[MUSIC PLAYING]

SYDNEY WIDELL: I'm Sydney.

BONNIE WILLISON: I'm Bonnie.

SYDNEY WIDELL: And this is *Introduced* from Wisconsin Sea Grant.

BONNIE WILLISON: There is this legend that takes place near Peshtigo, Wisconsin, at the mouth of the Peshtigo River and Lake Michigan. It's 1934, so during the Great Depression. And there's this family of limited means living in this shack-like home. And on Sunday, the mother wants to get an early start on Monday's laundry, so she sends two of her sons up to the mouth of the Peshtigo River with wash tubs to get some water.

And the boys lean into the river, and they fill up the basins. And they pull them up, and they see a lot of little silvery fish in the tub. And they're really amazed.

So they went back to the house, and they got all these other containers. And they brought them back, and they filled each of them up with these fish. And the next day, they went to the market, and they sold the fish. And they got money to pay off debt and buy food and clothes.

SYDNEY WIDELL: It's a miracle.

BONNIE WILLISON: Yeah. It was the Depression. And suddenly, food was swimming around your ankles.

So these little fish were rainbow smelt. They're native to the Atlantic Ocean, but they're able to survive for their whole life in fresh water. They are commonly used as bait or food for the fish that we like to raise. And so that's why they were stocked in Crystal Lake in Benzie County in Michigan. In the early 1900s. And Crystal Lake is really, really close to Lake Michigan. It's basically right on the lake, and so you can probably imagine--

SYDNEY WIDELL: Ah, too close.

BONNIE WILLISON: You can probably imagine what happens. The rainbow smelt escaped in the 1920s. They made it into Lake Michigan. And soon after, people all over the Great Lakes must have experienced exactly what this Peshtigo family did with these fish.

SYDNEY WIDELL: Mysterious and miraculous fish.

BONNIE WILLISON: By the 1930s, these smelt had started reproducing in Lake Michigan and spreading. They reached the shores of Wisconsin, all the way down to Racine, and also into Indiana. And they also went north into Lake Superior and Lake Huron-- all over.

Jared Myers researched smelt for graduate work. And now, he is a fish biologist for the US Fish and Wildlife Service in Ashland, Wisconsin.

JARED MYERS: If you've seen smelt, they look like little baby barracudas. And I think we're all happy that they're small. Because if you had big smelt in Lake Superior, I don't know if that many people would want to go swimming.

While they're certainly not scary to large fish, like lake trout-- they serve as prey for them-- they do have an impact on small fish within the environment. And every fish has to start their life small.

BONNIE WILLISON: So imagine a bunch of fresh baby fish. They're really tiny. And you see this giant school of thousands of minnow barracudas coming at you.

JARED MYERS: Almost if you think of it like PAC-MAN. You can run, but you can't hide.

[LAUGHTER]

BONNIE WILLISON: So the most important question first. Really, are they actually rainbow?

JARED MYERS: You can convince yourself that they're beautiful when you bring them in and they're real silvery. And they do have a rainbow color to them when you see them fresh.

BONNIE WILLISON: Yeah, so smelt were introduced to the Great Lakes, and they moved around. And they were kind of just out there swimming waiting for good and ideal conditions, like they would love it if all the predators, like lake trout, vanished. And then that kind of happened.

The sea lamprey came in, the vampire of the Great Lakes. They're this eel-like fish that has a suction cup-like mouth, with rows and rows of teeth. And they like to suck the blood of the lake trout. And the sea lamprey populations explode in the 1940s. And so the lake trout were really attacked by this. And there was also over-fishing of lake trout happening too. And so lake trout plummeted. And the smelt were there, and it was kind of their time to shine.

Smelt populations rose dramatically-- there was so many smelt in Lake Michigan, and Lake Superior, and Lake Huron. And like we were talking about before, this introduced fish came at this opportune time because it was the Depression. And people responded accordingly to food swimming at their feet.

[MUSIC PLAYING]

Communities started what became known as smelting. Or from the people that I talked to in Ashland, apparently, the locals call it shmelting.

