Plastic Pollution Action Team Fall Meeting

Wednesday, November 1 · 1:00 – 4:00pm

Meeting Materials Link

Meeting Minutes

Attendees

Anna Kasko - MD DNR	Kelly Somers - EPA / Vice-Chair
August Goldfischer (they/them) - CRC	Kristin Saunders - UMCES
Bailey Robertory - CRC	Marc Moran - PADEP
Barbara Balestra - American U	Mark Southerland - Tetra Tech
Bob Murphy - Tetra Tech	Mark Trice - MD DNR
Carlie Herring - NOAA	Matt Gallagher - DOEE/Chair
Christine Knauss - UMCES	Melinda Paduani - FIU
Claire Buchanan - ICPRB	Michael Gonsior - UMCES
Donna Morrow - MDNR	Mike Ross - FIU
Doug Austin - EPA	Nancy Roth - Tetra Tech
Jason Davison - Catholic U	Nicole Trenholm - UMCES
Jamie Pierson - UMCES	Paige Hobaugh - Tetra Tech
Jennifer Starr - LGAC	Phong Trieu - MWCOG
Jesse Meiller - Georgetown U	Rebecca Whiteash - PADEP
Jon Cohen - University of Delaware	Ryan Woodland - UMCES
Julia Wakeling - DC Gov	Shawn Fisher - USGS
Katie Morgan - NOAA MDP	Tish Robertson-VADEQ

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Introduction

Introducing Matt Gallagher

- Matt Gallagher: New chair, works at DC DOEE Water Quality Division

Introducing Bailey Robertory

- Bailey Robertory: New staffer, Chesapeake Research Consortium at Chesapeake Bay Program

Tetra Tech Project Updates

Developing a Plastic Pollution Monitoring Program for the Chesapeake Bay and its Watersheds

- PPAT Priority: Design and implement a microplastic monitoring program integrated into the existing Chesapeake Bay watershed monitoring framework
- Progress
    - Developing a field sampling and analytical reference guide due to EPA in November 202
    - Literature review completed of field and laboratory methods
    - Survey design- reaching out to various existing monitoring programs to discuss survey designs to answer priority questions
- Developing laboratory reference guide
    - Literature review completed
- Monitoring framework: looking for feedback
    - List of questions guiding monitoring roles
    - Looking to fine-tune questions
- Questions guiding monitoring goals - feedback results here
    - What is the current status (i.e., concentrations) of plastic pollution in tidal and nontidal waters of Chesapeake Bay and its watershed?
    - What is the spatial distribution of plastic pollution in the Chesapeake Bay and watershed?
    - What are the sources (i.e. plastic product) of plastics found in the bay and watershed?
    - What are the pathways (i.e. stormwater, wastewater, non-point source) of plastics for the bay and its watershed?
    - What is the range of concentrations for plastic pollution within the food web, focusing on species identified in the Chesapeake Bay 2014 Watershed Agreement Goals and Outcomes (e.g. blue crabs, oysters, brook trout) as well as other species of commercial and/or recreational importance (e.g. striped bass)?
- Role of PPAT: Input on guides
- Timeline:
    - Sampling Reference Guide Draft: November 2023
    - Analytical Reference Guide Draft: November 2023
    - Framework for Monitoring Plastic Pollution in the Chesapeake Bay Draft: June 2024

- Questions:
    - How much have you looked into international groups that have done this?
        - In September three members participated in the International Joint Commision on Great Lakes. They are in a similar position, but we should look more to the EU.
            - Christine Knauss offered to help if requested
    - Source of wastewater and tying into systems like the Riverkeeper Program that do trash collection. Could there be a tie-in to that?
    - How many times are you sampling for the first monitoring framework?
        - This project is a desktop study focused on developing a framework and does not consistent of any field work. We are taking feedback on frequency, however.

Microplastics Source Tracking in the Chesapeake Bay (CB) Watershed

- PPAT Priority: Support research to understand microplastic pathways in the Bay, including trophic pathways that may affect living resources such as Striped Bass, Blue Crabs, Oysters, and other species critical to the Bay ecosystem; focus on tidal Potomac
- Objective: characterize microplastics coming from catchments of various land use types
    - Agriculture
    - Wetland/Natural
    - Urban
    - Suburban
    - Stormwater
    - Wastewater
- Protocols
    - 3 sites /per land use "treatment"
    - Ambient water sample
    - Baseflow sampling/storm sampling
    - Laboratory isolation
    - Polymer analysis will be done by EPA's Office of Research Development at the EPA- Atlantic Ecology Lab in Narragansett, Rhode Island). Analysis will take place in Summer of 2024
    - Synthesis and probable sources analysis will be completed by Tetra Tech

Mysid Shrimp-Striped Bass Study

- Microplastics → Mysid Shrimp → Fish
    - Larger fish intake more microplastic indirectly through mysid shrimp consumption than directly
- Study plan: sample mysid shrimp in Potomac and Patuxent estuaries to determine background loadings;
- Using striped bass and mysid shrimp in lab to assess transfer of microplastics
- Questions/comments:

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- Have you thought about the types and sizes of particles to be used??
  - Depends on what we find in mysids. Would like to regulate. Sourcing fibers for lab studies.
  - Action: Bob Murphy will follow up with Jon Cohen

Talks

Plastic waste policy in Florida; Finding connections and developing solutions - Melinda Paduani

