

Seneca Lake Pure Waters Association: Thank you so much for joining our latest Deep Dive webinar. It's a monthly series run by Seneca Lake Pure Waters Association designed to inform people about the issues that impact the lake, and also just

Seneca Lake Pure Waters Association: the lake itself, you know, the wonders of the lake. But tonight, we're going to be diving into one of the more pervasive issues that the lake has to deal with, which is unfortunately invasive species. Tonight, we have Laurel Williams of, PRISM, and,

Seneca Lake Pure Waters Association: She works to develop and manage regional programs, watercraft inspection, citizen science programs.

Seneca Lake Pure Waters Association: Maintains, partnerships in the region, and works to spread awareness about what is going on out there. And, prior to joining PRISM, she was, worked as a watercraft inspection steward herself.

Seneca Lake Pure Waters Association: And, as, her educational background is also in, environmental science and environmental and outdoor education. So, without,

Seneca Lake Pure Waters Association: Too much more, let's just say, welcome, Laurel, and thank you so much for being here, and take it away.

Laurel Williams: Yeah, thank you so much. Great introduction, that was some of the stuff that I cover in my own intro.

Laurel Williams: But I'll kind of finish it up. So, hi, my name is Laurel. I am the Invasive Species Education and Outreach Program Manager for the Finger Lakes PRISM, otherwise known, you know, Finger Lakes Partnership for Regional Invasive Species Management, right there in the logo. And we're at the Finger Lakes Institute at Hobart and William Smith Colleges. And this background that you're gonna see pretty consistently as I am transitioning from different

Laurel Williams: parts of this presentation. That's the campus. It's really gorgeous. It's about to look like this soon, because fall is going to be here before we know it.

Laurel Williams: But yeah, thank you all for joining, really excited to talk to you today. The presentation I have is titled, Watching Our Waters, Invasive Macrophytes.

Laurel Williams: emerging concerns, and citizen science, so it kind of touches on a lot of different components, and I'm going to try and consolidate them best I can for you all, and hopefully leave you with some action items at the end.

Laurel Williams: So...

Laurel Williams: We're gonna click... oh my gosh, you never know that first click of is gonna go, and it did, so that's good. But yeah, so like I said, we are out of the Finger Lakes Institute at the college, there in Geneva, and it's actually right on Seneca Lake.

Laurel Williams: So, we are really close and personal. I see Seneca, like, every single morning, whenever I go to work. It's a gorgeous view up there.

Laurel Williams: But the Finger Lakes Institute, their main goal is to translate knowledge and research about the Finger Lakes Watershed into collaborative action, and they have four major program areas, and Invasive species is one of them. The Finger Lakes PRISM, so the Partnership for Regional Invasive Species Management.

Laurel Williams: is a network of state, federal, local agencies, NGOs, and other stakeholders that support a diverse approach and comprehensive approach to invasive species management.

Laurel Williams: So, we allow the partners, which SLPWA would be one of those, to share and leverage the limited resources across the region.

Laurel Williams: And we are funded through the New York State Environmental Protection Fund, which is administered by the NYS Department of Environmental Conservation, otherwise known as the DEC. So, just as a little note here.

Laurel Williams: We cover a 17-county region. I always really like to make that known. It's about the size of New Jersey. So if you think it goes all the way down to the bottom of the state, we border Pennsylvania up to Lake Ontario. We have a pretty wide space to cover.

Laurel Williams: And we only have about 5 full-time staff members that are there consistently year-round. Of course, we have a lot of seasonal staff that are really wonderful, help with a lot of our projects and programs that we have going on, but that's where I like to highlight the fact that we have these partnerships, and again, SLPWA is a wonderful partner for us.

Laurel Williams: But leveraging these partnerships is really helpful in creating a comprehensive

Laurel Williams: You know, Invasive species management plan across region. So, just wanted to highlight that fact.

Laurel Williams: These are a couple photos from just out in the field of our people doing what they do. Vacuuming spot lanternflies is always a fun thing, but we also do some other programs, like water chestnut pools, surveys, the Watercraft Inspection Steward Program.

Laurel Williams: Continuing on with all of our other program areas. I'll get to more of this later, but just a little highlight of what's to come in the presentation.

Laurel Williams: So, I'm gonna go ahead and get right on into it. I know this... you could be like, oh, I know what invasive species is, I totally got that. But I always like to do a slightly back-to-the-basics kind of thing, just because I feel like it's important to know exactly what makes an invasive species invasive.

Laurel Williams: So, an invasive species is one that is non-native to the ecosystem under consideration, and whose introduction causes, or is likely to cause, economic or environmental harm, or harm to human health. So, if it hits any of those three criteria.

Laurel Williams: That's what's going to make it an invasive species. There can be non-native species that aren't invasive because they are not exhibiting any of these behaviors that would make them an invasive species.

Laurel Williams: Economic impacts could be, you know, agriculture, recreation, wood forest products, trade shipping, tourism, etc, etc. That could be a note of the invasive species is causing harm to those.

Laurel Williams: There's also environmental, which you hear a lot about the environmental impacts of invasive species. So biodiversity, structural diversity, the natural processes, just the aesthetics, you know, you don't want to look at something that's just completely one thing all the time.

Laurel Williams: And the ecosystem services as well.

Laurel Williams: Then there's human health, so this could be a plethora of things, but here we just have highlighted, you know, impacts on soil quality that could impact agriculture, in turn, human health, water and air quality, flooding, injury, and it also could cause disease or illness.

Laurel Williams: So, if an invasive species hits any of these criteria, 1, 2, or even all three, that's what categorizes it as invasive.

Laurel Williams: Some characteristics of invasive species, they have a pretty high reproductive rate most of the time. They reproduce very rapidly, and

Laurel Williams: Faster than a lot of our other species, our native species that we have, so that could be a characteristic, sorry, of invasive species.

Laurel Williams: They also are aggressive, so that could be physically aggressive, they could be going after other things if they're, you know, an animal, insect, or something, or could be a plant that just grows aggressively and takes over areas.

