

The Rapids: US EPA's Trash Free Waters Monthly Update October 2020

<https://www.epa.gov/trash-free-waters>

Introduction

Good afternoon all,

We hope many of you were able to celebrate and participate in International Coastal Cleanup Day (September 19) in your own safe way. Thanks to all of you who participated!

I would also like to note that the September 18 version of *Science* magazine had several articles on plastic pollution. I especially urge you to read the article “[Predicted growth in plastic waste exceeds efforts to mitigate plastic pollution](#),” which provides insights into the predicted impact of various management strategies on the accumulation of plastic pollution in our waterways.

On September 24, Senator Tom Udall (D – NM) introduced the [Plastic Pellet Free Waters Act](#) to prohibit the discharge of pre-production plastic pellets. Click on the link to learn more about this draft legislation.

Please continue to share any upcoming events with Layne Marshall (marshall.layne@epa.gov) so that the Trash Free Waters team can advertise these opportunities with all of you on the first Monday of each month.

Romell Nandi
US EPA
Trash Free Waters program lead

EPA Announcements

\$5 million in Great Lakes Restoration Initiative (GLRI) funding for Trash Free Waters projects
On September 30th, EPA Administrator Andrew Wheeler traveled to Michigan to announce that a second GLRI TFW RFA can be expected by the end of the year. The FY21 grant program will provide applicants an opportunity to compete for a total of \$5 million for Great Lakes trash-free water projects that use mechanical devices, vessels, and other technology for cleaning up and protecting our Great Lakes harbors and waterfronts from trash. Awardees are expected to be selected by summer 2021. Read the full press release about the news [here](#).

Administrator Remarks at the G20 Agriculture and Water Ministers Meeting
EPA Administrator Andrew Wheeler recently attended the G20 Agriculture and Water Ministers Meeting where he directly highlighted the Trash Free Waters Program, noting that the U.S. is taking a leadership role in preventing trash from entering waterways and eventually becoming marine litter. The Administrator was quoted saying “I know a lot of us have different pilot projects to combat the issue. It’s time that we move beyond the pilot phase and implement real solutions.” Read a news release about the meeting [here](#).

Press Conference on Projects Funded Through the 2019 Gulf TFW RFA
On September 16th, EPA Region 6 held a virtual press conference featuring the Region 6 Regional Administrator, Ken McQueen, and representatives from three organizations which were awarded a “Gulf of Mexico Program Reduction and Prevention of Trash in the Five Coastal States” grant in spring 2020. The press conference outlined the work funded under the RFA, ranging from community cleanups and outreach and engagement to the purchase of a mobile trash skimming device. Read the full EPA news release recalling the event [here](#).

Trash Free Texas Expanded Through 2019 Gulf TFW Grant
The following day, an [EPA News Release](#) was published highlighting yet another Gulf of Mexico Trash Free Waters grant awarded in April of this year. The North Central Texas Council of Governments (NCTCOG) received a

half a million dollars for trash prevention and reduction projects with strong community outreach and engagement aimed at changing behaviors and business practices to reduce trash from six basins in the Dallas-Fort Worth and Houston regions that drain to Galveston Bay and the Gulf of Mexico. This grant expands off of the existing efforts of Trash Free Texas – a EPA TFW initiative dating back to 2016.

National Estuaries Week

On September 21st, EPA highlighted National Estuaries Week with a [tweet](#) about how EPA's National Estuary Program plays a key role in cleaning up our estuaries by addressing pollution and protecting and restoring habitat. The tweet featured a photo of a beach cleanup at San Juan Bay Estuary in Puerto Rico, a critical partner of the Trash Free Waters Program.

New Trash Free Waters Article on Plastic Packaging

The third article in the Trash Free Waters Article Series was recently published on the TFW website, titled "Rethinking Plastic Packaging: How Can Innovation Help Solve the Plastic Waste Crisis." The piece describes some of the various innovative products and models that are being developed to reduce waste from plastic packaging. The article examines bio-based plastic materials, non-plastic packaging alternatives, and new reuse models. Be sure to check it out [here](#).

