

Rukmini

Hey everybody, this is Rukmini from NRPA and you're listening to the Guardians of Greenspaces podcast, the show that explores water conservation from a park-and-recreation maintenance lens.

Today we're talking about maintaining natural water spaces with Danny Roop and Kate Harris from Boise, and Lorraine Krzyzewski and Tina Mohn from Columbus. We'll discuss maintenance challenges and solutions for rivers, lakes, ponds, and more!

Could you all introduce yourselves briefly for our listeners?

Daniel Roop

Yeah, I'm Danny Roop and I work with Boise Parks and Recreation. I'm the sustainability specialist there. I've been with the department for about 10 years and I work in a various capacity between maintenance and administration.

Kate Harris

I'm Kate Harris. the water quality programs manager for the city of Boise. In addition to regulatory compliance and sampling monitoring, I oversee a program called Enhance the River at the city of Boise, which includes river restoration projects.

Lorraine Krzyzewski

My name is Lorraine Krzyzewski and I'm the watershed manager with Columbus Water and Power. We are the public utility that provides drinking water to central Ohio, where our source water comes from a system of reservoirs, most of which are open for public recreation. We oversee nearly 10,000 acres of land and water associated with the reservoirs with a focus on safeguarding the water supply. Our reservoirs are cooperatively managed with the Recreation and Parks Department.

Tina Mohn

I'm Tina Mohn with the City of Columbus the Recreation and Parks Department and I have the privilege of being the administrator over our conservation section within our Capital Strategic Planning Design and Construction Division.

Rukmini

Great, thanks for being here with us, y'all. So we're here today to talk about maintenance of natural water spaces for water conservation and water quality. And I just want to start with getting some background on where y'all are and the type of work you're doing.

Daniel Roop

Yeah, I'll start with Boise. So we have kind of three different types of water bodies that we manage in Boise with through parks and recreation. We have the river. And we manage all of the any hazards that are in the river that might hang up floaters. So that's down trees, sometimes other things that find their way into the river, bushes, things like that that might catch floaters as they go down. And then we also have our sort of more swimming forward ponds. Those are ponds that we manage very, very tightly for swimming, and then our more fishing and irrigation forward ponds.

Kate Harris

The swimming ponds that Danny mentioned are attached to the river. The swimming ponds are maintained partially by their flow through nature and the city purchases water to push through those ponds to help maintain water quality.

Daniel Roop

Yeah, and we should mention at the start of this, I think we talked about this a little bit last time, that all of our water in Boise ultimately comes off of the Boise River in various ways, a little bit from some other sources of runoff, but we do live in a semi-arid, high desert sort of climate. All the water is very tightly controlled in Boise.

So any of the water that is coming into our ponds is likely from our irrigation canals, our system of irrigation canals. And then we have some ponds that are down by the river that come directly off the river.

Lorraine Krzyzewski

Here in Columbus, our watershed management team, we are caring for nearly 10,000 acres of land and water that's associated with our drinking water reservoirs. In addition to our maintenance staff who are very active in tree care, all sorts of mowing from the weekly mowing to annual mowing, we have a staff of dedicated water protection specialists or rangers. They're out there interacting with public visitors and they assist with shoreline protection and restoration initiatives to protect our water supply.

So when we're thinking about how best to protect reservoir health, we really see our shorelines as one of the most important areas of focus. We work to surround the reservoirs with a buffer of native vegetation, amateur trees. And this riparian buffer provides many water quality benefits and ecosystem benefits, but we really value the deep roots, which help to minimize the risk of shoreline erosion.

Columbus reservoirs are very popular recreational destinations here in central Ohio and they offer a variety of activities including boating and fishing. And two of our reservoirs are long and narrow. They're essentially wide spots in the river. While Hoover, our largest reservoir, it behaves more like a lake. And because our reservoirs are first and foremost our future drinking water, we are managing them with water quality in mind.

Tina Mohn

From recreation and parks, I'd like to highlight just basically we have over 50 ponds and there's a lot of differences between the ponds. Some are within our golf courses because we have six golf courses. Some of the ponds are more natural spaces acting more as sort of wetland areas but also in some capacity, some of those, in some of the more natural spaces, they're acting like green infrastructure, stormwater management ponds as well.

And we have six to eight, depending upon the season, recreational ponds. And then we have an eight mile, a little over eight mile stretch of water trail on the Olentangy River. That's from one of our, basically one of our parks called Antrim Park south to the confluence in downtown Columbus. And we have some level of maintenance associated with that.