SYDNEY WIDELL: Shmelting.

BONNIE WILLISON: [LAUGHS] It has a good ring to it.

Basically, when the fish come to spawn at the shore every spring, people gather and they net all the smelt. And it's a real cultural event. It brings in people from all over. It all goes back to smelt's reproductive behavior.

So usually throughout the year, smelt live a few hundred feet off the shore swimming around. And in the spring is when they are usually ready to reproduce. And what signals to them to spawn is when the water warms up to a certain temperature. So it's like around 42 to 44 degrees, and that's their signal to come into shore.

And so usually in the beginning of April, you'll be in Ashland on Lake Superior, and the ice will start to thin as it gets warmer. And the ice will start to turn black and recedes from the mouth of certain creeks, and then the rest of the bay. And that's usually the signal to the people that smelt will start their run. And the really funny thing about smelt is that they only come in and spawn in the dead of night.

SYDNEY WIDELL: That's bizarre.

BONNIE WILLISON: And scientists think that has to do with predation, to minimize how many fish are going to eat you and take advantage of this spawning. And so the smelt come into shore to lay their eggs and reproduce every night for two weeks, once this cycle starts.

So when the smelt population really took off in the Great Lakes, especially on Lake Michigan, there was this smelting boom. And there is these stories of what these towns did. There was festivals and parades centered on smelt in the 1930s in the coastal towns of Lake Michigan Towns like Oconto and Marinette attracted 20,000 to 30,000 visitors every year. And there was dances, and banquets, and fireworks at these smelt fests. And they even crowned a smelt king and queen, apparently. [LAUGHS]

SYDNEY WIDELL: It's homecoming. It's the homecoming of the smelt. [LAUGHS]

BONNIE WILLISON: Yeah, basically. And they also have this really bizarre tradition. Actually, let me show you a picture, and you can describe what's happening here. And I think of photo is from Marinette, Wisconsin.

SYDNEY WIDELL: So kind of close to Peshtigo.

BONNIE WILLISON: Mm-hm.

SYDNEY WIDELL: Smelt, ground zero. Oh! [LAUGHING] That's really, really different. [LAUGHS] OK, so what I think I'm seeing is two grown men in their boxers are-- this is a black and white photo-- they're attacking each other in this ring. And the ring is just full of smelt, I guess. Is this smelt?

BONNIE WILLISON: It is, yeah.

SYDNEY WIDELL: Why are they doing that? And then there's this crowd of people. I think what's happening is weird. But then what makes this picture even stranger is this crowd of smiling onlookers acting like what is happening in this ring is completely, completely normal.

[LAUGHTER]

I know. I love the guys in the back. They all have their little 1940s hats on.

BONNIE WILLISON: 1939-- you were really close.

SYDNEY WIDELL: '39. Yeah. They're all gleefully looking at this wrestling ring with these men. This is a tradition, called smelt wrestling. And it's like a boxing ring covered in two tons of smelt. And apparently, the wrestlers would fight to see who could stuff the most smelt in his opponent's trunks.

[LAUGHTER]

BONNIE WILLISON: So even more intense than regular wrestling. So you can tell that there was a lot of smelt in the lake. And commercial fishing also took advantage of this. And there were tens of millions of pounds of smelt harvested in the '40s and '50s. Here's Jared, talking about Lake Superior.

JARED MYERS: Through the '60s and '70s, there were a ton of smelt. As lake trout dove down because of sea lamprey, it created a situation where smelt were able to take off. Folks would tell stories of when people would come up here with school buses that had cattle tanks inside of them. And they would seine up smelt, and then take those fish back and spread them as fertilizer. So there was just stupid amounts of smelt in the lake back at that time.

BONNIE WILLISON: So admittedly, now, we don't have as many smelt as before, but smelting is still a tradition in Ashland. In Ashland, bait shops and the Chamber of Commerce will start getting these calls in the winter. And people are always asking, when are the smelt going to be here? When is smelting season going to start?

I wanted to learn more about Ashland smelting, and so I called Angler's All, which is a bait shop that sits right on Lake Superior in Ashland. And Angler's All is owned by Carolyn Swartz. And she's worked there since the '80s.

