

Sidedoor Season 5, Episode 6: The People's Insect

[MUSIC]

Lizzie Peabody: This is Sidedoor, a podcast from the Smithsonian with support from PRX. I'm Lizzie Peabody.

[MUSIC]

Lizzie Peabody: Years ago, in a different life, I was a teacher. And every spring in my classroom, we hatched butterflies. It's a great way to teach kids about nature, responsibility and metamorphosis. And let's be real, the caterpillars do all the work. This is how it went.

[MUSIC]

Lizzie Peabody: I ordered a kit in the mail. It came with a tupperware container, holding a dozen little caterpillars. We put them in a terrarium with some leaves, and watched them crawl around and eat. After a few days, they began this miraculous transformation and suddenly, we had butterflies! Once these black and orange beauties made their debut in the classroom, we'd have a butterfly release party. Families of my students gathered in the playground and we would open the lid of the terrarium and watch our butterflies fly off into the wilds of suburban Virginia. And that's where the story always ended for me. Where these butterflies went, or how they survived; honestly, I never really thought about it. They were insects. And, it turns out, that's a fairly common attitude to have.

[MUSIC]

Dara Satterfield: I was sort of just thinking, they're an insect. I don't have much to connect with here. And I think that's probably how many of us think of insects.

[MUSIC]

Lizzie Peabody: That's Dara Satterfield. She's a Scientist and insects weren't always her thing. But today, she gets butterflies over butterflies. Specifically, Monarch butterflies.

[MUSIC]

Dara Satterfield: And so, I kind of think of Monarchs as like, "the people's bug."

Lizzie Peabody: (Laughs).

Dara Satterfield: We connect with them. (Laughs). Yeah, we connect with them in a way that we don't with most insects, and I think that's partly because of their migration story.

Lizzie Peabody: "The People's Bug." How ironic that it's given... that it's called the Monarch butterfly.

Dara Satterfield: Oh yeah! That's true. I've never... (Laughs).

Lizzie Peabody: That's the royalty of the insect world. (Laughs).

Dara Satterfield: Right. Right. I mean, they're not true bugs. Just for the record. Any Entomologist would be like, "What?"

Lizzie Peabody: (Laughs).

Dara Satterfield: That's a whole different class, but yeah. I think it's ok to say that.

Lizzie Peabody: (Laughs). Okay. Dara is a Researcher at the Smithsonian Migratory Bird Center, and she studies insect migration. I reached out to her because, like many of you, I've been stuck at home. And I began wondering about the lives of those butterflies we released in my class. I imagined them frolicking outside with their butterfly friends, and I wanted to know, what's it like to be a butterfly?

[MUSIC]

Lizzie Peabody: But instead of a story of pretty little things floating from flower to flower, Satterfield told me an adventure tale of survival, instinct and a migration that spans generations. And I never suspected that when I read my students Eric Carle's classic, "The Very Hungry Caterpillar," that book leaves out the best part! The story doesn't end when a caterpillar becomes a butterfly. Friends, that is just the beginning!

[MUSIC]

Lizzie Peabody: So, this time on Sidedoor, far from the fragile fruit of a classroom science experiment, we examine the epic migration of Monarch butterflies. These half-gram heroes on a dangerous mission, they have no choice, but to accept. Stay with us!

[MUSIC]

Lizzie Peabody: Alright. Butterfly time! Although Monarchs are some of the world's most studied insects, there's still so much we don't know about them, but what we do know is remarkable.

[MUSIC]

Lizzie Peabody: First, they make one of the longest migrations of any insect. Here's Dara Satterfield again.

[MUSIC]

Dara Satterfield: They're making this 3,000-mile journey, in two months or sometimes less. And there's evidence that this long migration has been going on for maybe 20,000 years, maybe much, much longer than that.

[MUSIC]

Lizzie Peabody: Wow! And, they head to Mexico.

[MUSIC]

Dara Satterfield: Some of this is a mystery. So, we know that they go to the same 12 or so mountain tops every year, that their great-grandparents or maybe even great-great grandparents had been to the year before. They've never been to these sites themselves, Somehow, they find them year after year.

[MUSIC]

Lizzie Peabody: Monarch butterflies are pretty distinct looking. If you live in southern Canada or most of the American states, you've probably seen one. Their wings have these bright orange windows, surrounded by black panes, ringed with little white dots, tiny stained-glass masterpieces. And their abdomens are covered in a fine, black fuzz.