Laurel Williams: They have no natural predators. Something I always like to note is spotted lanternfly. Whenever it feeds on its preferred host, which is Tree of Heaven, it tastes bad to our native species. The birds and things. They don't want to eat it, because it tastes bad. It's like.

Laurel Williams: If somebody gave you a pile of just mush and then presented you with a brownie sundae, you're obviously gonna go for the brownie sundae and not the pile of mush.

Laurel Williams: In that scenario, the pile of mush is a spied lanternfly.

Laurel Williams: So... We like to also just say they have no natural predators.

Laurel Williams: They also could have low nutritional value. So, that could be, like, you're eating potato chips for the rest of your life, which some people might be like, woohoo, but they just have no nutritional value. They also take advantage of human disturbance, so you can see over here on the right, there's some clearing from logging, and if that space isn't properly cleaned or taken care of.

Laurel Williams: Or if it wasn't locked in the first place properly to prevent invasive species spread, then that is a prime spot for invasives to emerge right there on the border of that forest.

Laurel Williams: So those are just a couple characteristics.

Laurel Williams: I also like to note the goldfish. Do not flush Freddy down the toilet, because then Freddy is going to turn into a really large goldfish, because they are a part of the, carp family. So, that's another example of invasive species getting spread.

Laurel Williams: These are just a few examples of invading landscapes, so just, you know, areas that have been taken over by an invasive species. I'm not going to name all of them. The ones I will point out, just for the purpose of this webinar and it being for Seneca Lake.

Laurel Williams: You do have Hydrilla down there in the bottom, left corner. That is what Hydrilla looks like under the water whenever it's taking over a spot.

Laurel Williams: And then, in the upper right corner, I'm, like, doing the left and right thing with my hands, you've got water chestnut, so that is a total, coverage of water chestnut on a water body to where other plants can't grow.

Laurel Williams: So, those are a couple aquatic examples of invading landscapes, but just for context, wanted to show the others as well, because what happens on land also impacts the water.

Laurel Williams: So, now we're going... now that we've had, like, that background of what invasive species are, and, you know, just a little refresher in the brain.

Laurel Williams: We're gonna talk more about specific invasive species of concern for Seneca Lake. So, these are a mixture of species that have not yet gotten there, and species that are there, and we just want to be aware of those species.

Laurel Williams: So, without further ado, we're gonna start talking about them. This is the one that I would think most people here most likely have heard about before, especially if you are a Seneca Lake resident, or you live within the Finger Lakes region.

Laurel Williams: This is Hydraila, so it could also be called water time, but you're most likely gonna be hearing it referred to Hydrilla.

Laurel Williams: This is an invasive macrophyte that is currently in Cayuga Lake, so it is neighboring Seneca Lake very closely.

Laurel Williams: And the proximity of Hydrilla on Cayuga really increases a likelihood of infestation on Seneca, just because it's right there. There's the canal up at the top, and also just boat traffic back and forth between the two lakes.

Laurel Williams: it just... there's more of a likelihood, if it were to happen, that it would go to Seneca Lake. Hydrill is a very aggressive invader, like we saw on that photo very recently. It really takes over the... under the bottom of the lake and makes it to where other native species can't grow.

Laurel Williams: It'll impact recreation. If it gets too dense and too matted, then boats can't... aren't gonna be able to get through. It's not gonna be the preferred food source for species that are there.

Laurel Williams: It does have a native lookalike, and I've had people mistake this native lookalike for Hydrilla a lot, but it looks like a Lodia, and I'm just gonna really quickly talk about some characteristics, so that if you do see it, you take a minute to say, okay, does it have the characteristics of Hydrilla before you

Laurel Williams: think that it might be the really bad invasive. Elodia has whorls of 3, and Hydrilla typically has 5 or more. I know it says 3 on here, but most likely you're gonna see 5 or more.

Laurel Williams: It also has serrated edges, so you can see Hydrilla has those serrations on the leaf edges in that photo that is on the upper left.

Laurel Williams: Elodia has smooth margins, so it doesn't have those toothed edges on the leaves.

Laurel Williams: And I just wanted to point that out. But Hydralis spreads by seeds, tubers, and turons. Tubers, just for context, are small potato-like structures in the sediment.

Laurel Williams: So, if it gets fragmented by a harvester, or a boat, or just by somebody pulling some species, then it can continue spreading throughout the water body, potentially get on another watercraft, and take a hitchhike.

Laurel Williams: So I just wanted to mention it. Our aquatic Invasive species field team.

Laurel Williams: Which is led by Catherine Farrell. She is our Aquatic Invasive Species Program Manager, so she's my counterpart, but I do education outreach, I do the citizen science, I do the watercraft inspection steward program, and Catherine does the management of invasive species out on the lakes.

Laurel Williams: So, their team, we're working with DEC to monitor, known hydrilla on Cayuga Lake to help inform treatment areas.

Laurel Williams: We're also looking at other high-priority sites on Cayuga to ensure that the hydrilla is not spreading, and just in general, I'm going to mention early detection rapid response right now, and I'll get into it a little more further on in the slide deck.

Laurel Williams: But EDRR across the region helps to ensure that Hydrilla is not spreading to new areas. So just being very aware of it, and what it looks like, and the implications if you do find it, or you think you have found it, that's the most important thing.

Laurel Williams: So, wanted to mention Hydrilla, it's kind of the one to be on the lookout for. Of course, all the other species that I'm about to talk about, also keep an eye out for, but Hydrilla is not in Seneca, and we would like to keep it that way. So, just be aware.

Laurel Williams: Water chestnut! So, this one is the really horrible Lego, is what I like to call it. If you step on that thing, it's like stepping on a Lego, but about 10 times worse.

Laurel Williams: So, water chestnut tends to grow in more shallow water. It is... it flows on the surface, and then it extends all the way down, so the root is in the bottom of the sediment, and that's where that nutlet is. So that, brown picture in the left.