Funding Opportunities

North American Wetland Conservation Act (NAWCA) Small Grants

The U.S. Small Grants Program is a competitive, matching grants program that supports public-private partnerships carrying out projects in the United States that further the goals of the North American Wetlands Conservation Act. Projects must involve only long-term protection, restoration, enhancement and/or establishment of wetland and associated upland habitats to benefit migratory birds. Applications are due by October 15, 2020. For info about eligibility criteria and instruction on how to prepare an application, please click [here](#).

Water Research Foundation (WRF) Research Priority Program RFP 5088 – Defining Exposures of Microplastics/Fibers in All Waters: Occurrence, Monitoring, and Management Strategies

The objectives of this project are to: (1) Characterize typical microplastic (MP) numbers, types, and sizes in all waters (including secondary and tertiary treated wastewater, recycled water, stormwater, drinking water supplies); (2) Develop reliable monitoring and sampling guidelines, based on MP sizes and source media; (3) If needed, develop a decision-making framework for MP reduction strategies from the whole water supply cycle; and (4) Describe the relative effectiveness of various technologies and legislation to mitigate sources and pathways of MPs. Project proposals are due October 29, 2020. To submit an application, click [here](#).

NOAA RESTORE Science Program: Planning for Actionable Science

The NOAA RESTORE Science Program recently released its next funding opportunity. This competition will provide natural resource managers, researchers, and other stakeholders with funding to plan a research project that informs a specific management decision impacting natural resources in the Gulf of Mexico. All natural resources and decisions associated with them are eligible. \$2.5 million is expected to be made available through this funding opportunity. The minimum and maximum individual award amount is approximately \$25,000 and \$125,000, respectively. The application period closes on December 15, 2020. For updates, check [here](#).

BoatU.S. Foundation: Grassroots Grants Program

The BoatU.S. Foundation is looking for creative and innovative projects that promote safe and clean boating on your local waterways. Projects should facilitate behavior change in the boating community through unique ideas and extensive outreach efforts to boaters. They should incorporate widespread reach and hands-on work with the boating community by using technology and/or social media to educate boaters as well as have a means to measure the success of the program. For examples of previously funded projects, grant guidelines and more info about the program application process, visit their grant page [here](#). Applications are reviewed on a rolling basis.

Clean Cities, Blue Oceans Grant Program (Philippines, Vietnam, and Sri Lanka and Maldives)

CCBO's grants program is designed to identify and implement locally-led, sustainable solutions and approaches that support the program's objectives and combat ocean plastics pollution directly at the source. Program goals include 1) Promote reducing, reusing, and recycling practices—the 3Rs—and strengthen markets for recycled plastic; 2) Improve local implementation and enforcement of laws, policies, and regulations; 3) Build social behavior change for 3Rs and sustainable solid waste management; and 4) Forge new private sector partnerships for improved impact, sustainability, and forward-looking commitments. CCBO is seeking the support of grantees throughout its focal

countries and currently has several opportunities available for application. Learn more about current opportunities and how to apply [here](#). Application deadlines close within the coming months and vary by country.

Pollution Prevention and Mitigation BAA

This Broad Agency Announcement (BAA) seeks opportunities to co-create, co-design, co-invest, and collaborate in the research, development, piloting, and scaling of innovative interventions for effectively mitigating air, water, and soil pollution, including ocean plastic pollution, electronic and other forms of solid waste in low and middle-income countries. USAID invites organizations, companies, academic and research institutions, and investors to propose innovative approaches for preventing and mitigating pollution in countries to promote healthier populations, cleaner environments, and inclusive, sustainable economic growth. Read more about this opportunity [here](#).

Alliance to End Plastic Waste: Request for Proposals (RFP)

The Alliance to End Plastic Waste is now accepting project proposals on the implementation of infrastructure to eliminate leakage of plastic waste through collection and containment. This RFP prioritizes support to cities in Asia, Africa and Latin America. In partnership with organizations that directly work with cities, they hope to shape high-quality submissions that ultimately deliver against the goal of driving investments in much-needed infrastructures. The first window for submission of Concept Papers closes December 31st, 2020. To submit your proposal, please visit the [Plastic Free Waste Cities page](#).