That sort of, that program, the maintenance program for our water trail is more of a volunteer basis in helping with some of the signage, the kiosks, the wayfinding, and there's a level of clearing that we do just to the access in the tributary, the access basically,

ingress, egress for the spaces clear of debris and just keeping invasives out of those spaces. So that's predominantly in terms of how recreation and parks manages a lot of our water systems is pond based, river based. And then like Lorraine mentioned, we co-manage the three reservoirs with Department of Water and Power.

Rukmini

Thanks, y'all. I think it's great when we have, you know, multiple agencies on a podcast and we get to hear how things are similar or different in the municipalities that you all are working in. But something that we've heard that's been consistent across many agencies who are doing maintenance of natural water spaces is sometimes the tension that comes from having these spaces be open to the public, open for recreation, and also trying to maintain for water health and water quality. So sometimes those things go together and sometimes they don't. So I want to ask you all what your experiences have been trying to maintain these spaces, both for recreation and for water conservation.

Lorraine Krzyzewski

I think I can start us out with that one just by talking about how, as we've considered what types of recreation are appropriate for the reservoirs, we always have to evaluate, you know, what is the potential impact that activity would have on water quality or reservoir health, because some activities, you know, such as large boating or jet skis or swimming, they may have impacts to our water supply that might lead to extra sedimentation or erosion or user conflict, or in the case of swimming, if that led to beaches developing along our reservoirs, that can bring in contaminant sources that we really don't want in the water supply.

So from that standpoint, and this is a challenge that we seem to have to think about this challenge every time there's a new type of recreation that's coming to be popular. For example, when wakeboarding became a very popular activity, though we allow water skiing on some of our reservoirs, with wakeboarding, you saw a lot larger wakes and those wakes when they would hit the shorelines could be more damaging and cause erosion in ways that we hadn't seen with water skis. The same with jet skiing and personal watercraft. The way people oftentimes use those, they stir up a lot of sedimentation in the bottom of the reservoir and that is something we don't like to see for water quality.

Kate Harris

I can talk a little bit about the city of Boise. We have, as Danny mentioned, our swimming ponds. We balance those for recreation and we have an agreement with central district health, our health department and also department of environmental quality to monitor for E. coli. And then in the past, we've also had problems with harmful algal blooms.

We have to watch out for those. A lot of the maintenance in the ponds, which have aerators. Danny can talk more about this, but we're not only managing for decreasing the conditions that allow the E. coli or the algae to bloom, but in addition, the ponds are stocked for fish and they are, as I mentioned earlier, a flow through on the Boise River. So we have to make sure, for example, that the ponds aren't a large heat source for our river.

The river is designated for salmon and spawning. So the aerators keep the ponds from stratifying, so we have dissolved oxygen monitoring and temperature monitoring at different levels in the water. We can actually, we're protecting for aquatic life as well. But one of the real balances there, for example, is these temperature loggers are on a chain on a buoy in the river, excuse me, in the pond, and you have to really careful, for example, is somebody going to go swim on the buoy and get caught in the chain.

So we don't leave those out all the time, but it's a, it is a balance. And then one other thing with the Enhance the River program, the Boise has a whitewater park and waves that are used for river surfing. And we also have to have a fish ladder and a side channel for the fish to pass. I mentioned that is a salmon and spawning area.

Daniel Roop

Yeah, those are all really good points, Kate, and I'll just add, you know, back to the theme of managing for recreation and for habitat. I mentioned that the clearing that we do of trees and downed hazards in the river for the floating season, you know, a lot of those types of things make great habitat for fish spawning. So we do try to balance that. Anything that we can leave in the river, we will.

If it's a fully submerged log that doesn't pose a hazard for floaters, we try to leave those in if we can to create that habitat for fish. Also just back to Lorraine's point of sort of managing for erosion, we do a lot of management along the river corridor and along some of our ponds in the riparian area to just manage those user-created pathways and user-created access points. Those are big contributors to erosion along those waterways.

We tried to provide as much adequate access to the river so that people aren't creating those user-created access points, but that's a constant struggle between allowing for recreation on the river while still managing for the ecology of the river.

And just having protocol in place to protect these zones of interest, know, these places that are really prone to erosion, having those protocols written down and adhered to not only by us, Parks and Recreation, but by all the other agencies that have a stake in the river and help with management on the river is really important. So we have a lot of sort of interdepartmental agreements and protocols that we adhere to.

