New Species Podcast
A New Gecko with Javier Lobon-Rovira
Published October 17th, 2023

[bright, tech-y introductory music]

Zoe: Welcome to the New Species Podcast. I'm your host, Zoe Albion. On this podcast we learn about recent discoveries of species that are new to science, but not necessarily new to nature. We ask scientists how they find these new species and why they matter. We learn what makes a new species, and hear some behind-the-scenes stories along the way. So join us as we explore the biodiversity of our planet and the scientists who help us better understand it.

[music fades out]

00:36

Zoe: [clears throat] Okay. Ready? My voice is not. Are you ready?

Javier: Are you ready?

Zoe: I am.

Zoe: Welcome to the New Species podcast. I'm your host Zoe Allian and I'm here with Javier Lobon-Rovira, conservation photographer and PhD candidate at the Universidade de Porto in Portugal.

Zoe: Javier is actually a repeat guest, and I definitely recommend you listen to his other interview with us last November about the feather-tailed leaf-toed gecko. But today he's here to talk to us about his paper in the October 4th issue of Zookeys, in which he and his co-authors describe a new gecko from southern central Madagascar. Welcome, Javier. Thank you so much for coming on the podcast.

Javier: Hi!

Zoe: So for those that didn't hear your first episode, can you share a little bit about yourself and how you came to study geckos?

01:34

Javier: Yeah, so my PhD is entitled, "working in the evolutionary trends in southern Africa geckos". So most of my research is based on geckos in southern Africa. This last publication is not really on my PhD or my research, so I'm more like co-author of this work. I was involved in the

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that was lead by Dr. Francesco Beluardo from Seville. And we were for Madagascar almost for two months. And this is one of the results that we get from that expedition. Yeah, so let's just

dive right in. Tell us about this gecko and what makes it so special. Yeah, so this gecko is considered a cryptic species. That means you cannot really differentiate

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similar geckos in the field. Like when you take the sister species or similar species in the field and you look at them, it's really difficult to tell them apart to each other. So when we found this gecko, this gecko lives in sympatry, that means lives together with other sister species in some localities. And we didn't realize, well.

03:00
some of the researchers that were there, they knew already that this is going to be a new species, but we knew based on the genetics. And without the genetics, it's considered part of the same group of geckos. But thanks to the genetics, we were allowed to describe it as a new species. I mean, even 30 years ago, there were species that we would have no idea are differentiated. And today we have

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so much more information about their relatedness and their genetic code. And I think it's really fascinating. Yeah, definitely, definitely. And it's really helpful for cases like this, when you have a cryptic species that you can really differentiate in the field. And then when you get to the genetics or molecular section, and you can identify as different species, and you can also see that indeed it's an endangered species. So.

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That makes a lot of sense when you want to, because people think describing a species is more like, oh, I'm going to put the name of this species, that species, but there is a lot of things behind of that. And for example, conservation issues like this. You have a lot of species that are really in danger, but you don't really know that these represent a new species or different species to different one that is more widespread, and the conservation status is completely different. So yeah.

04:26
We'll definitely talk about their endangered status later. I want to ask you about the relatedness of geckos, because I'm really not as familiar, and I think other listeners are not as familiar, with the way the lizard group is put together. And so I was wondering if you could talk a little bit about where geckos fit, and then also the different sort of branches of geckos. So yeah, so definitely geckos, it's a completely different branch to other lizards.

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The position is still quite controversial, so it's not really clear which is the evolutionary position of geckos when you put it in all the contests with other squamids or lizards. But one cool thing of geckos is geckos is the most specious group of lizards on Earth, and widely distributed all around the world. And you have a lot of different radiations.

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05:25
Now it's solved in seven different families, all well distributed. But in Southern Africa, all the geckos are represented by the family Geckonidae. But still, there is a lot of different morphological traits and different evolutionary complexity in this group. And I think if I'm not wrong, there is about 50 different genera within Geckonidae.

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more than about 1,500 species around the globe. So it's pretty amazing group. And as you say, they're found all over the world. So why specifically did your team go to Madagascar? What was so interesting and important about that area? Well, so the expedition was to explore a region in the East, central East of Madagascar that is called Andrinjitra Massif.

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that is quite unexplored. So the focus was not in geckos, was other petofauna. And the reason is why is because it's really unexplored. I think the only previous expedition there was about 100 years ago, or maybe a little bit less, but there is no really these samples are, or fresh samples that you can use for molecular purpose. So the main goal was to go there.

06:55
see which is the real diversity and try to get these samples and molecular information that we can use to put everything in a phylogenetic frame. That's why we went to Andringitra and we were exploring two different areas. So Andringitra is quite cool because when you go there in the eastern part of the Massif, you get rainforest and in the western part is more dry and you get dry forest.

