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**Andrew Lowery** [00:00:21] Welcome to a talk on the wild side, your biweekly tour of all things wild in Texas, I'm your host, Andrew Lowery. Dr. Rideout isn't with us today. And you know, as they say, when the cats are away, the mice will play! (Laughter).

**Brianna Slothower** [00:00:34] Yeah. And today we're definitely playing. So please excuse us. (Laughter). And I'm your co-host, Brianna Slothower. I'll stick with my role. (Laughter).

**Andrew Lowery** [00:00:44] OK, so guys, today we have an awesome episode for you. And don't worry if things seem just a little bit fishy, that's par for the course.

**Brianna Slothower** [00:00:52] Here we go with these puns again.

**Andrew Lowery** [00:00:53] Oh yes. We're always plunny on this show. So today, guys, we're talking with Assistant Professor Dr. Carmen Montana from SFA about freshwater fisheries, but we will get to that in a few moments. Guys, we have a really awesome what's wild and new segment that me and Brianna are going to tag team today. Usually our topic, you know, is about Texas, hence the intro. But today we're going to go a little bit farther than Texas. We're going to go to the Philippines. And over in the Philippines in January. Well, let's actually let's back up just a little bit... Brianna, do you know what YouTube is?

**Brianna Slothower** [00:01:28] You know, I've heard of it.

**Andrew Lowery** [00:01:29] There's that place they post all those funny cat videos. Yeah, yeah, exactly. Well, YouTube, guys, if you don't know, is a video hosting site. It has a innumerable amount of content creators that produce videos on just about every topic that you can imagine. If you haven't been on YouTube, please go and take the time to look at some of the cat videos because they're wonderful. (Laughter) OK, so now back to our story. So January of this year, an individual named Joe Show, that's what that's what we're going with. I apologize if I am pronouncing your name wrong, sir, but we have a lot of respect for what you're doing. Mr. Joe Show discovered an entirely new species of tarantula while filming for his YouTube channel, the new species of tarantula that researchers placed into an entirely new genus. If you excuse my Latin, Taksinus bambus, this is the only known tarantula that inhabits hollowed out bamboo shoots.

**Brianna Slothower** [00:02:18] Yeah, when you told me about this, I thought, This is really cool. You know, it's not something you see every day.

**Andrew Lowery** [00:02:24] No, it's it's really not. I mean, even within the scientific community and established scientists that are funded to go do this sort of thing. You really don't see new species popping up every single day. And so to see a citizen science, someone who's really like devoted their own time, their own resources to doing this, to discovering something, you know, that's really incredible and that's really something to like, you know, golf clap. (Laughter).

**Brianna Slothower** [00:02:48] Yeah! Well, and it's just interesting too, to think like how many times have I walked around somewhere and saw something and been like, Oh, you know, that's cool, or I'm going to avoid that, but it could be something really exciting and new. So, it's neat that someone has the knowledge to do that. I'm so far removed from that, that I could never do that.

**Andrew Lowery** [00:03:06] You know, and even I think that even within a lot of the scientific community, you might be hard pressed to find somebody...but yeah, you know, you don't. It's very difficult to identify new species, especially in the field. I just want to make that very apparent to the listeners that it is very difficult to do.

**Brianna Slothower** [00:03:20] Yeah, I know for sure. And especially this species. You know, I think it's really a fair point to mention that we've seen in previous episodes how a devoted group of individuals, both professional scientists, and citizen science alike, can really come together and have a huge impact on what we see in the world.

**Andrew Lowery** [00:03:37] So true, so true. And it's kind of cool with these tarantulas that they live only in bamboo shoots. We see similar things here in Texas and other parts of the United States with like old wood forest cavity nesters like the Cockaded Woodpecker.

**Brianna Slothower** [00:03:49] Yeah, yeah. I remember learning about that and like fire ecology and how important fire is to their ecosystem.

**Andrew Lowery** [00:03:55] And so they have to have these older trees that they, you know, use as as habitat.

**Brianna Slothower** [00:04:00] Yeah, I wonder why this tarantula has chosen hollow bamboo. Do you know anything about that?

**Andrew Lowery** [00:04:06] I really don't. To be honest, I am not a I think it's entomology. I'm not sure if spiders have a unique little subsection because they're technically arachnids, not insects...so... Yeah, but yeah, guys. So back to today's episode just to refresh everyone, we will be talking with Dr. Carmen Montana about her work at SFA with freshwater fisheries. So, yeah, let's get to it.

**Dr. Sandra Rideout-Hanzak** [00:04:28] Well, we have Dr. Carmen Montana with us on the phone today. Dr. Montana is an assistant professor in the Department of Biology at Stephen F. Austin State University. Welcome to our podcast, Dr. Montana. Thank you so much for being here.

