NATURE FORWARD

STREAM MONITOR

THE NEWSLETTER FOR WATER QUALITY MONITORING

JANUARY 2025, ISSUE 2

2024 SNAPSHOT!

Here are summaries of the 2024 stream monitoring findings generated by the work of Nature Forward volunteers.

This chart lists the monitoring sites and IBI (Index of Biological Integrity) scores.

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Nature Forward Water Quality Monitoring Program
2024 Index of Biological Integrity (IBI) Scores by Stream Site

MONITORING SITE	WINTER 2024	SPRING 2024	SUMMER 2024	FALL 2024	STREAM HEALTH
Site 32, Ten Mile Creek Tributary	4.71	5.00	4.71	4.14	Good to Excellent
Site 36, Dark Branch	3.86	5.00	4.43	4.43	Good to Excellent
Site 46, Middle Patuxent River	4.71	4.43	3.86	4.43	Good to Excellent
Site 20, Wildcat Branch	4.43	4.71	3.86	3.86	Good to Excellent
Site 37, Ten Mile Creek Mainstem	4.43	4.43	4.71	3.29	Good to Excellent
Site 6, Rock Creek/Muncaster Mill Road	4.71	4.14	3.86	3.86	Good to Excellent
Site 44, Hawlings River		4.43	3.29	3.86	Good to Excellent
Site 10, Rock Creek/Agricult History Farm Park		3.86	3.57	3.86	Good
Site 27, Muddy Branch		3.57	3.57	3.57	Good
Site 8, North Branch of Rock Creek/Meadowside		3.29	3.86	3.29	Good
Site 25, Goshen Branch			3.86	3.00	Fair to Good
Site 18, Northwest Branch/Layhill Park		3.29	3.00	3.29	Fair to Good
Site 19, Great Seneca Creek	2.43	3.00	3.57	3.57	Fair to Good
Site 38, Northwest Branch/Kemp Mill Road	3.00	3.57	2.71	3.29	Fair to Good

Please click on the image to display the complete report.

2024 SNAPSHOT (CONTINUED)

This chart shows the macroinvertebrate counts. The counts cover all sites that were monitored during the 2024 winter, spring, summer, and fall monitoring periods.

- There were 97 monitoring visits to 28 sites.
- A total of 9,790 benthic macroinvertebrates were identified and counted.

Nature Forward Water Quality Monitoring Program
2024 Macroinvertebrate Counts (for all WQM sites: winter, spring, summer, fall)

Macroinvertebrate	Count
Common Netspinner Caddisfly - Hydropsychidae	1,659
Fingernet Caddisfly - Philopotamidae	1,271
Midges - Chironomidae	1,116
Small Minnow Mayfly - Baetidae - Total	1,076
Small Minnow Mayfly - Baetidae Baetis. Count = 478	
Small Minnow Mayfly - Baetidae genus not identified. Count = 447	
Small Minnow Mayfly - Baetidae Acentrella. Count = 151	
Flatheaded Mayfly - Heptageniidae - Total	465
Flatheaded Mayfly - Heptageniidae Maccaffertium. Count = 262	
Flatheaded Mayfly - Heptageniidae genus not identified. Count = 149	
Flatheaded Mayfly - Heptageniidae Epeorus. Count = 53	
Flatheaded Mayfly - Heptageniidae Stenacron. Count = 1	
Black Fly - Simuliidae	390
Brushlegged Mayfly - Isonychiidae	353
Riffle beetle - Elmidae - Total	333
Riffle beetle - Elmidae, genus not identified. Count = 135	
Riffle beetle - Elmidae Stenelmis. Count = 99	
Riffle beetle - Elmidae Macronychus. Count = 35	
Riffle beetle - Elmidae Ancyronyx. Count = 26	
Riffle beetle - Elmidae Optioservus. Count = 17	
Riffle beetle - Elmidae Dubiraphia. Count = 13	
Riffle beetle - Elmidae Oulimnius. Count = 8	
Planarians/Flatworms - Dugesiidae	328

Please click on the image to display the complete report.

INCIDENT REPORTS

SUBMITTED BY WQM VOLUNTEERS

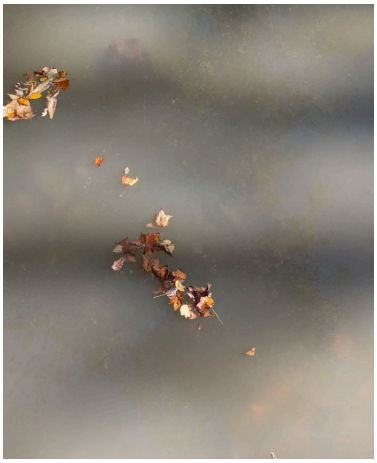
Monitoring teams continued to play the valuable role of "eyes on the ground" in 2024 by identifying and reporting on potential threats to the health of area streams.

