The Rapids

US EPA's Trash Free Waters Monthly Update

November 2022

epa.gov/trash-free-waters

Introduction

Hello all,

According to a recent Minderoo Foundation report, "**The Price of Plastic Pollution: Social Costs and Corporate Liabilities**," the costs to society from plastic pollution — including environmental clean-up, ecosystem degradation, shorter life expectancy, and medical treatment — exceed $100 billion per year.

I also wanted to point out the Global Alliance for Incinerator Alternatives (GAIA) **"Zero Waste to Zero Emissions"** report, which outlines the numerous benefits of zero waste systems, including those related to climate mitigation and adaptation and incorporates several case studies.

In addition, OpenOceans Global has launched an online citizen science **map of plastic-fouled shorelines** and needs your help in identifying additional hotspot beaches.

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.

Romell Nandi
US EPA
Trash Free Waters National Program Lead

EPA Announcements

Release of Project Summary Report "Reducing Aquatic Trash Though Stormwater and Solid Waste Management"
TFW partnered with the National Municipal Stormwater Alliance, KCI Technologies, and the American Chemistry Council to explore the status, challenges, and potential solutions to address aquatic trash in the context of stormwater and solid waste programs. The project partners just released a summary report of learning from several stakeholder engagements held on this topic.

Release of EPA's "Building a Circular Economy for All: Progress Towards Transformative Change"
With support from new congressional authorities and funding, EPA's Office of Resource Conservation and Recovery is making significant progress in supporting a circular economy for all by creating grant programs to support recycling infrastructure and recycling education and outreach. EPA is also issuing

strategies and reports on how our nation can improve recycling, decrease plastic waste, and reduce food waste. This summary document outlines these recent accomplishments as well as provides insight on next steps.

TFW Webinar – Bioplastics: The Good, The Bad, & The Band-Aids

On October 27, TFW hosted the tenth webinar in the TFW Webinar Series. Our panel of experts discussed the complexities of bioplastics - what they are, how they are and can be utilized, how they are disposed of, and their role in a sustainable environment. Over 200 people were in attendance. A recording will be posted on the **TFW webinar archive** in the coming weeks.

Funding Opportunities

FY22 and FY23 EPA Region 2 Source Reduction Assistance in Communities Grants

EPA Region 2 is announcing a grant competition to fund assistance agreements that support research, investigation, study, demonstration, outreach, education, and training using source reduction approaches (also known as "pollution prevention," or "P2"). P2 means reducing or eliminating pollutants from entering any waste stream or otherwise released into the environment before recycling, treatment, or disposal. EPA is particularly interested in receiving applications that offer hands-on practical P2 tools, information, and/or innovative P2 approaches to measurably improve public health and the surrounding environment, by reducing the use of hazardous substances, reducing toxic pollutants, supporting efficiencies in reducing resource use (e.g., water and energy), and reducing business expenditures and liability costs. **The deadline for submissions is November 14.**

EPA Green Chemistry Challenge Awards Program

The EPA Green Chemistry Challenge Awards promote the environmental and economic benefits of developing and using novel green chemistry. These prestigious annual awards recognize chemical technologies that incorporate green chemistry into chemical design, manufacture, and use. Focus areas of the challenge include Greener Synthetic Pathways, Greener Reaction Conditions, and The Design of Greener Chemicals. **The deadline for submissions is December 9.**

Solid Waste Management Grant Program

The U.S. Department of Agriculture's Solid Waste Management (SWM) Grant Program has been established to assist communities through free technical assistance and/or training provided by the grant recipients. Public bodies, nonprofits, Federally recognized tribes, and academic institutions within rural areas and towns with a population of 10,000 or less are eligible to receive SWM grant funds to reduce or eliminate pollution of water resources in rural areas and improve planning and management of solid waste sites in rural areas. Funds may be used to evaluate current landfill conditions to determine threats to water resources, enhance operator skills in the operation and maintenance of active landfills, and help communities reduce the solid waste stream. **The deadline for submissions is December 31.**

