But Why: A Podcast for Curious Kids

How do invasive species take over?

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Jane 00:20
This is But Why: A Podcast for Curious Kids, from Vermont Public. I'm Jane Lindholm. On this show, we take questions from kids just like you and we find answers. And while your questions sometimes sound simple, the answers are often really complex. Like this one:

Leo 00:38
I'm Leo. I live in Cincinnati, Ohio. I'm almost five. Why did people bring invasive species to other countries?

Jane 00:53
"Why do people bring invasive species to other countries?" There are so many different ways to tackle that question, Leo. First, we need to know what it means to be an invasive species. Then we need to think about how invasive species get from one place to another. Sometimes people move plants or animals on purpose and sometimes they don't even know they've picked up a hitchhiking snail or insect or algae. And then we can talk about what to do about invasive species once they start crowding out or hurting the plants and animals that are already established in a place. And it turns out, you might have a role to play in preventing the spread of plants or animals that aren't really supposed to be in your neighborhood. Because once something has a strong presence in a new place, it can be really hard to get rid of. That's the case in Florida, where we're going to start today, where a very large type of snake, originally from very far away in Asia, has exploded in population over the last few decades.

Yvette Cano 01:56
Today, we are actually in an area of Everglades National Park known as Shark Valley. This is a very popular area for bicyclists and hikers because there is a paved 15-mile loop that allows people to explore the heart of the Everglades.

Jane 02:12
Everglades National Park covers almost 2500 square miles in southern Florida, and is known for having some really wonderful wildlife, including alligators and crocodiles, beautiful big birds, and plants like cypress trees and flowering orchids. But the ecosystem is also threatened by invasive species. I paid a visit to a park ranger at the Shark Valley Visitor Center recently to learn a little bit about the threats from relatively new plants and animals that don't belong in the park.

Yvette Cano 02:43
My name is Yvette Cano, and my official title is Director of Education at Everglades National Park.

Jane 02:50
We could talk to you about a million different things here at Everglades National Park. But one of the things that we're discussing lately and that kids have been wondering about are things called invasive species. And I know you have some here in South Florida, and maybe here in the park, too, that can cause problems, and they can be plants or animals. So what makes something an invasive species?

03:13
So there are native species and non-native species. A native species of a plant or an animal, a living thing, is something that has made it naturally to an area to grow, or live and reproduce, have young. A non-native species is described as something that is moved by people to an area. So for the sake of an example, I would say that we go to our favorite place in the world. And we love a plant, and we pick up the seed and we bring the seed back home, and we plant that seed at home and we plant it in our backyard, that is now a non-native species. In contrast, if a seed makes it to South Florida in the winds of a hurricane, that is a natural process. That species is considered a native species. So that's just to give you an example.

Yvette Cano 04:05
Now, when you're looking at the behavior of being invasive, most non-native species that become a problem is because they have that invasive ability. They outcompete our native species. Now, don't misunderstand me: there are some native species that have a little bit of an invasive attitude. And that's okay too, right? And they are propelled sometimes by nutrients, extra nutrients in the water and things like that. But when we're looking at non-native invasive species, like I mentioned, they outcompete our native species. So one of the poster child's of non-native species that has been on the news and has been all over the papers now for an extended period of time is of course the Burmese python. I actually have a skin here for you. And as you look at the skin, you can see that it has a beautiful brown and tan pattern, and really allows this snake to blend into this environment just beautifully.

Jane 05:18
Park Ranger Yvette had been holding a rolled up snakeskin. And when she tried to unroll it, it was so long, she couldn't even unravel the whole thing when her arms were completely stretched out. So these snakes are big, but they're also a very big problem.