**Dr. Carmen Montana** [00:04:43] Thank you. It is my pleasure to be here with you all to talk a little bit about my research, here in Stephen F. Austin State University. And as I say, I teach several courses ranging from ecology, community ecology, fisheries, conservation, community ecology, among other courses that I help. And also, I carry that research program primarily related with freshwater ecosystem, fishes in particular. So is it fair? Well, I was also an assistant professor I from Houston State University. And I got my PhD at Texas A&M University, where, you know, I did a career in wildlife and fisheries. And then I did a lot of my research on Texas species and tropical species that I can give you a little bit more later on.

**Dr. Sandra Rideout-Hanzak** [00:05:46] Great. Well, sounds like you've been kind of all over sort of that area of Texas from Sam Houston and A&M. And Stephen F. Austin, I bet you've had a lot of fun research going on there.

**Dr. Carmen Montana** [00:06:01] Yeah. Yeah, it has been great. You know, learning about, you know, temporal species here in North America, primarily here in Texas, where we have a high diversity of fish. And I'm very lucky to be here in East Texas at SFA, were actually, we have a high diversity of fish, at least it seems, and it's things that are so beautiful because it is a high valuation, different water type, you know, different type of land uses. So that's actually very important for the research question that I have on fisheries ecology.

**Dr. Sandra Rideout-Hanzak** [00:06:39] Hmm, thats neat!

**Brianna Slothower** [00:06:41] Yeah. And one thing I was curious about is how you became interested in studying fish. Were you always fascinated by them?

**Dr. Carmen Montana** [00:06:49] Yeah, I would say I... You know, since I was a little girl, I remember being so fascinated about fish, and other aquatic organisms. And I believe this is because, you know, I grew up in Venezuela, my family have a ranch that was, you know, very close to a big river. And we used to swim in the river. I used to go with my dad fishing almost every day in the afternoons when my dad was, you know, fishing. I was like flipping rock roots and trying to looking through those little holes, and looking for fish or invertebrates. And I think that's actually was an inspiration for me. And then when I went to college, you know, I spending a lot of my time working in the fish collection in a big new thing where actually one of the largest collection in the country in Venezuela. And I think that's, you know, it was in my in my blood, you know, fish...Learning about the diversity and growing in a country where we have a high diversity of freshwater species. So I think all of those situations helped me to became very, very interested in this field and especially because, you know, in countries like these developing countries in South America, women they don't have a lot of opportunity to work in these fields. So I was always very, you know, a facinated but also trying to motivate other little girls, you know, that were in these in these schools where I I went and I did my education, and I was so lucky to have very good mentors that were in this field of fisheries; so, that help a lot. I think so.

**Dr. Sandra Rideout-Hanzak** [00:08:36] That's neat. It sounds like an idyllic childhood to me. I think you and I would have been fast friends because I was always finding myself looking, looking and turning over rocks to see who's hiding underneath this rock. (Laughter).

**Dr. Carmen Montana** [00:08:52] Yeah, it was, you know, I think curiosity, you know, everything that we do is because there is some sort of curiosity for us. So interesting how that works. And actually, when I was an undergraduate student, I described my first official species with this mentor in Venezuela. So I think that think, you know, it was really remarkable for someone like, like me to start doing that. And as I say, my mentors, they have a high influence and what I am doing right now because they teach me everything that I know about fish by that time. You know, I get more, and more involved in doing research in fisheries. So that was very, very remarkable, yeah.

**Brianna Slothower** [00:09:39] Yeah. And speaking of your research in fisheries, it seems that you've studied the threatened fish; specifically, the sabine shiner and how urbanization may have impacted its population. Can you tell us a little bit more about that?