And Angler's All is directly on Lake Superior. And looking out her window, Carolyn can see Washburn, and Houghton Point, and the hills of Bayfield.

What are the conditions on the lake today?

[MUSIC PLAYING]

CAROLYN SWARTZ: They are crisp, cold. We have a west wind starting to blow a little bit. There's a little bit of chop on the water. The lighthouse is all lit up by the sun, and it's a gorgeous day on Lake Superior.

BONNIE WILLISON: Carolyn had to watch the shop, so we had to talk at a time when she didn't think many people would stop by. So we chatted at 6:00 AM.

CAROLYN SWARTZ: It looks like an old-time bait shop. It's not fancy. I have a lot of pictures of the past that have been given to us over the years. I have some mounted fish on the wall, and animals. And I have fur hats and hanging furs. So I'm a little bit old school.

BONNIE WILLISON: People call Carolyn with a lot of questions.

CAROLYN SWARTZ: Oh, geez, we'll start getting phone calls in February as to, well, when do you think that we should make plans to come up there? And the Chamber of Commerce gets these same phone calls. What time are they going to run? What days should I take off of work to go smelting? You have to ask the smelt.

BONNIE WILLISON: Carolyn said, you never know when the ice is going to thaw and when the water is going to warm up to that 42 to 44 degrees. And the average ice out is April 22, but Carolyn has seen it happen in May and also as early as in March.

CAROLYN SWARTZ: I tell them that my crystal ball is broken. And some people take that well, and other people think it's offensive.

[LAUGHTER]

BONNIE WILLISON: Carolyn isn't a native of Ashland. She moved there with her husband in the '80s, so she was new to Lake Superior culture. And at first, she thought ice fishing and also smelting were a little bit odd, but they quickly became part of her life.

CAROLYN SWARTZ: We started smelting when we got here. I mean, smelting had always been a big part of the history of this area, and everybody went smelting. We were lucky enough to have a beach next door to us, and it was the best smelting beach on the bay.

And it was kind of a whole neighborhood thing. They would come down. The kids would all come down in the neighborhood. They'd carry smelt buckets for us. We'd have campfires and cook out. And we would have to stay up all night, sometimes, and be here all day. So it's a tough time of year too, physically.

BONNIE WILLISON: So Angler's All would sell smelt for people who might not want to go smelting themself, but still want some. And they also sold smelt for bait. And now, Carolyn hasn't gone smelting for a few years, because she says she's too old. But the bait shop's role is still to answer questions, really, tell people where the smelt are, sell smelting nets, package and sell smelt for people. And basically, her role is to be on call throughout the night.

SYDNEY WIDELL: Wait. So she would sell them as bait. You can't do that anymore, right? That's not allowed.

BONNIE WILLISON: Right. You can't sell live smelt, but you can buy and sell frozen smelt. So that's what Carolyn does.

SYDNEY WIDELL: OK. So how do you smelt?

BONNIE WILLISON: Yeah, good question. So groups of people gather at beaches that smelt are known to come in to. And when the smelt are first coming to spawn, you really don't know when they're going to show up. It could be 7:00 PM. It could be midnight. It could be all the way till 6:00 AM.

So with a lot of this, it's just waiting and seeing what the smelt will do. And so a lot of smelting, I've heard, is like having bonfires, drinking beer with friends, and staying up late into the night, because you usually don't get done until 2:00 AM or something-- so barbecuing and just having a really social time on the beach at night.

But Wisconsin typical spring, the weather is not reliable. And so you could be smelting in the snow where your gear could freeze at night, or it could be 70 degrees. It just depends on the year.

And so there are two main methods that people use for smelting-- seining and dip netting, and I didn't really know what seining was. So there's a little video clip of this. So this is a video from Larry Smith Outdoors that I found. Can you tell what's happening here?

[AUDIO PLAYBACK]

- I can already see them.

- You can?

- They're jumping over by you.

BONNIE WILLISON: So there are these men in the water. They're standing in their waders in knee-high water, and it's night. Ooh, it looks like there's a fire on the shore too.