Team leader Gale Minnich-Blewis and her team had picked up litter near the Wildcat Branch monitoring site for many years before the problem grew too big for them. Last spring, Gale reported that an area close to the stream had developed into dumping ground for construction materials, including window frames, shingles contractor bags filled with garbage, and more. Nearby residents confirmed that the situation had gotten significantly worse. Nature Forward alerted Montgomery Parks and when Gale's team returned in July for summer monitoring, they were excited to find that the trash had been removed.

In the first edition of the Stream Monitor, we described dams constructed by park users in Northwest Branch at Adelphi Mill which degraded benthic macroinvertebrate habitat by submerging riffles. After we reported the issue, Prince George's County Parks removed the dams – and installed a new sign! In October alone, the sign proved to be a useful visual for discussing stream health issues with over 100 community members during outreach and monitoring events.

New sign at Adelphi Mill

In November, team leader Glenn Welch reported that Northwest Branch near Randolph Road, which usually runs clear, was opaque. After reporting this to Montgomery County Parks, we learned that there had been a watermain break causing a road collapse and large amounts of sediment to wash into Bel Pre Creek, a tributary of Northwest Branch just upstream from Glenn's monitoring site. In this case, the county was aware of the problem and the watermain was being repaired.



Sedimentation at NW Branch
Photo by Glenn Welch

For Montgomery County, please report incidents immediately by calling 311. You can also contact the Park Manager using the contact information on the permit letter (on the WQM clipboards).

OBSERVATIONS

Many team leaders are intimately familiar with their monitoring sites, having sampled for years and even decades. While we certainly don't expect our volunteers to submit detailed observations, it is fascinating to read the "stories" about the ever changing streams. Here are two examples from the WQM data sheets. Enjoy!

FROM WENDY DUKE, DARK BRANCH: "A beautiful summer day! Habitat is continuing to change. Three more trees have fallen mid-reach (these didn't fall into the stream). Mid-reach, the right bank has eroded away quite a bit where fallen trees are obstructing normal stream flow. This erosion is decreasing sinuosity in this part of the reach. This is concerning because it is the last curve upstream of an already existing straight stretch. Upstream from the tree obstruction, there's significant deposition (again. Same happened a few years ago. Sand). More areas of bank scouring were observed this time compared with the past. The benthic macs trended on the smaller side. One potential Heptageniidae Stenacron was found (darker body, "thighs" less "muscular" than other flatheaded mayflies we have, paired median black marks medial to pair of pale spots on pronotum, no freckling of head capsule). This one was preserved and will be brought to Woodend for identification."

FROM SUSAN MILIUS, GOSHEN BRANCH: "What were just islets in the stream, one toward the upper end of the reach and one toward the lower end, have ballooned into major islands that now leave channels with modest widths (est. 18 to 24 inches of water on each side). The riffles in these channels have continued to yield macros, but the recent lengthening and widening of the two islands has been odd. The area between the islands and their riffle zones continues as a still, relatively deep pool where we haven't found much and rarely sample. Finally, the small stripling trees planted and then replanted in the restoration phase some years ago seem to be growing substantially (with plenty of them an estimated 12 ft or more). At last, this no longer looks as bare of trees as it did during the restoration."

OBSERVATIONS (CONTINUED)

Mitch Greene spotted, photographed and sent in photos of dobsonfly (or hellgrammite) egg masses on boulders from the Hawlings River monitoring site in Rachel Carson Conservation Park. These egg masses are often found on tree leaves overhanging a stream.

Photo credit: R.M. Greene

Dobsonfly Larva

The Hawlings River team also found a lovely Common Burrower Mayfly (Family Ephemeridae). Of the 9,790 benthic macroinvertebrates identified in 2024 by our WQM teams, only 3 were Common Burrower Mayflies. It's a little difficult to see in the photo, but this mayfly has thick, feathery gills which it waves over the top of its abdomen.

Common Burrower Mayfly. Photo by Paul Bade

Note the tusks on this critter!

Interestingly, shortly after observing this, we received an email from a Mifflinburg PA Area School District outdoor educator who asked about adding a photo to the Creek Critters app of Penns Creek's famous Green Drake (Ephemera guttulata) nymph. ("We always make a big deal about it with the students when we find this nymph.") To the right is a photo that Joe Southerton sent.
Green Drakes (circled) are Common Burrower Mayflies. Joe's students collected a trio of these macros!

