



Musconetcong River News

Summer 2021

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Asbury, New Jersey

Microplastics in the Watershed

By Sam Johnson, Water Quality Field Specialist

While plastic pollution, such as bottles and bags littering our watershed, are easy to spot, the plastic pollution present in the Musconetcong River goes beyond what the eye can see. Smaller than 5 mm in size, microplastics are plastic pieces that can generally only be seen with a microscope. Because of their small size, finding microplastics in the environment often requires extensive sampling and analysis procedures. Microplastics are an emerging environmental concern, but up until recently, there has been little investigation into microplastics in the Musconetcong River.

As a student at Centenary University, MWA's Sam Johnson sought to determine how microplastics are distributed in the sediment of the Musconetcong River. In early 2021, she began her own research project at Centenary University with support and guidance from Dr. Julie LaBar, assistant professor of environmental science at Centenary University and MWA Trustee, and funded by The Independent College Fund of New Jersey. The primary goals of her project were to establish a standard operating procedure for the University and a preliminary data set for microplastics in the river. Sam sampled two sites on the river in Hackettstown and Asbury. After processing sediment samples and performing chemical analyses to separate microplastics from natural organic material, microplastics were able to be classified and counted under a microscope.

From this, it was determined that there was 379 ± 50 and 264 ± 68 microplastic pieces per kilogram of dry sediment in sections of the River in Hackettstown

and Asbury, respectively. The dominant microplastic type present in these sediment samples was fibers, which was expected due to their prevalence in waterways. Polyester fibers from clothes exist in wastewater from washing machines and cannot be effectively removed from wastewater treatment facilities, meaning they are released into streams.

This summer, four environmental science students from Centenary University joined Dr. LaBar's research team to continue looking at microplastics in sediments of the Musky. These students have collected sediment samples both above and below the remnants of the Beatty's Mill Dam in Hackettstown to determine if a gradient in microplastics concentrations in sediments exists. MWA has taken an interest in this research due to its applicability to water quality and overall stream health. Specifically, MWA is interested in how microplastics are situated in the sediment behind dams. As dam removals proceed, it is important to understand what will be released downstream.

So far, the microplastics research happening in the Musconetcong River has only looked at how many microplastics pieces are present in the sediment. Future studies may investigate the overall fate and transport of microplastics in the stream, including the origin of these plastics, their chemical compositions, and their impact on organisms in the stream.

Unfortunately, efforts like MWA's



Sam Johnson and Craig Fleming collecting samples upstream of Beatty's Mill Dam.



Michela Sales and Anthony Ranaudo collecting samples downstream of Beatty's Mill Dam.

Annual River Cleanup will not rid the River of microplastics, but individuals can help prevent the introduction of microplastics into the Musky by choosing to use products free of microbeads and other plastic chemicals that can be washed down the drain. Avoid fabrics like nylon, polyester, and Lycra, and instead look for clothing made from natural fibers like cotton, wool, hemp, modal, and viscose. Overall, limiting plastic usage of any kind ensures that less plastic waste ends up in our rivers and streams. ♻️

MUSCONETCONG WATERSHED ASSOCIATION

PO Box 113, 10 Maple Ave.
Asbury, NJ 08802

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www.musconetcong.org

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Welcome, Annie!

Annie Polkowski grew up in Northeast Pennsylvania and Northwest Indiana and spent a great deal of time on the water. Whether precariously wading in the Delaware or fishing for steelhead with her dad in Lake Michigan, most family time was spent exploring outside. Influenced by her parents' love of the outdoors, she attended Northampton County Junior Conservation School (NCJCS) both as a camper and as a counselor, gaining a deeper appreciation for a career in Environmental Science.

Her educational background is in Engineering and Environmental Studies, and she recently completed a Master's Degree in Water Resources Engineering from Villanova University. This interdisciplinary background encouraged Annie to seek a career where she could help solve complex water resources issues that often draw on many fields of expertise. She's excited to be joining a team where a variety of skill sets and approaches are applied to address threats to sustainable water resources management..

Most recently, Annie worked as a Watershed Specialist for the Monroe County Conservation District, providing technical assistance to a diverse group of



Annie Polkowski

watershed organizations in the Pocono region of Pennsylvania."Prior to that, she was employed with the City of Philadelphia's Office of Watersheds working with the City's Green City, Clean Waters program to maintain the City's new green stormwater infrastructure installations.

