

# MACRO TO MICROPLASTIC IN NARRAGANSETT BAY



**NARRAGANSETT BAY  
ESTUARY PROGRAM**

**FRIDAY, OCTOBER 7, 2022**

Roger Williams University CAS 157  
1 Old Ferry Rd.  
Bristol, RI 02809

# PLASTICS IN NARRAGANSETT BAY



## *About the Event*

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**Plastic pollution** is a known threat to the Narragansett Bay region, from the macro scale (the plastic we can see) to the micro scale (the tiny bits of plastic that may not be seen without a microscope). Trash and plastic are on our streets, clog storm drains, and find their way to local waters. Improperly recycled plastic adds to our local landfills. Researchers at our region's universities and federal agencies are working to understand how plastic pollution impacts the environment, and what we can do about it.

Today, the Narragansett Bay Estuary Program is hosting a **learning forum** on plastic pollution. We will hear about the status of plastic pollution in the region, and how scientists are tackling the issue. Today's objective is to **create and share content** for advocacy agencies and policy makers to support and create better, more equitable solutions to plastic pollution.

This event **builds on** many prior conversations and collaborations started before the COVID-19 pandemic and will **set the stage for** more challenging conversations to re-ignite progress and develop interdisciplinary partnerships.

## *Event Partners*

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Roger Williams  
University



# PLASTICS IN NARRAGANSETT BAY



*Schedule*

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**8:00 REGISTRATION AND BREAKFAST**

**8:30 WELCOME**

Margaret Everett, *Provost*, Roger Williams University

Mike Gerel, *Executive Director*, Narragansett Bay Estuary Program

**8:50 FRAMING THE DAY**

Jed Thorp, *RI State Director*, Clean Water Action  
[State-Level Plastics Advocacy in RI](#)

Rebecca Altman, *Author and Sociologist*

[Then As Now: How Plastics' Histories Can Inform Present Efforts to Reduce Future Plastic Pollution](#)

**9:25 KEYNOTE**

Scott Coffin, *Research Scientist*,

CA State Water Resources Control Board

[Managing Micro- and Macro-Plastics: Lessons Learned from California State Agencies](#)

**10:25 COFFEE BREAK**

# PLASTICS IN NARRAGANSETT BAY



*Schedule*

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## **10:40 WHERE DO WE FIND PLASTIC IN THE REGION?**

Martin Bide, *Emeritus Professor*, University of Rhode Island  
[Textiles and Microplastics](#)

Madison Burke, *Education and Outreach Manager*,  
RI Resource Recovery  
[Recycling in Rhode Island](#)

Chris Dracoules, *Interceptor Maintenance Assistant Manager*,  
Narragansett Bay Commission  
[The Impact of Plastic Debris on Narragansett Bay Commission  
Sewer System](#)

Mike Jarbeau, *Narragansett Baykeeper*, Save The Bay  
[Cleaning Up Rhode Island's Shoreline - Advocacy Perspectives](#)

Sushant Harsha Bajracharya, *Mystic Ambassador*,  
Mystic River Watershed Association  
[Trash Free Mystic](#)

Q&A and Discussion

## **12:45 LUNCH**

## **1:45 HOW IS PLASTIC IMPACTING THE ENVIRONMENT?**

Andrew Davies, *Associate Professor*, University of Rhode Island  
[Marine Plastic Pollution within the Waters of Narragansett Bay](#)

Kay Ho, *Research Scientist*, US EPA Atlantic Ecology Division  
[Sediment Microplastic Research at the U. S. Environmental  
Protection Agency](#)

# PLASTICS IN NARRAGANSETT BAY



*Schedule*

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**2:25 HOW IS PLASTIC IMPACTING THE ENVIRONMENT? (CONT'D)**

Coleen Suckling, *Assistant Professor*, University of Rhode Island  
[Interactions and Impacts of Microplastics on Marine Organisms](#)

Koty Sharp, *Associate Professor*, Roger Williams University  
[Microbes Matter: a Focus on the Unseen, Sublethal Aspects of Microplastics Pollution and its Impact on Narragansett Bay Corals](#)

Q&A and Discussion

**3:15 COFFEE BREAK**

**3:30 WHAT NOW? EXPANDING THE COMMUNITY OF PRACTICE**

Vinka Oyanedel Craver, *Professor & Assoc. Dean of Research*,  
University of Rhode Island  
[URI Plastics COLAB](#)

Dr. Craver will lead a discussion on expanding the community of practice and how we can reduce plastic pollution.