**Dr. Carmen Montana** [00:09:56] Yeah, sure. Well, you know, here in Texas, and I think this is a worldwide problem that we have with urbanization, with the changes in land uses. And sometimes, you know, people don't pay a lot of attention to what does this when it comes to aquatic ecosystems that are running nearby, these urban developments. And one thing that actually it have a motivated me a lot, here in Texas, especially in this area where I work in East Texas, is that we have a lot of surveys of historical surveys in this stream, that actually can help us understand how fish populations community had changes over time. And this means that actually we are starting right now, these are shiner, the sabine shiner, it is a small fish and sometimes people say, why are interesting small fish? And actually, I like all fishes, but you know, I have become very interested in this species is because, we actually don't find as a species as they used occure in some river here in East Texas. So the more that we sample the latest species are now that are released. This is the greatest conservation needs in the state of Texas. So there are now calling in the same size were sample, like they were, they collected in the 1940s, 50s, 90s, 2000. So we have actually now we are doing like resurveying all of these streams where this is supposed to occur. But we are not finding some of these species, and the sabine shiner, in particular. We have a very good record from the 2000s. So there was this professor from University of Texas that actually he, he did a research on this fish, and he recorded high population abundance. In this scene where we are working right now, but we are barely finding and these are specific system where we are finding them in la Nana watershed, and...creek. So basically, the populations are just isolated to certain stretches of this stream. And what is particular about this fish, is that this is even though this is small fish, they actually are barely a...there are a restricted to very stretches of the river where it has to flow and they have gravel. And it's because they actually when they spawn the releasing egg, those egg has to flow, drift in the water for some time until they hatch. They don't have the right flow and they don't have the right to straight. So the eggs actually sink and they will not hatch. So I think that with a high development, alteration with the flow, alteration of the substrate, that is what is causing the decline of the species in these places where they used to occur in high abundances. And that's the one thing that we are actually monitoring very closely now is we are tagging with a species using some implants. So you actually inject this implant on their back. And actually, every month we go out there in the field and we sample the same sites that were surveyed like 20 years ago and see what is what is happening. And we have this study for over one year. And so this population is still we are finding a very confined population to a small stretch of the Lebanese that that is a tributary of la Nana creek that is a tributary or the Angelina River. So our main concern is that, you know, the high impact in the extreme, that has caused changes a lot of the flow regeme on the substrate is what is causing the decline of these diseases in these streams here in East Texas.

**Dr. Sandra Rideout-Hanzak** [00:14:09] So I was just going to ask, so this Sabine shiner, if you just find them in the streams, you don't find them like in the Angelina River, right?

**Dr. Carmen Montana** [00:14:16] There are no, there are multiple small tributaries of this major rivers like, for example, tributaries to the Angelina river or tributaries or the Nature River and tributaries to the Sabine or the Sabine river. So the Sabine and Angelina is a large river, so you are not going to find those in the main channel or these big rivers more than the tributaries that are...tributaries of these large rivers. And primarily because they actually the type, the flow has to be like a flow, like a rainfall type in a not too deep. So it has to be like shallow flowing water with gravel substrate, these are going to be the ideal habitat for for them to actually reproduce and do this.

**Dr. Sandra Rideout-Hanzak** [00:15:08] Ok. So that really highlights the importance of those little tributaries. Not, I mean, it's not just the rivers that are important.

**Dr. Carmen Montana** [00:15:18] Yeah. Well, the tributaries, you know, at the end are the ones that are going to feed this main river. Right? But the tributaries is where you are going to have like them, so much more fish that actually are associated with that very particular type of habitat. As you may know, a lot of fish, actually, depending on their morphology, they are going to be associated with a particular type of habitat. So this fish like because of their size, because of the type of life history, type of reproduction that they have the best habitat for them to occur is the one that I was describing to you. Right. Because in those big rivers. So you will they, you know, they have to be somehow close to the substrate because of their morphology. They are like, they are very flat, ventral, flat. So basically, this are like bottom, bottom feeders, bottom...they use the bottom for all the needs that they have, right? Because of the type of morphology. So in these large rivers, there is no way for them to do well when they have to deal with high flow, but also high disturbances in these systems.

**Dr. Sandra Rideout-Hanzak** [00:16:28] Mm-Hmm. OK, so what do you you said that this is a little guy and sometimes people wonder why you're interested in it. What do you say to those people about how the importance of these little shiner type fish?

**Dr. Carmen Montana** [00:16:46] Well, I think that, you know, every single organism, all we have an ecological role in these systems. You know, sometimes people matter more about a lot of fish because they are more interested in maybe for fisheries or for consumption. And that is, you know, most of the time that do what people think about, okay, the value of the fish is because the food or because of recreation. But for ecologists like me or other fishery biolologists, for any other like state agency like Texas Parks and Wildlife or any institutions that deal with fisheries, so for us, every single fish is going to be important because also because of the role that they have in this ecosystem, right? For these, for one particular fish like this Sabine shiner, I care a lot is because, you know, like, let's say that these populations decline so much that they can go extinct. So we are going to be losing fish from the biodiversity that we have in Texas. So this is an icon fish, right? Maybe for some people, they don't understand that, but losing one species, it is a lot. Right? And also, these are organisms that you know, they they provide so much importantance for nutrient recycling in the ecosystem. They can be food for other fishes. So the roles, every single organism is going to have an important ecological role in this in this ecosystem. Even that sometimes people say, is not tangible to other people. But is there are there and especially this fish that is so a very particular differing from other minnows, that losing them maybe can have some effect in these aquatic ecosystems. So, an effect, probably in nutrient cycling, that we know a little bit about this fish, but now we are learning more. So there are very few studies before this study that I am doing right now with my students. There was another study that documented the life history of reproduction, but in the 2000s. But other than that, we don't know a lot about this species. So, you know, it's like, I just tell people, it's like if we know more about what is the ecological role, just losing this species, so we probably will be able to, you know, care not only about this, but other species that are in the same situation because here in east Texas, we have not only this species is listed as a species of great conservation needs. There are about, ten other species that are in the same situation. And the same situation is because habitat alteration is a flow, a alteration. And these little minnows that are or these little shiners are usually flow depending a species. Something happen and they are going to be affected. So let's think about losing this species. We don't know, we don't know a lot about other species that are in the same situation because more research needs to be done. And and that is fascinating because, you know, I feel very lucky being here ongoing and learning more about what is the species doing there... They're they're actually recording stats, this is in some of these streams and some of these systems, they haven't been surveyed yet. So we actually started doing that recently with help with some collaborators from CPWD other universities here in Texas. So we are very excited to continue working in, you know, learning more about this is more efficient.