Building Resilient Infrastructure and Communities

The Federal Emergency Management Agency (FEMA) Building Resilient Infrastructure and Communities (BRIC) grant program will support states, local communities, tribes, and territories as they undertake hazard mitigation projects, reducing the risks they face from disasters and natural hazards. The BRIC program's guiding principles are supporting communities through capability and capacity building; encouraging and enabling innovation; promoting partnerships; enabling large projects; maintaining flexibility; and providing consistency. **The deadline for submissions is January 27, 2023.**

20th Annual P3 Awards: A National Student Design Competition Focusing on People, Prosperity, and the Planet

The EPA seeks applications proposing to take a holistic approach, grounded in research and innovation, to develop and demonstrate solutions to real-world challenges. The People, Prosperity, and the Planet (P3) Program highlights the use of scientific principles in creating innovative technology-based projects that achieve the mutual goals of improved quality of life, economic prosperity, and environmental protection. This award program is split into four separate funding opportunities: Clean and Healthy Air (EPA-G2023-P3-Q1), Clean and Safe Water (EPA-G2023-P3-Q2), Safeguard and Revitalize Communities (EPA-G2023-P3-Q3), and Ensure Safety of Chemicals (EPA-G2023-P3-Q4). **The deadline for submissions is February 1, 2023.**

Research to Action: Assessing and Addressing Community Exposures to Environmental Contaminants

This National Institutes of Health Funding Opportunity Announcement encourages applications using community-engaged research methods to investigate the potential health risks of environmental exposures of concern to communities and to implement an environmental public health action plan based on research findings. The overall goal is to inform and support efforts to prevent or reduce exposure to harmful environmental exposures and improve community health. Researching the disproportionate impact of emerging and ongoing exposures like microplastics is an eligible topic. **This is a rolling application but the next review will take place on February 5, 2023.**

Other opportunities…

EPA Region 7 2022 Pollution Prevention (P2) Recognition Awards Program

Applications are now being accepted for the EPA Region 7 2022 P2 Recognition Awards Program, an annual, voluntary, and non-monetary award program. P2 is a successful, non-regulatory approach to energy conservation, water conservation, reduction of toxic materials used, and money savings. Those interested in applying or nominating an organization to be considered for an award should submit a complete application describing the nominee's P2 efforts, activities, cost savings, and more. **The deadline for submissions is November 7.**

Google Circular Economy Accelerator

This is a 10-week virtual accelerator program for Seed to Series A technology startups and non-profit organizations based in North America and Asia-Pacific. The accelerator is designed to bring the best of Google's programs, products, people, network, and technology to those working towards a waste-free world. Each cohort will comprise 10-15 organizations using technology to tackle circular economy challenges. These challenges include reuse, refill, recycling, composting, fashion, food, safe and circular materials, and the built environment. **The deadline for submissions is November 14.**

2023 NOAA Marine Debris Program Art Contest

The NOAA Marine Debris Program holds an annual art contest to reach K-8 students and help raise awareness about marine debris. An awards panel will collect all entries and select 13 winners to be featured in a marine debris calendar. Entries will be judged on their creativity, artistic presentation, and relevancy to the theme of 1) How marine debris impacts the ocean and the Great Lakes environment, and 2) What you are doing to help prevent marine debris. **The deadline for submissions is December 16.**

In case you missed it...

California's SB 54: Path to Passage - The World's First True Circular Economy Bill
The National Stewardship Action Council recently hosted this 2-hour webinar on SB 54 (Allen): California's Plastic Pollution Prevention and Packaging Producer Responsibility Act, signed into law on June 20, 2022. SB 54 lead author, Senator Ben Allen, and Senior Policy Advisor, Tina Andolina, presented along with key negotiation stakeholders to share the details regarding the process, how an agreement was reached, the timelines for implementation, and more.

By the Numbers
This webinar was in The Recycling Partnership's By the Numbers webinar series for industry stakeholders focused on current trends in the U.S. recycling system and circular economy. This event featured national subject-matter experts and NGO leaders about sources of plastics recycling rate information, what these rates tell us, and the drivers of recycling rate improvement.

Upcoming Events

Trash Free Texas Single-Use Plastic Reduction Workgroup Meeting
November 7 (3:30 PM ET), virtual
The Trash Free Texas team from the North Central Texas Council of Governments and the Houston-Galveston Area Council cordially invites Texan cities, restaurants, third-party delivery providers, chambers of commerce, and restaurant patrons to participate in the next meeting of the Trash Free Texas Single-Use Plastic Reduction Workgroup. The purpose of this meeting is for the Trash Free Texas team to receive feedback on two draft toolkits (one for cities and one for restaurants) that include resources, templates, and strategies for voluntarily reducing the use of single-use plastics in restaurants.