Tina

We have some documents that we use sort of as guiding documents in terms of creating a balance, a structure that we can utilize internally within our department or for utilizing third-party contractors, but also that we can share with external partners, the community and partners to demonstrate because sometimes there's pushback with why didn't we stock the pond or there it looks like there's an excess of debris in the ponds.

And sometimes we're using those things to Danny's point as habitat, or we're not stocking the pond because a certain level of our maintenance demonstrated that maybe the levels in the water were adequate to sustain an additional stocking of fish. So the community is really engaged in terms of the fish stocking and of the six to eight that we utilize more for recreational. There's an expectation there, right? So we have to we have to kind of manage the expectations as well. And I think our documents that we have internally help with that.

The other aspect I think that Kate and Danny both mentioned were the health of the ponds by way of oxygenation and supplying these aerator systems or bubblers or in some cases we have some fountains. They look aesthetic and then they get clogged and then doesn't look so great. There's a level of maintenance that we utilize that has to do specifically with more of the infrastructure pieces and that's something that we like to try to share out with the community as well in case it's again back to: why isn't there this certain level of recreational opportunities that exist? So the external messaging is a really important piece of what we're doing as well.

Lorraine Krzyzewski

I also wanted to add that here in Columbus, our reservoirs are large enough that we can support public marinas as well as private docks. And we like to see the recreational boaters as partners in the protection of water supply. I think when the boaters can value the reservoir and the reservoir health, whether they are drinking Columbus water or not, they can see how everyone plays a part in protecting the waterway.

They can be eyes and ears for us when they're out there on the water noticing things that we might be concerned about. And we have recently received a designation as a clean marina, which is something that Ohio Department of Natural Resources. It's a program that they run and it really recognizes Columbus for the things that we're doing to protect water quality and the way we maintain the reservoirs. But also it provides boaters with opportunities to learn how they too can impact waterways through their boating activities, whether it's being very careful when they're fueling their boats, protecting from trash blowing away, and just the ways that boating can impact water quality.

Rukmini

It's interesting to hear you all say community engagement is such a big part of this process because that's something that's come up for us again and again as well. And so I think here you're positioning community engagement as a solution to some of the issues that are coming up.

And so I do want to ask more broadly about what are the other maintenance challenges you all are seeing as you're maintaining these natural water spaces. I think several already came up, but I want to open the floor to hear about the other maintenance challenges you're facing and how you're approaching solving those.

Tina Mohn

I can start with this one. More specifically, I guess, geared toward the waterway challenges that have come up. Large woody debris becomes an issue for us navigating water, but also navigating the access points to the waterway.

That's been something that because the Olentangy River runs through several municipalities, it could be a county, it could be city, it could be state, it could be private. So it depends on the section of the water trail that could be specifically impacted. But generally, I guess a barrier that we have literally and figuratively is who's in charge of maintaining if something like that happens. We've been learning more and more that usually the lift is kind of a multifaceted municipality. Everybody's kind of trying to do their part to help clear some of the impassable spaces.

Lorraine Krzyzewski

So around the reservoirs, as I mentioned, we do like to maintain a healthy vegetative buffer that includes native plants and mature trees because of the root systems, as well as the function of that buffer in filtering the stormwater runoff and surface water runoff that's coming from nearby developed areas.

So we realized that as people want to come to the reservoirs to enjoy them, and we have over 75 designated public access points around the three reservoirs, some of those access points over the years we realized were not very well designed from a water quality perspective. The parking lots were right up on the water's edge, and I'm sure the people coming to boat and fish didn't mind that, not far to walk, but for us, that didn't allow a sufficient place to have a healthy vegetative buffer. So we started pulling back those parking lots and really rethinking the design of our public access points.

But as Tina mentioned, wanting to get to the shoreline, we realized that if we didn't create and mow designated paths, people would make their own. And I think these actually have a name, they're called desire paths, where people kind of wear down a trail. And so we had to think about how people access the shoreline and create those access points in spaces where we knew they would be used.

Daniel Roop

Another thing that we do, coming back again to the design of the ponds, is anywhere we can, providing flow through of water, and we've touched on this several times, but having the water flowing through the ponds and just having that flowing water through the ponds is huge and maintaining just a healthy pond. It helps with the temperature. It helps with decreasing the frequency of algal blooms and things like that. So it really does increase the overall health of pond if you can maintain that flow through, whether they're stocked or whether fish sort of find their way in naturally to those ponds, the depth of those ponds plays a huge role in the temperature that they maintain in the summertime.

