

## **Making Waves Episode 42**

### **Burning to Beautiful: The Cuyahoga River's Recovery**

[intro]

Hello, my name is Susan Washko, and welcome to Making Waves, brought to you by the Society for Freshwater Science.

Many of you may have heard of the Mistake on the Lake, or the incident of the Cuyahoga River catching fire in 1969. Infamous for its industrially polluted condition, the Cuyahoga sparked public outcry, leading to the passing of the Clean Water Act a few years later. June of this year marked the 50<sup>th</sup> anniversary of the burn on the Cuyahoga River, and the river has come a long way. The organization American Rivers even named it the 2019 River of the Year! I wanted to dive into the details of the river and how it has recovered in the last 50 years.

First, just a little bit of background—the Cuyahoga is around 80 miles long, and flows in a U-shape around northeast Ohio and then into Lake Erie. Along the river are wastewater treatment plants that discharge treated effluent into the river, drinking water reservoirs, agricultural fields, industrial complexes, a large metropolitan area, a public parks system called the Cleveland Metroparks, and the Cuyahoga Valley National Park, among other land uses. This means that the number of stakeholders in the river is really high, which can complicate management. I reached out to three Cuyahoga River experts from different aspects of river management—one with the national park service, one with the Cleveland Metroparks, and a PhD student at Kent State University—to learn from them how the river has recovered, how the different parks are involved with the river, and what kind of research is being done to learn about the modern water quality issues the river is facing.

My first interview was with Maureen Finnerty, the Strategic Action Plan Coordinator with NPS at the Cuyahoga Valley National Park to give us a history of the river and a glimpse into the future.

#### **NPS @ CVNP**

1) What has happened to the river since it burned in 1969?

The Cuyahoga burned thirteen times since 1868. Since that last river fire in 1969, and even before then, the Cuyahoga has been going through a transformation of sorts. The recovery and restoration of the Cuyahoga River gained significant traction with the election of Carl Stokes, who was the first African American mayor of the city of Cleveland. Following that river fire on June 22<sup>nd</sup>, 1969, Mayor Stokes led a local press tour to the location of the fire, as well as to the industrial sites and sewers that contributed to the pollution that caused the river fire. From there, the Cuyahoga gained national attention as the 'river that burned,' but in Cleveland, efforts were already underway to improve the sewer systems and curb pollution. The establishment of the environmental protection agency in 1970 and the passage of the Clean Water Act in 1972 were two landmark events that helped improve the quality, not just of the Cuyahoga River, but all

waterways across the country. Local efforts included the establishment of the Northeast Ohio Regional Sewer District in 1972 to address the sewer infrastructure, and since then, along the entire length of the Cuyahoga, efforts have been made to reduce erosion and sedimentation in the river, curb point source pollution such as sewer overflow, and to improve the agricultural and industrial practices. Large-scale restoration work within the watershed has also been part of the recovery and transformation effort.

2) What role has the National Park played in the river's recovery?

Following on the heels of the establishment of the EPA in 1970 and the passage of the Clean Water Act in 1972, Cuyahoga Valley National Recreation Area, which was later renamed Cuyahoga Valley National Park, was established in 1974, which would protect 26 miles of the Cuyahoga River between Cleveland and Akron. When the park was established, mining and agriculture had impacted the land pretty significantly. Hazardous waste sites needed to be remediated, and exposed soil was eroding into the Cuyahoga and its tributaries. Since its establishment, Cuyahoga Valley has taken on the remediation of those hazardous waste sites, most notably the cleanup at the Krejci dump site and the Jaitte Mill site. The park has also been working on large scale revegetation and invasive species removal projects. The increased forest cover helps maintain water temperatures in the Cuyahoga and its tributaries, which is important to improving fish habitat. The vegetation also helps reduce erosion, slowing down rainwater and reducing the sedimentation in the river. The park has also been monitoring water quality and working on projects that improve water quality for the natural resource benefits, but also for recreational users. More recently, the park has also been a regional supporter and a strong voice for the health of the river. In 2017, the park joined the advisory committee for the Great Lakes Area of Concern, and defined action items to help a broader effort to de-list the Cuyahoga River from that Area of Concern.

3) What are some future goals the park has for continued improvement of the river?

In 2016, the park aligned its work around a strategic action plan focused on the Cuyahoga River becoming a national and international symbol of renewal. That work involves efforts at all levels of the organization on both large and small scales. The park will be working with partners like the Army Corps of Engineers, the Northeast Ohio Regional Sewer District, and the Nature Conservancy to identify and implement large-scale habitat and streambank restoration projects over the next 5-10 years. In 2019, the Brecksville Dam will be removed, which will greatly improve water quality for both natural resource benefits and for improved recreation. The park is one of ten managing partners on the soon-to-be-designated Cuyahoga River Water Trail, which aims to improve river access and information for paddlers and anglers and other river users. It's a really exciting time for the future of this river that has come so far in the last 50 years.