**Dr. Sandra Rideout-Hanzak** [00:20:40] Yeah. Well, it sounds like important work to learn more about them. So you've also studied some invasive fishes in the East Texas watersheds, too. What fishes have you found in the waterways that really don't belong there? And where did they come from?

**Dr. Carmen Montana** [00:20:57] Well, the invasive species. Most of the research that I'm doing now, these species are primarily found in the Brazos river, although it doesn't mean that I have'nt found some invasive species in East Texas. So, in east Texas some of the species, invasive species, that lately we have found streams are tilapia, and this is a fish that is endemic from Africa, right? But in particular, the two species that we are studying are occurring in the Brazos River, and these are the species that actually are primarily found in coastal ecosystems. So the two species that I am talking about is the sheephead minnow, and the gulf killifish. So these are those small fish species as well. And the gulf killifish is a species that is actually native from, the range or distribution goes from Florida to Veracruz, Mexico and the sheephead minnow, actually, the distribution goes from the coast of Massachusetts to the Yucatan peninsula. So it is a very broad distribution, but they...

**Dr. Sandra Rideout-Hanzak** [00:22:12] Hang on. So, I just want to interrupt you real fast. So, sheephead Minnow, and what's the other one you said?

**Dr. Carmen Montana** [00:22:18] Sheephead minnow, and gulf killifish the gulf, killifish. Yeah, it's called, killifish. Well, it's these. Again, these are called animal species also. But the killifish is a name that, you know, these are very polarizing species as well. So in the two, we see that we are interested in and we are studying now, is it those two actually...they are here in Texas, they are found in tributaries, like coastal areas of tributaries running through the Gulf of Mexico. So that includes the lower Brazos river, the lower nature river, the lower Sabine. So these two species are abundant there, because that is their type of habitat where they are actually associated to. But also introduced to other rivers, like inland systems in Texas and in particular, we are very interested about these two spcecies is because, the rivers in Texas where they have been introduced, they actually have had barely a damage in the receding populations or, other species of minnows or congeners species. Let me give me give you an example of where this species have been introduced before, like in the Pecos river. In the Pecos river, this species where introduce. The only problem we think actually, we don't know exactly how those introductions have occured, and that is one thing that we are studying. So what are the pathways introductions in the Brazos, for example, in the Brazos river? Because when it was introduced in the Pecos river, the sheephead minnow actually hybridized with the native species that was the Pecos pupfish. And the hybridization initially and caused a decline in the pure breed of the native species. So basically now what you find is in the river is a hybridized more between sheephead minnow and the pecos pupfish. So we actually that's the one thing that we don't want to happen in Nebraska. The we want to have a beautiful population. Right, right. And since we don't know much about what is going on in Nebraska and that's why we started doing this research is that research that actually is supported by six walleye people that are very interested in knowing what is the current situation with the population, with these two invasive species in this in this river, because we have to add and, you know, maybe make some decisions about what is going on. And that's the one thing that we are right now investigating. What are we find them? So what are the abundances and decide where the seasons were collected before and for first time because cases were reported in the Brasov river was in 2000? You leaving? I don't know if you remember that big draw to happiness in that time.

**Dr. Sandra Rideout-Hanzak** [00:25:45] I do. I'm a fire ecologist. And so, yeah, it was kind of huge, huge drought. That was the only year in my fire class that I didn't get to burn because it would have been a really bad idea.