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So you have the transition zone between dry and rainforest, and you have a lot of enthemems for this area. So yeah, that's why we went there. And you talked a little bit about the gecko being endangered. I know that there are a lot of geckos and many other species that are endangered because their habitat is endangered. Is this one of those cases? Yeah.

07:52
So Madagascar have a really big problems with conservation. So I'm not sure if it's the 90 or 90 something percent of the primary forest has been chopped down in the last 2,000 years. So everything that remains is patch of forest. And this is where these species are living, in the patches of forest.

08:22
For sure, well, and why this is chopped is because the population is growing so fast and also logging for Asia and Europe and all the areas. But mainly it's because the rice fields and cattle is growing so fast in the area. So they just burn the forest or chop the forest to have more grasslands and all these things for the rice and the cattle.

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And this species is living in these patches of forest, but there are like this species, there are hundreds of species in Madagascar. And the amazing thing is there is still a lot of species living in those patches of forest in big abundance, but they are critically threatened because the forest are disappearing so fast.

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I know it's a really big problem around the world. And I think vertebrates are particularly threatened by habitat loss like that, right? Yeah, habitat loss, fermentation. That's the thing is, so we found this species only in two different patcheses and they are pretty far away from each other. So there's not going to be a gene flow between those forest or fragments or whatever you want to call.

09:46
And we don't really know the magnitude of this impact, but yeah, definitely this big. And something that is showing up here is like, for sure there are species that have disappeared already, and we will never know that they were there. So the impact is double in this way.

10:12
Speaking of that impact, can you tell us how you and your team decided to name this species? Well, the name is Isamalongabato. That is a Malagasy name for rock climbing. And the reason why my colleagues chose that name is because one of these parts of forest, well, firstly, is because this species is a rock-welling species. It's a climber.

10:41
Gico, but also because one of these patches of forest is located in Saranoro, in Andrinjita. Saranoro is known as an important rock climbing place for famous climbers, because it's not an easy climbing. This combination of the two things brings the name. I think that's really nice. Yeah, it's freaking cool indeed.

11:11
So freaking cool. Yeah, I like the name. I can give you an example as well of the cryptid species because I just published another work in Solodekan Journal of the Indian Society where we described five new geckos of Lygodactylus that they are dwarf geckos from Central Africa. This was one species that was distributed from Senegal.

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to Ethiopia in the East and all the way down from the Albertine Reef to the Katanga region in Democratic Republic of Congo. And everything was considered to be one species and now that is described in five different species. So, and they are completely cryptic and this have a lot of conservation implications because when you have one species, well, they distribute it all across Africa. And then you know that indeed represent

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five, six, seven different species, and they're really endemic to different areas. This has completely different implications for conservation. Yeah, well, the example is this. We described legodactylus. Guturalis is one species that is well-distributed in Africa, and we split it in five different species. Note that it did represent seven different taxa, because we elevate another one subspecies to species, and we included another species with

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that was completely out of phylogenetic framework, or phylogenetic context. And we know now that Lycodactylus guturalis indeed represent nine different lineages, or taxa. And now we know that they are endemic, one endemic to the savanna belt in the sub-Sahara region, another one from the Congo rainforest.

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another one from Uganda, another one from Rwanda, another one from Tanzania, and another one from the west of the Congo Basin. So and these have a lot of implication, because for example, if you go to the region of Burundi, that is highlands, a lot of forest or highland forest is being chopped down as well. So this species could be considered probably in danger.

13:34
the forest in the Congo Basin as well has been chopped. When you want to develop conservation implications, you have to consider all these cryptic taxa to really develop these conservation plans. Is that part of your dissertation? Those conservation issues? Yeah, yeah. So my main thesis is based on systematics and evolution.

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But the goal behind of this is to provide the ground for more informed conservation plants. Because my goal in my life is not to describe new species. It's nothing to do with that. But when you describe new species and you put it on an evolutionary frame, you can provide the ground to better understand how the species distributed in the space and in the time, and which are those factors that are involved.

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or have some implication in the diversification pattern of the species that is completely needed to keep the natural selection or the continue of the evolution of the species to survive. So I think this needs to have more, needs have to be more, how to say, included in conservation plans.

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this evolutionary history of the species. Not only, okay, I'm going to protect this species in that area because this and that through the nest. You also need to, okay, this species is here because it's coming from there and these have diversified because there is this river or there is this mountain range or, you know, you need the background and the

15:29
or more informed conservation ideas and trajectories. Absolutely, because these populations have not just been kind of sitting waiting to be discovered. They've been evolving and responding to the environments that have been changing. And there's so much context. It gets kind of gnarly, but also really interesting, I think. Definitely. And there are always in continuous change and continuous movements.

15:58
So you cannot forget that this species is coming from here and the trajectory is that way. And yeah, these sort of things. So sometimes there are species that are more in the transition zones for whatever reason, that could lead to more species and processes and all these things that brings more strength or however you want to see for changes in the future. So yeah.