74th Annual Gulf & Caribbean Fisheries Institute Conference
November 8-12, 2022; virtual
The theme of this year's Gulf and Caribbean Fisheries Institute (GCFI) conference is "A Changing Time: Interactions between Science and Governance." The meeting will bring together regional stakeholders to share experiences and present success stories from around the Gulf and Caribbean. Several conference presentations will be dedicated to marine litter, including microplastics research and Abandoned, Lost, and Discarded Fishing Gear (ALDFG).

USAID Solid Waste Planning to Advance Circular Economies
November 9 (10 PM ET), virtual
Having a robust local Integrated Solid Waste Management Plan is central to being able to effectively manage waste to reduce ocean plastic pollution and advance a local circular economy. This training will share information on how local governments can develop effective Solid Waste Management Plans and will discuss the critical components of robust plans that can reduce ocean plastics, advance local circular economies, and promote gender equity.

EPA Stakeholder Meeting on Rubber, Miscellaneous Plastics, and Miscellaneous Manufacturing
November 9 (1-2:30 PM ET), virtual
EPA is hosting a series of public meetings in Fall 2022 to inform updates to **EPA's industrial stormwater fact sheet series**, which guides each of the 29 industrial sectors covered under the Multi-Sector General Permit (MSGP). These resources are an important part of EPA's industrial stormwater program to assist facilities in managing their stormwater discharges. This particular meeting will focus on hearing stakeholder input on common activities, pollutant sources, and associated pollutants at facilities in Rubber, Miscellaneous Plastics, and Miscellaneous Manufacturing (Sector Y); and stormwater control measures

or best management practices, including source control and good housekeeping/pollution prevention measures for potential pollutant sources at facilities in the sector.

Starting Community Composting Programs on Tribal Lands (EPA Region 9)
November 9-10, Maricopa, AZ
This in-person training workshop will be hosted by the Ak-Chin Indian Community in Maricopa, Arizona, and is organized by EPA Region 9 with the support of Booz Allen Hamilton. Attendees will learn how to compost, identify community composting practices that may work well in your community, and chart a path toward developing a community composting program. We will visit current on-farm composting operations and hear from other Tribes about their composting experiences. This event is intended for employees of federally-recognized Tribes and Tribal consortia. Participants from outside of EPA Region 9 are welcome, though travel stipends are not available.

Plastics Recycling World Expo
November 9-10, Cleveland, OH
This North American exhibition for plastics recyclers will feature over 100 speakers and 200 exhibitors over two days. Technical sessions and industry debates will cover the recycling value chain, plastic additives, Extended Producer Responsibility, plastics packaging innovations, and more.

Circular Economy and the Future of Recycling in the US
November 10 (12:30 PM ET), virtual
This webinar will assess the impact that recycling, fast fashion, and policy have on promoting a circular economy and achieving a healthier standard of living for the environment and the well-being of people. Speakers include Stefanie Valentic, Editorial Director of Waste360; Dr. Katja Grimme, Writer, Strategy Consultant, and Keynote speaker providing Thought Leadership on Sustainability in IT, Digitization, and Business; Stacy Savage, Founder and President of Zero Waste Strategies and Co-Founder of the Austin Zero Waste Alliance; and Kelley Dennings, Campaigner for the Center for Biological Diversity.

Electronics Reuse Conference
November 14-16, Denver, CO, and virtual
Join the world's brightest minds in reuse to learn and connect. This conference will bring together more than 10 industries, consisting of hyper-focused speeches, panels, and live Q&A sessions to help take your business to the next level. The all-in-one repair, reuse, and refurbishing event will bring you closer to leading companies and brands than ever before in the mile-high city.

MICRO 2022, Atlas Edition: Plastic Pollution from Macro to Nano
November 14-18, virtual
Questions about plastics have continued to multiply as the research community grows and public concern heightens. MICRO 2022 provides an opportunity to share what we know, fill in gaps, identify new questions and develop commitments to operationalize this knowledge into meaningful actions addressing plastic pollution from macro to nano.