Laurel Williams: Upper left, that is the nutlet for the chestnut, so that is, you know, its seed. The seed is in the sediment, and then it goes up, up, up, and forms that rosette at the top of the surface.

Laurel Williams: So, just because it has to, you know, go pretty far, it doesn't typically grow in water that is deeper than 15 feet.

Laurel Williams: It's a floating-leaved aquatic plant, forms that rosette. It can have those four-petaled white flowers, but the leaves are pretty distinct. Water chestnut is really...

Laurel Williams: well affected by hand pooling, so a mechanical hand pooling. We do water chestnut pools, where I like to say it's like spaghetti. You, like, reach down in the water and wrap it around your hand, like you're getting spaghetti on your fork, and then you pull it out, and then you're able to get the nutlet and the entirety of the plant in that one pool.

Laurel Williams: So we do aquatic Invasive species pools for water chestnut, where we have volunteers go out, or we go out ourselves, and pool a water chestnut. There's actually a site up at Fairhaven, which is, Lake Ontario area, it's a pond right there, that we have been doing management for water chestnut. I think...

Laurel Williams: folks have been doing it since 2017, maybe, or maybe even sooner up in that area, and we see a decrease in the amount of water chestnut that is there. So it's pretty, well impacted by the, you know, pooling of...

Laurel Williams: the chestnuts.

Laurel Williams: But yeah, just wanted to mention Waters doesn't trap in Dayton's.

Laurel Williams: Starry stonewort is another invasive that I wanted to bring to everybody's attention if you don't already know it.

Laurel Williams: It's an invasive macroalgae. Currently, what our team is doing, we are surveying the areas that have known populations of starry stonewort to monitor for potential impacts on native species. So you can see down there on the dock, that's just a map... that's a big pile of starry stonewort.

Laurel Williams: If it is able, I have seen it to where there is a known starry stemwort population at a spot, and it's not there, because, you know, it might just be spring, it's not popped up yet. I went down, visited that site, this is on Canandaigua, not Seneca, but I went down, visited that site, and it was just blanketing the bottom of the space.

Laurel Williams: So, it'll come back. Since it's a macroalgae, it'll pop when it's squeezed due to the, cell wall breaking, so whenever it pops, it kind of...

Laurel Williams: it just goes limp a little bit in your hand. That's a good way of identification for a starry stonewort. It can also be identified by the presence of tiny star-shaped bubbles.

Laurel Williams: But I wanted to bring Starry Stonewort to everybody's attention, because again, creates a really aggressive ground cover.

Laurel Williams: Takes away space from our native species, eliminates diversity, and can impact water quality whenever, you know, it's not allowing for the proper cycle of nutrients to flow through all of those native species.

Laurel Williams: Come on, go to the next slide. There we go. Okay, fan wart! So, this is one that is not in Seneca Lake.

Laurel Williams: It is only in one location in our region, but I still wanted to mention it, just because whenever it's... something is only in one area, we still need to talk about it so that people are aware, and can help prevent the spread of it. So it's only in Onondaga County.

Laurel Williams: We are currently managing, fanwort infestations at two marinas along the Seneca River. These are the only confirmed locations known to have fan wort in our prism.

Laurel Williams: So, and we want to keep it that way, so by, you know, doing our due diligence, being aware, clean, drain, drying our boats, and just, you know, if you're going around talking to people about it, that's it. Word of mouth is a great way to spread, knowledge about invasive species.

Laurel Williams: So we're working with local agencies to eradicate those small populations.

Laurel Williams: And we also are conducting point intercept surveys on Onondaga Lake this season to determine whether Fanwort has established there or not. I also staffed a watercraft inspection steward on Onondaga Lake, partially due to the knowledge that there was Fanwort up there, but also just because we wanted to have a steward on Onondaga Lake to extend our reach. But that's another example of a little bit of EDRR, so finding something

Laurel Williams: That hadn't been there before, and our team taking action to make sure that species doesn't spread any further.

Laurel Williams: But these are just a couple example slides. I'm using these kind of descriptive slides so that you guys can either take photos, whenever this goes up, you can go back to it, but I wanted to give you the power of knowing what these species looked like so you could maybe identify it in the wild.

Laurel Williams: Round Gobi! So this is not a Macrophyte, this is obviously a fish. If it was a Macrophyte, that's a really interesting looking Macrophyte.

Laurel Williams: But, the round goby is an invasive fish in the... our area. It is in Seneca Lake. I've known people have fish off of the dock near my work, so near our office, like, at the top of the lake, and they have caught goby, they've caught Gobi at the top of the lake.

Laurel Williams: It has a high reproductive capacity and is a very aggressive competitor. It consumes fish eggs of native species very rapidly. So I've talked to a lot of fishermen that say, oh, well, I love the goby because the bass are eating the goby, and the bass are huge.

Laurel Williams: And then I say, well, the goby are eating the bass eggs, so in about 10 years, there's not gonna be these really big bass, because the gobies have eaten all of the bass eggs.

Laurel Williams: Whenever Goby gets into a water body, it is difficult, and...

Laurel Williams: Pretty... it's nearly impossible, probably, to remove it from a water body once it gets there, but it can... it can't walk across land, so the only way it's going to be getting to, especially lakes and landlocked lakes, would be through boater travel.

Laurel Williams: We just had a recent introduction into Cuca Lake.

Laurel Williams: So, we just want to talk about it, because if it's in Seneca Lake, if you fish there, if you do anything there, we want to prevent the spread from other areas. So, while we are also still monitoring on the north and south ends of both Cayuga and Seneca Lakes, we're looking for round goby abundance.

Laurel Williams: And we're providing samples for researchers to do some food web studies on campus about the round goby.

Laurel Williams: And we just want to have some knowledge about the impact of this species, and how it could be spreading, and what avenues we can do to prevent that. And education and outreach, which is my schtick, is one of the major ways of preventing it.

Laurel Williams: Wanted to talk about that.

