

New Species Podcast
Two new Catfish with Ananda Serejo
Published September 9th, 2026

00:00

[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 with the scientists who help us better understand it.

[music fades out]

Zoe: Welcome to the New Species podcast. I'm your host, Zoe Albion, and I'm here with Ananda Serejo, PhD in Systematics and Evolution from the Federal University of Rio Grande do Norte (UFRN) in Brazil. She's here today to tell me about her paper published in the April 8th 2026 edition of the Journal of Fish Biology in which she and her coauthors describe two new species of whiptail catfishes from northeastern Brazil. Welcome Ananda, thank you so much for coming on the podcast!

Ananda: Hi Zoe, thanks for having me.

Zoe: So I would love to learn, what exactly is a whiptail catfish?

Ananda: So I want to describe whiptail catfish. So whiptail catfish are a group of armoured freshwater fish. I don't know if my pronunciation is just correct, It's a really hard word to say! But they live in South and Central America. That's a group of fish, they have the body covered with bonny blade instead of scale. So they get their common name because they have a long slender tail and an elongated body and they are bottom dwelling fish. So they spend most of the time searching for foods in the river beds. Yeah.

Zoe: And are they closely related to, for example, the North American catfishes?

Ananda: They are from the same order, like in the classification taxonomy, right? But I think they are closely related to, I think if, I don't know, they're familiar with aquariums, know, [Plecós](#)? Yeah, That is closely related to them. Okay.

Zoe: And are they similar size?

Ananda: They can vary in size, right? Like, I think the genus I work with, like the Loricarians, on the paper, they can get like, 30 centimeters around 12 inches, guess, something like this. Yeah. So they very size.

Zoe: I think that's pretty big. If I were, you know, swimming in a river, I would think that was a pretty big fish.

Ananda: Yeah, it is. They can be very small. It's very different. But yeah, you have like the order, like all the Plecos. You have one that's really interesting. can get around one meter long. It's very big.

Zoe: That is wild. And so are they adapted to lots of different habitats? Do you find them all around the world?

Ananda: Yeah, they're specifically found in Central South America rivers. But they inhabit very different habitats. They can be found in rivers, streams, lakes, sandy bottoms or mud bottoms. They are very specialized. I think it's the most fascinating thing about them because, I don't know, you go to something like a really small stream and you can find one there, go to the big rivers, you can find something there too. Yeah, they're really specialized in different environments.

Zoe: Yeah, and can you talk a little bit about what they're doing there? You said they're bottom feeders?

Anada: Yes, they are bottom feeders. So can you imagine a fish wearing an armor like the Roman gladiator? It's something really because, you know, they're from the *Lorica* family. So the term *Lorica* means armor like the Roman gladiators that they come from. So they have armor. It's like protective, right, of course. But it's, they have the whole body cover plates, bony plates, and they have like a mouth on their side of the head because they are jaw-walling fish. So it's perfect for fitting along the bottom of the rivers.

Ananda: So they have the mouth with small sensory barbells. So they keep like help them search for food. And the whole body, like long slender, that's what the common name say we already talked about that. They have very long like, with tail. That's why they come from too. And most of the species are brown. So because it's like camouflage, right? So they can have spots, or they can have like, traps pattern. And everything about the anatomy, it's like adapted to life on bottled or freshwater rivers.

5:30

Zoe: Wow, that is really cool. And I know you've been working with these fish for a little while. You have another species in this genus too, right?

Ananda: Yeah, it's not my first species. So this whole whiptail research, we started with my master's degree actually back in 2017. So it's almost 10 years of research, right? It's long. And yeah, it was my first species back then. And I think it's where my whole interest in taxonomy

comes from. Like, okay, I like that. That's what I want to do. I want to be a taxonomist. It's really cool to differentiate species and have like what I'm trying to claim as a new species and differentiate

06:24

staff, or all of other species of the group, seeing each feature. It's just amazing. I think it's not like naming species, right? It's just describing the biodiversity. It's saying, it's seeing like what is, it's hidden biodiversity there. It's really like, I really like taxonomy.

Zoe: Yeah. And how did you come to focus on this particular group?

Ananda: I think the first thing about them is their appearance. don't know, when I saw one, catch fish as an order, catfish is the sub-ordered order, so fish they have like the barbels, that's why catfish, and also they don't have scales, so it was pretty unusual because when you think of fish, you think of scale. And you think, I don't know, it's not my first thought, like thinking that fish is a bottom dwelling fish and eating scraps in the bottom is not my first my first thought about a fish.

Ananda: When I was in university and I started learning about fish diversity and just wow, that's unusual. I want to know more about it. And here in Brazil and South America, we have like the most diverse catch fish. I don't know, we have more than a thousand species. So it was really interesting to know how they are, who they are, and where they live. So I think that was my first thought about working with catfish.