Outside of work, Annie is excited to soon become a partial owner of her family's farm, where she intends to "practice what we preach" by implementing better conservation practices on the farm. 🌱

Welcome, Kenzie!

Kenzie Smith is excited to lead Camp Musky this summer (2021) as our Camp Counselor! Kenzie is a 2020 graduate of Gettysburg College with a Bachelor of Science degree in both Environmental science and Public policy and a minor in writing. With multiple years of summer camp and after-school care at the YMCA, and tutoring experience through her college, she has consistently demonstrated her competency for educating and entertaining young minds. She looks forward to further developing a sense of curiosity and environmental stewardship in the campers through educational activities, crafts, and games that make learning fun!

Following this camp year, Kenzie is excited to continue her environmental work in her new position with the New Jersey Department of Environmental



Kenzie Smith

Protection as an Environmental Services Trainee with the Bureau of Case Management in the Site Remediation and Waste Management division. 🌱

Volunteer Spotlight: Jesse Bardwell

Jesse Bardwell is a new friend of the MWA, but an old friend of the Musconetcong River. He began volunteering with us earlier this year and is already involved in multiple programs, including trail maintenance and MWA's water quality monitoring program. We are so grateful to have volunteers like Jesse and look forward to working more with him in the future!

How did you first learn about the MWA?

I first learned of the MWA as a youth growing up in the Hackettstown area. However, it wasn't until I started guiding on the Musconetcong, more recently, that I really began to understand and value the incredible work that the MWA does. And it takes volunteers, a lot of them, to maintain the quality of river water and river resources we are accustomed to today.

What have been some of your favorite MWA projects to work on?

I really enjoy data collection from the river. Learning critical skills to evaluate water conditions, studying their effects on the local ecosystem, and more specifically, monitoring for the presence of harmful algal blooms (HABs), makes me feel like I am doing my part to give back to the river that gives so much to me.

What advice would you give someone looking to volunteer in their community?

If I had any advice for someone looking to become a volunteer with the MWA, it would be, "Do it!" There are opportunities to get involved for everyone of all ages and skill sets, from trail work to nature walks. Building relationships and working with



Jesse Bardwell

like-minded individuals looking to do good in the community is a win-win for everyone!

If you are interested in joining MWA's volunteer program, visit our website or reach out to Ryan Jiorle, Community Engagement Coordinator, by emailing ryan@musconetcong.org. 🌱

MWA Educational Trail Gets New Bridges

By Ryan Jiorle, Community Engagement Coordinator

Over the past few months, MWA volunteers have been hard at work replacing 3 wooden footbridges along the MWA's Educational Trail in Asbury. Luke Kluthe, along with his father and MWA Trustee, John Kluthe, worked with BSA Troop 191 to make the upgrades as part of his Eagle Scout project.

To complete the job, they used pressure-treated lumber as the bases of the bridges, with native red oak lumber for the crosspieces. The lumber was cut locally at Creveling Sawmill in Harmony Township.

With 2 bridges measuring approximately 12 feet in length, and the third measuring approximately 16 feet, this was quite the undertaking for Troop 191. The 14 volunteers spent 67 hours in all to cut the wood, construct the bridges, and install

them in their proper places.

These bridges now provide safe passage across the 3 biggest gaps in the main loop of trails adjacent to MWA's River Resource Center. Thanks to their efforts—along with the efforts of other MWA volunteers—the Educational Trail will be ready to serve visitors as well as the children who attend Camp Musky. MWA is very grateful for Luke's efforts, as projects like this show how important volunteer contributions are to the MWA's work in the Musconetcong Watershed.

If you would like to learn more about volunteers at the MWA, email ryan@musconetcong.org. 🌱



Luke Kluthe stands in uniform on one of the repaired bridges.



BSA Troop 191 relaxes on a repaired bridge along MWA's Educational Trail.

Safety Advisory: Avoid Changewater Section of the Musky During Pipe Removal Project

In our Spring Newsletter, MWA provided an update on working with Chevron to remove unused pipelines from the Musconetcong River. While these pipelines were originally installed to bring oil from Central Pennsylvania to Bayonne, NJ, they now sit unused in the River and can impede paddlers at the Changewater section of the Musky..

Depending on weather and water levels, by mid-August, Chevron is planning to remove these pipelines that sit between Lebanon Township, Hunterdon County, and Washington Township, Warren County. This project will be conducted approximately 1,500 feet downstream of the Changewater Road Bridge and will take several weeks to complete.

For the safety of the public, MWA and Chevron are asking recreationists to avoid this section of the River in Changewater during the project work.