Laurel Williams: And then we have some Dreicodid mussels. So, again, not a macrophyte, but still wanted to talk about it. I've talked to a lot of people that have said, oh, I've cut my foot on a zebra mussel before, so there's going back to that harm to humans. If you cut your foot on a muscle, I'd say that's pretty harmful.

Laurel Williams: But drysonid mussels, we are marking them down whenever we toss a rake and pull it up to do the point intercept surveys, or whenever our stewards are doing it, they also are supposed to record Driscoid mussels in any of their watercraft inspection surveys if they do find it.

Laurel Williams: And we're trying to figure out if they have a relationship between macrophytes and aquatic invasive species. So, could they prefer certain macrophyte

species? Because they have latched on, I've seen them on eelgrass, Eurasian watermilfoil, I've seen them on native and invasive species alike.

Laurel Williams: They have small bivalves, they out-compete native species, and one of the things that they do is they remove particles from the water, and that can impact water quality. Because even if people are saying, oh, well, that's good, they're making the water super clear.

Laurel Williams: that can create more opportunity for algae to form, and potentially harmful algal blooms as well. So, wanted to bring up some muscles, and if you are going from water body to water body.

Laurel Williams: If you have fishing gear, or even your own gear, like, I have a paddleboard that I go out on, and I try to make sure it's dry every single time.

Laurel Williams: Because their eggs are spread... they can be in water. You're not even gonna see it. It's invisible. So making sure all of your gear is properly dried two weeks is preferable, but giving it a really good wipe down, just cleaning it really thoroughly.

Laurel Williams: Boats, fishing stuff, personal, you know, paddleboards, kayaks, etc. Even if you're... even your water shoes. You know, for anything, you should just make sure it's all dry before you're going to other water bodies.

Laurel Williams: That concludes the aquatics portion. I'm gonna talk about terrestrial in a minute.

Laurel Williams: But again, I do want to give a shout out to Catherine Farrell, our Aquatic Invasive Species Program Manager. They do a lot of amazing effort to help manage those species and continue to gather more data, so I will answer questions that I can, and then I also might be deferring some to her, so I encourage you to make a connection with her, because she's more than happy to answer questions that you have about some of the management they're doing

Laurel Williams: on our water bodies, and especially Seneca Lake.

Laurel Williams: But I wanted to note terrestrial invasive species of concern, because what happens on land, like I said, impacts the water. So things to keep an eye out for are hemlock woolly adelgid, which you can see on somebody's glove. There's those little white fuzzies on the...

Laurel Williams: hemlock branch, so it's an aphid, sucks it out, devastates our hemlocks, and we're concerned about it because it can impact the streams and tributaries going into Seneca Lake. So, if those hemlocks are dying and they're affecting that stream health, or the shoreline health, that is flowing right into the lake and can have adverse effects.

Laurel Williams: Spotted lanternfly is of concern to a lot of folks that have agriculture. It also can impact the

Laurel Williams: native species on the shoreline, but spotted lanternfly can really have a adverse effect on vineyards, apple orchards, hops. It likes all of those sweet things, like all of us do, and why there's such a big economy for, you know, wine and stuff like that in the Finger Lakes.

Laurel Williams: But Spotted Lanternfly is making its way up here, so... and is already here in some areas, so we just want to have people be aware of it. Tree of Heaven is the host for spotted Lanternfly, that is the image of, like, the sun shining through the leaves underneath the adelgid.

Laurel Williams: So, Tree of Heaven is, while it's the host, once they have pretty much gotten their fill on Tree of Heaven, their big and strong little lanternflies, they're gonna start going to the other, fruit... fruity-like

Laurel Williams: species that are native, and that we have a really good economy up here for. So I wanted to mention both of those, because Seneca Lake fosters a good environment for a lot of wineries and orchards.

Laurel Williams: Japanese knotweed can also have similar effects to the HWA, hemlock woolly adelgid, because it grows on the shoreline and on the streams, so it could impact that water quality of the, you know, flow going into Seneca Lake.

Laurel Williams: And then Phragmites, similarly, impacting those streams. So I wanted to bring all of these to your attention, and just note that what ha- like, like I keep saying, and I can't say it enough.

Laurel Williams: It's all connected, so by being aware of both aquatic and terrestrial, it's going to just make us all better stewards for the environment and for our lake.

Laurel Williams: So, I'm gonna quickly go through managing an invasive species. I've already talked about several of our management methods, so I'm not gonna harp on this too much.

Laurel Williams: But I wanted to just mention a couple additional ways that invasive species could be managed. I always like to point out the invasion curve. This is, like, my textbook lecture kind of slide. It's in every single Invasive species class I've ever taken, but I love this image because it just is very clear, gives you a great idea of

Laurel Williams: what we're looking out for. That little blue arrow down there, where it's right at the prevention, that's where we want to be. We want to prevent species from going from water body to water body.

Laurel Williams: We don't want to start getting into the red, because that's obviously, you know, it's... unfortunately, they're here to stay, but by doing this presentation, and also just by you being aware and knowledgeable, I'm hoping that we can do a pretty good job

Laurel Williams: of keeping that prevention down for some of these species that might not have gotten to other areas, like Hydrilla. I'm really... I'm really gunning for it to not be in Seneca Lake. So, just being aware and talking about it is one of the best things you can do.

Laurel Williams: But yeah, so Invasive Curve, really wonderful image.

Laurel Williams: These are the Invasive species tiers. Not gonna get too much into it. This is something that you can visit our website for. However, I just wanted to bring it to your attention, because you can see where each prism lists a certain species.

Laurel Williams: And how, you know, how concerned we should be about it if we do find it. So this is something you can visit our website, which is fingerlakesinvasives.org, if you're interested in looking more into these tiers.

Laurel Williams: Different management methods. I've already talked about several of these. Prevention, like I said, is a huge one. We want to prevent species from getting somewhere in the first place. This could be clean, drain, dry your boat.