Zoe: And you talk in your paper about how one of the reasons that there's so much diversity is because of these unique ecosystems that, as you said, they're specialized in. Can you talk a bit about the river basins that you researched for this paper and kind of what makes them unique?

Ananda: Yeah, so I think when you think about Brazil or South America, you think about the Amazon, right? Like, big river system. And yeah, we have not just [the Amazon](#), we have [Paraná](#), [Paraguay](#), [Madeira](#), just really big river systems. And of course, they attract more scientific attention. know they want, people want to know what is in there and more funding, of course. But we have such small areas, rivers smaller than of course, the Amazon, but they have been kind of neglected. Like what is in there? We don't know.

Ananda: People used to expect that they have less diversity. But I think in the past two decades, researchers started to see these small areas like the coastal basins of Brazil and looked like, oh, what is in there? Why don't I explore them? And what they have found is that the diversity there is much higher than they expect. And also these areas were more affected by some events like geological events, like, and also like sea level fluctuation over the million years.

10:03

Ananda: So every time you have a transgression, a regression, they kind of change the landscape. So how do events help to develop the biodiversity there? And for my group, for the genus *Loricaria*, each river has a different species, sometimes endemic species. So how the change, specifically how this change helps each river to work as a unique biodiversity. So it's a way to look at the small areas and you have so much information you can have from that. Of course, the Amazon and all the big systems are really, really impressive and you have so much more to extract from that. But this is more where there's no attention to it. Maybe you can have much more information to understand the big rivers.

Zoe: I'm sure it's so cool to kind of uncover these new layers of the river. I wonder if you could tell us kind of the story of your paper. I mean, you said you were already working on this group. How did it come to be? Like, what did you find and who was involved?

Ananda: So this paper specifically, it started back in 2017 in my master's. I was working with the *Loricaria* in my home state in Brazil, Maranhão. So we have around seven rivers. And back then, back in 2017, all the information we had is all the seven rivers have one species of *Loricaria*, [*Loricaria cataphracta*](#). And that species was originally from Suriname, so I don't know, like 2,000 kilometers away from where I am. So how could the species be there? It's really the same species, all these populations, all the rivers. It was the question back then. And I was working on it with morphology back.

Ananda: I don't know, I examined so many materials, 400 species, like measuring, counting plates, gills. It was so much. And I found the first species. I described the first species, but it was something there. Something's still there. I could see subtle differences, but I could not... Just the morphology was not enough. I had to add more information. And when I started my PhD and I have to propose a project, right? So I think, okay, what about bringing back this research? There's so many questions I need to answer from that.

Ananda: And that was the opportunity. And I could add some DNA molecular biology to the research. And that was really nice. But also it was my nightmare because, my background is oceanography. We don't study DNA in oceanography, like molecular biology, right? So when I was there at the lab and I had to extract DNA, sequences, biogenetics analysis, and even, I don't know, interpreting a tree, it was so hard. I had a difficult time. I spent so many nights studying and studying and thanks to my labmates, I could finally understand and pull all this.

Ananda: And yeah, so I had the, the, the morphological evidence, like was my first clue, right? And then I have the DNA now. And when I put it all together, and I could finally see what was intriguing me since 2017. So yeah, it was nice. And also, think my, I grew up as a scientist since 2017, right? So I had, I trained better, I looked for what I should be looking. So it really helped. So yeah, it was the story of this paper.

Ananda: And also I had to go to the US to the Academy of Natural Science of Philadelphia, Drexel University. They have an amazing collection there. A lot of South American fish that I

don't know if I would be able to travel around South America to see all this fish. So I have all been in the same place. It was really interesting. It was a really nice experience. And to work with [Dr. Mark Sabaj](#), was really nice, was a really celebrity ichthyologist. He's really cool. I learned a lot from him. So yeah, it was the story of this paper, after almost 10 years of work and now finally, I Finally! Finally!

16:08

Zoe: That's incredible. And it must be so satisfying to be able to publish this paper and to talk about it after all that time.

Ananda: Yes, it is. I can... I know, I think I'm so proud of myself.

Zoe: You should be! You did it!

Ananda: Yes, absolutely! Yeah, it's really nice to see the paper out there and people talking about it. It's really good. I like it.

Zoe: Yeah, because something else you and your co-authors discussed in your paper was some of the challenges. There are some barriers to species delimitation, especially in this particular group. Can you talk a little bit about that?