Product Sustainability Summit USA 2022
November 15-16, Arlington, VA, and virtual
This conference will be held by ChemicalWatch and feature expert speakers to help explore how businesses can benefit from a sustainable product strategy. The building blocks for a sustainable product strategy start with responsible sourcing and supply chain transparency. This then leads to circular economies, including compliance with laws in chemicals on products that are being made circular. Designing for sustainability is the next building block to be considered and this includes trends for "Safe

by Design" in the U.S. and EU. The final building block to be covered in this conference is sustainable packaging.

2022 Plastics Packaging Summit
November 15-17, Indianapolis, IN
The theme of this year's Plastic Packaging Summit, produced by the PLASTICS Industry Association, is "Packaging for a Sustainable Future." The summit is divided into four main components: technology, business readiness, sustainability and recycling, and networking. Sessions include discussion around sustainability as a corporate strategy, supply chain decision-making, and packaging challenges and opportunities from a retail perspective.

EPR Masterclass: Chemical Recycling
November 17 (11:30 AM ET), virtual
The term "chemical recycling" refers to a wide range of technologies that process recovered plastic products (including packaging) into new plastic, as well as energy and/or fuel. Government policymakers tasked with passing legislation or issuing permits for chemical recycling projects lack the criteria to assess their economic, environmental, and human health impacts. The Product Stewardship Institute's forthcoming report, "Making Sense of Chemical Recycling," aims to fill that gap. During the webinar, presented by the **Extended Producer Responsibility Alliance (EXPRA)**, our expert panel will discuss the wide range of technologies that fall under the chemical recycling umbrella and consider criteria to determine which, if any, can support a sustainable economy, prevent waste and pollution, and curb greenhouse gas emissions.

Envisioning the New Reuse Economy
November 17 (1 PM ET), virtual
Upstream's vision is to see at least 30% of consumable goods sold in U.S. and Canada sold in reusable formats by 2030. Join Upstream's Matt Prindiville along with Anita Schwartz (WSP) and Crystal Dreisbach (Don't Waste Durham/GreenToGo) for a lively discussion about the ideation, experimentation, and strategies needed to create a shift to a circular economy. They'll also dive deeper into the opportunities to bring reuse/refill to key sectors like food service, beverage, consumer packaged goods, brick & mortar retail, e-commerce, and waste management.

Plastic-Free Presents: Mindful Gifting for Healthier Holidays
November 17 (5 PM ET), virtual
Join Plastic Pollution Coalition for a special holiday webinar featuring Alejandra Warren, Co-Founder and Executive Director of Plastic Free Future, and Dr. Manasa Mantravadi, Pediatrician, Founder/CEO of Ahimsa. This webinar will outline ways to share gifts this holiday season while also reducing your plastic footprint.

The National Zero Waste Conference
November 30 - December 1, virtual
The National Zero Waste Conference is the annual two-day virtual educational and networking event organized by Zero Waste USA in partnership with TRUE Certification for Zero Waste. Zero Waste Business is the focus on Wednesday, November 30, and Zero Waste Communities on Thursday, December 1. Conference topics include Circular Economy, Zero Waste and Climate Change, Ocean Plastics, Product Policies, Contracting Best Practices, Social Equity and Workers' Dignity, and more.

Save the dates for future months...

Restore America's Estuaries Coastal and Estuarine Summit
December 4-8, New Orleans, LA, and virtual
Restore America's Estuaries (RAE) proudly presents the 2022 Coastal & Estuarine Summit with support from Coalition to Restore Coastal Louisiana (CRCL). In its 11th year, the 2022 Summit will bring together the coastal restoration and management communities to explore issues, solutions, and lessons learned in their work. The Summit Program will address all aspects of coastal and estuarine restoration and management, including the Great Lakes and international locales. These topics are crucial as coastal communities pursue new, more robust strategies to effectively manage, protect, and restore their resources in a changing climate.

WasteCon 2022
December 5-8, San Diego, CA
WASTECON is The Solid Waste Association of North America's (SWANA) executive leadership summit. The solid waste industry is going through exciting changes that bring both challenges and opportunities. With a mix of keynotes addressing the hot topics in the industry, development and learning sessions, and lots of networking time, this event will provide you and your team with what you need to best respond to change, seize the opportunity, and keep stakeholders aligned and supportive.