Laurel Williams: Washing your fishing gear, washing your clothes, your boots, whenever you're walking from area to area, brushing those boots off at a boot brush station, or just taking something with you.

Laurel Williams: Preventing them from getting somewhere is what the ideal, it's what we want to do. There's mechanical, so that's where you're physically removing the species. Like I said, we do water chestnut pools, we do European frogbit pools.

Laurel Williams: Whenever we can, we'll do that pool, so it's mechanically removing the plant, and sometimes it's really effective for the species we're dealing with. There's chemical, where you have to use pesticides, you have to use chemical applications to deal with the species, because it doesn't respond to other treatments.

Laurel Williams: Then there is biological, so biocontrol, where you introduce another species to go after, that invasive.

Laurel Williams: Like, silverflies for hemlock woolly adelgid.

Laurel Williams: for all of these management methods, there is not one size fits all. You can't say, well, I'm just gonna spray absolutely everything, and that's gonna take care of the issue with pesticides. It...

Laurel Williams: different species react in different manners to different management methods, so it's really important to have that baseline background knowledge whenever we're going through these things and understanding how the species interact with the environment. But just wanted to bring it up that you guys can get involved in the prevention and the mechanical if you volunteer for us.

Laurel Williams: you could already help in 2 out of the 4 different methods. So, and I think that's pretty big. 50% is nothing to, be... nothing to...

Laurel Williams: I just... I had something in my head, and I totally forgot the analogy, but I think some of you probably know what I'm thinking, so I'll let you fill in the blank.

Seneca Lake Pure Waters Association: happening.

Laurel Williams: But...

Seneca Lake Pure Waters Association: End that.

Laurel Williams: Yes, thank you, thank you. It totally was gone. But yeah, so then there's education and outreach, that's where I obviously fall in.

Laurel Williams: Aquatic Invasive species pools, like I said, that's something you can do to help out on your water body. Citizen science programs, which I'm gonna dive further into in a minute.

Laurel Williams: There's specialized events, so those are just ones that are not part of our citizen science programs. I sometimes call them one-off events, but we also do a webinar series. We have events that we do that are more as things come up, if we need to do education, if we need to do stuff about it, we have these events for the public.

Laurel Williams: There's also, regional outreach events, so we go to different things for different partners, we help them out with stuff, we table it, everything, and there's billboards and signage across the area. We've got some billboards, we've got boot brush stations, I've gone to trails before that I've seen, oh my gosh, wait, I work for them, because the Finger Lakes Prism did a sign before I started there, even.

Laurel Williams: And it's right there, so it's a good feeling to see that across the area.

Laurel Williams: And these are some images of different pools that we have done, or just events that we've tabled at.

Laurel Williams: We also have the Watercraft Inspection Steward Program, which I, run. I'm the manager for our stewards. This is our 2026 PRISM coverage in our area. We've got two stewards on Seneca Lake. We originally were going to have 3, but we ended up with only 2 for this year.

Laurel Williams: So we have one at the top of the lake at Seneca Lake State Park, and then one at the bottom of the lake at Kloop Park in Watkins Glen.

Laurel Williams: So we've got two on the lake, but then we also have stewards across the region that are working to prevent the spread. You can see on Cayuga Lake, which is where there is a large hydrilla infestation, we are hopefully

Laurel Williams: doing adequate education and helping those boaters be knowledgeable before they were to go to Seneca Lake. We've got somebody at Cayuga Lake State Park, we do Mudlock occasionally, Long Point, and then the ESF Parks program also staffs Cayuga Lake, so...

Laurel Williams: We are really working hard to hopefully prevent Hydrilla from getting over, as well as other species prevention, but that is a concern for Seneca, so just talking about it quickly.

Laurel Williams: You can always go online to the WISPA application that was developed by the DEC and the New York Natural Heritage Program if you would like to learn more about the area.

Laurel Williams: So, now we are getting into how can you help? So, what can you do as a citizen, or just a concerned person that lives on the lake? How can you help out?

Laurel Williams: The first things first, knowing your invasive. So, one, you being here and just being interested in this particular deep dive webinar and saying, yeah, I want to hear about that, that's the first thing. You are learning and you're being knowledgeable.

Laurel Williams: IMAP Invasives is a really good platform if you are interested in seeing what's around, if you want to see what's on Seneca Lake.

Laurel Williams: That has detections and non-detections for the entire area. There's also SEEK, which is by iNaturalist.

Laurel Williams: That's something I use if I'm, you know, waffling between, oh, is this an invasive or a native for myself? Then I can use Seek, and it helps. So, knowing your invasives.

Laurel Williams: That's first thing.

Laurel Williams: Citizen Science with the Finger Lakes Prism is highly recommended. I'm not just saying that because I organize the programs, promise no bias.

Laurel Williams: But it really is a great way to get involved. You build community, you get outside, and you get to learn about your local ecosystems.

Laurel Williams: It's also inclusive to all skill levels. Anybody could participate. We even had people bring their children, and the kids are learning about invasive species, and they're tossing rakes, and they're pulling things up, and they're really interested in it.

Laurel Williams: So, learning about your local ecosystems is a big perk. You get to work with professionals such as myself and my colleagues that host these workshops. You are also helping to fill important data gaps, which I'll show some images that are demonstrating that data gap

Laurel Williams: just demonstrating the data gap and where you guys can fit in. And there's opportunities year-round, so while the Macrophyte survey program is ending at the end of September, our hemlock woolly adelga one is going to pop up pretty soon.

Laurel Williams: But, the Macrophytes array program, which I think is the most applicable, but not the only one you should do if you are a Seneca Lake resident, or you're just generally concerned about the health of Seneca Lake.

Laurel Williams: The Macrophytes Survey Program is the one I would recommend for you.

Laurel Williams: You get to be our eyes on the water, so the citizen scientists that we have, those observations play a very critical role in our understanding of aquatic invasive species.

Laurel Williams: This is key to rapid response and preventing those high-impact invasives from spreading and harming the native ecosystems.