**4:15 CLOSING**

Courtney Schmidt, *Staff Scientist*, Narragansett Bay Estuary Program

**4:25 NETWORKING**



**Visit the  
Trash  
Trailer!**

# PLASTICS IN NARRAGANSETT BAY



*Abstracts and Contact Information*

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## REBECCA ALTMAN

*Author / [rebecca.altman@gmail.com](mailto:rebecca.altman@gmail.com)*

### **Then As Now: How Plastics' Histories Can Inform Present Efforts to Reduce Future Plastic Pollution**

Industrial plastics date to the mid-1900s. An extensive but little-known secondary literature documents this history and will be brought to bear on current efforts to mitigate plastics' harms and prevent future plastic pollution. Pre-WWII plastics presage much of plastics' later problems - even when early plastics had carbon backbones sourced from the living plant kingdom, e.g., cellulose or latexes, rather than from fossil carbon. As with today, early mass plastics - across their global supply chains- were of consequence to human health, human rights, and the environment. Though made from different sources, the problems posed by plastics, then as now, extend beyond the physical or the material. Plastics' industrial production has long relied on toxic solvent systems and additives, which in turn imposed a myriad of occupational and community hazards, and with the often violent, colonial extraction of raw materials, forced labor within plantation economies, displacement, resource depletion, and deforestation. The historical literature also reveals that plastics' rapid expansion was facilitated not merely by plastics' possibilities or technical performance but also by geopolitics, military contracts and government subsidies. This talk draws from Dr. Altman's synthesis of plastics' historical literature, published in *Science's* 2021 special issue on plastics, and will be supplemented by her own archival and historical work, including here in Rhode Island.

# PLASTICS IN NARRAGANSETT BAY



*Abstracts and Contact Information*

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## **SUSHANT HARSHA BAJRACHARYA**

*Mystic River Watershed Association / [sushant.bajracharya@mysticriver.org](mailto:sushant.bajracharya@mysticriver.org)*

### **Trash Free Mystic**

Trash Free Mystic is an initiative to tackle short-term and long-term impacts of trash through education, outreach, public-private collaboration, data collection, and research.



## **MARTIN BIDE**

*University of Rhode Island / [mbide@uri.edu](mailto:mbide@uri.edu)*

### **Textiles and Microplastics**

Textiles comprise many different materials: it's not always clear which of them are "plastic". But they are ubiquitous, they are made and used in 'micro' form, and they are constantly shed from textile objects and subsequently enter the environment, along with the dyes and finishes they are treated with.



## **MADISON BURKE**

*Rhode Island Resource Recovery / [mburke@irrc.org](mailto:mburke@irrc.org)*

### **Recycling in Rhode Island**

Resource Recovery is a quasi-public agency whose mission is to provide safe, environmentally compliant, clean and affordable solid waste and recycling services for the Rhode Island community. During this presentation, you will learn about Resource Recovery's main operations including the Central Landfill and Materials Recycling Facility, what happens to your "stuff" when it leaves your curb, how to recycle right in RI, and more.

