brown.

Gonzalez: Yeah, when I go to the forest, I am always looking at the ground, never to the sky.

Ari: Gonzalez uses a twig to gently pack some of the feces into a couple of small tubes.

What he really wants are the cells on and in the feces – cells sloughed off from the gut of the defecating animal. Even though he's pretty sure the feces were deposited by a marten, Gonzalez doesn't know whether they came from a pine marten – Martes martes – or a stone marten – Martes foina. Back in the lab, the DNA in these cells will tell Gonzalez which species of marten was responsible.

And that distinction – knowing which type of marten is where – is at the center of the puzzle Gonzalez is trying to unravel out here. He's searching for pine martens in the forested areas of the Basque country.

Gonzalez: Usually when we have this kind of good quality forest, usually the pine marten has an advantage to survive over the stone marten.

Ari: Pine martens depend on large swaths of old forest. The trees give the animals protection from predators, they're perfect for creating dens, and the forest provides habitat for the small mammals that pine martens eat.

Gonzalez: But not all forested areas of Northern Spain are able to have pine marten populations.

Ari: The old forests here have been fragmented by roads and towns, splintering the continuous stretches of tree-lined slopes. The DNA work has taught Gonzalez that pine martens are in a delicate situation – the pockets of remaining animals have grown genetically isolated from one another. Because when pine martens don't cross a particular road or town, their genes don't either. Stone martens, however, are doing just fine.

Gonzalez: The stone marten is adapt to many, many different conditions – to open fields, even in urban areas, in big cities.

Ari: Stone martens thrive in areas markedly transformed by humans. They can tolerate warmer weather as well, so they can be found clear down to the Mediterranean Sea. And the relative

success of the pine versus stone martens says something about the natural versus altered environment.

Gonzalez: The pine martens, they need the forest to survive, so if we conserve pine martens, we are conserving many, many other species.

Ari: Chief among those species is Quercus petraea, or the sessile oak tree.

Gonzalez walks briskly to show me one of his favorite spots. At last, we come upon an enormous sessile oak. It's 300, maybe 400 years old, and it's magnificent. The thick, mossy trunk surges up from the ground and a web of branches – like a tangle of hair – decorate the top half of the tree. Gonzalez leads me to an opening near the ground, and we both enter a cavity at the base of the trunk.

How big – can you stretch your arms out?

Gonzalez: So, we can put my right hand on one side and with left hand, maybe, 2 meters – something like that.

Ari: But basically, it's the distance – from, if you stretch your arms out to either side.

Gonzalez: Yeah, like that.

Ari: The tree's big enough to fit 14 people. They tried it once. The grooves of the inside of the trunk curl upwards like a helix.

Gonzalez: Of course, we have not so many of huge oaks because we have been cutting them many years ago, but we have some survivors of the human activity like this one. I think that for pine martens, those trees are their home. To maintain pine martens, estamos obligados – we are…?

Ari: Obligated…

Gonzalez: Obligated to maintain this kind of forest.

Ari: Gonzalez's first name, Aritz, it means "oak" in Euskara – the Basque language. His sense of obligation to protect the trees of this forest, the trees that are his namesake, is rooted in a sense that these trees are living history.

Gonzalez: Yes, it's historia viviente – living history.

Ari: This oak tree has survived centuries of human exploit, serving as a home for pine martens for just as long. Gonzalez is a strong advocate for protecting the integrity of these trees and of

the forest, managing it in a way that allows pine martens to thrive right alongside stone martens, just as they used to.

Ari: Our series, One Species at a Time, is produced by Atlantic Public Media in Woods Hole, Massachusetts. I'm Ari Daniel Shapiro.

Meet the Scientist

Meet scientist Aritz Ruiz who you heard featured in the Martens podcast:

Where do you work?
I´m member of the "Systematics, Biogeography and Population Dynamics" Research Group at the Dept. of Zoology and Animal Cell Biology. University of the Basque Country. UPV-EHU (Spain).

What do you study?
My research is focused on phylogeography and landscape genetics studies of martens in order to understand how ancient and contemporary factors shape genetic variation. The research field of non-invasive genetics (i.e. the use of non-invasively collected samples such as hair and feces as source of DNA) let us to investigate the biology and the ecology of secretive carnivores without disturbing them.

What are three titles you would give yourself?
Environmental scientist, pragmatic , enthusiastic about all I do.

What do you like to do when you are not working?
I enjoy travelling but also reading travel books (a cheaper way to discover other regions of the world). I like hiking (always searching for carnivore signs), playing soccer, and other relaxed activities like cuddling up on the couch watching a good movie or listening to music.

What do you like most about science?
The chance to explore and give answer to different questions in ecology and evolution combining the information obtained by traditional field work and novel genetic data.

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The One Species at a Time podcast series is supported by the Harvard Museum of Comparative Zoology.