- Purpose: facilitate Tetra Tech and FIU partnership, presenting overall picture of plastic waste issues and solutions being pursued in Florida
- Various issues with plastic bans in Florida
  - Florida recycling: 2020 goal was not reached, more ideas promoted afterwards
  - The state has passed a ban on plastic bans for localities
  - State-wide plastic ban bills have not gotten very far in Florida legislature
    - Localized microplastic monitoring projects underway
- Ideas
  - Clean Waterways Act of 2020: standardization, funding - extension to microplastics
  - Coastal Zone Management Act – baseline plastics data to be collected
  - Florida Watershed Restoration Acts: TMDL's
  - Everglades water quality enhancement areas/surface water improvement and management programs: opportunity for risk assessment similar to Chesapeake Bay
  - Florida "best use" legislation: protecting seacoast for public and private recreation is priority
    - Include other category for nurdles to avoid certain situations
- End goal: balance best of water policy and plastic policy/ pass barriers
- Questions/Comments
  - Website for legislation (https://www.globalplasticlaws.org/)
  - What kinds of projects are they doing in the estuaries?
    - Indian River Lagoon: monitoring/finding types and locations/organisms
    - Tampa Bay: educational program
  - How many types of instances are there where laws in local jurisdictions are preempted by the state? Are there other examples?
    - Some that are unrelated to plastics
    - Many of the cities have tried to get regulations, but often go to state supreme court
  - What are some of the localities that had single-use plastic bans on public property?
    - Coral Gables, City of Miami Beach, Hollywood, Orlando, and I believe Jacksonville and Clearwater as well

Choptank plastics fate/transport study - Jaime Pierson & Will Nardin

- Hypothesis: marshes/SAV trap plastics in a sink
- Goal: develop budget of plastic debris input and retention in Choptank
- Sampling in upper Choptank- on edges of marsh 2 times per season - one on either side and one in deepest portion
- Field: Using plankton net, Van Veen grab sampler
- Lab: extraction, density separation, nile red staining, dissection scope and image analysis
- Coordination with drones for marsh vegetation/size
- Drone can use IR to determine type of plastic in water
- Some early modeling suggests in the marsh it depends on where you sample. Lots of trapping close to edge. As water pushes in lots of trapping nearby the water edge.
- Questions/Comments:
    - How long was plastic deployed for degradation rates?
        - 6 months out…were only able to find 1…others had been washed away or moved. Ones in the cove were out for 4 months.
    - Did you specifically design sampling to test if grass beds were trapping plastics?
        - We looked seasonally. Not a ton of grass beds in Choptank. Have done some additional sampling in the cove inside and outside grass beds. But, the overall idea is to look at the season to see when there is and isn't.
    - Did you have any evidence for storm event pulses of material coming in? Wastewater overflow?
        - We have some samples and are hoping to work with them but haven't gotten data yet.
    - Did you take any other parameters in sediments/analysis?
        - We are doing water quality parameters. For sediment, someone else is characterizing grain size. Will have data for samples. Will follow up with barbara
        - Jamie Pierson follow up with Barbara Balestra

Nash Run, DC MP - Jesse Meiller & Barbara Balestra

- Paper Link
- Nash Run receives large amounts of runoff
- 3% of trash in watershed from Nash Run
- Trash traps deployed
    - Floating trash trapped, collected, and identified by local organizations
    - Significant increase in biodiversity after trash traps (plus restoration) installed
- Highest concentration of microparticles in water in fall 2019…possibly due to increased rainfall
- Highest concentration of microparticles in sediment in spring 2019
    - More microplastics trapped in upstream sediment
- Questions/Comments
    - Being so close to being so urban did you find any tire particles?
        - No we did not but we also didn't analyze all that we found and randomly sampled
    - What is the source of the glass beads?
        - We are studying and reading. They are used a lot for paint. We have seen them in road paint and other road paving. Sometimes a mixture of glass and polymer beads. That is one of the current efforts.
    - Relationship to data to trash traps themselves. Any impact from trash in traps? Are traps influencing?
        - Most of the trash in traps is buoyant or neutrally buoyant. Some make it underneath. What is held is usually floating bottles. Different types in chemical analysis. It is possible it is contributing but it is receiving input from roadways and other sources.

Feedback on Monitoring Project Framework
- PPAT Input using Mentimeter

Questions Asked:

1. Of the questions already identified, which are most important?
    - What is the current status (i.e., concentrations) of plastic pollution in tidal and nontidal waters of Chesapeake Bay and its watershed?
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    - What are the annual (and seasonal) loads of microplastics entering the Bay at the fall line?
    - What is the status (and trend) of plastics pollution in the Bay, based on beach and water monitoring?
2. Which should be addressed first (i.e., within the next 5 years)?
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3. How should we prioritize biota for sampling (gamefish, other fish, oysters, blue crabs, non-tidal freshwater benthos, Bay benthos)
4. What other key management questions that can (and should) be answered by monitoring microplastics?
5. What programs should be contacted for further information on current monitoring?

Results

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Partner Roundtable/Updates/Close out

Nicole Trenholm - Ocean Research Project

- Baywide ocean microplastic survey (500 microns and greater)
- Video
- Non-profit sailing vessel
- Results should be show in the next couple days
- Document effort, cost-effort analysis
- QA/QC with Horn Point Lab
- Second run during spring in high flow period

Anna Kasko -

- MDE not doing monitoring. Dependent on other people.

Bob Murphy - Tetra Tech

- CERF in 2 weeks in Portland, OR
- Several microplastic talks

Shawn Fisher - USGS

- Next generation water movement analyzer for microplastics using optical sensors, filtering techniques, etc to distinguish organic material from plastics.
- Coordinating with traditional methods
- Hoping for deployment in 2024

Jason Davidson - Catholic U

- Presenting at American Geophysical Union
- Extending lab with analytical equipment if anyone wants to collaborate

Kelly Somers - EPA

- https://www.midatlanticocean.org/2023-mid-atlantic-marine-debris-summit/