16:28
Conservation is like, okay, I'm going to protect this patch of forest because there is a species. Okay, no. But why? Why this species is there and which is the evolutionary pathway of this species that need to be included in that conservation idea? Yeah, absolutely. So we've talked a lot about conservation and the importance of describing species before we can do any other work on them. But why do you think that...

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finding this gecko specifically is really important to southern Madagascar and to the world. And why do you think that your work matters? Yeah, I think it matters because firstly, I think less and less we are losing the importance of doing fieldwork and keep going to the field and keep looking for...

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genetics variability between population and these sort of things. It seems like with the new technologies that I think they are completely important like museumics, genetics from museums and all these things, they are important for sure. But I think it's really important to keep going to the field and to keep going looking for evidences of diversification that we still have no idea. So this is the first thing and I think this work

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and shows how if we didn't go there and we look for these things, this species could be considered a parodura renare, that is the common species there, and it could get extinct at some point, and we will never know that that species was there and the importance of that species for that precise ecosystem, biome, forest, or population, or whatever it is.

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How vulnerable are the species when we want to consider a wider perspective of how the forest were, where the species were distributed, and the impact of this fragmentation of the different habitats? In my opinion, sometimes it feels like we have both too many...

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tools, like too much information and also just not enough hands to do the work. And so this seems to me like one of those issues where now we have the opportunity to go back into a lot of our data, a lot of our old sites and collect new samples and do new analysis on them to find some of these cryptic species. And it's certainly happening. There are certainly some amazing scientists like yourself doing that work. And also there are just not enough people trained and funded to do that work.

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It's difficult because now you can see where funds go and all these sort of things. I think, well, definitely there's a big bias on funding, reptiles and amphibians. Amphibians a little bit more now, but there is not really much funds for reptiles, for example. Nobody cares about reptiles and they have a huge relevance.

19:46
in many ways. So they're part of the food chain and other sort of things. And also, I think there is not much funds to go to do fieldwork. I think now everything is moving for try to find models and these sort of things that every researcher can do from their office. But we

20:14
to see how these models fit in the field and the importance to go to the field continuously. It's like expeditions cannot be like one expedition per year or every five years to a place to see what is going on. No, no, we need people in the field continuously. And you get a new perspective when you work in the field too. You also, as I mentioned briefly in the beginning,

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do photography and you did some amazing photography of this new species of gecko. I actually like I saw the gecko, you know, I was flipping through the pictures. It's very beautiful. It's very beautiful. And then that picture where you're holding it or someone is holding it in their hands and it's so tiny. I like, like kind of like shouted I'm so excited. It was it was such like a cute thing. And that gave me like a very distinct, you know,

21:10
and its size and its beautiful pattern. And I think that photos do something that reading about it in a paper just doesn't. Yeah, well, that's the other part of my work is try to show the people, you know, reptiles many times for the large public and people who is not herpetologists, well, reptiles, insects, this sort of...

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animals that many people say like, I'm working with reptiles. Jackie or whatever. But then with my photos, yeah. But then with my photos, I try to give them another perspective and try to get more appreciation for these kind of animals. And this is the main goal that I do with photography. Like try to see the people get this kind of reaction. Like, ah, this is cute. Maybe we need to protect them as well.

22:09
And this happened as well with the snakes and all these things that people at the first, they say, oh, snakes, oh, I hate the snakes. But then if you put it in different perspective and importance and good photos and photos that shows them in their environment or whatever it is, maybe wake up some feelings, different feelings in them. And yeah, definitely, this is the main thing.

22:38
I know that I certainly appreciate all of your work, including the papers and the photos. And I know other people do too. So thank you so much for all the work that you do. And thanks for coming on the podcast today. Thank you and thanks for keeping this wonderful podcast and bring some light in these new discoveries that have a lot of implications, not only for many new species.

23:07
for everything that has behind of these discoveries. Thank you. Thanks so much. And thanks for coming in on your paternity leave. No worries. I love to be here. Oh, good. You must be exhausted. Yeah, a little bit, but it's all right. Always time for these sort of things. Javier Loboño-Vera's paper, Another Step Through the Crocs, A New Microendemic.

23:35
rock-dwelling Pero Edura from south-central Madagascar is in volume 1181 of Zoetiques. See the episode details for an open access link to the paper, and to learn more about Javier and his work, you can check out his Instagram, at javilbn underscore wild photography, or his website in both Spanish and English, javierlobonrovira.com.

24:04
Thanks for listening to this episode of the New Species Podcast. This podcast was created by Brian Patrick and is edited and produced by Zoe Albion. If you would like to support us, please consider subscribing to our Patreon at patreon.com slash newspeciespond. And if you'd like to get in touch with questions or feedback, please email us at newspeciespodcast at gmail.com.

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