Signage is being installed at access points along the river that are nearest to the project site. For safety reasons, those planning to visit this area of the Musky during this time should expect to pull out no later than the Changewater fishing access. Downstream river journeys are recommended to begin at Hampton Borough Park.



For a map of other spots to safely access the Musconetcong River for fishing or paddling, visit MWA's website and download the online Water Trail Guide. 🗺️

The Great Waters of New Jersey

By Alan R. Hunt, Ph.D., Director, Policy and Grants

People just love to fish, tube, paddle, and take in the views of the Musconetcong River, and other rivers in our part of the state. But those values are not always part of how important land use and water quality decisions are made by local and state agencies. Connecting recreation to the protection of the water quality that supports recreation — and our region's tourism economy — is the goal of the newly launched Great Waters initiative.

The initiative adds capacity to MWA and regional partners to maintain water quality. MWA is often called upon by members, residents, and Musconetcong River Management Council representatives to discuss development applications. When we look into them, there are two main questions: 1) Are there potential impacts to water quality? and 2) Does the application follow the rules for protecting water quality? If a project is along the Musconetcong Wild and Scenic River segments, we consult with the National Park Service and follow the guidelines in the Wild and Scenic River Management Plan.

Since about 2015, there was an uptick in development applications, and many were from the industrial sector — something new for MWA. These have ranged from a natural gas power plant, a groundwater discharge sewer system, a quarry being reactivated, a solar farm on a former industrial site, and projects with stormwater basins near the river or its tributaries. Many of these have the potential to impact water quality. The applications are detailed, and require a review of the local and state regulations to ensure compliance. Doing these reviews right often means there are discussions in between the public hearings with local officials and the applicant to iron out issues. All of this was starting to add up.

Through funding from the William Penn Foundation, and the Environmental Endowment of New Jersey, MWA launched the Great Waters initiative to better protect the Musconetcong River, and other rivers like ours in northwestern NJ. We formed partnerships with state policy experts on water quality protection at the Watershed Institute

and Association of NJ Environmental Commissions, Trout Unlimited which has chapters covering the region, the Highlands Coalition, and the Delaware River Greenway Partnership, which leads on the Lower Delaware Wild and Scenic River. Together, we are better able to review projects, and we also can work to close gaps in state policies which are not grounded in watershed science.

The Great Waters website is now live and has recreational maps showing river access points and trails, and showing people how to connect with our Great Waters. We also have an outreach goal to meet with all 50 municipalities in northwestern NJ, and the 4 counties, to share with them local and state actions that can be taken to protect water quality. Holland Township was the first municipality to pass a Great Waters resolution of support to ensure the region's recreational waters are protected for generations to come. To learn what you can do, or share how you connect with rivers, check out www.greatwatersnj.org or contact us. 🌊

Water Quality Monitoring... It Takes a Village!

By Christa Reeves, Water Quality Program Coordinator

This summer, the water quality monitoring team has been busy out in the field working on many different projects, including a NJDEP funded Nonpoint Source Pollution Control project in collaboration with Montclair State University. The purpose of this project is to update and expand the “2012 Musconetcong River Restoration and Protection Plan.” The study conducted in 2018 monitored the bacterial levels from Hampton to Bloomsbury and found reductions in bacterial contributions from cows – mostly due to the introduction of best management practices (BMPs) on farms in the watershed. The upstream portion of the river from Hampton to Hackettstown is an area of interest due to the fact that bacteria levels were reduced by 35 % at the top of the study area above Hampton in 2018. In order to understand the sources of bacteria and pollutants into this section of the stream, MWA continues to conduct microbial source tracking and other water quality monitoring measures.

This year, MWA’s water quality team is coordinating with researchers from Montclair State University to visit 9 sites along the river on 5 sampling days throughout each month, for a total of 20 samples at each site. These sites were chosen based on their proximity to leaky septic systems, stormwater runoff, and agricultural influences. Many of the sites are tributaries to the Musconetcong, which can reflect bacterial inputs that are present further from the main stem of the Musky. On these sampling days, the water quality team takes discharge measurements and water quality readings including dissolved oxygen, temperature, and pH. The team also collects water samples to be analyzed for total phosphorus. With this data, MWA can gain a better understanding of the amount of bacteria being released into the River and its origins.