Ananda: Yeah, it's the fish, like the species, they look the same. It's oh my god, it's so hard. I just remember, I think we, I don't remember when, but I was with my advisor, we were comparing species and the specific thing was like the length of the head. And we were seeing two species right in front of us. And he was saying like, I see the difference. I look at them. I know they are different. But when you look for body proportions to describe, it was the same proportion. You cannot use that difference to describe. It was like, what is happening? I know they are different. Why is one showing this in the measurement?

Ananda: So yeah, I think that was the hard part to differentiate to delimit the species is because they are really similar. The intraspecific variation, it's very, very, very hard to find. You need to have this integrative approach, use more than one line of evidence that you could be more sure about what you are proposing.

Zoe: That's exactly what I was going to ask. In some situations, also a better key could help, but it sounds like in this case, there's kind of this cryptic speciation, it might be just really hard.

Ananda: Yeah, we made a really good effort to try to list all the morphological differentiation so we could help when fishermen or researchers go out there and look at the species. Okay, this is *Loricaria cacirino*. Okay, this is *Loricaria satae*. Because it was really hard, we could pull out these differentiations phylogenetically.

Zoe: Definitely. I think a lot of people listening to this podcast have worked or even just seen and are familiar with museum collections, but ichthyological collections are a little bit different. Can you talk about just the process of working in the collection of fishes and how the specimens are stored and how you work with them?

Ananda: Yeah, ichthyological collections is a white collection, right? You need first when you go out to the field, you gather fish, you use formalin and when you go to the lab and you start identifying the species, right, the bigger fish you are having. And you need to preserve alcohol and we store in jars. You have a lot of shelves full of jars and fish inside the jars. And the alcohol, 70%, stores them for a long time. And every time you have to maintain filling the jars with alcohol, because it's evaporating, right? So you want to keep the fish for a long time. It's a lot of work to keep a wet collection.

20:18

Zoe: Yeah, I mean, for every specimen, you're never going to preserve them perfectly as they were in life. But I imagine you're talking about their brown color and kind of camouflaging in. I imagine they're color dulls over time, right? And so with some of the specimens that you were working with, the older they were, I'm sure the kind of duller in color they may have looked.

Ananda: Yeah, preserve the coloration is almost impossible, right? So I think for these species, in this paper, I had one with like stripes along the body and it was hard because I was working with, I don't know, fish collection around like 10 years ago and they didn't preserve the stripes. And I was like, oh my god, what is that? Like, is this our diagnostic feature? Like having stripes, not having stripes. But since like I had more recent collection, like recent samples, I don't know, a year, and I could see the stripes and the color was better. Like it was brown, but it was different shades of brown. Yeah, but I couldn't like in the paper describe the coloration when the fish were alive. So I would only have the preserved its specimens. The coloration is really tricky.

Zoe: Definitely. I also wanted to ask you, I saw that your paper had an ethics statement that just described kind of the way live fish were handled and things like that. Can you talk about that statement, like what it means and if it's common in ichthyology to have a statement like that in your paper?

Ananda: Yeah, it's common. I think it's been common around five years, every major journal asks when you submit the manuscript, they ask us to issue the ethical statement. And usually, every institution has an ethics committee, and they have their own criteria of how you should handle the animals. We have to ask for the permits and to collect and to handle the fish. And this has been like, yeah, a pretty common thing in ichthyology. I'm not sure about other fields, but in ichthyology, yeah, it's been common. It's been ethical, right? Like how to, how are you gonna kill the fish? It's a life. You need to be more careful how to do it. And also you're working sometimes with endangered species. So yeah, you need some criteria, you need to permit and you need to do it right.

Zoe: Yeah, I think that makes total sense. Of course, it wasn't super relevant to you where the specimens were just from the museum, but when folks go out into the field, I think it does matter. They kill the specimens. It's a hard part of our jobs, right?

Ananda: Yeah, it's true. And even, like, I didn't go out to collect the fish, I was using collection specimens, but I think it was important to make that clear that I'm not killing anything. I'm using collected species.

Zoe: Did your specimens stay at the UFRN, the collection at the university? Is that where your types are?

Ananda: No, I send the two holotypes to [Museo Nacional in Rio de Janeiro](#) because you should be able to have an institution where they have all the infrastructure to house the specimens, right? They can keep them in the right way and be able to, I don't know, future generations can just go there and check. So I think we have like three main institutions like this here in Brazil. We have one in Rio de Janeiro, one in [São Paulo](#), and one in [Manaus](#), like the Amazon area. So for this paper, we sent it to the Rio de Janeiro institution. Yeah, but the paratypes, we distribute around institutions, to like small institutions, because everyone should be able to have access to the today's specimens.

25:03

Zoe: Definitely. And speaking of your new species, I would love to know the story behind the way you named them!