- They're under-- you're going to get them. Hold tight, hold tight. Woo!

[END PLAYBACK]

SYDNEY WIDELL: They're pulling this net through the water right off shore. And they lifted it, and it's full of smelt. Oh, my gosh. And they're all flopping around in this net. And there's so many.

BONNIE WILLISON: Yeah. I think, from that video, what was surprising to me is that the water is kind of muddy. So you literally can't tell there's hundreds of smelt right under their feet, until they pull in the net all the way to shore. And then they have to make sure the smelt don't all fall out.

SYDNEY WIDELL: Oh, right. Because there are large waves coming in, which is an element that I didn't really anticipate. I had this image of them in the water, but not in the water with large waves breaking. [LAUGHS] That adds a lot of intensity.

[AUDIO PLAYBACK]

- Tommy and Michael are out there doing a poll right now. Let's see how many they get. We're on about our fifth pull, and we probably have about, maybe, a quarter of a cooler full.

[END PLAYBACK]

SYDNEY WIDELL: They have a gigantic cooler, and it's just full of tiny, little silver fish.

BONNIE WILLISON: Yeah, so that was seining. It's basically kind of like-- imagine two people with a tennis net, and the net has weights on the bottom and then floats on the top. And then people are at the two ends in waders, and they're slowly bringing the net into shore.

And then the second way that people smelt is with dip nets. And check out a clip from this video from Bear Solis Outdoors of people smelting in the Milwaukee area.

[AUDIO PLAYBACK]

- This is smelting the old-fashioned way, like the old timers used to do it. We don't got out seining anymore, we use rigs on the wall here.

SYDNEY WIDELL: So I'm seeing these men on a boat, or maybe this is a dock. And it has a large hoist or pulley looking thing hanging out over the water. And I bet that there's-- oh, here comes the net.

BONNIE WILLISON: Oh, it's hard to describe.

SYDNEY WIDELL: Yeah, it's really hard to describe. It's attached at four corners, kind of like a big table cloth, almost. Yeah, they didn't get any smelt though. That's kind of a bummer. I wanted to see. I wanted to see the smelt coming in.

BONNIE WILLISON: Yeah, so dip nets. They're actually standing on a pier, so it requires a pier. And so you're standing on there, and there's a crane arm that extends over the water. And there's this tablecloth slash upside down umbrella-shaped net that you're just lowering, and then reeling it back up to see if you get any fish.

Then once you have your cooler full, or however many smelt you want, you can clean them. Which I heard from a lot of people it takes longer to clean them than it does to catch them, because you have to go through all these minnow-ish looking fish and chop the head off and get rid of the insides. And then you can eat them. And people eat them-- a lot of people just deep fry them or have fish tacos. Those are some of the recipes I heard.

And another big part of the smelting weeks is that a lot of organizations up there will do smelt fry fundraisers. The fire department, or the Catholic Church, or the local veteran's organization will hold smelt fries. And you can go and get your fill.

SYDNEY WIDELL: That seems really wholesome.

BONNIE WILLISON: Here's Jared, the fish biologist.

[MUSIC PLAYING]

JARED MYERS: I first started smelting when I was a freshman in college. And you almost never forget your first time smelting, whereas the tradition is, the first smelt you catch, you've got to bite the head off. And so yeah, I remember that. [CHUCKLES]

SYDNEY WIDELL: That's pretty gory. [LAUGHS]

BONNIE WILLISON: So smelt have really only been in the Great Lakes for about 100 years or less. But clearly, they've become a pretty big tradition for coastal areas. And back in the day where, in Lake Superior, they would fill up school buses, tanks within school buses full of smelt, now you can get a five-gallon bucket. But you're probably not going to get so much more than that, based on the conditions that year.

We should mention that, if you're planning to go smelting on Lake Superior, check if there is a consumption advisory. In January, 2021, the DNR found high levels of PFO acid in smelt. That's a group of chemicals that have negative health consequences. The Department of Health Services recommends eating Lake Superior rainbow smelt only once a month, so keep that in mind.