The work now underway requires all hands on deck, which is why the water quality team is thrilled to have welcomed two new interns on board for the summer:



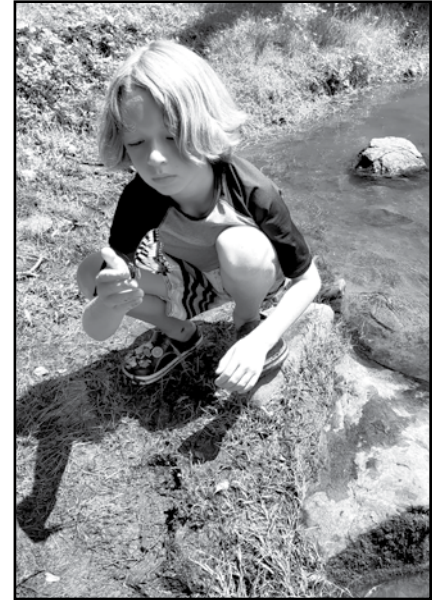
MWA interns (left to right), Bret and Nino, taking water quality samples in the Musconetcong River.

Bret Schuler is part of the MWA Water Quality Internship Program this summer. Bret currently attends Drew University in Madison, NJ, majoring in Environmental Science and minoring in Film Studies. He also competes in tennis at the collegiate level and recently celebrated a triumphant spring 2021 season, winning the Landmark Conference Championship. As an MWA intern, Bret hopes to learn many useful skills in water sampling, using topographic imagery and analyzing ecological systems, and to take full advantage of the the opportunity to network with organizations and professionals in the environmental field.

Nino Di Odoardo is a senior at East Stroudsburg University, pursuing degrees in Environmental Studies and Organismal Biology. He is graduating this summer and hopes to enter the field of natural resources management. The natural world has always fascinated him, and this fascination has driven his studies and interests. In his free time, Nino enjoys hiking, mountain biking, and rock climbing. Music has also influenced Nino’s passions, and he currently plays guitar in a band.

If you are interested in getting involved with MWA’s Water Quality Program, consider volunteering your time by becoming a River Watcher or applying to the 2022 summer internship program. ☺

Camp Musky



A camper holds an Eastern Tiger Swallowtail butterfly on the banks of the Musconetcong River during MWA’s Camp Musky summer program. This year’s program was completely filled with all weeks at full capacity.

Save the Date!

Wine Tasting on the Musky

**Saturday, October 16
2-5 pm**

**The Pavilion at the Warren
County Rod & Gun Club
279 Asbury Bloomsbury Rd.
Asbury, NJ 08802**

Come enjoy fine wines, craft beers, and hard ciders on the picturesque banks of the Wild & Scenic Musconetcong River. There will be live music, food, and games. This event is for 20 + only.



Rain date, Sunday, October 17

Visit:

www.musconetcong.org/wine-tasting
for more information and tickets.

Adopt a Sensor: Know the Flow

By Christa Reeves, Water Quality Program Coordinator


As you paddle down the Musconetcong or dip your feet in on a hot day, you may ask yourself, how much water is flowing in this river? Well, you have come to the right place to learn how to figure that out. The United States Geological Survey (USGS) has been measuring thousands of streams across the US for over a hundred years. The Musconetcong River has two USGS gages, one at the outfall of Lake Hopatcong and the other near Bloomsbury. The Lake Hopatcong gage is used to measure the amount of water leaving the lake, over the dam, and entering Lake Musconetcong. The Bloomsbury gage is approximately 34 miles downstream from the Lake Hopatcong gage, located off of Lime Kiln Road in Franklin Township. This gage is measuring all of the water introduced from the lakes at the headwaters, tributaries, stormwater and any ground water along the way and is a much better measure of how much water is in the Musky than the gage at Lake Hopatcong..

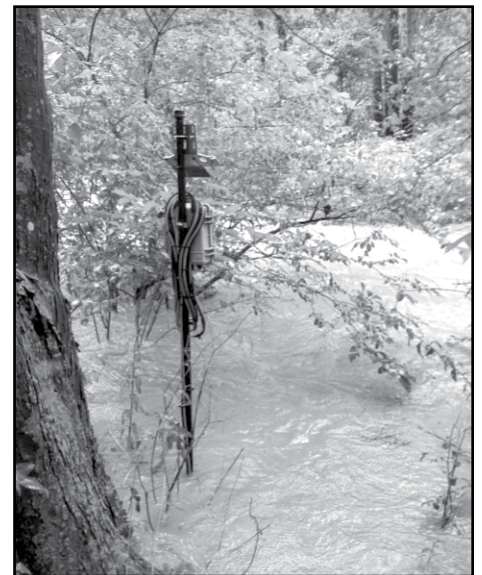
When visiting the USGS website, you will see the “Most recent instantaneous value”, in both discharge and gage height (also referred to as stage). The discharge is the volume of water passing a point per second, in this case cubic feet (cfs). The gage height is the water level at a fixed point, like a permanent yard stick in the water attached to the streambed. Whereas gage or stage height is measured, discharge is calculated with additional information. Measuring the stream width, depth, and flow velocity we can calculate discharge ($\text{Area} = \text{Depth} \times \text{Width}$, $\text{Discharge} = \text{Area} \times \text{Velocity}$). MWA River Watchers do this all the time



