



ACS AEC

ASSOCIATION OF CARIBBEAN STATES
ASOCIACION DE ESTADOS DEL CARIBE
ASSOCIATION DES ETATS DE LA CARAIBE

“Microplastics in the Caribbean: Sources, Impacts and Monitoring Methodologies

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February 3 2023

Presentation to the Sixth Meeting of the Scientific and Technical Advisory Committee (STAC) to the Protocol Concerning Pollution from Land-Based Sources and Activities in the Wider Caribbean.

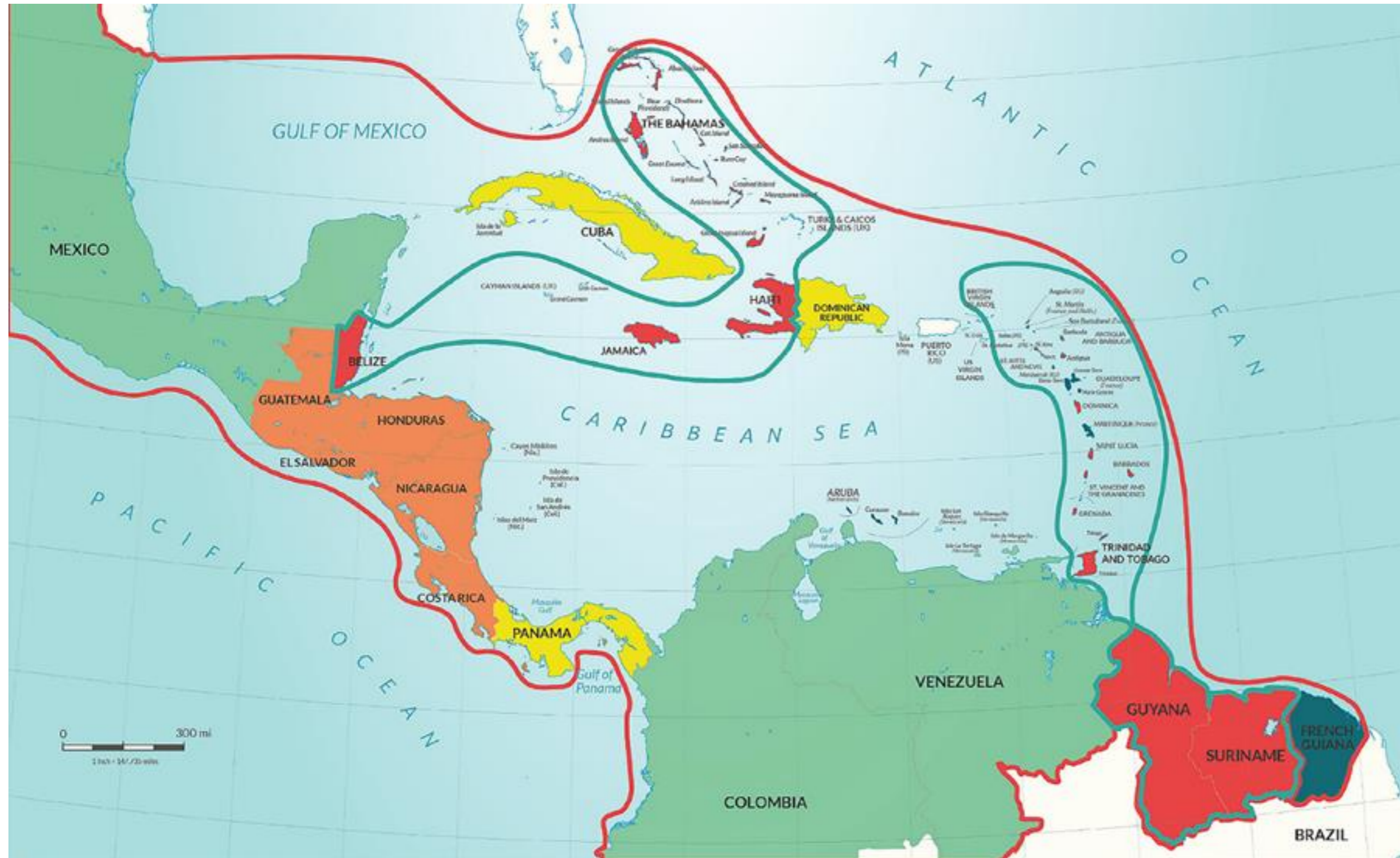
Summary

1 Background

2 Seminar Highlights

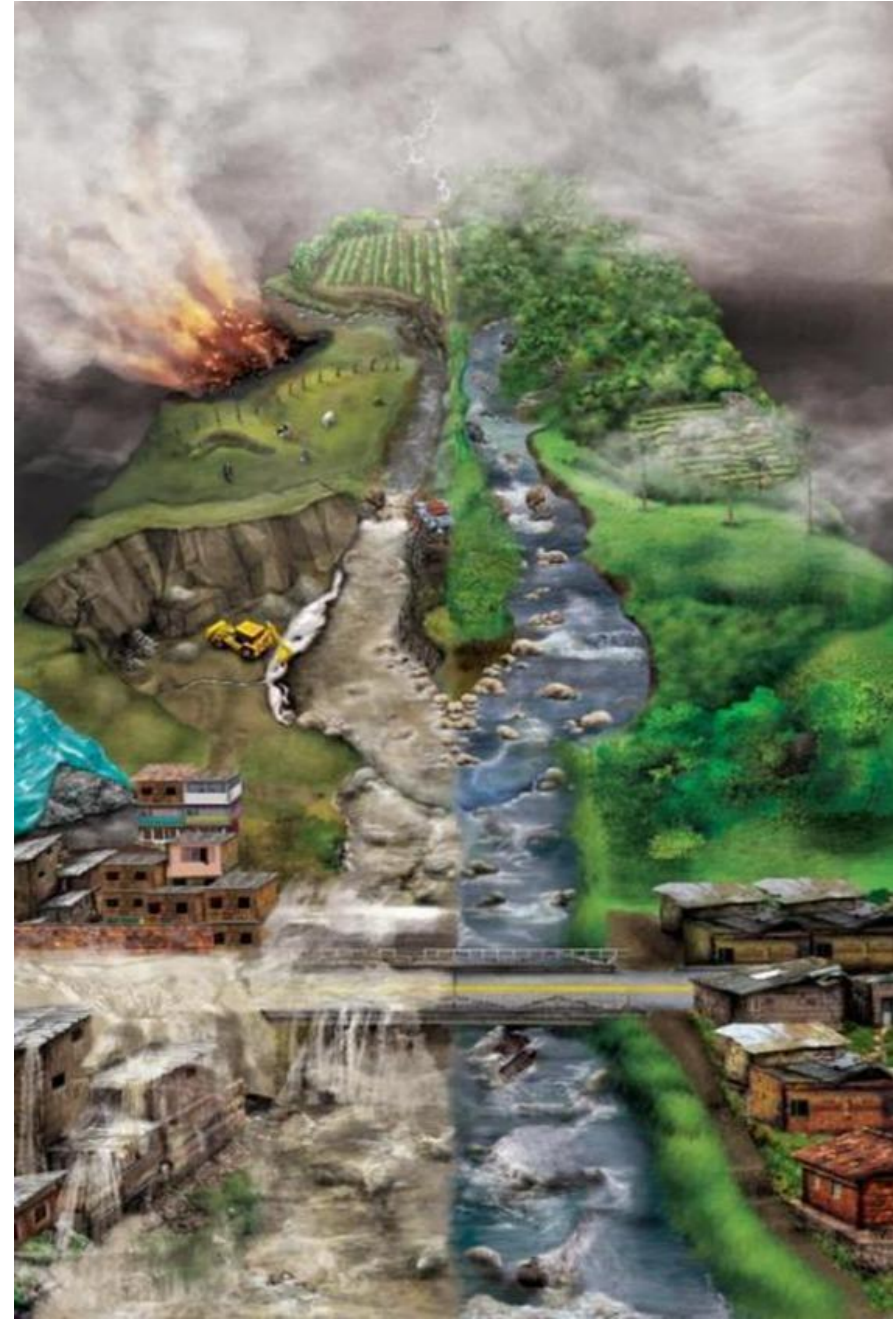
3 Next Steps

Background



- 35 contracting states.
- Founded in 1994 to “promote consultation, cooperation and concerted action between its member countries.”
- Forum for dialogue between its member states that allows for more creative and innovative solutions to be found.