But smelting still brings thousands of people to Ashland. You can go through town on an April night and see people smelting at every public beach along the main road. And you can see campfires in the night all around the bay.

I talked to Sara Hudson. She's the parks and rec director for Ashland, and she actually said parks and rec. It's a lot like the show. And her job is to deal with just these hordes of the people that come in for smelting season. And so she has to deal with the littering. She has to deal with parking violations and camping problems. And so smelting season can be kind of overwhelming for her, like when they got a nice new pier at a popular smelting beach.

SARA HUDSON: We have a new pier, Bayview pier. And we said, you can't attach anything to the pier to smelt. And you would have thought I cancelled Christmas. They're like, what do you mean? And I'm like, well, it's a new pier. I can't have you drilling into my brand new pier. They're like, well, we've always done that. And I was like, but that was illegal, but no one cared because it was a 30-year-old pier.

[LAUGHTER]

BONNIE WILLISON: Yeah.

So up north, summer and fall are pretty touristy-- lots of people traveling. And then you have deer season in November, right? Deer season?

SARA HUDSON: Mm-hm. Yep.

BONNIE WILLISON: And then in winter, there's still quite a few people coming in for snowmobiling, ice fishing, cross-country skiing, those types of things. Then you hit March, April, and May. And Sarah was calling these months "the shoulder season" because there is really no tourism at all. And a lot of businesses will even close down for this period. The smelt run around March or April kind of punctuates this.

SARA HUDSON: It's one of those signs that spring in the Northwoods is going to be here. Soon the ice will be out, and summer does come. Temperatures will get above 40. We all look forward to it, because winters are long up here.

[MUSIC PLAYING]

SYDNEY WIDELL: There once was a resident of Wisconsin who was unable to locate a trash bin. The unwanted items found their way to the ground. And from there, the impending disasters compound.

The spring snow melt and summer rains washed the refuse down storm drains, across the land, and other locations, unplanned. The wastewater treatment plant did its best to filter and settle, but micro-plastic waste was just too small to wrestle within the existing technology and cost parameters constraining the work of pollution control managers. Other problems ensued as organisms inadvertently ingested the waste that humanity manufactures with unabating haste.

Want to learn more about the impacts of waste on our waters? The Trash Trunk lessons and tools will allow you to consider and measure how to rethink, refuse, reduce, refurbish, repair, repurpose, recycle, and treasure the resources we steward on behalf of one another.

BONNIE WILLISON: If you're among the many who are looking for online learning materials for use at home, check out The Trash Trunk. Its free lessons are great for learners anywhere from levels kindergarten through adult. Click on the link in the description, and visit the Wisconsin Sea Grant website for more details.

Despite them being the sign of spring, despite them being really adored by a lot of people, smelt weren't always in the Great Lakes. I asked Sara about this. Remember, she's the parks and rec director for Ashland.

Do you think people who come smelting realize or know about smelt being an invasive species?

SARA HUDSON: No, [LAUGHS] I do not. I honestly don't think people realize that they are a non-native species. I think they think they've always been there.

BONNIE WILLISON: Sara said, sometimes, these are hard conversations to have, because people will argue with her. And she's like, well, just Google it. It's on Google.

So I wanted to know more about smelt out in the lake, you know? What happened to the lake when smelt were introduced? Here's Jared.

JARED MYERS: So smelt were a big part of my graduate work and trying to understand the influence of smelt on recruitment of cisco or lake herring.

SYDNEY WIDELL: So recruitment being how many young fish make it into adulthood?

BONNIE WILLISON: Yeah. Basically, how well their reproduction is going. So I was just trying to confirm that lake cisco and lake herring are the same fish. And so I wanted to know what the common names for cisco are. And so I googled common names for cisco. Google says, common first names for cisco-- James, John, William.

SYDNEY WIDELL: George, Charles, Robert.

BONNIE WILLISON: Charles, Robert.

SYDNEY WIDELL: What cisco? What is this talking about?

BONNIE WILLISON: I think it means if Cisco was your last name, what might your first name be?