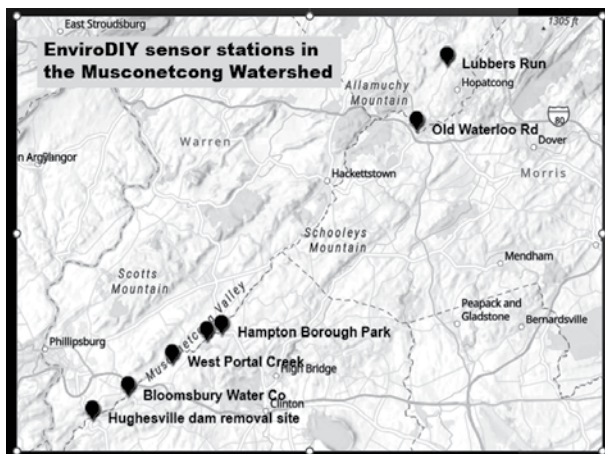
Mapping the channel for discharge at the Hughesville dam removal site.

with rubber duckies or unpeeled oranges in place of a flow meter. However, to gain precision and accuracy, MWA staff use flow meters and channel mapping.

USGS gaging stations are costly to maintain and quality control, so we also use EnviroDIY sensor stations at other sites in the River. MWA has four stations on the main stem of the River, and three on its tributaries, with more to come (see map). These stations measure conductivity (how much salt and other dissolved ions are in the water), temperature, turbidity (some stations) and depth. These stations can be found on <https://monitormywatershed.org>. In the header there is a place to “Browse Sites,” which takes you to a map where you can zoom in on Asbury, NJ to see all of the available stations. Once, you have picked a station you would like to view, click on “view data for this site” and you’re off! The last 72 hours of data is available on first glance; for a more in depth look at an individual parameter just click this symbol .




Shurts Road tributary sensor station during Hurricane Isais in 2020.



EnviroDIY sensors measure a bit differently than the USGS gages (metric instead of standard US units). Understanding these readings will help you to learn when you can go out on the River. Flows that work for fishing may not be ideal for paddling. It is good to start checking the gage each time you go out to better understand what your ideal conditions look like. Same with the EnviroDIY

levels, 171mm doesn’t mean a whole lot until you put it into context. Since, there are many more EnviroDIY stations at different points all along the river, you can start to become more precise in your understanding of what levels are good for paddling, fishing or tubing and what levels mean flooding. Recreation and safety are the two main concerns when looking at flow.

To read more about these sensors visit our website and click on the drop-down tab “Explore the Musconetcong,” then choose, “Sensors on the Musky.” If you would like to volunteer to steward these sensors, please contact Christa Reeves at christa@musconetcong.org. As always, we want you to stay safe while enjoying the river, and this is just another tool to help you do so. 

Annual Run for the River Gets Bi-Coastal Participation

This spring, MWA once again hosted our largest yearly fundraiser, the Run for the River. Still virtual, this event went off without a hitch as we created ways to connect with our participants online, and challenged our Board, staff, and friends to register others outside of New Jersey to join us.

Rising to the challenge, over 100 people from 21 states, including California and Hawaii partook in the event, supporting MWA by running, walking, hiking, biking, paddling, fishing, or by finding other ways to get outside and stay active.

Participants connected with the MWA and one another by using the hashtag “MovingfortheMusky” on



MWA Trustee Tish Lascelle, and former trustee Amy Hansen ran for the River at MWA's River Resource Center headquarters in Asbury.



Participant Ryan Thorpe got moving for the Musky at the Delaware Water Gap National Recreation Area.

Facebook, Instagram, and Twitter. A commemorative medal designed by a local artist and a long-sleeved t-shirt was given to participants.