NOAA FY2021 Marine Debris Research Grants Notice

The NOAA Marine Debris Program invites applications for field, laboratory, and modeling research that investigates and identifies the critical input pathways for marine debris introduction into the coastal zone, including evaluation of appropriate simultaneous pathways of riverine transport downstream, surface runoff, stormwater discharge, and wind-driven transport, and degradation and fragmentation of debris during transport. Funding of up to \$2,000,000 is expected to be available, while typical awards range from \$150,000 - \$300,000. Applications are due in February 2021. Read more about this opportunity [here](#).

US Department of Agriculture Rural Development Water & Waste Disposal Loan & Grant Program

This program provides funding for clean and reliable drinking water systems, sanitary sewage disposal, sanitary solid waste disposal, and storm water drainage to households and businesses in eligible rural areas. Applications are reviewed on a rolling basis. Full details, including requirements and registration, can be found [here](#).

Save the Dates/Calendar

October 5-9th: Smart Oceans 2020 Workshop

This event, brought to you by NSF, MIT, and Woods Hole Oceanographic Institution, is titled "Future of Oceans: Innovation, Exploration, and Utilization Workshop." The workshop features virtual sessions on oceanography, climate & environmental sustainability, computing, marine biology & ecology, geopolitics, and defense. Together, we will explore ongoing challenges and emerging opportunities in ocean innovation, exploration, and utilization. View the program and register for free [here](#).

October 5-9th: Smart Oceans 2020

To accelerate the future of oceans research & technology, the Media Lab at MIT has joined forces with the Woods Hole Oceanographic Institution to spearhead a series of cross-cutting, multidisciplinary virtual workshops funded by the National Science Foundation called "Smart Oceans 2020." This NSF Convergence Accelerator conference will feature a mix of plenary speakers, lightning talks, and brainstorming sessions, all with the purpose of accelerating use-inspired convergence research. The goal of the conference organizers is to foster a wealth of synergy, connections, and cooperation, which will lead to partnerships between academia, industry, NGOs, government, philanthropy, and venture capital. Register for the conference [here](#).

October 6th (12PM EDT): NOAA Marine Debris Research Webinar Series: Addressing the Ecological Risks of Microplastic – Webinar 2

Second in a webinar series hosted by the NOAA Marine Debris Program, used to highlight results from several research projects wrapping up at the end of the year. This event is titled "Assessment of Plastic Marine Debris Export Mechanisms and Risk to Sea Scallop Fisheries of the Mid-Atlantic Bight" and will feature Scott Gallager of the Woods Hole Oceanographic Institute. Register for the webinar [here](#).

October 6th (1PM EDT): Creating Partnerships to Advance Sustainable Packaging

In this GreenBiz Group webcast, Sun Chemical will share how partnering across the supply chain can help lead to sustainable innovations and drive wider industry adoption, creating climate solutions while helping to achieve

corporate sustainability goals. Speakers include Russell J. Schwartz, Chief Technology Officer at the Sun Chemical Corporation and Phil Davidson, Global Sustainability Director at HAVI. Register for the webcast [here](#).

October 13-15th: 2020 Global Symposium on Waste Plastic

Hosted by AIChE, the global home of chemical engineers, this virtual conference features experts from a variety of engineering disciplines contributing to the accelerated development of alternative plastics with the goal of mitigating the effects of traditional plastics in our environment. To learn more about the symposium, click [here](#).

October 14-17th: The North American Association for Environmental Education Annual Conference

For nearly five decades, NAAEE has convened one of the leading annual conferences for environmental education professionals, designed to promote innovation, networking, learning, and dissemination of best practices. The goal of this year's conference, held virtually, is to "educate, collaborate, and inspire change." Check back [here](#) to register.

October 20th (12PM EDT): NOAA Marine Debris Research Webinar Series: Addressing the Ecological Risks of Microplastic – Webinar 3

Third in a webinar series hosted by the NOAA Marine Debris Program, used to highlight results from several research projects wrapping up at the end of the year. This event is titled "Selective ingestion of microplastics by oysters: exposure assessment as a predictive tool for assessing the environmental risk to commercially important bivalves" and will feature Dr. Evan Ward of the University of Connecticut. Register for the webinar [here](#).