PETE'S DESK

By Pete Yarrington

THE SEARCH FOR STENACRON

In the past year, we asked teams to send in any nymphs collected in the flat-headed mayfly family Heptageniidae that they believed might be in the genus Stenacron, rather than Maccaffertium, which is the flat-headed genus we most often collect. While only one Stenacron was collected in 2024, it was a good exercise to look carefully at some our most common, and most interesting mayfly nymphs. It is unclear why so few possible Stenacron were found in oursampling, since they and Maccaffertium have similar water quality tolerance values. It's possible that Stenacron prefers slightly larger streams than those we sample, which would help explain why they are relatively common in the nearby upper Patuxent River between Montgomery and Howard counties. It also seems possible that they prefer slightly less broken water than the classic riffles where we normally find Maccaffertium. When asked about this, Greg Pond of EPA described Stenacron he collects in West Virginia as mostly a pool species, frequently found on large woody debris, but also in slow moving riffles.

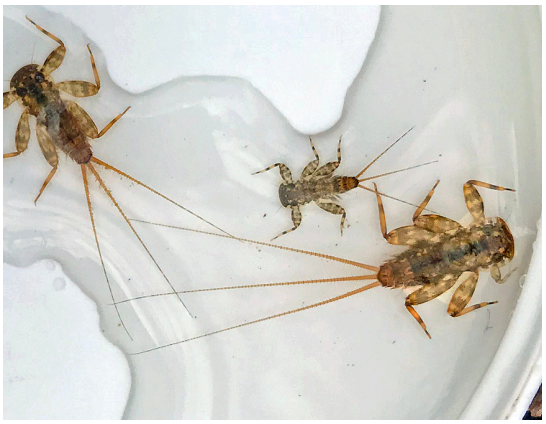
The telltale shape of Stenacron's abdominal gills, which are pointed rather than rounded or squared (see the gill photos on the next page), is seldom clearly visible in the field, so I have come to rely on several general characteristics that alert me that I am likely looking at Stenacron. First, Stenacron nymphs are often less mottled dorsally than Maccaffertium, and what dorsal patterning is present organized to some degree into lengthwise stripes. However, nymphs of both genera can be dark enough to mask these traits. On the underside of the abdomen, Maccaffertium almost always shows some cross banding on the smallest segments; Stenacron has little to no markings under the abdomen. Finally, Stenacron nymphs often appear more elongate, less "bulky". These characteristics are most helpful when observing mature larvae, and even then, it must be remembered that, like most macroinvertebrates, there are differences between insects of the same group in different streams, and there are minor differences between individuals.

PETE'S DESK (CONTINUED)

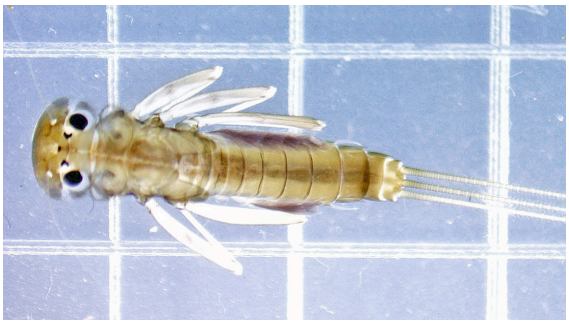
Here are several pictures of Maccaffertium and Stenacron nymphs collected locally.

(All photos by Pete Yarrington, except the grouping of 3 nymphs)