Laurel Williams: So, it's really a great program to be involved in.

Laurel Williams: It provides you with all the information, so we give everything to you. We do virtual trainings, we do in-person workshops, which...

Laurel Williams: All of the trainings and workshops have concluded, however, you can still find that on our YouTube channel. If you want to just learn about it, the virtual training is there. If you didn't get enough of me talking to you tonight, you can go watch another hour of it, and you'll learn more about aquatic Invasive species through that.

Laurel Williams: But it runs annually from June to September. You could do it next year if you wanted to. Volunteers are encouraged to commit to a schedule that works best for you, but sampling on a bi-weekly basis is ideal.

Laurel Williams: All you have to do is throw a rake into the water, which that could be... you sawed off a garden rake, you tied it to a rope, you tossed it in, and then you pull it up, and you see what plants are on there. You could even do hand sampling, where you just take a big handful of species and identify them that way.

Laurel Williams: Anybody can do it. It's inclusive for everyone. Highly encouraged and highly recommended.

Laurel Williams: All of the data that's collected from the citizen science programs are shared with IMAP Invasives, so it will go to IMAP, all of the detections that are found.

Laurel Williams: And our partners, so, you know, if SLPWA reaches out and says, hey, what species were dissected on Seneca Lake through the MSP this year? I can create a map, I can send the data over, and we have that partnership, and we have that collaboration, where we are helping our partners understand their water bodies, or just their needs, and assisting them with additional data gathering, and, you know, potentially that helps with some grants, et cetera, et cetera.

Laurel Williams: So the Macrophytes survey program is really highly recommended.

Laurel Williams: Water bodies are high traffic areas. EDRR, like I mentioned. Some people have detected things through the MSP faster than our team has found something. So, by having consistent people across and consistent volunteers, it really helps to promote that.

Laurel Williams: And we use it to generate spatial data to better understand those communities and species distribution.

Laurel Williams: Because just knowing what's in the lake doesn't necessarily lend to those interactions that are happening under the water. So, this is how the Macrophyte Survey Program helps us understand that ebb and flow of species, how they're interacting with each other, what's going on.

Laurel Williams: This all goes into it.

Laurel Williams: I pulled a little bit of preliminary data since the program is still going on, and we haven't analyzed this year's yet, just because we're still collecting it. This is just a preliminary set, but this is just a map of everywhere that we have had people participating in the Macrophyte survey program.

Laurel Williams: And I also want to say that we don't take your participation in this as...

Laurel Williams: it's not taken lightly, because this is the exact same survey that my watercraft inspection stewards are doing. So you are actively doing something that is really backed by a lot of science and a lot of time and effort put by our crew, enough that our team is doing it in addition to the public.

Laurel Williams: So it's a really great program to be involved in.

Laurel Williams: We're gonna take a little bit of a closer look at Seneca Lake. This is just a zoomed-in image of Seneca, so you could see it a bit better.

Laurel Williams: But like I said, and this is where citizen science really comes in, we have two watercraft inspection stewards on Seneca Lake, and our Aquatic Invasive species team does point-intercept surveys at four sites.

Laurel Williams: That's really only 6 areas, and while they... our stewards are tossing brakes every time they're at the launch, every day they're at the launch, and the AIS team is going out there 3 times a year to those 4 sites, even though they're going out there, that's only 6 spots on the lake, and the lake is huge. It's a very large lake.

Laurel Williams: So, citizen scientists can help fill the gaps. If you look over there on the map, those are the known points of where people have done the Macrophyte survey program, but if you are here today, and you live on

Laurel Williams: In any of those areas that don't have any points, your help would be greatly appreciated so we can understand what's going on across the entire water body.

Laurel Williams: And no data is data as well. If you live in an area that has really rocky sediment, not a lot of plants grow there, you can still do the Macrophyte survey program, and you can put in that you didn't find plants, but you were tossing a rake.

Laurel Williams: So that is still really important to do and to help out in. If there's anything, I really hope you would be interested in joining this program.

Laurel Williams: And you're helping us and our partners better understand the aquatic community. Like I said, SLPWA's a great partner, we work with them, and I'm happy to share data and collaborate on ways that we can make this program better.

Laurel Williams: So...

Laurel Williams: With that all being said, for the Macrophyte Survey Program, once again, I'm gonna go slightly into a little bit more of terrestrial, just because you have to always mention terrestrial whenever you're talking about the water. So, the Hemlock Woolly Adelgid Survey Program is our winter citizen science program.

Laurel Williams: You help us fight HWA by surveying around trails and parks in your own area, and with a greater understanding of HWA's distribution, we can combine efforts with our partners and come up with ways to limit the spread and treat it before it's too late.

Laurel Williams: We offer workshops and virtual trainings for this. All of the citizen science programs have something virtual you could watch, just like this.

Laurel Williams: Or, you can come in person. I say I go on tour for all of the citizen science programs because I go across the region, I work with partners, we do these

workshops, and it's a really great learning opportunity for everybody. And you also get the chance to work alongside professionals in a surveying scene.

Laurel Williams: Registration for the 2027 HWA Survey Program is going to go live most likely sometime around December 2026, so this December. So as a Christmas present to yourself, you can sign up for this program.

Laurel Williams: For the Trail Survey Program, which that is the sister program to the Macrophyte Survey Program, it runs from April to September 30th.

Laurel Williams: So, anybody could participate in the Trail Survey Program. This is one where if you just have an area near you, even at your house, a trail, wherever you want to go, if you want to collect data on the species that we are specifically looking for, this is wonderful.

Laurel Williams: So, I just wanted to also mention the Trail Survey program is a great opportunity for you to get involved.

Laurel Williams: All information on the Citizen Science programs can be found on our website, so fingerlakesinvasives.org, and then you go to the Take Action, and it's under the Citizen Science tab. Everything you need to find is on there. We have all the resources available, or you can also email me at the end of this presentation.