# PLASTICS IN NARRAGANSETT BAY



## *Abstracts and Contact Information*

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### **SCOTT COFFIN**

*California State Water Resources Control Board /  
scott.coffin@waterboards.ca.gov*

#### **Managing Micro- and Macro-Plastics: Lessons Learned from California State Agencies**

Despite decades of research detailing widespread contamination and potential risks of micro- and macro-plastics (synthetic particles smaller than and larger than 5mm, respectively) to humans and ecosystems by the scientific community, government agencies worldwide have made little progress to address the emerging contaminant class. Additionally, while research on micro- and macro-plastics has increased exponentially in recent years, translation into knowledge that's useful for management has lagged - prompting more clear communication between the scientific and management communities.

California's Environmental Protection Agency was the first state agency to address macroplastics under the Clean Water Act with the development of a statewide total maximum daily load (TMDL) for "trash" in 2015. Since then, California has taken additional steps to address the smaller plastic particles that can pass through the "full capture devices" required by the TMDL (i.e., microplastics). Legislative mandates passed in 2018 require California to address microplastics in drinking water and aquatic ecosystems, prompting development of fundamental tools and methods for identifying and assessing risks, including a legal definition, analytical monitoring methods, and risk assessment frameworks.

While this scientific and legal progress provides a baseline foundation for developing regulations for macro- and micro-plastics in California and other jurisdictions, additional research is needed to reduce uncertainties and overcome logistical barriers that are preventing full emergence as a regulated contaminant suite. This presentation provides critical insights from both scientific and regulatory perspectives regarding recent advances in the field and recommends paths forward to overcome scientific and other barriers. Specific topics include monitoring contamination, assessing risks to humans and ecosystems, and intervention strategies to reduce contamination.



# PLASTICS IN NARRAGANSETT BAY



## *Abstracts and Contact Information*

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### **VINKA OYANEDEL CRAVER**

*University of Rhode Island / [craver@uri.edu](mailto:craver@uri.edu)*

#### **URI Plastics COLAB**

The University of Rhode Island (URI) created the URI Plastics COLAB as a collaboration focused on addressing the increasing regional and global plastic pollution concerns, reducing US reliance on foreign plastics producers and recyclers, and moving our nation towards an era of plastics neutrality and novel alternative materials.



### **ANDREW J DAVIES**

*University of Rhode Island / [davies@uri.edu](mailto:davies@uri.edu)*

#### **Marine Plastic Pollution within the Waters of Narragansett Bay**

Microplastics are ubiquitous in marine habitats around the world, but what is the current condition of Narragansett Bay? Over several years, a multidisciplinary team at URI has explored the distribution of plastics, including microplastics in the surface waters of the Bay. We will present the challenges we faced in characterizing microplastics within a physically dynamic ecosystem and show our research findings as we aim to produce the first robust estimates of microplastics within Rhode Island's surface waters.



### **CHRISTOPHER DRACOULES**

*Narragansett Bay Commission / [cdracoules@narrabay.com](mailto:cdracoules@narrabay.com)*

#### **The impact of plastic debris on Narragansett Bay Commission sewer system**

This presentation will cover a brief overview of NBC and its operations. From there it will focus on how plastic enters the sewer system and negatively impacts the conveyance of sewage from our customers to the wastewater treatment plants. This presentation will also highlight the methods NBC uses to remove plastic and other debris for the system and what can happen during wet weather events.

# PLASTICS IN NARRAGANSETT BAY



*Abstracts and Contact Information*

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## **KAY HO**

*U. S. Environmental Protection Agency / [ho.kay@epa.gov](mailto:ho.kay@epa.gov)*

### **Sediment Microplastic Research at the U.S. Environmental Protection Agency**

Microplastic (MP) particles (5mm-1 nm) are ubiquitous and exponentially increasing in our environment. In aquatic systems, the majority of these particles are deposited in sediments through processes of aggregation, biofouling and settling. Once entrained in sediments, MP have been demonstrated to cause ecological damage. In addition, sediments may serve as MP sources during resuspension events. Despite demonstrated effects and known persistence, methods to extract and identify MP in sediments are still not mature. This presentation covers research performed under the US Environmental Protection Agency's MP program with a focus on sediment research performed at the Atlantic Coastal Environmental Sciences Division in Narragansett, RI. Our program has focused on development of methods for extraction and identification of MP from sediments, citizen scientist procedures, and effects research for small MP and nanoplastics.