So we do, you know, in many of our ponds, we'll need dredging on a semi-regular basis to maintain that depth. They get sedimented in over time. And if we don't maintain that depth and that temperature control of those ponds, it results in large fish kills at those ponds which is undesirable for us and for users of the parks, whether they're fishing or not.

Lorraine Krzyzewski

Something I wanted to mention too is that it seems like we're always struggling to right size our parking here at the reservoirs. We know as Columbus is a growing city, there's more and more demand to come to the reservoirs. And if you don't provide enough parking, people are creating their own and they're parking in the grass and that can lead to erosion. So we've started to consider things like pervious parking where we can add additional parking space without contributing to the effects of impervious [parking] and how that increases our stormwater and decreases water quality.

Rukmini

Something I really want to move us into is this question of geese. Because I think it came up several times in the conversations we had with several agencies. And I know some of y'all are doing something pretty cool to try to mitigate the issues that come with geese. So what are y'all's maintenance approaches to having just too many geese at your natural water spaces?

Lorraine Krzyzewski

Several years ago, Columbus was dealing with an overpopulation of resident Canada geese. Resident meaning they weren't migrating. And we really were seeing a lot of environmental degradation associated with this large population, both from the messes they were making as well as just how much they were eating the vegetation we were trying to establish along the shorelines. So with the playground nearby and a multi-use trail, we just saw that we had to do something to try and curtail that.

So we worked with our Department of Natural Resources and obtained a permit to do egg-addling in the spring. And so that's become a regular practice of ours every spring is to train staff to addle eggs.

We realized a lot of geese were congregating along with other waterfowl because people were feeding them. So we worked with our staff to develop some brochures and signage to help people understand that that feeding was not beneficial for the waterfowl. In fact, it was the opposite.

We also made some changes to our landscaping. The short turf grass was very attractive to the geese. So by allowing some areas to grow up into taller vegetation, the geese don't like that. They can't tell if a predator might be hiding in there. So allowing the taller vegetation around the water bodies really also helped diminish the attractiveness of habitat for the geese.

Tina Mohn

And then within the ponds themselves, we do a lot of the harassment techniques. We generally hire a contractor that will come in with a dog. Usually that's the technique that they use and they'll harass the spaces once or twice a week and randomly because then the geese aren't used to when they're coming. But like Lorraine said, the trouble with some of this is they're resident geese populations, so they're used to being here and they'll just go from one water body to the next. So we're really just displacing them.

Adding obviously can have a bigger impact with that, but generally again, because of just the, I guess the oversight of and the eyes and ears that are on our ponds in such an urban setting, unlike some of the spaces at the reservoir, we're just not able to do that as often as we'd like. So we rely more on the nuisance disturbances, like a dog or something like that.

Daniel Roop

Yeah, I'll just echo what Lorraine and Tina said. We also in Boise struggle with the resident Canada goose population that we've been struggling with for years. They definitely do, you know, they are a large contributor to sort of nutrient load on our ponds, which is, you know, detrimental, especially to our swimming ponds. One thing that we do in Boise that I haven't heard mentioned yet is on several of our parks along the river, we open those up seasonally, during the winter, to dog off leash.

So just for the public to come in and have dog off leash hours at the at the park. That's because we have you know, we have less programming in the wintertime and we just see those huge populations of geese out there in the wintertime on the short turf areas as Lorraine mentioned. It is a very popular program, having those areas open seasonally for dog off leash. And it's kind of a crowdsourcing, you could say, of the hazing that we do.

We've also used lasers, both handheld for our staff to use, and they were most effective in the early morning hours before the sun comes up, because the geese can really see that laser dot on the water, and it spooks them. We also have trialed some water surface mounted lasers. They're kind of on a floating platform, and they spin and project a dot on the shoreline and had some success with those as well. So we've tried a few different iterations of the lasers.

I would say, you know, I do agree with Lorraine and Tina. All of the hazing that we do is kind of just moving the resident population from one park to another. So it's kind of just controlling where you want the geese. It's not a long-term solution.

Rukmini

Before we move to our last section here, do want to ask about controlling algal bloom. So Kate mentioned it early on, talking about the aerators and how they support trying to mitigate harmful algal bloom. But I do want to ask if there are other maintenance protocols that you use for that specific purpose.