SYDNEY WIDELL: John? Jonathan? [LAUGHS]

BONNIE WILLISON: Yeah. So Jared's research focused on the concern that smelt could have negative impacts on these native species.

[MUSIC PLAYING]

So looking at Lake Superior as a case study here-- a big question is, what do smelt eat? And it turns out smelt eat baby or really young walleye, whitefish, and cisco, a.k.a. lake herring. Imagine the PAC-MAN that we talked about before going after these baby native fish.

So smelt eat cisco. And we like cisco, because they are good, hearty prey to keep the food web in balance. They've been here a really long time in the Great Lakes. And so the smelt eating their babies, that can't be good for them.

Cisco have been declining in the Great Lakes to the point where there's been almost dire levels of cisco before, at least in Lake Superior. And it kind of seems like when smelt have a bad year, the ciscos recover, or the ciscos do better.

SYDNEY WIDELL: Like if if smelt go up, then the cisco will go down. And if there are no smelt, the cisco can come back up. It's like a smelt/cisco seesaw?

BONNIE WILLISON: Yeah.

SYDNEY WIDELL: OK.

BONNIE WILLISON: So for example, take Lake Superior in the '70s. So on one side of the seesaw, we have smelt at the top. Smelt are doing quite well. And then at the bottom of the seesaw on the other side, there are really dire levels of cisco a.k.a. herring. And then, in the '80s, the smelt start to decline.

JARED MYERS: Smelt came down through the 80s, and that is what some people believe allowed cisco to begin to recover in Lake Superior. The 1984 year class of cisco is famous because folks almost thought herring were gone, until the '84 year class came out of nowhere. And then, poof, herring were back in Lake Superior.

BONNIE WILLISON: And that seems like anecdotal evidence, but Jared's research confirms it.

JARED MYERS: While smelt don't likely cause a complete crash of a species, or like cisco, they can certainly dampen the success of a given year class. And so whereas, you might have expected a really good year class of cisco given certain environmental conditions, if you have a lot of smelt present and surrounding those baby young-of-year cisco, you're going to lose some of that potential.

We see year classes of cisco that just never take off like we might expect. And there's a whole host of other things that can influence your class strength. So in no way am I trying to say it's just smelt.

BONNIE WILLISON: OK, what are some of the other things that can affect a year class of cisco?

JARED MYERS: So your question is something that has puzzled fishery scientists since the beginning of fishery science. It's the holy grail of fishery science, is to understand what causes good years for fish and, more often than not, bad years for fish.

BONNIE WILLISON: When you're looking at a lake as big as Lake Superior, there are so many factors that would go into the populations of all kinds of different animals, like temperature and wind speed. If the wind brings a vulnerable baby fish into an arena that allows them to grow really fast, then they'll be able to escape predators. But maybe the wind doesn't blow that way.

And Jared said that fish have so many offspring-- like each one has hundreds of thousands-- and so trying to figure out what makes the few that survive good at surviving is just really, really hard and something that scientists are still working on. And smelt are just part of this equation in Lake Superior, because all of these new aquatic invasive species have come in. And they've changed the lakes. They're still changing lakes. And 10 years ago, the lakes looked different than now. And they'll look different in 10 years too. That's what makes it hard.

So there's another element to this story. We've covered what smelt are eating, but what is eating the smelt? So since smelt have become established in Lake Superior, they've actually become a very important part of the food web, as it is now. When smelt came in and cisco levels went down, the lake trout, which usually would have eaten a lot of cisco, had to turn to something else to eat. So they turned to eating smelt. Smelt are so abundant close to shore, and they become a really important part of the lake trout diet.

JARED MYERS: My understanding of smelt is that they're actually kind of dumb. They sit somewhat motionless in the water column, and so it's really easy for lake trout to encounter and eat a lot of smelt. And so I always say, if you're a lake trout, and you're swimming around and you can eat a herring, that's like eating one big, juicy cheeseburger. It's a healthy cheeseburger. It's good for you.

But if you're going around and eating smelt, it's almost like you're going around and eating fingernails. Maybe there's some substance to it, but it's not that good for you. So it's just another aspect of smelt that's like, eh. They serve a role, they're just not that great.