[MUSIC]

Lizzie Peabody: So, I wanted to know, when I released my butterflies with my class every spring, what do they do? Where do they go?

[MUSIC]

Lizzie Peabody: Satterfield says the first thing they do is flutter around in the warm breeze and look for a mate! What else is there to do? It's summer vacation! And after they mate...

[MUSIC]

Dara Satterfield: If it's a female, it will lay eggs on milkweed plants. The female Monarch can lay 300 or 400 eggs and her lifespan probably typically, and she has to visit a different milkweed plant for every egg pretty much. She likes to spread them out.

Lizzie Peabody: Really?

Dara Satterfield: Yeah. She doesn't put all her eggs...

Lizzie Peabody: So, 700 milkweed plants.

Dara Satterfield: Right!

Lizzie Peabody: Monarchs and milkweed are inseparable. If a Monarch mom-to-be is going to fulfill her considerable reproductive potential and lay a few hundred eggs; she practically needs a field of milkweed.

Lizzie Peabody: Why does it have to be milkweed?

Dara Satterfield: That is their host plant for caterpillars. It's the only thing that they can eat. They have co-evolved to really specialize on that plant to be able to deal with its toxins, and, not only deal with the toxins, but to use them to their advantage.

[MUSIC]

Lizzie Peabody: That's right. Monarch caterpillars are toxic. If you eat one, well, just ask the birds what might happen.

[MUSIC]

Dara Satterfield: There is this famous study with a Blue Jay that showed this Blue Jay throwing up after eating a Monarch and they think that that's a pretty memorable lesson...

Lizzie Peabody: Hmm.

Dara Satterfield: ...when they see a caterpillar again with the same colors.

[MUSIC]

Lizzie Peabody: Despite their protective toxins, more than 90% of Monarch caterpillars are killed before they can even turn into butterflies.

Lizzie Peabody: Okay, so after the, the butterfly lays her eggs, what happens to her?

Dara Satterfield: So, she will probably only live two to six weeks as an adult butterfly. And then...

Lizzie Peabody: Hmm.

Dara Satterfield: ...that'll be the end of her life, if she's breeding.

[MUSIC]

Lizzie Peabody: So, she just dies.

Dara Satterfield: She does.

Lizzie Peabody: So, released butterflies, like the ones I set free in my class, they pretty quickly die, but not before unleashing the next generation of their species on the world.

[MUSIC]

Lizzie Peabody: And I remember some of this from my classroom, but just to make sure we're all on the same page. Here's where caterpillars come from. A few days after the egg is laid, the caterpillar makes its escape. And the first thing it does is eat the egg it just came out of.

Dara Satterfield: And it is a sort of translucent, two millimeter, very tiny critter with a black head capsule.

Lizzie Peabody: Two millimeters. Is that like the size of a, like a sesame seed?

Dara Satterfield: That sounds about right.

Lizzie Peabody: And how big does it get?

Dara Satterfield: It can grow 2,000 times in its original mass.

Lizzie Peabody: Whoa!

Dara Satterfield: So, by the time... yeah!

Lizzie Peabody: Talk about growing pains. I thought adolescence was tough.

Dara Satterfield: (Laughs).

Lizzie Peabody: What does a Monarch Caterpillar do? How does it spend its time? Is it munching constantly, kind of like in the book, "The Very Hungry Caterpillar?"

Dara Satterfield: That's exactly right. That is biologically accurate. They spend all of their time eating.

Lizzie Peabody: (Laughs).

[MUSIC]

Voice Reading "The Very Hungry Caterpillar" Out Loud: The Caterpillar ate his one nice green leaf, (crunching sound) and after that, he felt much better. (crunching sound).

[MUSIC]

Lizzie Peabody: And if you're looking for a Monarch caterpillar, they're pretty easy to spot. Find a milkweed and look for holes in the leaves. You'll probably find a colorful caterpillar chomping away.

Dara Satterfield: They have these black and white and yellow stripes that are almost velvety looking because they're so vivid in color. And they have these really strong mandibles in their mouth that help them to chew the milkweed, and you can actually hear them chewing.

Lizzie Peabody: Without the help of any kind of microphone?

Dara Satterfield: Right. That's one of my favorite things in a lab is to hear the Monarch chewing. (Laughs).

Lizzie Peabody: (Laughs). What does it sound like?