5th Annual Virginia Stormwater and Plastic Pollution Workshop
December 7, Arlington, VA
Clean Virginia Waterways is excited to announce the 5th Annual Stormwater and Plastic Pollution Workshop for stormwater, plastic pollution, and litter-prevention professionals. This workshop will address urban trash pollution and strategies employed to intercept a piece of trash before it becomes part of stormwater runoff and is conveyed to and through the storm sewer system. Registration will open soon.

In case you missed it...

Hold the Plastic, Please! A Web Briefing For Restaurant Owners Who Want To Reduce Single-Use Plastic
This Beyond Plastics webinar provided guidance on how restaurant, cafe, and bar owners can reduce their consumption of single-use plastic during day-to-day operations. Guest speakers included two restaurant owners who shared the steps they took to reduce their plastic footprint using Beyond Plastics' **"Hold the Plastic, Please" guide**.

Webinar for Dry Cleaners Who Want to Reduce Single-Use Poly
This webinar highlighted Beyond Plastics' new **guide** to help dry cleaners reduce single-use poly and other plastics, including practical advice for reducing plastic usage, guidance for calculating potential savings, suggestions for shop front signage, green business listing websites, and more. Expert panelists included Jennie Nigrosh and Agela Harris of Green Garmento, makers of a popular reusable garment bag; and David Meyer, owner of Elite Cleaners in Phoenix, Arizona who experienced a dramatic increase in customer satisfaction and support after he introduced reusable garment bags in his establishment.

The Microplastics Breakdown

HUMAN EXPOSURE AND POTENTIAL IMPACTS

The landscape of micron-scale particles including microplastics in human-enclosed body fluids

Quanquan Guan, Jin Jiang, Yan Huang, Qing Wang, Zhaofeng Liu, Xuan Ma, Xiaona Yang, Yong Li, Shangqian Wang, Weiding Cui, Junwei Tang, Hua Wan, Qing Xu, Yiming Tu, Di Wu, Yankai Xia

In this study, samples from thirteen kinds of human-enclosed body fluids from eight body systems, including whole blood, cerebrospinal fluid, and two main pathological body fluids (effusions and cyst fluids), from 104 patients aged 24–96 years with an average age of 56 years were analyzed for the presence of microparticles. A total of 702 microparticles were detected in the samples. The average particle number detected in each kind of enclosed body fluids ranged between 29 and 80 with renal, hepatic, pelvic, and gallbladder cyst fluid containing the most particles. Most synthetic material particles were detected in the renal cyst, whole blood, and pericardial effusion while most iron compound particles were detected in the pelvic cyst. The researchers classified the microparticles into five major categories based on their sources and chemical properties: 1) synthetic materials - polymers, synthetic pigments, and other unnatural compounds or monomers; 2) iron compounds - iron oxides and their derivatives or iron-containing salts; 3) iron-free minerals - natural minerals without iron; 4) carbon/organic - carbon black and natural organic materials; 5) undocumented - those whose spectrum the researchers who could not be identified. Nine kinds of microplastics (MPs) were detected: polypropylene (PP), polystyrene (PS), polytetrafluoroethylene (PTFE), polyvinyl butyral (PVB), polyamide 6 (PA), low-density polyethylene (LDPE), polyethylene-co-acrylic acid (PEAA), polystyrene-co-acrylonitrile (PSAN), and polyvinyl alcohol (PVA). According to the authors, their study results showed that a large number of microparticles were unprecedentedly detected and identified in human body fluids, which they asserted indicated that internal microparticle exposure is under-evaluated. These results, they asserted, urge environmental protection agencies to take the exposure of microparticles including MPs as risk factors.