05:36
This is probably about a 13-foot Burmese python. That's really large for our snakes here in South Florida. Our native snakes don't get this big. So when you see a snake this big in Florida, it's definitely a non native. Now the Burmese python came because of course, people wanted it as a pet. And our ecosystems here in South Florida are conducive, this warm environment, even during our winters, it's still pretty warm. So if you're a reptile, or and even in amphibian, you like this kind of weather, right? So you got plenty of water, plenty of food and the warmth that you need for that cold-blooded body. So these pythons actually start really small. This one's 13 feet, but when they're baby, they're hardly a foot long. And just like all reptiles, they will grow to the size of what they consume. Now the Everglades was set aside for its biological diversity, for life. So we have plenty of food for these pythons to eat, unfortunately, so they have really wreaked havoc, especially on our small mammal population. We

started to see a decline in small mammals, things such as rabbits and raccoons, for example, which may not seem as a big deal because rabbits and raccoons exist pretty much all over the world. But when you start to create an unbalanced system, as a result of an introduction of a non native invasive species, it becomes very challenging because the animals who were relying on the rabbits and raccoons now no longer have that as a food source. Or, for example, rabbits eat vegetation, and disperse seeds. That's also a very important role that they play in our ecosystem, that now there isn't that dispersal or that population of rabbits.

Jane 07:35
Forty or 50 years ago, there were no Burmese pythons in Florida, except a few kept in captivity. But today, there are maybe as many as 300,000 of them living in the Everglades. And all, probably, because people were keeping these snakes as pets, and then letting them go. No one released their snakes on purpose to do damage to other native animals. They maybe just couldn't take care of them anymore and didn't want to kill them or have to admit that they couldn't handle them. So they let them go. Lots of people probably thought they were doing the right thing. But now these snakes are doing a lot of damage and they're really hard to get rid of. So in some cases, people are licensed to hunt and kill Burmese pythons.

08:21
That is correct. They are impacting our ecosystem. They are very, very difficult to find. So we have licensed individuals who know how to identify the snakes because here in South Florida, we have over 30 species of native snakes. We want the individuals catching the pythons to know exactly what they're catching, that they're not catching our native snakes, they are indeed catching pythons. And those organized efforts help. But unfortunately, there are a lot of snakes in the Everglades and the Everglades is really difficult to get across. We are mostly wet, whether it's freshwater, brackish water or salt water. It's not like we can walk across the lawn for example, looking for a snake. And these pythons do an excellent job of utilizing the ecosystem for their advantage. And you can see in this one that I have, in particular, how beautiful these patterns are, how they blend right in to the ecosystem. They will go right underneath the water and disappear from plain sight, knowing that they're right at our feet. So there are efforts but unfortunately, this is one invasive species that is going to be a part of the Everglades and we are going to continue to educate about it and get rid of them as much as we can from the landscape. And like you mentioned, we do unfortunately have to euthanize them. We can't ship them back to where they're originally from because that, of course, starts other problems. But with new invaders, we really put a lot of effort into understanding them and that's where the science comes in, right? What are there behaviors? And attacking them before they become a larger problem, right, looking at where those concentrated populations might be, and making sure that we're getting rid of them very, very early on, not allowing them to become more of a problem into the ecosystem.

Jane 10:21
What are some of the other invasive species here in the Everglades?

10:25
So we have a number of plant species. Many time, we actually talk about animals because they have a face, right. But we have more plant species than we do animal species invaders. Things like Brazilian

pepper, Australian pine, Melaleuca, all three of those plants are within the top five of our top invaders of plants in the Everglades that we manage for. So we'll burn, we will apply herbicide to them to be able to manage for those plants.

Jane 11:00
It's also a lot of money. And it's not possible to spend the money to do that in every place where there are invasive species.

11:06
That is correct. Whether it's a plant or an animal, removing invasive species is extremely costly. It is very, very difficult, starting from the science of understanding what we're up against, whether it's a plant or an animal, and how that plant or animal will respond to what we think might work. And what will work here in Everglades National Park might not work in other places around the world, because of the different situations, right? We don't have snow, for example, where in a place, you might have snow, you're still gonna have invasive species. Or you might have terrestrial animals that don't do well in water. Well, the Everglades might not be their place, right? This might not be a place for them to be an invasive species. So those kinds of things also dictate how we manage for invasive species very, very costly indeed.