While MWA plans to reinstate the Run for the River as an in-person event next year, we have been delightfully surprised by the popularity of a virtual opportunity to engage. Look for ways to participate both online and in-person in 2022, and keep moving for the Musky!

Thank You to Our Gold Sponsors: AT&T Pioneers, Atlantic Traffic & Design, Borealis Compounds, Inc., the Gullage Family, Engineering & Land Planning, Finne Building & Investment, Harrington Construction, M&Z Engineering Associates, Ondra-Huyett Associates, Princeton Hydro, Rossi Dealerships, Schaibles Plumbing & Heating, Thrivent Financial, Unity Bank.

Thank You to Our Silver Sponsors: Amy S. Greene Environmental Consultants, Asbury Coffee Mill, Asbury Farms, Asbury Village Farms, Aqua Pro-Tech Laboratories, Brown & Brown Insurance, Cinny and Maxie MacGonagle Inc., Frank Rymon and Sons, Gladstone Design, Hackettstown Municipal Utilities Authority, Hawk Pointe Golf Club, Herman Grefe & Son, Holland Liquors, International Process Plants, Mid Jersey Orthopaedics, Musconetcong Sewerage Authority, the Perkins Family, RiverLogic Solutions, Rockefeller Group, Rosenberg Rich Baker Berman, Wells Fargo Advisors. ☺



Participant Blaire Langston won an honorary mention this year for participating all the way from Hawaii!

The MWA is constantly seeking to introduce a wider and more diverse population to our organization and work. We love to engage with our members, and are eager to meet and make new friends. Education and recreation are both core elements of our mission, so we offer activities throughout the year that promote learning and fun! Hikes, paddles, ‘River Talks,’ birding, foraging, tours of our historical Mill. Wine-tasting on the Musky? We do that, too!

To stay abreast of our activities, there's an Events page on our website (www.musconetcong.org) that is regularly updated, and tells you how to sign up for special activities. Or, subscribe to our Instream Updates by emailing info@musconetcong.org with “Subscribe” in the subject line and we'll bring information about our happenings right to your Inbox!

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Meetup
Musconetcong
River Area
Outdoor Activities

MWA is still adhering to recommendations from NJ State, the CDC and other authorities regarding Covid-19, and may cancel or alter planned activities to protect ourselves and the public. The Events page on our website will always have the latest updates on our activities.



The Musconetcong Watershed Association

The Musconetcong River Valley is rich in scenery, history, natural resources, and recreational opportunities. The river rises up in Lake Hopatcong - New Jersey's largest spring-fed lake - and is shadowed by 1,000-foot Highland ridges and slices through a deep, limestone river valley, flowing swiftly to the Delaware River. Along the way the "Musky" passes by state and county parks, bustling towns, vital industries, historic villages, and some of the most productive farmland in the state.

The Musconetcong Watershed Association (MWA) is a non-profit organization formed in 1992 to protect and enhance the Musconetcong River and its related resources through advocacy and environmental education programs, scientific research and river restoration projects. The MWA scope spans the 158 square-mile Musconetcong River Watershed, and includes portions of four counties, and all or portions of 26 municipalities. The Musconetcong River became part of the National Wild and Scenic River System in 2006.

MWA members are part of a network of individuals, families and organizations who care about the Musconetcong River and its watershed. They are kept informed about issues concerning the river and its related resources by receiving quarterly issues of the Musconetcong River News.

MWA Membership Application

Please enroll me as a member of the Musconetcong Watershed Association. I have enclosed a check payable to MWA for the amount indicated below:

- | | |
|--|--|
| <input type="checkbox"/> \$20 Student | <input type="checkbox"/> \$100 Sustainer |
| <input type="checkbox"/> \$30 Family | <input type="checkbox"/> \$250 Steward |
| <input type="checkbox"/> \$50 Supporter | <input type="checkbox"/> \$500 Champion |
| <input type="checkbox"/> \$1,000 + Life Member | |

Name: _____

Address: _____

City: _____ State: _____ Zip: _____

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Musconetcong Watershed Association
PO Box 113, Asbury, NJ 08802

- ◆ Microplastics in the Watershed
- ◆ Welcome Annie
- ◆ Welcome Kenzie
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- ◆ The Great Waters of New Jersey
- ◆ Water Quality Monitoring...It Takes a Village!
- ◆ Camp Musky
- ◆ Adopt a Sensor: Know the Flow
- ◆ Run for the River Gets Participants
- ◆ Coast to Coast #MovingfortheMusky

What's Inside:

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PO Box 113