Laurel Williams: So, I'm just going to kind of leave with a get involved today. This is just your opportunity to really make a difference. I know it sounds... like, I know I'm kind of harping at this, but it really is the best way that you can

Laurel Williams: you can help! Like, and if we get a huge crew together, I mean, it makes a difference. You guys have no idea how much of a difference it makes, and we see that every single day. So...

Laurel Williams: While, you know, questions and everything's going on, I'm gonna probably leave this slide open unless you want me to take it off, Ben, but this is my contact information, so my email's right there, inbox is always open. If I don't respond to you in two days, it got buried, so poke me again. I'm not gonna be offended.

Laurel Williams: Just message me, [lwilliams](mailto:lwilliams@hws.edu), at hws.edu.

Laurel Williams: That is my office phone. I am sometimes in the office, and sometimes not, because it's field season. So...

Laurel Williams: I might be in the field, but again, our website is fingerlakesinvasives.org. But that is all I've got for the presentation, so I saw the chat was happening, but I didn't read anything, and I will...

Laurel Williams: Leave it to you.

Seneca Lake Pure Waters Association: Sure, yeah, so we'll start off with the first question, and let me just say thank you so much, that was incredible. That was... touched on so many different things, everything from prevention to what was already here, and it's really important to touch on all of those things, so thank you so much, we really appreciate that presentation.

Seneca Lake Pure Waters Association: So, we'll start off with a question from the chat. One person said, I have noticed a dramatic decrease in muscles, at least zebra mussels, in Seneca Lake in the past year or two. Is that real? Have you noticed it? And do the staff at FLI Prism have any idea on where they seem... on why there seems to be a decrease?

Laurel Williams: I personally do not know the answer to the decrease. I have heard that, though. I have heard the general sentiment that there has been a decrease in muscle activity. I personally am not aware of it, but that is a question that I could ask one of my colleagues, and we could obviously get back to you if you wanted to just drop an email. I could shoot you an email about it.

Seneca Lake Pure Waters Association: Gotcha. I'd like to follow up on that, actually. Now, is the decrease, if there is a decrease, is that potentially tied into the life cycle of the muscles, or is there any...

Seneca Lake Pure Waters Association: Credence to the growing, word of mouth that round gobies might also be taking a chomp out of them.

Laurel Williams: Yeah, round gobies, I do believe they eat the mussels. It could be a give and take, so it's kind of... if you've heard that old sentiment of...

Laurel Williams: like, fox and rabbits, so whenever the rabbit population gets really big, the fox go after the rabbits, and then the fox population gets really big as the rabbit population dwindles, and back and forth. So that similar sentiment, I... and again, this is something that my colleagues would be a little better equipped to answer than I would be, just because they deal really more directly with the muscles, and they're the ones that are doing the point intercept surveys.

Laurel Williams: However, I do know that gobies eat the zebra mussels, but I'm not sure of the exact, relationship, and we personally are not looking into that, but I'm sure people would know a little more than I would, but we're not doing any research right now.

Seneca Lake Pure Waters Association: Gotcha.

Seneca Lake Pure Waters Association: Do you think there is legitimate hope in keeping Hydrilla out of Seneca Lake? That's a question for me.

Laurel Williams: Yes, I... I am a certified optimist, so...

Laurel Williams: Personally, yes. I definitely think there is hope, and that's why I'm here, and that's why I do what I do.

Laurel Williams: Because I think that by building on that public knowledge, and by us having staff out there, and the collaboration I have seen across the region, I think there is legitimate hope that we hope... again, hope that Hydrilla would be able to be kept out of Seneca Lake.

Laurel Williams: As always, could it get in? Yes. There are multiple avenues. It takes one fragment.

Laurel Williams: And if that fragment isn't caught quickly enough, then it could spread, and it could create more, but with the effort that I've seen from the region, I have hope that Hydrilla could be kept out of Seneca Lake. If we all work together, it's kind of one of those things. If we all work together and we're all

Laurel Williams: working on it, and we're aware of it, so... yes.

Laurel Williams: Certified optimist saying yes.

Seneca Lake Pure Waters Association: Good. We're exactly on the same page there.

Laurel Williams: Next.

Seneca Lake Pure Waters Association: question from the chat.

Seneca Lake Pure Waters Association: Let's see, other than reporting aquatic or terrestrial species that are invasive through an appropriate survey, should a community member or landowner ever actually try and take it on themselves? Like, for instance, trying to

Seneca Lake Pure Waters Association: Chop down or eradicate Tree of Heaven or Japanese knotwood?

Laurel Williams: Yeah, so you would... there are plants that you could take on yourself. There's actually a couple on my property that I am eyeing on my target list for next spring.

Laurel Williams: But you just would need to go through the proper avenues, so Tree of Heaven is a hack and squirt method. This is a good example of where if you don't do the proper control method for a species, you could make the problem worse. So, Tree of Heaven, it's like a hydra from Greek mythology. If you chop off one head, it's gonna grow 7 more.

Laurel Williams: So, if you were to just go to town at the Tree of Heaven in your space, like, you know, if you're like, I'm just gonna chop it all down.

Laurel Williams: you're gonna create a larger population of Tree of Heaven. So, you would have to treat it with pesticides, which people can do if you get the certified, application from... and I'm forgetting exactly how you would go about that, but that is something that our terrestrial program manager could point you in the direction for.

Laurel Williams: But my main takeaway for that is do thorough research before you just go out in your yard and start pooling or chopping or...

Laurel Williams: Anything to invasive, because you could potentially make the problem worse.

Laurel Williams: So, just thoroughly educate yourself.

Seneca Lake Pure Waters Association: Quick follow-up, specific to round goby and fish. If you pull an invasive fish, don't put it back in, would be the recommendation, correct?

Laurel Williams: Yes, don't put it back in. But...

Laurel Williams: It's... this is a tricky one, because, you know, it's...