**Dr. Carmen Montana** [00:25:57] Well, during that time, DPW did. They were actually trying to move a fish from some places on isolated pools to main main channel where the water was still flowing. And they actually found a tip him in or in a meeting with the brass of either me or both of them. Mm hmm. And so same. So there was another proposal that historically collecting this is going on all the time and trying to see where he found those around that idea where it was first reported. And we were concerned about how does this go there, you know, because these are a species that there are no allows the lethal a bait shop. So how did he get there? So we still have the same question now because even though we have been interviewing people, we have been doing a lot or like surveys and we have not found that the species is being sold at Navy Shop. So what happened? So there are several hypotheses that we have, but one is that potentially we physical there because those fishermen broadcasting, you know, they're reputed to be reasonable beacons. That reasonable can be one of the main a way, how people easily move things around because they can bring fish from one place to one moment and just before those after a day of fishing, right? Mm hmm. And so but there are no evidence that there can be two species that are being sold in a lab in the area. So what is good? But we still need to, you know, make people aware that this is done. They'll be disposed in these reputable or downstream offspring from before reasonable because that actually lead to big problems as we have already in all the systems in Texas. And yeah, hmm.

**Dr. Sandra Rideout-Hanzak** [00:28:05] Isn't there something silly that you're not supposed to like flush your fish down the toilet to? Is that that might just be out

**Dr. Sandra Rideout-Hanzak** [00:28:12] of left

**Dr. Carmen Montana** [00:28:12] field? Well, it's going to be really hard at this point when you run out in the field.

**Dr. Sandra Rideout-Hanzak** [00:28:23] That's where these. Were these two species, were they were they pet? Are they part of the pet industry?

**Dr. Carmen Montana** [00:28:31] Well, if you start shearing takes that there are no there are no sold in the pet industry, but equally they are very good a lie base in the coastal area. Those states are. So when we actually interview people and it's a picture, you see, it's all basically be a gold fish. Mm-Hmm. Fishermen love the beach for a for fishing marine fish, right? But you know how? How is being moved from a coastal New England fishing? Is it still a part of that? We are trying to win this thing. Yeah. And in Louisiana, for example, there are Italy they call silly fish is being a producing aquaculture to actually help with the demand that fishermen have with these fish because they really like the cold fish for fishing. OK, so I don't know. We still don't know. And you know, it's it's sort of thing we will keep, you know, starting doing more research, trying to do more interviews and see what we get about how the fish are being move from, you know, coastal waters. So, OK. Yeah.

**Andrew Lowery** [00:29:54] So I actually have a question. So somewhere with these invasive fishes, are they coming in and just filling wide open issues within the ecosystem? Or, you know, do you have a situation kind of like where you had in Florida with the snakeheads to where they came in and made a niche for themselves? They just killed everything else off because they were so dominant? Yeah. Well, go ahead. I'm sorry.

**Dr. Carmen Montana** [00:30:20] No, no, no, no. So it asked the question, Would you have something else to what was?

**Andrew Lowery** [00:30:26] So are they coming in and just finding niches within the ecosystem that are already open and president available to them? Or are they coming in and pushing other species out of those niches because they are more prominent or more dominant in that ecosystem?

**Dr. Carmen Montana** [00:30:42] Yeah, that's a very good question. The thing is, we know that invasive species, they actually are calling basically because they usually have a detrimental impact in those receiving communities or population where they are actually coming into. But for these fish, for example, in the in the brasserie, there we are. We start learning what is happening based on a they're basing their ecology. So this is this is cool, potentially compete for resources. They have very similar a guitar feeding ecology and their morphology is also very similar. And equally, these are a fish that are a very generally a very resistant and tolerant to the conditions of the water than a native. And I think that's why they did. They actually became very well established where they are right now on the Upper Brassell river. So the thing is, and I think the major concern that we have is that if hybridization is there or in between those containers, so we had the referee that was fish that is congenial to choose Himeno. So they can they can hybridized as happened with the chicken or the pig was both fish. So that's the main concern because we don't want to lose a native species from the brasserie they're doing to hybridization because the hybridization will happen. You may, you may the mean or they you may displays the future, well, fish in the barrels of it. And the post basically was listed as a species by the sea or takes off early this year, last year, this spring 2020, because of the same situation that, you know, the populations can be harmed because not only that risk going to southeast hybridization thrown in, but they can be more sensitive to changes being it drought changes, things it flows, do it to them because we have a lot of dams and they operate the river, and that's is actually affecting flow rigging and the flow can actually affect these people species. So it's more of a before they can display things because they are more aggressive, like, for example. This fish can be very aggressive and something can be even eat fish, and probably it can display the needed a plane fish, for example, that could be the convener for the killifish. So. We still are not seeing evidence that we actually start analyzing phone data based on morphology, basing a stable isotope analysis on diet, and we are learning that there is a lot of overlap between these two species. They gold killifish and the plain killifish, and they keep him in the Red River fish. So our next step will be like experiments that we can see a better behavior when they're are together, whether they can be or, you know, how are they going to within their natural system, right? We already know a little bit about the ecology in turtles. The feeding ecology, morphological morphology. But if we start learning about what those two species looking invasive species can do in these two native species, they call the fleeing jellyfish and the great river of fish. So these are the one the two native species that will be affected by these invasive species. So, so does that answer your question?