Dara Satterfield: It's a very quiet munching sound.

Lizzie Peabody: (Laughs).

Dara Satterfield: Almost exactly as you would expect.

Lizzie Peabody: Can you munch it? Can you like...

Dara Satterfield: (Laughs).

Lizzie Peabody: (Laughs). Can you do it for us?

Dara Satterfield: (Laughs). I wish I could. I wish I could. I've never been good at mimicking animals.

Lizzie Peabody: Okay, do you want me to try?

Dara Satterfield: (Laughs).

Lizzie Peabody: Is it something... I'm imagining that it sounds like this. Like... (makes crunching sounds). Is it like that?

Dara Satterfield: That's surprisingly good! (Laughs).

Lizzie Peabody: (Laughs). Okay.

Lizzie Peabody: So, after 9 to 14 days of munching loudly on milkweed, the caterpillar attaches itself to the underside of a tree branch, park bench or building. Then, like something out of a zombie movie, it unzips its skin to reveal its chrysalis. And the, chrysalis is actually the husk of the caterpillar's body. It becomes like, a changing room. And in there, the caterpillar is undergoing a wild transformation. Its chomping jaws morph into a straw-like mouth for lapping up nectar. The caterpillar's short stumps make way for six elegant legs. It struggles free from the chrysalis as a butterfly.

[MUSIC]

Lizzie Peabody: How big is an average Monarch?

[MUSIC]

Dara Satterfield: They're about four inches in wingspan and they weigh about as much as a raisin. So, 0.5 grams, give or take.

Lizzie Peabody: Oh! (Laughs). That's, I don't know why the raisin description... I find that so touching. (Laughs). They're just so delicate, so small.

[MUSIC]

Dara Satterfield: (Laughs). They are amazing.

[MUSIC]

Lizzie Peabody: And the whole cycle repeats: egg, caterpillar, butterfly, egg, caterpillar, butterfly, egg, caterpillar, butterfly, egg, caterpillar, butterfly. This repeats about four times every summer. And the Monarch populations creep further north, chasing that tender young milkweed as it pops up from the ground.

Dara Satterfield: If you're releasing a Monarch in Washington, D.C., her offspring, her daughter might go a little farther north; and eventually, some of the offspring might make it up to southern Canada by July.

[MUSIC]

Lizzie Peabody: So, by July, the bulk of the Monarch populations are up near the Canadian border. But in late August, when the year's last generation of Monarch emerge from their chrysalises, something remarkable happens. The season has changed. The days are shorter.

Temperatures start to dip. And each butterfly has this little voice, deep inside whispering, "Goooo tooooo Mexicooooo."

[MUSIC]

Dara Satterfield: This is probably my favorite part of the story. So, in what we call the super generation, they start to go south or southwest, towards the overwintering sites in Mexico. So, even if you put them in a cage to study them, like we sometimes do, they will sit sometimes in the south or southwest corner of the cage. That's how sort of driven they are to go that direction.

Lizzie Peabody: So, this super generation, born in late August or September, has strong instincts to head south. They start their migration. And to make this amazing journey that will take two months, remember, Monarchs usually only live about one month, they've evolved a way to prolong their lives.

Dara Satterfield: They go through what we call reproductive diapause, which is a delay in the reproductive organs being developed. It's kind of like a delayed puberty.

Lizzie Peabody: So, they, yeah. They conserve, I guess a lot of energy that would go toward developing sex organs and things like that.

Dara Satterfield: That's exactly right. Yeah. They're able to conserve energy to lengthen their lifespan probably up to eight or nine times what the normal breeding Monarch would do.

Lizzie Peabody: So, you're telling me that, that a butterfly that lives for one month all year long, just suddenly lives eight times as long?

Dara Satterfield: That's right.

Lizzie Peabody: How is that? I mean, you already told me I guess how that's possible. Even now, my brain is having a hard time with that math. It's like a person deciding to live until they're 600 years old because they want to get more stuff done. And then there's the math of how a butterfly, this dainty little thing, flies from Canada to Mexico. Have you ever watched a butterfly? They are not going anywhere fast. They seem to kind of, you know, flap up and down and around.

Dara Satterfield: Hmm.

Lizzie Peabody: So, how on Earth do they suddenly straighten it out and focus on a single direction?