Microplastics found in human breast milk for the first time: Exclusive: Researchers concerned over potential health impacts of chemical contaminants on babies

Damian Carrington, Environmental Editor for the Guardian

This article summarized a **recent study** published in the journal *Polymers* which found that MPs have been detected in human breast milk. It was reported that the researchers collected breast milk samples from 34 healthy mothers, a week after giving birth in Rome, Italy. The breast milk samples were collected, stored, and analyzed without the use of plastics, and control samples were also processed to rule out contamination. MPs composed of polyethylene, PVC, and polypropylene were detected in 75% of the samples – a finding which resulted in the researchers being greatly concerned over the potential health impacts on babies. As described in this article, the research team examined the women's consumption of food and drink in plastic packaging and of seafood, as well as the use of plastic-containing personal hygiene products, but they found no correlation with the presence of MPs. This suggested, the article reported, ubiquitous presence of MPs in the environment "makes human exposure inevitable," although larger studies in the future may identify particular risk factors.

MICROPLASTIC REMOVAL AND INNOVATION

New Plastic Biodegrades in Ocean Water

University of California San Diego

This blog post discussed research conducted at the University of California San Diego focused on developing new biodegradable material, a polyurethane foam, that is designed to replace conventionally used plastic, the results of which are published in the journal *Science of the Total Environment.* This material had been found to biodegrade in land-based composts. The researchers conducted a series of tests of their biodegradable polyurethane materials developed at UC San Diego over the last eight years. As described in this article, samples of the biodegradable polyurethane were exposed to tidal and wave

dynamics and tracked for molecular and physical changes. Additionally, the article reported that the study results showed that the material started to degrade in as little as four weeks. The researchers were reported to then have identified microorganisms from six marine sites around San Diego that are capable of breaking down and consuming the polyurethane material.

Detection and Analysis of Microfibers and Microplastics in Wastewater from a Textile Company
Sinem Hazal Akyildiz, Rossana Bellopede, Hande Sezgin, Ipek Yalcin-Enis, Bahattin Yalcin, and Silvia Fiore
According to the authors, this study was intended as a preliminary investigation of microfibers (MFs) and MPs in textile industrial wastewater and an evaluation of the removal efficiency of an on-site wastewater treatment plant (WWTP). Ten samples of inflows and outflows of an onsite WWTP were taken from a textile company in Turkey that produced wool, cotton, acrylic, polyamide, polyester, polypropylene, and viscose (rayon) fabrics. Samples were taken over 5 months in 2022. Cotton, wool, and MPs (acrylic, polyester, polypropylene, polyamide, and viscose/rayon) were identified in the inflow and outflow samples. The only exception was "dense" viscose/rayon, which was not detected in the outflows, and which the authors attributed to possible retention by the WWTP with the sludge. Outflow samples were found to have more particles below 1 mm as compared to the inflow samples, which confirmed to the authors that larger particles tend to settle with the sludge. The quantity of MFs found in the inflow samples was in the range of 893–4452 MFs/L. The outflow samples (310–2404 MFs/L) exhibited a 38–65% reduction compared to the inflows. These findings demonstrated that up to 62% of residual MFs can enter the sewer network or the receiving water body.

MICROPLASTICS IN THE ENVIRONMENT AND POTENTIAL IMPACTS

Microplastics in Surface Sediments of a Highly Urbanized Wetland
Farideh Amini Birami, Behnam Keshavarzi, Farid Moore, Rosa Busquets, Seyed Ghasem Ghorbanzadeh Zafarani, Reza Golshani, Hamidreza Cheshmvahm
This study investigated the incidence of MPs in surface sediment samples, collected from the Anzali Wetland, Gillan Province, North of Iran. The article described this wetland area as receiving municipal wastewater effluent and serving as a site for both the industry sector and recreational activities. This research was prompted by the authors' identification of the need for studies to understand MP pollution in wetlands. Forty sediment samples were taken from what were identified as potential pollution hotspots in the wetland. All of the sediment samples were found to contain MPs; the article reported that a total of 2,899 MPs were counted (note that it also reported that MPs <100 μm were not counted). Fibers were the most common type of MPs (80% of the total MPs detected). Films and fragments, respectively, were the other frequently identified MP-shape from the samples. Consequently, they asserted their findings indicate that the dominant source of MPs in the study area could be domestic wastewater effluent input via local rivers and/or urban runoffs. The degradation of different types of worn or discarded commercial fishing gear like nets and rope was also cited as another potentially contributing source. The majority of the MPs found were polypropylene (PP) and polyethylene (PE). Coarse-grained sediments were found to have had a large capacity to lodge the MPs. The article concluded that the results of this study could be used to establish protection policies in wetlands and highlighted the opportunity of intercepting MPs in the Anzali Wetland, which are generally greater than 250 μm, before they fragment further.