Daniel Roop

Yeah, absolutely. So we do have those aerators. We have a couple of different types of aerators in some of our ponds. We have the traditional sort of surface aeration looking like the big fountain on top of pond. We also have diffuse aeration in our swimming ponds that we've used. And those are pneumatic tubes that go down that are at attached to the bottom of the pond and bubble up water so they sort of aerate the entire stratus of the pond. Those do help with controlling for algae. Like I said, having the flow through, we've, in the case of our swimming ponds, we've redesigned those to have greater flow through that helps control for algae.

Tina Mohn

Having a fish population and macroinvertebrate population also helps with that. Depending upon, know, some of the algal blooms are obviously poisonous to those macroinvertebrates and fish as well. That also can pose an issue. But when all else fails, we do have a contractor that can come chemically treat. And we also have staff on board that are aquatic applicators that can help as well with some of those treatments.

Having a contractor come in once every two weeks to check levels has been extremely helpful. And if we need to, we have the flexibility to increase that. We do get into those extreme heat situations where the water starts heating rapidly and there isn't enough coverage in some of our ponds to sort of combat that in the water. And sometimes they can see that it's on the horizon, that there could be an increase in algal population, algal bloom populations, and they sort of give us the heads up.

Rukmini

Great. I think there have been several themes that have come up over and over again through this conversation, both in Boise and in Columbus. So I want to wrap by asking you all about best practices. If there are one or two principles or takeaways that you want people to leave this conversation with around maintaining natural water spaces, what would those be?

Tina Mohn

I can speak to, generally in terms of our volunteer groups, we have several friends of groups that are established within our waterways that continually help. They're stewards of the waterways, stewards of the greenway trails, students of our park systems and with over 1500 acres of parks and over 438 parks themselves, we rely heavily on volunteer base.

When it comes to the storm water, or I'm sorry, when it comes to the water quality aspects of things, we do a few different programs. And because they're already attuned to water quality aspects, because they're these already established volunteer groups, we're able to curtail some things like some of the erosion, some of the litter within the spaces. I would guess that most folks would say as our populations are growing our park should be growing our waterways should be growing our pond should be growing and in doing that and that requires another level of participation from the organizations .

Lorraine Krzyzewski

As Tina mentioned, something that we have going on around the reservoirs is called the Land Stewardship Program. And it really is designed to work with residents who live adjacent to the city-owned reservoir shoreline. We realize that people want to access the reservoir, maintain a path, and possibly have a boat dock. So this program really evaluated what are the best practices for managing a shoreline.

And it's told us that we really want to try and reduce the impacts to that riparian ecosystem, that the native natural vegetation and mature trees does so much to protect our water quality that we really want to be cautious about the number of paths or the spaces that we're reducing that by allowing mowing or other disturbances.

And we've seen just in retrospect that when land is disturbed, it often opens the door for invasive species, whether that's honeysuckle or tree of heaven or other species that then become a battle to try and get that under control. So it's something that you can prevent that from being disturbed in the first place. That goes a long way.

Second of all, we realized that people like green lawns, but the use of herbicides and nutrients is not really compatible with water quality. So we prohibit that on city property, but we really try and encourage greener ways of maintaining lawns and landscapes. And the city has a program that deals with this on a large scale through our stormwater program, but really it's some of same principles. Reducing the chemical usage around the reservoir keeps us out of the water, keeps it out of the waterway to begin with, and that is often the food that can lead to algal blooms and things that then have compounding issues with water quality for both our recreational users and drinking water treatment.

Daniel Roop

I would say, as far as another takeaway, again, just trying to create-- any time that we have sort of a static pond or traditional irrigation pond where it fills through the canal system and then you have a drawdown cycle during irrigation, things like that.

Those are our ponds where we see the most issues with algae, with bacteria in those ponds, and with heat of the water column. So creating the more, what do we have to do to create a flow through of water? In our case, it's creating agreements with the irrigation companies or with the water master for the river to not only have the supply of water, but also have water going out into a drain or back into the canal or back into the river to create that a good flow through of water. And just the collaboration that's required to get those agreements in place, collaboration in our case with other departments or companies that work in and around the water in Boise is hugely important.

So maintaining those relationships and good communication because the maintenance of water, I would say this is universal, never, you know, never falls to a single organization. It's always many different organizations at many different tiers of municipal, on up to state and federal level. Maintaining those good relationships and communication I think is key.

Rukmini

Thank you Tina, Lorraine, Kate, and Danny for sharing your expertise on maintaining natural water spaces. Check out our other episodes on water conservation tools, including a two partner on green infrastructure, on Guardians of Greenspaces. We appreciate everyone listening and reminder— answer our key question and you could win a \$50 NRPA store gift card!

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