Dara Satterfield: Yeah, that's a great question. You're totally right that the average butterfly you see probably has a really erratic flight pattern. They're moving all over the place. They're hard to even glance at sometimes. But the Monarchs, when they're migrating, we don't know a whole lot about what their specific flight path look like.

Karen Oberhauser: Yeah! So, we know that Monarchs use, use wind to their advantage.

Lizzie Peabody: This is Karen Oberhauser.

Dara Satterfield: Karen Oberhauser is famous in the Monarch world for her work on butterfly conservation on what we understand about Monarch reproduction and migration. And she has been working with Monarchs for decades.

Karen Oberhauser: I've been studying Monarchs since 1985.

Lizzie Peabody: Oberhauser says that there's a lot we don't know about Monarch migration, but how they fly 2,000 miles in just a couple months, that we do know.

Karen Oberhauser: Most of their migration is actually not powered flight. So, if you imagine a butterfly flapping its wings, that's what we call powered flight. So, it's using energy, but if it can soar, like if you look out and see a bird soaring, when a bird isn't flapping its wings, it's using very little energy. And Monarchs can do the same thing.

Lizzie Peabody: Oh, like a Vulture kind of?

Karen Oberhauser: Exactly. Like a Vulture or a Hawk migrating. So, they do the same thing. And there was actually a guy who studied Monarchs who was a hang glider and he found Monarchs up to two kilometers up in the air. So...

Lizzie Peabody: Whoa! So, they're in the clouds!

Karen Oberhauser: Yeah. It's brilliant how they do that. So, they really maximize efficiency when they're flying south.

Lizzie Peabody: That is so cool. And Karen says we have a general sense of how they navigate.

Karen Oberhauser: So, there have been really clever experiments that have shown that Monarchs have an internal biological clock, so they know what time of day it is. And if they're trying to fly south, and it's morning, they should keep the sun on their left. And if they're trying to fly south and it's afternoon, they should keep the sun on their right.

[MUSIC]

Lizzie Peabody: So, we should also add that Monarchs don't have a tidy migration like birds. Some head to Mexico early. Others stay where they are year-round, but the migration we're describing is true for the majority of Monarchs. So, we'll leave the super generation soaring through the clouds above the United States, morning sun on their left wing.

[MUSIC]

Lizzie Peabody: (Whispers: "Goooo tooooo Mexicooooo").

[MUSIC]

Lizzie Peabody: Coming up, it's the biggest royal family butterfly reunion you've never been to, but even that's not the end of their journey. Like the Monarch, we'll keep going, after a quick break.

[MUSIC]

Lizzie Peabody: Welcome back, Monarch maniacs! So, here's what you need to know. Monarch butterflies are the best! They make this insane 2,000-mile migration from Canada by riding high on the winds bound for Mexico, but they aren't flying there thinking, "Yeah, Cabo or Cancun - both great." They're looking for a very specific place. Somewhere none of them have ever been, but somehow they all know how to get there. Here's Dara Satterfield.

Dara Satterfield: Some of this is a mystery. So, we know that they go to the same 12 or so mountain tops every year, that their great-grandparents or maybe even great-great grandparents had been to the year before. They've never been to these sites themselves; somehow, they find them year after year.

Lizzie Peabody: Scientists only learned in 1975 where Monarchs go hide all winter. Before that, it was a total mystery. They hang out in these misty mountain forests in central Mexico, about 100 miles from Mexico City. Both Dara and Karen have been there. Here's Karen Oberhauser.

Karen Oberhauser: I started going to the overwintering sites in 1997, when the population was very high, and I've gone most years since then.

Lizzie Peabody: Can you kind of indulge us in sort of a sensory journey in a way? Because I have no idea what that would be like. So, can you kind of put us there?

Karen Oberhauser: So, it's... it is an incredible sensory experience.

Dara Satterfield: It was a cold, kind of humid, misty day.

[JUNGLE FOREST SOUNDS]

Karen Oberhauser: When I first went, it was a very long walk. The Monarchs were, we're in a place that was a long way from where we started.

JUNGLE FOREST SOUNDS]

Dara Satterfield: And that probably took about an hour or so, carrying our gear and our nets and a dog went with us. There's often stray dogs that will pal around with you at these sites.

Lizzie Peabody: Once in the forest, they saw a few Monarchs.

Karen Oberhauser: We started seeing a few butterflies and they're just a few flying around.