4) What does the river mean to the greater Cleveland community?

The Cuyahoga River has always been a part of the history of northeast Ohio. Historically, it fed the canals that brought industry to what was known nationally as a hub of

innovation. Following the canals, the river continued to fuel the industrial growth and progress in Cleveland and throughout its valley. Since the final fire in 1969, the river has come to symbolize renewal and progress in a new way. There has been innovation even in its recovery with partnerships and scientific endeavors and community involvement and activism. Far from fueling jokes about the dirty river, the Cuyahoga is now fueling tourism, recreation, and an increased sense of pride in this beautiful working river. Going from the river that burns to now watching rowers and stand up paddleboards in the shipping channel, fly fishing and kayaking in the once highly polluted section within the national park, and increased use throughout what will be the entire Cuyahoga River Water Trail, is something about which all of northeast Ohio should be proud.

My second interview was with Jennifer Grieser, the Director of Natural Resources for the Cleveland Metroparks. She told me about what the Metroparks does for the river's continued recovery.

### **Metroparks**

1) What role has the Metroparks played in the river's recovery?

The role of Cleveland Metroparks in Cuyahoga River recovery has been interesting to see how it's sort of changed over time. Certainly the last burning, in 1969, there was a lot of industrial contamination, and that wasn't caused by Cleveland Metroparks, more just that we're trying to be good stewards of the land. It's interesting for me to even look back before that last burning of the river our founder of Cleveland Metroparks, our founder, William Stinchcomb, really had this ethic towards water quality, and I just kind of looked up a quote recently from one of our Emerald Necklace, it's just kind of a communication tool, a newsletter basically that goes out throughout the park district, and it's from the 50s, and it if it's ok for me to read a little bit from that, he writes, "Since the beginning of Cleveland Metropolitan Park System [that's our original name], it's been the practice of the park board to take samples of water from the rivers and principal creeks traversing the system. Over the years the trend has been towards a gradual worsening condition of the waters. With the increase in home building and industrial development, this was to be expected, particularly when the building of sewers and sanitary disposal of domestic sewage and industrial waste has not kept pace with the expansion of the homes and industry. [Now here's the really good part of the quote.] This lakefront and our rivers are great natural resources, provided the water can be kept reasonably pure, and are one of the greatest assets to a natural park system. Polluted they become not only unsightly nuisances but are health hazards. Here then is a community job of great importance." And I just love that. That's actually from our founder. So then fast forward to where we are now, and I see our role of being good stewards, helping other people be good stewards by all kinds of programming about watersheds, and water quality, and streams and wetlands. We have a watershed volunteer program that really gets people engaged in doing that work, so those are kind of all overarching ideas, certainly we do stream restoration projects, stormwater retrofit projects, things that are going to improve water quality across the board.

2) What are the challenges to managing a river that has so many agencies and stakeholders involved, such as townships, counties, NPS, Army Corps of Engineers, EPA...?

The challenges in having so many stakeholders involved is really stemming from each organization and what are their priorities, how do we help make priorities match, and different entities just simply work on different timelines. Some have expectations of turning around an answer within a week or two, whereas another entity, it may take them maybe a month or more to get that same answer just because they have to work through different channels of communication, different levels of autonomy with the staff. I chair the Cuyahoga River Area of Concern Advisory Committee. We have 25 different members; a few are members of the public, and then every one else, they range from representing private industry to local government, nonprofits like watershed communities, and so they each have different levels of autonomy. Some are in the upper management for their organization, so they can access data easier, or they can ask staff to do certain work to get things done, whereas other people may not be in that same level of their organization, so they have to run it through channels, and that takes time. So I think it's just kind of understanding where each entity is coming from. Some of the other things I thought about is just also that we have different strengths. And I think that's where we can overcome those challenges is really to focus on each other's strengths and bring those to the table instead of worrying about the challenges.

3) What are some future goals the Metroparks has for the river?