**Andrew Lowery** [00:34:50] Yeah, no, no, no. That's perfect. I was just trying to to to think of a good additive to the end. You know, so many times with invasive species, especially in situations where you get them so rapidly into an ecosystem that's hard to track exactly where they're going, you know, you have so much harm that ends up coming to that ecosystem. What what can people do to try to prevent that, to try to prevent, you know, introducing non-native fish into the waterways?

**Dr. Carmen Montana** [00:35:19] Yeah. Well, I think one thing that we can do, and especially this is all our learning in the past few years visiting all of these places where we that we were surveying for these invasive species is we think that more like signs warning people about, you know, this whole thing may be into the water, see things that will help some of the fishermen or a the regulations where people, they don't fishermen, they should know when hit by their fishing license about what the issues are. Maybe that are allowed to bring to these reservoirs or these rivers will try to warn the fishermen or be a little bit stronger with the fishermen about what are the type of B that they should be using in these little holes in these inland systems. And we also encourage fishermen to buy local bait bait shop near the bowls or the rivers where there are fishing. So it's more like the light look like they will be better for being dumping in those boats, those where where we don't know where are they putting into the system? So I think that will help, you know. Through the transport of a invasive species across the state. Mm hmm.

**Dr. Sandra Rideout-Hanzak** [00:36:56] That's good advice. Just buy, buy your bait fish, buy local fish and

**Dr. Carmen Montana** [00:37:01] yeah, something like that.

**Dr. Sandra Rideout-Hanzak** [00:37:03] Yeah, got something left over. At the end of the day, you can let them out without causing any harm.

**Dr. Carmen Montana** [00:37:08] Yeah. Yeah, because we are like in some of these, they chop, you know, they have they have local like local minnows that are good for fishing. But sometimes they you find people there that are using like, for example, goldfish or they are using a black soda that are more are. So the idea these days and they are not going to be they that are not going to do well here, but we never know where we are. We never know if we don't follow what these fish are doing. Dead or alive, probably they will survive these, these these waters, especially if they're coming from coastal area. These places, like in the upper bracket river, the waters are very salty because of the chlorine and this in the in the waters and the type of morphology already in the area. The conditions are going to be very similar in terms of a salinity that those ones in the coastline only physical attack very well. And that's one thing that can be a concern for us because we don't know it because it seems that are being released thankfully survived and became established. And that is a problem that that is how innovation happens most of the time.

**Dr. Sandra Rideout-Hanzak** [00:38:25] I I guess we're going to turn the tide a little bit

**Dr. Sandra Rideout-Hanzak** [00:38:29] with pardon the

**Dr. Sandra Rideout-Hanzak** [00:38:31] pun. Yeah, to ask you, what's your favorite fish and why?

**Dr. Carmen Montana** [00:38:38] Why? As I told you at the beginning, I like all the fish because I think that are fascinating. But I actually have a particular group of fish that I have studied for. I think for my entire career and I have been always fascinated, is a group of fish within the genus of sea, our new tropical fish. I don't know if you have heard about these groups that are called because back. So these are like the equivalent of here the in North America. So the morphology been similar director and these groups that appear only in tropical regions in South America. So there are a very polar pool that are very important for the economy of the country. They have a fascinating distribution because they're not or in more of a troop withdrawals for the Amazon. However, there is a human segregation. What we're seeing is this is so that are depending on the type of water from a pool in water or little black water river. And there are fucking native for fishing because there are various races and they don't cooperate associated with this. So I also always very interested in the thought that these can be persistent because they actually are very important in maintaining the balance of these ecosystems. But, you know, I always remember that there was a group of fish that my dad like it. I'm not, you know, I used to fishing and that are fascinated in all the aspects I just imagine. So, yeah, and actually, we recently we published a book about that political speech from South America, the articles that I have with my wife. But I think that these names, so he's also a very big fan of these beautiful species. So we were able to put a book together about the diversity, the ecology and conservation of this fascinating group of these people. So, yeah, that's it. You may need to do to that will be the group of fish that I will say. But as I say, I like all fishes because I think that are fascinated and very important to study aquatic ecosystem in different contexts.

**Dr. Sandra Rideout-Hanzak** [00:41:07] Sure. So if you could give some advice to young people out there who are interested in pursuing a fisheries degree, what's like the one best piece of advice you would you would give them or a fisheries career up?