Lizzie Peabody: Then 30 Monarchs. 50. Then, suddenly, a cloud of orange and black. To give you a sense of what that looks like, if you imagine a normal quarter-mile running track, like you'd find behind a lot of high schools. The grassy area in the middle, that's one hectare. And scientists think that, inside of these butterfly preserves, one hectare can hold as many as 21 million Monarchs.

Karen Oberhauser: It's overwhelming. If you've ever been snorkeling, scuba diving is kind of like that, because it's such a three-dimensional experience that the butterflies are just flying everywhere around you. They're flying as high up, as you can see in the sky and right down to the ground, and they're covering the trees.

Dara Satterfield: They have so many butterflies on them that it weighs down the branches.

Lizzie Peabody: What?!

Dara Satterfield: And they also cover the trunks of the trees in some cases.

Lizzie Peabody: These trees are bowing down under the weight of butterflies. Just think how many raisins it would take to bend a branch! And these Monarchs are semi-dormant, clustered together on trees. Some have enough fat on them to last most of the winter. And the rest, they try to flap around and find whatever nectar they can, but they don't all make it.

Karen Oberhauser: There always are a lot of dead butterflies on the ground, and they have a particular dead Monarch smell. And then, there's also the smell of forest.

Lizzie Peabody: And what is the dead Monarch smell? What does it smell like?

Karen Oberhauser: (Sighs). Yeah. It's a little bit of a fatty smell, because when they die, the lipids come out of their bodies, but also a smell of decaying things. So maybe a little bit like a forest where you have a lot of leaves decaying. It's not really a bad smell. It's just, it's just the smell of a lot of dead Monarchs on the ground. And, and you can actually hear them and that's pretty unusual to be able to hear butterflies.

[SOUND OF BUTTERFLIES]

Karen Oberhauser: You hear it and you smell it and you see it. So, it stays with me. I mean, I still can kind of close my eyes and feel that and that ability to see them just stays for a couple of weeks after I come back. It's like being there again. You know, it doesn't last forever, but the movement in the air that's caused by these millions of butterflies is, is really hard to describe.

Lizzie Peabody: One year, Dara and Karen were in Mexico together. Here's how Dara remembers it.

Dara Satterfield: We were looking at these Monarch clusters. And she said, "This is a whole continent worth of butterflies right here." And...

Lizzie Peabody: Wow!

Dara Satterfield: ...I'll never forget she said that because it's stuck with me. And we were in awe, but we were also aware of how vulnerable that is for a species.

Lizzie Peabody: Yeah. What an idea. So, every winter, this is how the Monarchs live, but it's not where the story ends, because come February, these very same Monarchs, the super generation that flew 2,000 miles from the Canadian border to Mexico, they take flight again, heading back north. And they make it about as far as Texas.

[MUSIC]

Dara Satterfield: These are really tough critters designed to be really long lived to make this incredible journey.

[MUSIC]

Lizzie Peabody: And by the time this super generation reaches Texas, they're exhausted. And kinda beat up.

[MUSIC]

Dara Satterfield: And by the end of their journey, they have been through so much, they've lost a lot of their orange. Some of them even look kind of translucent in some places on their wings because the orange scales have come off and they sometimes have holes in their wings or even whole chunks of their wings missing.

[MUSIC]

Lizzie Peabody: After all that, this 8-month-old super generation is rewarded by hitting its long-delayed butterfly puberty.

[MUSIC]

Dara Satterfield: They are determined to lay eggs on milkweed to continue the annual cycle.

[MUSIC]

Lizzie Peabody: And the cycle of short-lived summer Monarchs starts again.

[MUSIC]

Lizzie Peabody: Back in Washington, D.C., next to the Smithsonian's Hirshhorn Museum, is a little garden set aside just for Monarchs. It looks like many others you'd see around the Smithsonian, filled with flowers, and shrubs, grasses, but this garden is actually part of a Smithsonian Gardens' exhibit called, "Habitat." It's a Monarch rest stop.

Silvia Schmeichel: So, just like if you're going on a long road trip and you're going across country, imagine if you could only go to a gas station and restaurant every two or 300 miles.

Lizzie Peabody: Sylvia Schmeichel works for the Smithsonian Gardens as a Horticulturist, and she helps make planting decisions in the Smithsonian's many gardens. And you can bet that in the Monarch Garden, there will be lots of... Yes! Milkweed.

Silvia Schmeichel: It allows them to have more opportunities to rest and eat and it's the idea screen creating these stopping off points to help connect all these feeding and resting sites on their trip; whether they're going south to north in the spring or north to south in the fall.