Ananda: Yeah, to name a part is really fun, right? You keep picking one, why don't you name it after? But I think I came from a state that enjoys its culture. Like really celebrate our roots, and the fishes are from my home state, like [Maranhão](#), northeastern Brazil. And we have here our festivities called [São João](#). It's kind of a religious festivity, it starts as a religious festivity because we celebrate saints like Saint Peter, Saint John, but also along the years became a really traditional celebration we have here. And we have like this, these characters. So *Catirina* is one of the characters there. And [Dona Teté](#), the second species, is a woman that I really admire my entire life. She was amazing. She was so brave. Like she was her authority. She was a singer, a dancer, and she was so nice. I grew up watching her presenting in stages and television. It was so nice. And I tried to preserve in science the culture, make the link.

Ananda: And it was fun because after the paper came out and people tried to talk about it. Like, oh, that's a fish named after Catirina, after Dona Teté, and I became like a celebrity here because everyone wanted- like local news and I know social media wanted me to give an interview so I have my 15 minutes of fame so that's really nice.

Zoe: Oh my gosh, after reading this paper I went and looked up some of her music and it's wonderful. It seems like she just had this incredible life and, yeah, just an incredible impact on Mareña's culture. And so I'm so glad you were able to honor her. That's so exciting. We just had her birthday two days ago. So I hope you celebrated.

Ananda: Yes, it was so nice. She was a leader of a group, kind of folkloric dancers. And they made a really good celebration. It was so pretty. I really enjoyed it. It was really nice. And yeah, and I think also that thing like naming after culturally characters here made me a bridge between science and society. Like everyone was really interested in how important it is to have a new species and what it makes about tell about biodiversity and conservation. And it was really nice. I was like, okay, people are talking about science, you know, when the way everyone was understanding was talking about and everything became because it was that just because the names like the names was like the catchy part.

Zoe: It's so powerful how much names can make people care.

Ananda: Yeah, true.

Zoe: I'm wondering if you could tell us what the next steps are for your research. Like, what are you working on now?

Ananda: I keep working with this group because this research was part of my PhD, right? And it was one of the chapters I have another one, and I've been working. So yeah, think I'm working more on the whiptail catfish. I think that's my major scientific interest, and keep talking about taxonomy. I'm looking too for like postdoc positions and like research positions, researcher positions and I don't know just, entrepreneurship so I keep working on taxonomy of this group.

Zoe: There's always more work to do.

Ananda: Yeah, of course. Because you have... I just did the first step, presenting the new species, but it's not endangered. We don't know. What's the size of the population? don't know. It's so much to know how they live, where they live, what they eat. There's so much to know about them. And we have a lot of work to do.

30:17

Zoe: Definitely. The last question I'm going to ask is, it's always the same question. Why is it important to do what you do? So why is it important to study this group of catfish? Why should it matter to everybody?

Ananda: So catfish, think, I don't know if I said that before, but here in South America, we have the most diverse groups of freshwater fish. Like in catfish, it's the larger group. We have so much species and so much to know about it. And that means that we are very likely to

underestimate the diversity of this fish, right? So also the small regions like the North East and Brazil, we have so much to know about it, like how they helped the evolution of this fish, not just like evolutionary aspect, but also the geomorphology of the basins, not just northeast, but you have a lot of small regions that are still neglected. They still have to know so much about it.

Ananda: And I think when we uncover all this history, it helps to explain the patterns of diversity, like how we have so much endemic here, how it helps to explain the evolutionary history of animals, not just like fish, but we have so much more there. And it helps, right? And I think also I think that it's really important is climate change. Freshwater ecosystems are so endangered by climate change. And if we don't know what we have like now, and how are we going to know what we lost because it's happening. It's already happening. It's happening.

Ananda: So we need to understand because it's having measured the impacts. It's really important to keep this work, filling the gaps, documented biodiversity, how it evolves, what makes that like generated. Yeah, it's why it matters. And also, taxonomy studies, it's how it's the foundation, right? It's where it all begins. It's foreign conservation to, I don't know, genetics and everything. You need to know what you are working with. So it's essential. It's how it began and was why taxonomies are very important.

Zoe: I completely agree. We could probably talk for another hour, but I better let you go watch the World Cup! Best of luck to Brazil and thank you so much for coming to the podcast, Ananda. It was a pleasure!

Ananda: Thank you for having me. I really had a great time. I was nervous. Like, oh my god, I was gonna be- It's my first time in a podcast! But no reason to be nervous at all. Yeah, thank you so much.

Zoe: Oh good, I'm so glad.

[bright, tech-y music returns]

Zoe: Thanks for listening to this episode of the New Species Podcast. This podcast is 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 <https://www.patreon.com/NewSpeciesPod>. And if you'd like to get in touch with questions or feedback, please e-mail us at newspeciespodcast@gmail.com.

[music fades out]