BONNIE WILLISON: Smelt are important to the Lake Superior food web in that lake trout and other predators might struggle without them at this point.

SYDNEY WIDELL: OK. And meanwhile, there is this whole thing that's happened in these communities on the Great Lakes where people get so, so hyped about these non-native fish. And so they have become both very important to people, but also impacting people in ways that they might not even realize, like taking out other fish that they care about, like walleye.

BONNIE WILLISON: Yeah, walleye, cisco, herring, et cetera-- that's a really good way to put it. So that's Lake Superior. Now, imagine taking this whole cycle and squeezing it down to the size of an inland lake, like a popular fishing lake. What effects do smelt have in any of Wisconsin's thousands of inland lakes? It turns out that smelt cause very intense effects.

SYDNEY WIDELL: Oh, I know about those.

[LAUGHTER]

BONNIE WILLISON: Yeah, tell me what you know about this, because we reported about this last season with the story about the super smelt.

SYDNEY WIDELL: Yeah. So if you'll recall from season one, episode six, the tale of the super smelt, there have been a bunch of smelt introductions on small, inland lakes across northern Wisconsin, similar to how smelt were introduced to the Midwest in the beginning. But once those smelt are there, they are so disruptive to the food webs in those lakes and cause fish, like walleye and perch-- they cause populations of those fish to really just crash.

And it's very hard to bring them back. And it's even harder to get the smelt out of the system, once they're there. And people have gone to absolutely wild measures to take the smelt out of these systems.

BONNIE WILLISON: For sure. Smelt are doing what they're doing in Lake Superior. In the inland lakes, they're eating the larval fish of the cisco, and the walleye, and the whitefish, and the lake trout even. In episode six, we were talking about how they tried to change the temperature of a whole lake just to try to get it so that these smelt couldn't survive. And the smelt always end up duping people.

In order to not introduce smelt, though, into other lakes, there's a few things you can do. So it goes back to, don't transport smelt or use them as live bait. Always drain your live wells, your bilge water, and your transom well. I have no idea what these things are.

[LAUGHTER]

Always drain your boat before leaving water end. If you have unused bait fish, just don't dump them into any lakes.

SYDNEY WIDELL: It is not worth it.

BONNIE WILLISON: We're going to take a break. But after we come back, what happened to smelt wrestling?

STUART CARLTON: *Teach Me About the Great Lakes* is a twice monthly podcast in which I, a Great Lakes novice, get people who are smarter and harder working than I am to teach me all about the Great Lakes. And it serves a really important purpose within my job, because I do need to learn a lot about the Great Lakes. But I think what's really great is that, also, the audience can learn at the same time.

And so it's really become like a one-stop shop for everything you could want to learn about the Great Lakes-- things from biology, to ecology, to geology, natural history, political history, the arts, weather. anything that you might want, we probably have an episode about. Or if we don't, we'll probably have one soon.

And then, because this is every two weeks, we might have another one shortly thereafter-- maybe even a two parter. I don't know. And it's a friendly format, which is good. But I think what's key to our success is that we're unafraid to ask the important and difficult questions-- questions like, so if you could have a great donut for breakfast or a great sandwich for lunch, which would you choose?

SPEAKER 1: I would definitely have a sandwich.

SPEAKER 2: I would go with the sandwich.

SPEAKER 3: I'd have to go with the donut.

[MUSIC PLAYING]

BONNIE WILLISON: I caught up with Titus Seilheimer, the outreach specialist for Wisconsin Sea Grant, and he's based in Manitowoc. It's on the Lake Michigan side of Wisconsin. And I wanted to know what the smelt situation was up there. It's this vestiges of a tradition where you can still go to restaurants to get smelt, but the smelt are being imported from other lakes.

TITUS SEILHEIMER: Locally, here in Manitowoc, I know there's restaurants in town that I can go and order a smelt dinner. And that 20 or 30 years ago would have been harvested right off the shore here from two rivers. Now, a lot of that smell comes from Lake Erie.