October 20th (2PM EDT): Clean Currents Coalition: "A global collaborative solution to the complex plastics problem" webinar

This webinar will be led by Molly Morse and Valeria Tamayo-Canadas from the Benioff Ocean Initiative with support from OCTO. The Clean Currents Coalition is a global network of 9 teams combatting the flow of plastic waste from river systems to the ocean. Join the webinar to learn more about the solutions championed by Coalition member teams in their river systems, the plastic-intercepting technologies they are piloting, and the social, policy, and infrastructure-related strategies they are catalyzing in these communities. Register for the event [here](#).

October 22nd (12PM EDT): NOAA Marine Debris Research Webinar Series: Addressing the Ecological Risks of Microplastic – Webinar 4

Fourth in a webinar series hosted by the NOAA Marine Debris Program, used to highlight results from several research projects wrapping up at the end of the year. This event is titled "Microplastic ingestion by the black sea bass, *Centropomus striata*: An assessment of potential impacts on health of an Atlantic commercial fish species" and will feature Drs. Susanne Brander of Oregon State University and Alison Taylor of the University of North Carolina Wilmington. Register for the webinar [here](#).

October 26th: Start of the Massive Online Open Course on Marine Litter

UN Environment Programme and Open Universiteit have created a Massive Open Online Course (MOOC) on Marine Litter as a key activity of the Global Partnership on Marine Litter. It is also part of the Clean Seas Campaign. The course starts on October 26th and is free for all students and available in 10 different languages. The MOOC on Marine Litter strives to teach students through action oriented learning how they can apply successful and inspiring activities to their own local context, regardless of their profession or location. Register for the course [here](#).

[Save the dates for future months...](#)

November 5th (1PM EDT): EPA Trash Free Waters Webinar – Experiences and Lessons Learned from Trash Capture Projects

Trash capture devices can be an effective trash management intervention, particularly in areas with heavy trash loads in municipal runoff. However, there are many considerations that must be taken into account when determining whether a trash capture project is an appropriate intervention for a given area and when designing, implementing, and maintaining the project. The EPA TFW Program's next webinar will bring together experts who have planned and implemented trash capture projects in watersheds across the country. Join us on November 5th for a discussion of lessons learned from their experiences. Expect a calendar invitation soon!

November 9-10th: Plastic Free World Virtual Conference

Plastic Free World Virtual Summit 2020 will feature over 200 expert speakers and presentations, more than 25 panel discussions, a fully interactive exhibition, and dedicated networking sessions to share the latest in-depth industry knowledge to help the world tackle the rising issue of waste plastic in the environment. The five main agenda themes include: 1) Retail, Consumer Goods, and Packaging, 2) Food and Beverage, 3) Fashion and Textiles, 4) Bio-based Materials for Manufacturing Industries, and 5) Closing the Loop. Click [here](#) to view the agenda and register for the conference.

November 16th: EPA's 2020 America Recycles Innovation Fair

The America Recycles Innovation Fair showcases recent advances in recycling technology, product development, and materials usage. Exhibitors will display new recyclable products, goods made from recycled content, innovative

education and communication methods, or materials that promote more effective recycling, recycling and manufacturing research, and new technologies that are advancing recycling today and into the future. This year, the America Recycles Innovation Fair plans to showcase exhibitors both online (via a virtual exhibit hall) as well as in person (dependent on Washington, DC's guidance related to the ongoing COVID-19 pandemic). Visit the EPA site [here](#) for more info.

November 23-27th: MICRO2020 International Conference- Fate and Impacts of Microplastics: Knowledge and Responsibilities

MICRO's biannual international conference will be held during the originally planned dates of November 23-27, 2020, but it will be substantially online-based with several in-person meeting nodes. The goals of this conference are to: (i) identify the research challenges; (ii) facilitate open access to the breadth of ongoing research; and (iii) contribute a collaborative effort to our continuously expanding community. Read more about the conference [here](#).

December 2-4th: Human Health and the Ocean: In a Changing World International Symposium

The purpose of the "Human Health and Ocean Symposium" is to provide an update on the various risks human activities expose the oceans to, and the threats that those activities and the resulting ocean degradation pose to human health, but also to consider the various benefits that the Ocean can bring to the health and wellbeing of populations. The symposium, held in Monaco, will offer keynotes, mini-reviews by internationally renowned speakers and short communications open to researchers in the field. To view the full symposium agenda, click [here](#).