**Dr. Carmen Montana** [00:41:26] Well, I think that the fishery inside their families is growing a lot. And you know, fishing is a big industry not only in North America, but also in many places around the world. So there is a lot of research and development that goes into this field. So for someone that is really. During a career in fisheries or fisheries biology. So we need more people, we think we feel we need more women representation. And this is a fascinated Bayelsa state, you know, because it involves not only like fishing, a that's that sometimes people when they talk about fishing sign they, you know, depending on who you talking to, they think, Okay, this is related with aquaculture. This is related with it. You know, there is more than that. They've been able to fish population. They're finding migration, that ecology, community colleges that are many branches within that field that are fascinating to study and are very important because a, you know, a side benefit from fishing from the fisheries we use, these is a controversial feature. The fish are important for ecosystems soon and is not only studying. The fish is also studying the surrounding environment, where these fish, they or fry like their flora, they found. To me, it's about a decent water ecosystem. And it's not only freshwater because I especially think this water is, but also money. So we need more people doing research in this field. And I call for them to actually, you know, protect the rooting and fisheries because biologists don't feel

**Dr. Sandra Rideout-Hanzak** [00:43:23] it's great to hear that it's a growing field and that there are opportunities for folks.

**Dr. Carmen Montana** [00:43:29] Yeah. And we need a lot of more, you think? Yeah, I

**Dr. Sandra Rideout-Hanzak** [00:43:34] think you're right.

**Dr. Sandra Rideout-Hanzak** [00:43:37] Well, it might also be fun to is hearing maybe one of your biology blunders so people can know what to look forward to if they decide to pursue a career. Do you have a story where a situation kind of went awry and then ended with a funny or embarrassing story that you'd like to share today?

**Dr. Carmen Montana** [00:43:57] Oh my gosh. So I said, I think I have a couple, but I think I would like to tell one that is I don't know if it's funny or is it scary, but it was this whole situation with my word in South America because besides my local watering sixes, I did a lot of research in South America, and some of these were you were studying the effect of mercury contaminating aquatic ecosystem for the. So in this riveting again, I would I have my my research. So there was an opportunity that I we went there that was my permit to put a bite or something that they Anene, professor from Baylor University or the researcher from the royal and putting up things. So we were, you know, fishing for our research. And I wasn't actually in a boat with three older crew members in my fully supervised operating supervisor told the other professors. All right, we are going to be fishing here, you know, so just be careful with the piranhas if you catch a piranha. So they calmly to do that to hook the piranha from the fishing, the fishing line and let you know how to deal with that because she has been dealing with us for a very long time, you know? So I was doing the job, the job for the professor, because it was a little bit scary and there were a lot of piranhas in this river. Oh no. So I wasn't hooked in there, piranha pulling back in the water. So it was a time when I got my own piranha that it was like about six pounds piranha black bear on a gray area, but it's very good. Black Piranha Black Piranha is a very big that is one of the largest piranhas within the family. Wow. Within that group. So I called my brother into the boat. I was hooking the piranha from the WHO. I don't know how we happened, but we run a jump and got my middle finger. Oh, oh, I almost lost my finger. But you know, well, it was amazing for that for me. My supervisor and the other professors, I was you crying. I was afraid that I was. I lost my finger. I was bleeding. And anyway, finally, my supervisor said, Let me see your hands, let me see your fingers. And so my finger was there. Oh my God, I was very happy, but I was bleeding. And, you know, so it was a big story. People were just amazed to happen to me, and I was cool that I was beating. But up there on the news, the whole story. So that was an amazing, an amazing story for them. But it was painful for me, you know, but I come back with. The issues and reports of the United States, and I have my I have got my hair was full, it was getting very bad, the finger was getting infected. So I came back to the U.S., you know, before the plane that I was planning went through the rule around. Same thing when I arrived here in College Station. So I went to the emergency room that was again, I have to tell this story like a hundred times everybody was a mess. Oh, what a fantastic story. I'm glad. So I repeat this story many times, but the doctors and nurses, they will. Oh my god, this is amazing. We have someone with a surrounded by things in our room, so they found a piece of tooth or piranha tooth on my finger. So when the piranhas on my finger broke inside and it was there and that's what was causing the infection on my finger, so they did those, particularly they were fascinated about that. So they actually gave me like basically x rays and my finger. And so they asked me for the picture of the Piranha because my political device likely to kill the piranha part of the Piranha. This call and take all this cold back to me if they think this is a trophy for you, the bird, I love you too hot to handle the corona. So here in my office, I have this place and what people like about the brand, so I tell them this story. That's something that is one of the most I think is scary for misinformation. But you know, I see, you know, it is something

**Dr. Sandra Rideout-Hanzak** [00:48:37] I wondered if this was going to be a on a story once you got started. But yeah, I didn't even realize that there was a black piranha and it got that big. That's crazy.