Maccaffertium nymph from Catoctin Creek, Frederick Co, MD. April 24, 2023



Maccaffertium nymphs



Stenacron nymph, Site 36, Dark Branch
July 26, 2024

A darker Stenacron nymph
Catoctin Creek, Frederick Co, MD
April 2023

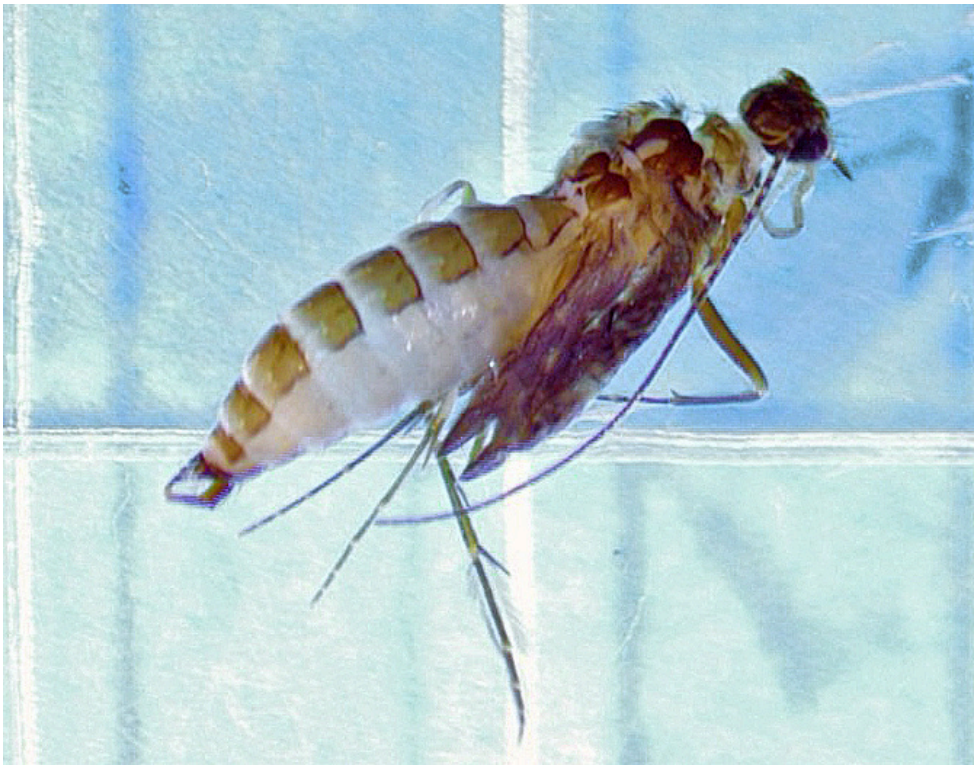
Maccaffertium squared/rounded gill
Site 6, Rock Creek at Muncaster Rd
April 7, 2024

Stenacron pointed gill.
Site 36, Dark Branch
July 26, 2024

* This discussion only covers two genera of the three-tailed Heptageniidae. Monitoring teams also find a two-tailed flat-headed mayfly in the genus Epeorus.

PETE'S DESK (CONTINUED)

ONE ADDITIONAL INTERESTING SPECIMEN!



Here is a caddis pupa found at Nature Forward Site 23, Pinehurst Branch in February 2024. It's likely family Philopotamidae, genus Dolophilodes or Chimarra based on emergence timing. The caddis larvae we encounter at our monitoring sites will (hopefully) pupate one day and become winged, adult caddisflies; we seldom encounter pupae in our work at streamside.

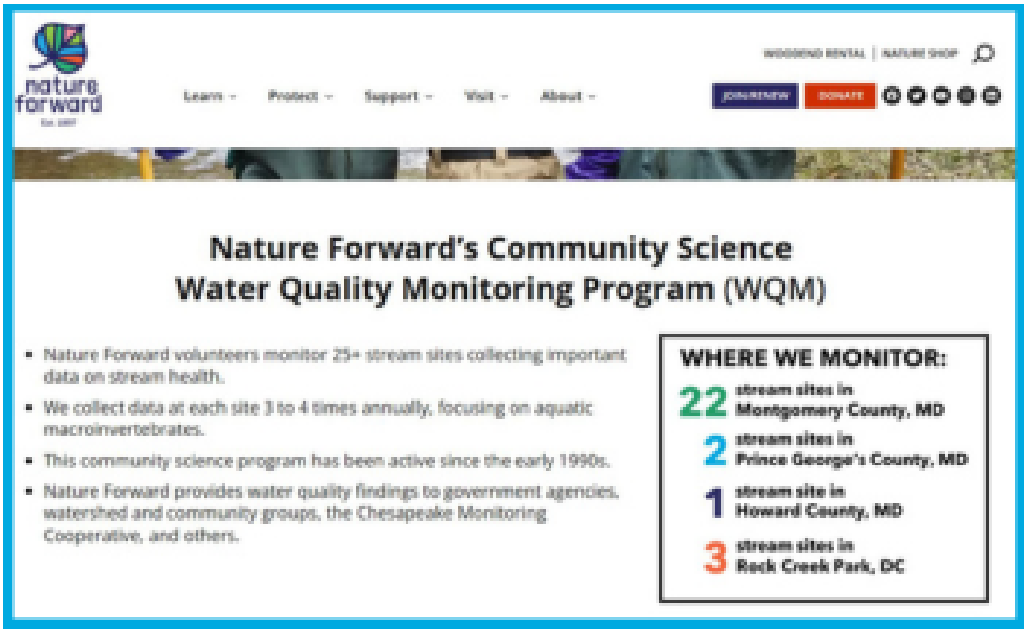
Because the pupae are in the process of becoming an adult insect and are technically no longer stream-dwelling macroinvertebrates, they are not added to our data counts - and they are not included in our water quality assessments. However, feel free to make notes (and take pictures!) of any caddis pupae found.