Jane 11:59
You brought up an interesting point about some of the plants, which is that in some cases, invasive species have been brought here, or brought to wherever they are living, on purpose, not to be invasive--people didn't try to do something bad. But in a lot of cases, invasive species are brought here for farming or as pets or a lot of plants are landscape plants that somebody thinks, "Well, this would look really pretty in my front yard, I'm going to plant this here," and then it gets away from them. Or you mentioned some animals have been brought over as pets. And then they're released by people who realize, "Oh, I don't have the ability to take care of this animal." What are some other ways invasive species get into an environment?

12:42
So, accidentally. So here in South Florida, for example, we have two really big ports. And a frog, for example, might jump on a boat, or might be in a shipment of plants that are being moved from one area to another. And then they happen upon South Florida and they say, "Hey," in their own frog language, "this place is really comfortable!" And they decide to call it home. And sometimes, for example, if we're using the frog, and they're being brought in these shipments of plants, those frogs might be laying eggs in the plants. So that we believe was the case for the Cuban tree frog, as well as the iguanas. So some of that is still debatable, because they have been here on the landscape for so many years, back when we really weren't keeping records have how things were moving. But we believe that both of those species came as a result of our ports through jumping on ships.

Jane 13:38
To be clear, the word invasive is a pretty negative word. And it might sound like the invaders are doing something mean or bad or wrong. They're definitely not. They're just doing what they naturally do. It's just that the other plants and animals around them evolved to compete with each other. And then this

new species comes in and it's able to sort of take over, partly because none of its natural predators or competitors are around in this new place.

14:07
Plants and animals are not at fault. It's not their fault that they're here and that they're being called an invasive. They did not raise their hand and say, "Pick me! Move me!" Right? We have made those decisions. The word invasive really describes the fact that they are competing, whether it's a native or non-native, they are competing and out competing an area. They are growing way too fast, or having too many babies and there's no competition, right? So in nature, there's those ebbs and flows, when something can cause competition, there's something like a predator that might eat it right? And they're keeping things in balance. When you have a non-native invasive species, the natural environment doesn't know how to respond to it. So let's take again the Python as an example. Our deer, whitetail deer that exist in all North America, they know how to respond to things like panther, right? We have a Florida panther They see that as, "Ooh, that cat might eat me," right? "I should probably run!" But when they see a snake, a snake has never posed a threat to a deer. However, this large snake, especially as large as the one that I have here, the skin of the one that I have here, could eat a full grown deer. So a deer doesn't necessarily run away or respond as we would think a human would. For example, if we see a 13-foot snake, right, we're running, right, we're not interested in hanging out. But a deer doesn't see it as a threat. So they don't necessarily understand because it is not part of our native ecosystem.

Jane 15:52
And that's also the difference between an invasive species and a non-native but non-invasive species is they've either not doing so well or they've reached a kind of equilibrium, a sense of balance with the native ecosystem, and they're not causing a problem. They're not out-competing, but maybe they do live here now. So that's still non-native, but we wouldn't consider that an invasive species, right?

16:16
That is correct. So if you have a non-native, for example, we have a number of palm trees that there have been brought from all over the world. And they do well here, but they don't have a whole lot of seeds. And they it takes them a very long time to grow. So they're not causing competition for native species. So yes, spot on.

Jane 16:35
Okay, so Ranger Yvette, here I am in South Florida. And there's some beautiful plants here. And I think they would look really pretty where I live. I'm getting the sense from what you're saying that I shouldn't put one of the seeds of one of the plants that I really like in my pocket and try to plant it at home. Even if it's just me just one home, just one plant.

16:57
That's 100% Correct. Leave the plants where they belong. Leave them in their home, right here in South Florida. We don't have snow. And I know in Vermont, there's quite a bit of snow. Luckily, the plants here probably won't do so well over there. But on the chance that it might, go ahead and leave those seeds where they belong. If that plant is intended to be one day in Vermont, Mother Nature will

make its way there and it, too, will be part of your native plant community. So don't take the seeds just travel and admire the plants in their homelands.