BONNIE WILLISON: Smelt numbers have been down pretty dramatically in Lake Michigan, actually recently. And this is also happening for alewife, which is another small and invasive fish that serves as prey for trout and salmon, the fish that we really like to catch in Lake Michigan.

TITUS SEILHEIMER: The ecology of Lake Michigan has changed, and that opportunity to commercially harvest smelt has really declined. It's the zebra mussels, quagga mussels changing the food web. It's a lot of predators in the lake too. And if you're an alewife, if you're a smelt, it's hard to find food. It's easy to get eaten by other fish.

BONNIE WILLISON: In these towns, like Marinette on Wisconsin's Lake Michigan coast, they used to have tons of smelt, like extra smelt for wrestling in. But now, if you're lucky, you get half a pail in a season. And when we were just watching those videos of seining and dip netting, if you noticed on Lake Superior, they had full nets and coolers full of smelt. And in Lake Michigan, it was like they had one little smelt in the dip net. And that's what it's like, it seems like. So more people from around Wisconsin around Lake Michigan are calling up to Ashland to try to go smelting there.

[MUSIC PLAYING]

BONNIE WILLISON: So at this point, smelt were still kind of confusing me because, technically, they're invasive. And invasive always sounds like-- it has this negative connotation, like we should be trying to get the smelt out.

SYDNEY WIDELL: Like you shouldn't be partying. You shouldn't be having a party on a beach because you're excited to see the species come running up in the net?

BONNIE WILLISON: Right. People love them so much. But on the other hand, there's research that point to that they probably have negative effects on suppressing some of the native fish in Lake Superior that we also love. So yeah, I asked Jared from the US Fish and Wildlife Service what he thought.

SYDNEY WIDELL: Oh, these things are always so complicated.

BONNIE WILLISON: Do you think there should be-- or would there be any way to manage smelt?

JARED MYERS: No. I guess I'll put it this way. Do you think we could remove mosquitoes from the state of Wisconsin? The answer's probably, no. Same for smelt in Lake Superior. They're like mosquitoes.

BONNIE WILLISON: So I guess, it just seems like smelt are here, and there's really nothing that we humans can do in either way, you know? Any questions about smelt management, like what would happen if all the smelt went away? They're basically just a thought experiment at this point.

For Jared, who studied the effects that smelt have on the baby native fish, he views a potential smelt decline kind of as an opportunity to see what would happen. And because what he thinks would happen is that native species, like cisco or walleye, would just become that much stronger.

But it's also like, is this even worth thinking about? Because it's interesting to me. But it's also like, is it worth talking about? Because if they're really like mosquitoes, there's nothing we can do. Here's Carolyn from Angler's All.

CAROLYN SWARTZ: Yes, they are invasive, but so are a lot of fish that have been planted over the years. That is the main forage base in this area for the fish to eat. So not only do people eat them, the fish eat them. And people, in turn, eat the fish. So it's kind of like a big circle of life there.

BONNIE WILLISON: It seems like a pretty small world up in the Ashland area. While I was talking to Jared, he had been kind of hardcore against smelt for the whole interview. He had his biologist's hat on, and he was standing up for native fish and doesn't really see any worth in smelt. But then when I talked to him about my conversation with Carolyn, his position shifted a little bit. It was almost like he had his friendly neighbor hat on again.

JARED MYERS: So I know Carolyn quite well, and she makes a good point. That is a time of year where there's not a whole lot of tourism. And so folks coming into town, staying in hotels, or coming through the doors of her bait shop, is fantastic. And it's making an opportunity that they wouldn't have. And so when we're presented with that situation, have at her, you know?

It's just from a management perspective, we only have so many levers, as managers, to do so many things. A lot of it is either catch more, catch less, or stock more, or stock less. That's all we've got. And neither one of those are going to happen for smelt. We're never going to catch enough to really have an effect on them, and no one's ever going to stock smelt. So with the situation we have, knock yourself out.

BONNIE WILLISON: These are really big lakes. And preventing the spread of aquatic invasive species is the only lever that we truly have.

[MUSIC PLAYING]

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