Laurel Williams: the recommended is that you need to euthanize the fish. And that could either be, you know, you could freeze it. Freezing is always an option, but if you don't want to, like, put it in your freezer and take it home, and freeze it that way to properly, you know, do that, you could

Laurel Williams: Smash it with a rock, but yeah, don't put it back in the water.

Seneca Lake Pure Waters Association: Look for a hungry seagull.

Laurel Williams: Yeah, look for Hungry Single.

Seneca Lake Pure Waters Association: Here's a question from, chat. So you guys have, and it's a little more specific, you guys have these awesome rakes that you tie to ropes and toss out to, like, pull Macrophytes back in.

Seneca Lake Pure Waters Association: Is it possible to get more of those, like, specific rakes the style that you guys have?

Laurel Williams: Are they the ones that kind of... I don't know why I call them the shark rakes, but they're silver, and they kind of look like... Yeah, they have white teeth. Yeah, okay, yeah.

Seneca Lake Pure Waters Association: It's a combination of, like, teeth and a hair comb.

Laurel Williams: Yeah, I want to look into getting more, because the reason we'd gotten those is so we could mail them out. They were, like, mailing size, but they work really well, and they're very nice and consolidated for people to use. So, I am gonna look into getting more of those, and if not, then potentially another kind of rake like that.

Laurel Williams: But, we have been working on getting some money to buy more rake supplies. Unfortunately, the way it's shaking out doesn't look like it's gonna come through for this season of the MSP, but...

Laurel Williams: That is going to be incorporated into next year, and we will have more for people to be able to sign out for coming years.

Seneca Lake Pure Waters Association: Gotcha. I have one last question.

Laurel Williams: Yeah.

Seneca Lake Pure Waters Association: What would it mean for Seneca Lake if Hydrilla did come here?

Laurel Williams: If Hydrilla did come there, I think Cayuga Lake would be a really good example to look towards for the response that would be taken by professionals.

Laurel Williams: if Hydrilla were to come to Seneca Lake. So, like I said on Cayuga, we're working with the DEC to treat the hydrilla, so you do treat it with an herbicide, and it is showing to, you know, dwindle some of those hydrilla populations, and we are looking into doing restoration.

Laurel Williams: after the Hydrilla populations have dwindled. So I would say, looking to Cayuga, it's going to be a response pretty similar, with the knowledge that we are learning from what we're doing on Cayuga Lake, and we would be applying maybe some new methods to Seneca. So if Hydrilla were to get here.

Laurel Williams: People would be on it, we would be going out there as much as we could.

Laurel Williams: catching it early would be ideal. So if it were to get here, then us going out and doing our things, but also, you know, regular people, if you see something off your dock that you don't hesitate, don't...

Laurel Williams: Even if you're questioning yourself, it's something that if we catch it early enough, there's a lot better of a chance for us to respond properly to it and get...

Laurel Williams: A controlled area, as opposed to if it just kind of goes unnoticed.

Laurel Williams: Because Hydrilla is more towards the south end of Cayuga Lake, and that has been really helped by the fact that we are actively treating it, people are aware of it, and they know, even going from one end of the lake to the other end of the lake, they need to be mindful of what they're moving from area to area.

Laurel Williams: So, similar reaction to, what's going on in Cayuga.

Seneca Lake Pure Waters Association: Sounds like a multi-million dollar problem.

Laurel Williams: Exactly, and that's where invasive species harm the economy. So prevention is the least costly way of, you know, having invasive species and dealing with them.

Seneca Lake Pure Waters Association: Hmm.

Seneca Lake Pure Waters Association: All right, one chat member noted, on a positive note, Hydrilla has been present for over 10 years, but to date, it is not established in Seneca.

Laurel Williams: Exactly. So, it being here, and us keeping it at bay for this long is, like I said, certified optimist, so whichever person in the chat said that, you know, great mindset alike.

Seneca Lake Pure Waters Association: Yeah.

Seneca Lake Pure Waters Association: But yeah, no, I mean...

Seneca Lake Pure Waters Association: organizations like PRISM, Pure Waters, this is what we're all about, you know what I mean? Like, we want to make sure that the lake remains clean, because it's the drinking water for 100,000 people, so...

Laurel Williams: Yes.

Seneca Lake Pure Waters Association: And the backbone of a tourism industry that is one of the main economic providers for thousands of people in this area, so this is incredibly important stuff.

Seneca Lake Pure Waters Association: Is there anything that you would like to end on before I, end the webinar?

Laurel Williams: I would just say, like I mentioned, I am always happy to talk, I'm always happy to discuss involvement, what you can do, because I... a lot of my programs and my citizen science programs, but

Laurel Williams: My area is where the public can get the most involved, unless you wanted to do seasonal work with us, but this is where you can really take action and do

something about it, so I highly encourage you to shoot me a message or sign up for some of our volunteer things, sign up for our listserv, and keep in contact with Pure Waters too, because like I said, we have been partners for a really long time, the PRISM and Pure Waters.

Laurel Williams: So, we've already got that established connection, and by you guys utilizing that and also tagging into it, it's just...

Laurel Williams: Teamwork makes the dream work, I'll end on that note.

Seneca Lake Pure Waters Association: 100% agree. Like, we're all in this together, and the more that we realize that, the better off we're all gonna be. I loved what you said before about get outside, build communities, help save the lake. Like, that is...

Seneca Lake Pure Waters Association: That is, like, exactly what this is all about, and it's wonderful to see what you guys do, and we love working with you guys.

Seneca Lake Pure Waters Association: So, by all means.

Seneca Lake Pure Waters Association: I would encourage our membership to check out PRISM, and I would also encourage you guys to check out, SenecaLake.org. We needed all the support that we can get from you guys. I say time, energy, and money are all equally valuable to us, so if you were willing to give any of those to us, we are grateful.

Seneca Lake Pure Waters Association: Alright, thank you, everyone. We really appreciate it. Next month, the webinar will be the annual meeting. We'll be streaming that, and then we'll be back to things in October. So, see you guys then. Thank you so much, we really appreciate it.