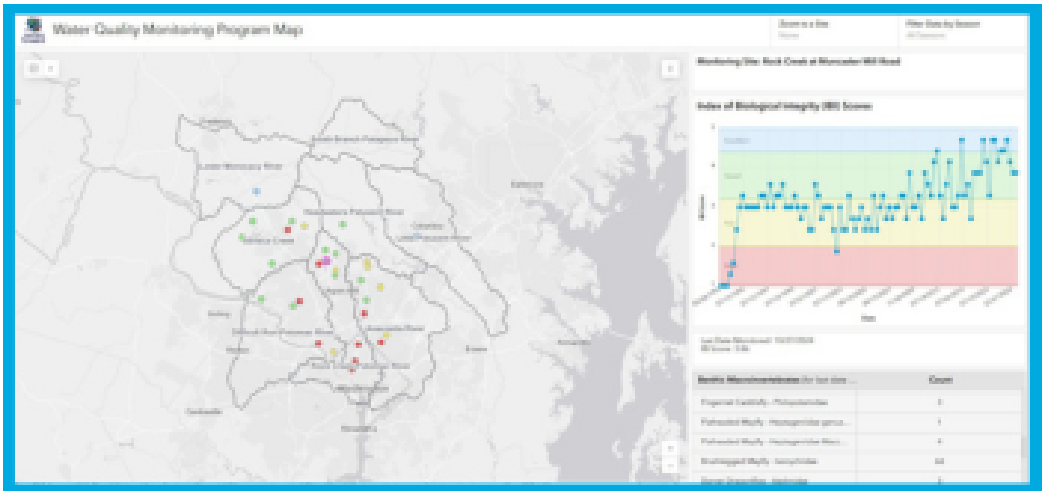
Volunteer Pete Yarrington is a team leader of Nature Forward's Northwest Branch/Layhill Local Park WQM site and takes care of our specimen identification work.

FOLLOW THE DATA

Nature Forward's Water Quality Monitoring webpage has been refreshed, and we've posted a new map highlighting our monitoring sites and data.

To access the webpage and new WQM map, visit: https://natureforward.org/water-quality/





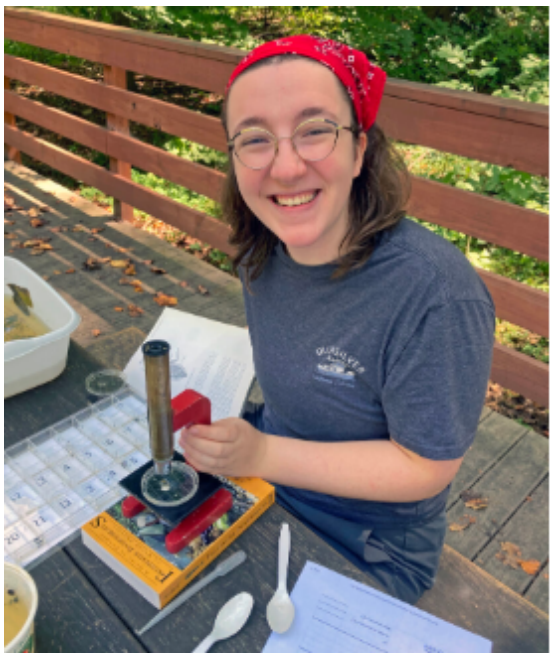
ALSO, on the WQM webpage:

- The most current stream monitoring data sheets for team leaders to download and print.
- Introductory stream science and advanced macroinvertebrate identification classes. Volunteers who have monitored twice in the past two years can contact us at cleanstreams@natureforward.org for free access.

PUBLISHED

College student – and former camper – Meg Jarvis conducted aquatic macroinvertebrate surveys at Woodend Sanctuary's pond last summer. Read the blog linked below!

[For the Love of Muck and Macroinvertebrates: A Former Camper Returns to Conduct Research on Woodend's Restored Pond]



A warm welcome to WQM volunteers who joined us in 2024 – and thanks to those who have been monitoring streams with Nature Forward for many, many years.

Three monitors took on team leader roles in 2024:

- Matt Anton and Katherine Cleveland are the new team leaders for the Rock Creek monitoring site in the Agricultural History Farm Park.
- Linda Green is the new team leader for the Muddy Branch monitoring site.

Special thanks to all team leaders who have mentored and supported team leaders who have come aboard in the past few years.