December 7-8th: The Our Ocean Conference in Palau

The goal of Our Ocean 2020 is to show how local ocean actions and innovations drawn from diverse contexts can translate into raising the level of global ocean ambition. Areas of action for conference discussions include: protected areas, climate change, sustainable food from the ocean, a clean ocean, sustainable blue economies, and maritime security. Keep apprised of news by clicking [here](#).

Our Coastal Futures Conference (POSTPONED)

Originally scheduled for this October, the 2021 Our Coastal Futures conference will bring together voices from researchers, practitioners, Indigenous peoples, activists, businesses, youth, and decision-makers. This vibrant conference will inspire new ideas to enable a transition towards respectful custodianship of our oceans and coasts. Conference themes include ontologies, sciences, economies, and reciprocity. For updates on the rescheduled conference date, check back [here](#).

The Microplastics Breakdown

The section below only includes a selection of notable, recent microplastics study summaries. If you would like to receive the complete Microplastics Breakdown, please contact Bathersfield.Nizanna@epa.gov

INTERACTION IN ECOSYSTEMS AND EFFECTS ON AQUATIC ORGANISMS

Interactive Effects of Microplastics and Selected Pharmaceuticals on Red Tilapia: Role of Microplastic Aging

Yejing Huang, Jiannan Ding, Guangsheng Zhang, Shujiao Liu, Hua Zou, Zhenyu Wang, Wenbin Zhu and Jinju Geng

This study focused on the interactive effects on red tilapia of aged and virgin microplastics (MPs) with the antibiotic sulfamethoxazole (SMX) and the Betablocker propranolol (PRP). Ultraviolet irradiation was used to simulate the microplastics aging in the environment. The results suggest that the MP aging could induce complex changes in the interactive effects between MPs and pharmaceuticals. For example, aging microplastics was associated with a significant increase in the accumulation of PRP in the brain and decreased the concentration of SMX by 46.1% in the gills. The aging of microplastics was found to influence the expression of genes related to the metabolic process, immune system process, and the genetic information process in tilapia under the conditions of co-exposure to MPs and pharmaceuticals. Read the full abstract [here](#).

The Impacts of Polyethylene Terephthalate Microplastics (mPETs) on Ecosystem Functionality in Marine Sediment

Yuxi You, Simon F. Thrush, Julie A. Hope

The goal of this 31-day laboratory experiment was to investigate how microplastics influence ecosystem functions associated with sediment biogeochemistry, large bivalves and microphytobenthos. The experiment tested the role of micropolyethylene terephthalate (mPETs) at five concentrations (0%, 1%, 3%, 6%, and 8% based on wet weight of top 1 cm sediment). Canonical principle of coordinate analysis (CAP) was applied to assess change on the ecosystem functionality with increasing concentrations of mPETs. The results indicated that stress effects on ecosystem function are the product of the interaction between the bivalve, *Macomona liliana*, microphytobenthos and mPETs. Instead of a simple cause-effect relationship, the mPETs appear to induce a chain-reaction in the system. Ecosystem functions and benthic infauna factors become both response and cause variables that shift under the stress of changing mPETs concentrations. Read the full abstract [here](#).

HUMAN AND AQUATIC LIFE EXPOSURE TO MICROPLASTICS

Abundance, Composition, and Potential Intake of Microplastics in Canned Fish

Razegheh Akhbarizadeh, Sina Dobaradaran, Iraj Nabipour, Saeed Tajbakhsh, Amir Hossein Darabi, Jörg Spitz

This study examined the presence of microplastics in 50 samples of 7 different brands of canned tuna and mackerel available in Israel and assessed their composition, possible sources and potential intake. The results showed that 80% of samples had at least one plastic particle and fibers were the most abundant shapes of MPs, and polyethylene terephthalate (32.8%) was the most common polymer type in canned fish samples. The authors hypothesized that fish, food additives, and contact materials during the cleaning and canning process are possible sources of MPs. Estimates of the human intake of canned fish indicated the possibility of plastics absorption by humans who consume canned fish several times a week. The concomitance of the detected MPs and trace elements revealed the possible risks posed by long-term consumption of canned fish in human populations that depend to a great extent on canned seafood. The authors conclude that the presence of tiny MPs (10–50 µm) in seafood products, such as canned tuna fish, indicates that more scientific attention should be given to the possible health risks of the chronic exposure of consumers to plastic in food. Read the full abstract [here](#).