Some of the goals that we have for the Cuyahoga River are to really continue this great momentum that we have here. Fifty years after the last time the Cuyahoga River burned and we've come so far, and we just want to continue that positive movement. We want to continue to acquire land where it makes sense. We currently manage over 8,375 acres in the Cuyahoga River watershed, and actually maintain land along 5.3 miles of the river, so those are great ways for us to just demonstrate that good stewardship of the land. We want to continue the connections that we've been focused on, pedestrian and bike trails, like the Ohio and Erie towpath, making connections up to the lake. Also, waterway connections. We're really involved with the Cuyahoga River Water Trail, and the Lake Erie water trail, and so supporting those initiatives. Just to make sure that the more people that are engaging with the river, the more likely that people care about it, so they'll want to keep it clean. The park district has been supporting my participation with the Area of Concern, and it's this broad Great Lakes-wide program that was set up by the US EPA through Great Lakes Water Quality Agreement, back in 1987, so the Cuyahoga River is one of 43 areas of concern. So, ultimately, we would like to get it removed from this list. We want to get out of detention and back into class with all the high-performing students, or in this case, rivers. Kind of a near-term project, which is sort of fun, is we received 1.6 million dollars, grand dollars, to establish public boat docks along the river. So that's really exciting, because that will be the first set of public boat docks for people to utilize. And then certainly continuing to look for restoration opportunities and rehabilitation opportunities along the river or any tributaries leading to the river.

4) What does the river mean to the greater Cleveland community?

It's been so exciting to be here in Cleveland, at the anniversary of the last time the river burned, and just to see how many people were interested, engaged, and so I would really just say that the river has become a great source of pride for the greater Cleveland community. Instead of being the butt of jokes, or something we turn our back on, it's really something that people want to be around and recreate on and so I think that just speaks volumes to all the efforts our predecessors have done.

My final interview was with Kent State PhD student Sayoni Dutta, who researches water quality issues in the Cuyahoga River.

### **Sayoni**

1) It's been 50 years since the river burned, and the water quality has come a long way. What are some current/modern water quality issues the river is facing? What are some future goals for the river's health?

One thing that I'm working on is pharmaceutical and personal care products (aka PPCP), and I'm actually sampling in the Cuyahoga River currently, particularly in the wastewater treatment plant that actually is situated on the Cuyahoga at Kent. So I think some of the water quality issues that the river is facing right now, one would definitely be the PPCP increase. Even though it's from the wastewater treatment plant, it's actually going to the river, and that's how it's a source for many drinking water treatment plants as well. So that of course is something that's an issue. Apart from that, it shows that often the Ecoli concentration increases after a heavy rainfall, so that is also something that the people in and around the Cuyahoga are trying to mitigate. And of course last but not the least is going to be the cyanoblooms, which is actually really prevalent in Lake Erie as well, but also prevalent in the Cuyahoga River. Mainly it's coming from the agricultural runoff and the untreated industrial wastes. Apart from nitrates, phosphorus is also what people have been using as fertilizer these days, so these are some of the issues I think.

2) What research is currently happening to investigate modern water quality issues?

So one thing that I'm currently working as I mentioned earlier was the PPCP mitigation. Right now, what I'm finding from my study is that the concentrations of PPCPs are much lower, even in the wastewaters, but this is not going to be the same if this keeps on increasing over the years. In another ten years maybe it's going to be not in nanograms per liter but micrograms per liter. So that is something people should definitely consider, especially if it has things like sulfametoxazol, like an antibiotic, or even hormones like estrin or estradiol, they should definitely consider that when it comes to the Cuyahoga River. Another thing is that like I mentioned, the Cuyahoga River is having issues with the Ecoli concentrations currently. The stormwater is actually why the Ecoli concentration increases. It is also what causes excess pollution loading. So, they are trying to check stormwater with the use of the smart aqua meter, and also use citizen science. Citizen science is an important aspect right now with different projects right now where people are being involved even if they are not in the field of science, and they have

these apps that can actually help them monitor the stormwater in different places. That is something that many people are trying to apply. Even a lot of projects at Kent State are involving citizen science. Another thing is of course with the Ecoli a lot of antibiotic resistant bacteria are increasing in the Cuyahoga. Even a part of my project actually involves antibiotic resistant bacteria and to see if we have a lot of it in the source water and how to control it.

4) How can what we learn from the Cuyahoga be applied to other bodies of water?

So my project on the PPCP is focused only on Northeast Ohio, but however, it's not only aimed at improving the water quality but most importantly the drinking water as well. So similar studies have indicated that whether it's a river or it's a lake, there have been some form of PPCPs in Europe and in different parts of the United States. It could be anything from an analgesic, a stimulant, or an antibiotic, or even any form of hormone. So this is not just an issue in Northeast Ohio or Ohio itself, it's a global issue, so we are just a piece of the puzzle. So, in order to improve the overall water quality, we need to contribute to the global body of research by actually looking into PCPPs because this is something that is going to be a really important form of research in the next few years.

This truly is an exciting time for northeast Ohio and the Cuyahoga River. As a girl who grew up on the banks of the Cuyahoga, I'm really proud of what our community has achieved, and I can't wait to see what happens in the next 50 years.

[outro]