Jane 17:34
Coming up we learn about a small insect that's causing big problems.

BREAK 17:38
BREAK

Jane 17:39
This is But Why: a Podcast for Curious Kids. I'm Jane Lindholm and we're learning about invasive species today. We were talking earlier with Yvette Cano about Burmese pythons and some of the other animals and plants doing damage in the Everglades National Park. In a different part of the United States, something much smaller is getting people concerned.

Juliet 18:00
Hi, But Why. My name is Juliet. I live in Philadelphia, Pennsylvania. I'm five years old. And I want to know why the government said to kill as many spotted lanternflies as you see.

Jane 18:23
In much of the eastern United States, spotted lanternflies have started appearing. And in states where they haven't taken hold, people are encouraged to kill them if they find them. Brian Walsh knows all about these insects. He's done research on them for Penn State University. So we asked him to help answer Juliet's question. First of all, their name is pretty cool. But do they look like lanterns with spots?

Brian Walsh 18:49
They kind of look a little bit like a cross between a grasshopper and a moth when they're flying. And they have hind wings and a bright red that everybody recognizes. So they're, they're kind of cool, but when their wings are closed, they're really sometimes tough to see because they're they have a gray, outer wing, a forewing, with little black, black and gray patterns and spots on it. And that really helps it blend into tree bark and things like that really well. But when they open up those wings, they're they're bright red hind wings show and then you can see them really easy. And there's not a whole lot that looks like it in our environment. They're they're native in Asia, and parts of China and Vietnam, and I think Indonesia as well. And so they don't belong in our hemisphere at all. They don't belong on the side of the world, but we accidentally moved them here when some material was being moved. They laid, looks like they laid their eggs on maybe some pallets or the material that was being moved, and the eggs got here and then hatched and started a whole population here.

Jane 19:55
Remember how Ranger Yvette told us that sometimes species traveled to a new place because they're tucked in with some vegetables, or they might be on the side of a big ship that's bringing goods to a new port? Well, it's the same thing with spotted lanternflies. They were first found in the United States in Pennsylvania in 2014. And immediately people who work in agriculture and scientists who study

insects were worried, because these flies had already caused problems in other places where they had shown up uninvited.

20:24
When they got to South Korea where they didn't belong either, they quickly became a problem. And that's where they realized in South Korea that they attack a lot of native plants, and can do some damage, especially to the grape industry. It's grapes that they really go after and can kill. And that's a problem. They can reduce the yields and harvest and they can kill the grape vines. So that's where we're most concerned with our farming and agriculture, but they will attack just about any other plant that's out there and try and get a meal from it, with the exception of conifers, like pine trees and spruce trees. They don't like the conifers, but um, pretty much any deciduous tree they'll feed on, including all the way down to vegetables in the garden, things like that. So, though they're less likely to cause a lot of problem for those, but it's the grapes that we're most concerned about.

Jane 21:18
Back to Juliet's question. Researchers wanted to make sure spotted lanternflies don't take hold in the United States, or don't continue to spread at least. But why are officials telling people to just go ahead and kill them?

21:31
So that's a great, great question, Juliet. The the reason that we want to kill lanternflies is because they don't belong here. And, while we don't like to encourage killing things that are nature, we don't like to kill animals for no reason, even insects, insects can teach us all kinds of things, and insects and spiders that can be really good for us, spotted lanternflies are not. Tey don't belong in our environment. We brought them here accidentally, humans did. And so because they're here, we wind up having to do other things to try and control the spotted lanternflies, to keep them from destroying our crops that we need to feed to feed ourselves. And because of that, we want to encourage people to kill them when they can. And also, the other thing is, if you kill them, then it's less likely to get accidentally moved to somewhere else. And because she's in Pennsylvania, there's a good chance she's already seen them. And there are a lot of parts of our country that have not seen them and don't have them yet. And they are really good at hitchhiking. Either they'll lay their eggs on different things that we move or they'll even just hop into a car or onto a train. And so we want to keep them from accidentally being spread further away and into other parts of our country where they aren't yet. And so they can't spread if we kill them. That's that's the important thing. And the other thing I would say is, if you're in an area where they don't have lanternflies, yet, and you see one, make sure you report it. Report it to your local county ag agency or your extension office. But let somebody know. If you're somewhere else, where it hasn't been found yet, make sure if you see one or your parents see one, make sure that they report it. And then people can start taking a look at maybe maybe getting it under control in that new area.