**Dr. Carmen Montana** [00:48:50] You also write

**Andrew Lowery** [00:48:51] haikus, the parkers, which are like the

**Dr. Carmen Montana** [00:48:53] yeah, those guys are even, yeah, they're the fruit eaters. But yeah, these are within the same families that were following me there. But you know, they they do. We have within the cerebral media, we have a very diverse. Thick variation among those, it's easy. And we have the proper runner that is probably terrible by war. We have the Red Bailey Piranha that is so small one body. Very, very aggressive, so we actually have a we have a film with BBC Channel two years ago, including in the same place where I work, so they did a film about Piranha. And so we actually work with the red band Piranha. So you guys can see for that's the only Netflix Serrano's we receive. So we have. So we thought about that because people are took about Piranha did a series about the Rana, but did you know people shouldn't be scared about doing it to, you know, sometimes accidents happen right now because they will attack you as people think it. Sometimes you that may amazing to just attack you. But it's not. It's no, it's not how people describe that they would kill you that know we actually have a person that was swimming with the run in anything and nothing happened. So it's just, you know, there are so sad that people understand that we actually are the one that makes the system of these organisms. So integration? Yeah. And so integration, you know, something when it's very dry and this system in South America so that are very hungry and a system. So if you splash the water, they think that you know, fish or refusing food and they can attack. But other than that, you know, I mean, with hundreds of millions of piranhas industry, but I I had this experience with on this boat inside it. Wonder what it would be?

**Dr. Sandra Rideout-Hanzak** [00:51:02] Yeah, that is kind of wild to be in the boat and get it. So that's a good trick, Carmen. Yeah. You know, it's funny because I mean, when you said piranhas, I was thinking red bellied piranhas. There was when I was an undergrad, there was a local pet store that was probably, I don't know, quite questionable, you know, I don't know. They sold all sorts of things that they probably shouldn't have been selling. And we bought piranhas and we bought red bellied piranhas that had for years, then for four years later than I have these red bellied piranhas in a in an aquarium, and I don't know why. It was a really dumb thing to do, but also we had this one. We had one that was bitten in half during shipping and the guy was going to throw it away and we were like, Well, we'll take it. And so we called him half half body part that begins with an A. Let's let's just for the sake of our listeners here, let's call him half angel. We called him. That's not really what we call them, but half angel is what we're going with here. Yes. And quarter by quarter. But there you go.

**Dr. Carmen Montana** [00:52:12] So I wonder, I was wondering, how did you bring those to the US? Because for another hour, I know I always thought we were united. We were both really.

**Dr. Sandra Rideout-Hanzak** [00:52:22] We were in Indiana and I like I said that store was quite questionable. They had monkeys and all sorts of things that they shouldn't have had. So, yeah, but half angel would live. He lived in the corner, nose down, and eventually the dorsal fin grew all the way around his back end, where the rest of his ankle was missing. Let's call it and and we would put the food right down in front of his nose for months, and then he got to where he could working really hard. He could make himself that he could bring himself upright, and he could make like one lap around and we would stand there in the dorm room and we would all be cheering as he would. He would make one lap around the aquarium and go back to his corner nose down, and it would take him like ten minutes and we would all, you know, like everybody in the hallway would be cheering on a half angle as it did that. So yeah, that's what I had in mind when this story started was so something that I knew was coming.

**Dr. Carmen Montana** [00:53:23] Yeah, yeah, no. I I I like Piranha that I think is a fascinating group of, you know, a good body in terms of their diversity, their feeding ecology. And, you know, it's like sometimes people use everything to look like a piranha. They say this is up there on the body. So much radiation. Yeah, you know, and they're feeding ecology so well. You know, people are burning. Yeah, but good, very important in the distribution of like swimming off a sea. So this person is in the Amazon. So there are important organisms or personal growth or sea like trees and was like, Oh,

**Dr. Sandra Rideout-Hanzak** [00:54:06] sure, they've all got a purpose. Well, is there anything else you'd like to share with us today?

**Dr. Carmen Montana** [00:54:13] Well, first, I just want to say thank you so much for this opportunity to speak with your program. And you know, I am always here to, you know, it's the one halfway through. You know, our research here is that they are learning a little bit more about the freshwater fish, absolutely. We the out and I'll be happy to chat or answering with your story later.

**Dr. Sandra Rideout-Hanzak** [00:54:39] Yeah, that's terrific. Well, we really appreciate you. You're our first fisheries person, and I'm really excited that we got to talk to you today. Thank you.

**Dr. Carmen Montana** [00:54:48] All right. Thank you so much.

**Dr. Sandra Rideout-Hanzak** [00:54:50] OK, bye. I'll talk. On the wild side is a production of the Caesar Claver Wildlife Research Institute of Texas A&M University Kingsville. Funding for this project is provided by the Harvey While Sportsman Conservationist Award by the Rotary Club of Corpus Christi. Editing was completed by the talented Gabby Olivas, Andrew Lowry and Trey Kendall. We thank the TAMUK distance learning lab for all their help and cooperation.