Lizzie Peabody: So, these gardens offer the Monarchs their critical milkweed, but they also have a number of other blooming flowers that Monarchs enjoy feeding from as well.

Silvia Schmeichel: So, some of the things that we like to plant for them that do well for us are Lantana species. They will just be covered! What they call Torch Flower. Zinnias are really good; but also, one of the things that we mention when gardening for pollinators, including Monarchs, is to plant a wide variety of bloom times. So, something that's blooming spring, summer and late into the fall to help them on that, on that migration, in addition to the milkweed.

Lizzie Peabody: Because Monarchs rely so heavily on milkweed, their fortunes are pegged to the plant that some farmers and cities see as a nuisance. So, when they get hit with herbicides and lawnmowers, that hurts Monarchs as well.

Karen Oberhauser: So, if we look at how numbers have changed over time, they were very high about 20 to 25 years ago. And then, they went through a steady decline. And over the last 10 years, they've kind of been going up and down around a population size that's a little less than half of what it used to be.

Lizzie Peabody: Wow!

Karen Oberhauser: So, their numbers have declined a lot, but they're not continuing to decline. They're kind of holding their own.

Lizzie Peabody: Their numbers swing a lot every year. Some years, their numbers are less than a quarter of the previous year. Other years, they'll increase by 400%. So, like Monarch butterflies, their numbers feel delicate, but they're surprisingly tough.

Karen Oberhauser: But the risk is that when you're fluctuating up and down around a low number, that just by random chance, the population some year will fluctuate so low that it will reach a point where it won't be able to bounce back.

Lizzie Peabody: One way to help Monarchs and all insects is to plant gardens. And really, who wouldn't want a garden full of toxic caterpillars and bright orange butterflies? Sylvia Schmeichel says that's the best part of her job at Smithsonian Gardens.

Sylvia Schmeichel: Oh my gosh! I am such a big nerd. Like, I will literally stop the public. I mean, like, "Look, we've got a live one. There's one right here, come look at this! Come look at this!"

Lizzie Peabody: (Laughs).

Sylvia Schmeichel: I just like seeing that they're there. Like, oh good! What we're doing is working. Like, it's, it's it just goes to show that you know, all this effort that we're putting forth, in bringing these plants into a lot of environments. It they're finding us! They're stopping. So that's, that's really rewarding.

[MUSIC]

Lizzie Peabody: So, plant some milkweed and get to know your Monarchs. Admire their fuzzy bodies, their brilliant colors and their long elegant legs. And wish them well on their journey.

[MUSIC]

Lizzie Peabody: You've been listening to Sidedoor, a podcast from the Smithsonian with support from PRX.

[MUSIC]

Lizzie Peabody: If you're enjoying Sidedoor, leave us a review on Apple Podcasts. In these tough times, nice reviews really keep us going, like a caterpillar chewing on a nice juicy milkweed leaf.

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Lizzie Peabody: And check us out on Instagram and Twitter @Sidedoorpod. We post extra images and episode related anecdotes and other Smithsonian resources. And subscribe to our newsletter at si.edu/Sidedoor.

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Lizzie Peabody: Special thanks this episode goes to all of our guests and Sarah Dickert.

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Lizzie Peabody: Our podcast team is Justin O'Neill, Nathalie Boyd, Ann Conanan, Caitlin Shaffer, Jess Sadeq, Lara Koch, and Sharon Bryant. Episode artwork is by Greg Fisk. Extra support comes from John, Jason and Genevieve at PRX. Our show is mixed by Tarek Fouda. Our theme song and other episode music are by Breakmaster Cylinder.

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Lizzie Peabody: If you want to sponsor our show, please email sponsorship@prx.org.

[MUSIC]

Lizzie Peabody: I'm your host, Lizzie Peabody. Thanks for listening.

[MUSIC]

Lizzie Peabody: Yeah. What does Monarch poop look like?

Silvia Schmeichel: It kind of looks like a bran cereal. Like, like Grapenuts or something?

Lizzie Peabody: (Laughs).

Silvia Schmeichel: You know...

Lizzie Peabody: (Laughs). Oh no! I ate so many Grapenuts as a kid

Silvia Schmeichel: (Laughs).

Lizzie Peabody: I really don't appreciate this kind of comparison.

Silvia Schmeichel: (Laughs).