Jane 23:22
There are also traps or pesticides that can be used to kill them. And research is underway by Brian and others to find new ways to control these insects without needing to squash them. Still, it probably does feel weird to be told to kill these bugs when you've been told before NOT to kill other insects or types of animals.

23:41
The important thing to remember is most bugs don't do us any harm at all. Most of the bugs that are out there just kind of doing their thing, or they actually help us in a lot of ways. And this bug, unfortunately, doesn't. It feeds on our plants that other bugs or other animals might need to use to make their living. And so because of that, you know, we worry about this with invasive species that they displace our native species. And so that's that's why it's okay to kill this one. It doesn't belong here. And we didn't bring it here on purpose. And because it's here, and it's kind of getting out of control, you know, we need to do what we can to try and stop it.

Jane 24:23
Just make sure you know what spotted lanternflies look like before you start stomping bugs at recess. Always do your research before taking any action. We've learned a lot about invasive species today. And it's a really complicated topic, one that can bring up strong feelings. There are things, though, that you can do to be part of the solution. The first is: never intentionally spread invasive species. So if you're riding in a boat, be careful to make sure that that boat gets cleaned off before it goes from one waterway to another. And also you can make sure you're buying native plants at garden centers. You can also be careful about which animals you buy as pets. Do a lot of research before bringing an animal into your home. Some cute baby animals get really big, like the Burmese python. Are you going to be ready to feed and care for a snake that's 13 feet long and can eat a whole deer? And some animals live for a very long time. Are you prepared to keep your pet turtle for 30 or maybe 50 years? If you do find yourself with a pet you can no longer care for, never release it into the wild, even if you think it's just a cute little frog and no one will notice. Surrender it to an animal care center. Or check in with your area's fish and wildlife agency to get advice for what to do. Everglades Ranger Yvette Cano also says, learning about the world around you can be a good first step in thinking about how to protect your local ecosystem.

25:52
Educating yourself, right, going to wherever home is, finding these natural areas, finding the why. Why is this place special? What makes it tick? Why am I connected to this place? Right? Is it the history? Is it for example, like Everglades National Park, that we're connected to the water? Right, the water goes into the Biscayne aquifer, and we drink that water. And everything is a sensitive balance in this biological diverse park. So finding the why. When you find the why, that fuels your passion and your desire to care and educate others. And when I talk about education, I don't want you to think that you need to be some old person, like in your 20s, becoming a teacher because for some of you, I know it's a long, long time from now. You can be a teacher right now, when you're three or five or 10. We all can be teachers. And the way we do that is by educating ourselves, getting the information right, making sure we know what we're talking about, and then empowering others.

Jane 26:53
That's pretty good advice for all kinds of things: Explore what's around you; figure out what makes you passionate, and then learn all about it so you can share your knowledge with other people. That's it for this episode, thanks to Yvette Cano, Everglades National Park and Brian Walsh for taking the time to talk invasives with us. Now, if you have a question about anything, have an adult record it. You can do

it on a smartphone using a free voice memo or voice recorder app. Then have your adult email the file to questions@butwhykids.org You can find all of this information also at our website, butwhykids.org, where you can submit your questions directly. Remember, we can't answer every question we get but we do listen to all of them and we love hearing what's on your mind. But Why is produced by Melody Bodette, Kianna Haskin and me, Jane Lindholm, at Vermont Public. We're distributed by PRX our theme music is by Luke Reynolds. We'll be back in two weeks with an all new episode. Until then, stay curious!