## **MIKE JARBEAU**

*Save The Bay / [mjarbeau@savebay.org](mailto:mjarbeau@savebay.org)*

### **Cleaning Up Rhode Island's Shoreline - Advocacy Perspectives**

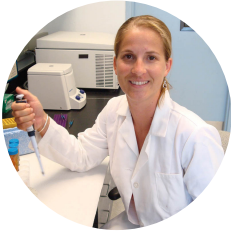
Since 1970, Save The Bay has been working to protect and improve Narragansett Bay. Beach cleanups help eliminate trash and pollution around the watershed. Using years of volunteer cleanup data and anecdotal evidence based on years of work along the state's shoreline, this presentation will briefly explore the need for coastal cleanups, the effectiveness of these efforts, and long-term trends.

# PLASTICS IN NARRAGANSETT BAY



*Abstracts and Contact Information*

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## **KOTY SHARP**

*Roger Williams University / [ksharp@rwu.edu](mailto:ksharp@rwu.edu)*

### **Microbes Matter: a Focus on the Unseen, Sublethal Aspects of Microplastics Pollution and its Impact on Narragansett Bay Corals**

Microplastics are widely recognized as a significant threat to coastal organisms and ecosystems. Research demonstrates that plastics-associated microbial biofilms are enriched with novel microbes not present in natural occurring particles. What is not yet well documented is whether microplastics can vector novel microbes into larger organisms via contact and/or ingestion, and whether there are long-term sublethal consequences of microplastics. These include impacts such as animal energetic investment in handling of plastics, mounting immune response, and shifting microbiomes. We are working with the local, temperate coral *Astrangia poculata*, and with the highly threatened tropical coral *Acropora cervicornis* to investigate the microbiology of microplastics pollution on coral health and physiology, in the context of ocean warming.



## **COLEEN C. SUCKLING**

*University of Rhode Island / [coleensuckling@uri.edu](mailto:coleensuckling@uri.edu)*

### **Interactions and Impacts of Microplastics on Marine Organisms**

In this talk Dr. Suckling will briefly overview some of our current understanding and efforts on marine organismal interactions and responses to microscopic sized plastics known as microplastics .



## **JED THORP**

*Clean Water Action / [jthorpcleanwater.org](mailto:jthorpcleanwater.org)*

### **State-Level Plastics Advocacy in RI**

In this talk, Mr. Thorp will discuss some of the legislative and policy goals on plastics pollution in Rhode Island in recent years, and what advocates need from the scientific community to be successful at the State House.

# PLASTICS IN NARRAGANSETT BAY



## *Additional Resources*

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### **Reading Materials**

How Bad Are Plastics For the Environment by Dr. Rebecca Altman

The United States' Contribution of Plastic Waste to Land and Ocean by Dr. Kara Lavender Law and colleagues

History of California's Microplastic Legislation by Southern California Coastal Water Research Project

Microplastics in Drinking Water - CA State Water Resources Control Board

### **Regional Plastics Initiatives**

URI Plastics COLAB: <https://plastics.uri.edu/>

Ocean State Microplastics: <https://osimap.org/>

Woods Hole Oceanographic Institute: <https://microplastics.whoi.edu/>

Mystic River Watershed Association: <https://mysticriver.org/trashfree-mystic>

## *Acknowledgements*

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**Thank  
you!**

NBEP would like to thank its partners for their support of this event. **RWU Events Staff** secured space for this meeting and managed all logistics. **Rhode Island Water Resources Center** at the University of Rhode Island's College of Engineering provided honorarium and travel support for our keynote speaker, Dr. Scott Coffin.

Finally, NBEP would like to thank our speakers for crafting this learning forum. Their enthusiasm and drive made this event possible.