Microplastics found in 75% of fish in New Zealand, Report Shows; Government's Oceans Review Also Presents Grim Picture of Species Under Threat of Extinction Including Seabirds and Mammals
Tess McClure, New Zealand Correspondent for the Guardian

This article provided an overview of a recent report from New Zealand's Ministry of the Environment focused on the state of the country's oceans. As described, the **Ministry's report** detailed the numbers of threatened species: 90% of indigenous seabirds, 82% of indigenous shorebirds, 81% of assessed marine invertebrate species, and 22% of marine mammal species. MPs were reported to have been found in three of every four of New Zealand's fish. The article also highlighted actions by the New Zealand government to tackle some of these significant environmental issues, including the country's ban on single-use plastic bags and freshwater management plans. The Green Party spokesperson, Eugenie Sage, was also cited as calling for greater regulation of the fishing industry, a ban on a greater variety of single-use plastics, and the expansion of ocean sanctuaries.

Marine Litter and Climate Change: Inextricably Connected Threats to The World's Oceans
Susana Lincoln, Barnaby Andrews, Silvana N.R. Birchenough, Piyali Chowdhury, Georg H. Engelhard, Olivia Harrod, John K. Pinnegar, Bryony L.Townhill
This literature review explored the interactions between marine litter and climate change and the compounding global risks to biodiversity and societies. A total of 305 bibliographic references (peer-review articles, technical reports, and books) were included in the final list of references. The researchers observed that after the period of 2003 to 2015, there has been a steady yearly increase in the number of studies looking at climate change and marine litter, which has become even more pronounced since 2018. The literature indicated there are different ways in which climate change may impact the sources, distribution, and final fate of marine litter, and the combined impact of those will have an effect on marine biodiversity and ecosystems and ultimately societies and economies. The article includes a discussion of several of these climate change drivers, including changes in rainfall, sea level rise, and extreme storms. One of the significant findings of this review was that marine litter and climate change combined have a greater negative impact than either acting alone. The article also acknowledged that there are many knowledge gaps in the interaction of climate change and local context-dependent stressors like marine litter, and the resulting combined impact may be different at a species level compared to the trophic or ecosystem level. The authors concluded that ecosystem resilience approaches offer a suitable framework for integrating policies and action plans to tackle the global problems of marine litter and climate change in a way that is effective and specific to each marine area or region.

MONITORING FOR MICROPLASTICS

Testing citizen science as a tool for monitoring surface water microplastics
Outi Setälä, Jyri Tirroniemi, and Maiju Lehtiniemi
This article described citizen science as the cornerstone of marine litter monitoring in the European regional seas and outlined the region's litter survey efforts. The authors outlined that beach macrolitter surveys are carried out by the member states on designated beaches 3 to 4 times per year, and in many of the countries, these surveys have been initiated by non-governmental organizations (NGOs) who often also organize the local beach cleanups and surveys. While citizen science was found to be suitable for the monitoring of beach macrolitter, citizen scientists are seldom involved in MP monitoring. As described, MPs are included in the list of the parameters which must be monitored within the EU Marine Strategy Framework Directive. The authors observed that existing methods used for processing environmental samples and analyzing their MP numbers and types are time-consuming, expensive, and require special expertise. In contrast to that, the authors asserted that field sampling in most cases is relatively straightforward, and successful sampling can be carried out independently after supervision by researchers. One example the authors shared was the use of citizen science in the collection of surface water marine MP samples with a manta trawl in the Baltic Sea. Samples of MPs were taken at seven locations with a custom-made manta trawl which was operated onboard a sailing boat. The researchers concluded that these results demonstrated that well-planned and supervised citizen sampling can provide good-quality samples

of MP from surface waters and could therefore be introduced into the toolbox of monitoring MPs. Additionally, they pointed out that citizen science also offers opportunities for lowering overall costs and increasing the spatial coverage of marine litter monitoring.

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

EPA Trash Free Waters Program | nandi.romell@epa.gov | epa.gov/trash-free-waters