Human Exposure to Microplastics: A Study in Iran

Sajjad Abbasi, Andrew Turner

This study focused on the exposure of microplastics (MPs) to a cohort of adults of various demographics from different regions of Iran. MPs were retrieved from filtered washes of the hand and face skin, head hair and saliva of 2000 individuals after an exposure period of 24 hours. A total of 8000 samples from head hair, hand skin, face skin and saliva were collected for microplastic analysis during the dry season. The majority of the microplastics were retrieved from head hair and the least samples were retrieved from saliva. About twice the amount of microplastics were retrieved from males than females. The number of MPs was similar amongst residents of urbanized regions, albeit with evidence of greater quantities captured in more humid settings, and the number was considerably lower in residents of a remote and sparsely populated area. Polyethylene-polyethylene terephthalate and polypropylene fibres of < 100 µm in length, likely from clothing and soft furnishings in the indoor setting and a wider range of sources in the exterior environment, were the most abundant type of MP in all body receptors. Read the full abstract [here](#).

Evaluating the Presence of Microplastics in Striped Dolphins (*Stenella Coeruleoalba*) Stranded in the Western Mediterranean Sea

O. Novillo, J.A. Raga, J. Tomás

The authors analyzed the presence of microplastics in Western Mediterranean striped dolphins' intestinal contents over three decades on the coast of the Valencia Community (Valencia, Alicante, Castellon) in the East of Spain. The results indicated that 90.5% of dolphins contained microplastics. Of these microplastics, 73.6% were fibres, 23.87% were fragments and 2.53% were primary pellets. Notably, microplastic amount per dolphin was relatively low and highly variable. Through FT-IR spectrometry, the authors found that polyacrylamide, typically found in synthetic clothes, was the most common plastic polymer. Read the full abstract [here](#).

MICROPLASTICS FATE AND TRANSPORT

A Critical Review on Various Trophic Transfer Routes of Microplastics in the Context of the Indian Coastal Ecosystem

Nagarajan Vikas Madhav, Kannappan Panchamoorthy Gopinath, Aakriti Krishnan, Neha Rajendran, Abhishek Krishnan

This study evaluates microplastic pollution along the coastal regions of India through a combination of existing literature and original observations at all beaches in Chennai. Based on the results the authors concluded that microplastics have been found in marine and terrestrial life in significant amounts. Their findings indicated that the two main processes by which microplastics enter the systems of these animals are by ingestion and bioaccumulation. The authors suggest potential routes for the bioaccumulation of microplastics through trophic transfer, with special emphasis on the routes involving those species at risk, in order to fill the existing knowledge gaps. They conclude that further studies are necessary to truly gauge the impact of the bioaccumulation in specific species and on the coastal ecosystem as a whole. Furthermore, the authors note that there is still uncertainty with respect to how animals, humans and the environment are affected by exposure to microplastics. Read the full abstract [here](#).

Elucidating the Vertical Transport of Microplastics in the Water Column: A Review of Sampling Methodologies and Distributions

Kai Liu, Winnie Courtene-Jones, Xiaohui Wang, Zhangyu Song, Nian Wei, Daoji Li

This study reviewed current progress of sampling methodologies, the distribution patterns, and the physiochemical properties of microplastics (MPs) throughout the water column. Three sampling protocols were identified in this study: bulk, net and submersible pump/in-situ sampling. Overall, the review found various vertical patterns from the surface to the seafloor in different water bodies; the authors also note that their inner mechanisms could possibly differ among regions. However, inconsistent sampling methodologies were thought to hinder researchers from adequately comparing processes among regions as well as establishing an accurate estimate of the vertical transport of MPs from the upper aquatic environment. Another overarching finding was that there is insufficient data in the field to establish an understanding of the realistic transport of MPs. The authors recommend that a volume gradient experiment is needed to obtain the ideal volume of filtrated water before an investigation. In addition, a unified mesh size of 60–90 µm is suggested to minimize the sample volume and mesh size impact on MP quantification. The authors also recommend a combination of bulk samples and net collection as being a possibly effective method to reveal the sink patterns of MPs from the surface water. Read the full abstract [here](#).

If you'd like to see your posting in this email, please email Marshall.Layne@epa.gov with any suggestions!