- **Focal Areas**



Disaster Risk Reduction



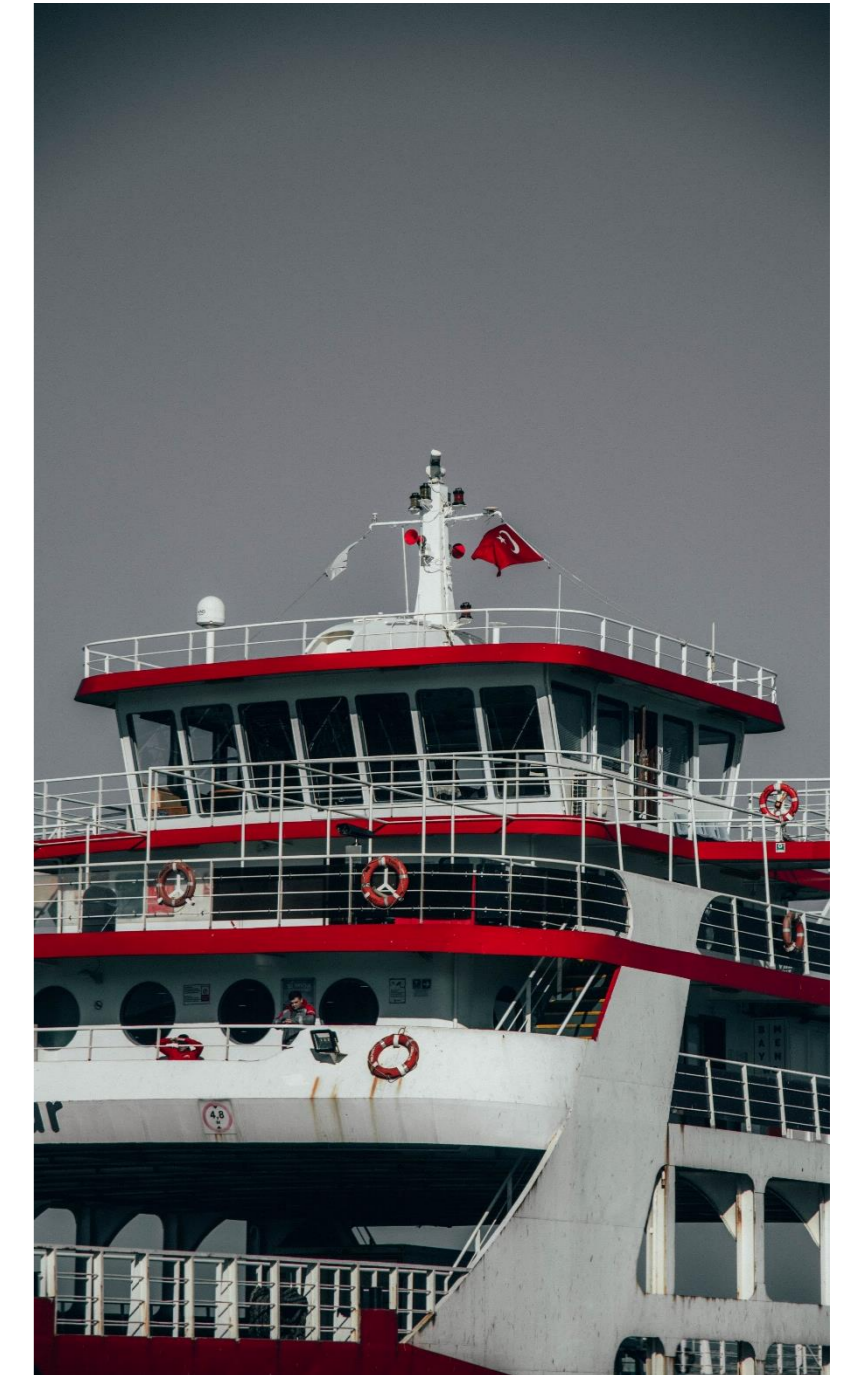
**Environment,
Caribbean Sea
Commission**



Trade



Sustainable Tourism



Transport

• ACS Plan of Action 2022-2028

The Plan of Action outlines the strategic objectives and actions to be undertaken by the ACS, in the short term (2022 - 2028) to progress in the priority areas of development

The Plan follows the following cross-cutting themes:



The ACS Plan of Action 2022-2028

Title: “Strategizing to reposition the Greater Caribbean for enhanced resilience and rationalisation for optimal performance.”

STRATEGIC OBJECTIVE A:
Enhancing Regional
Competiveness

STRATEGIC OBJECTIVE B:
Disaster Risk Reduction,
Increasing Resilience
Recovery and Building Back
Better

STRATEGIC OBJECTIVE C:
Restoration, preservation,
conservation, and
sustainable use of
biodiversity

STRATEGIC OBJECTIVE D:
Multidimensional
Cooperation

• Strategic Objective C.4

C.4 Promote measures for the elimination or mitigation of the impacts generated by solid waste on the environment and on the health of the citizens of the Greater Caribbean

Land activities generate between 70-85% of the garbage in the Caribbean Sea and it is mainly composed of plastics, resulting in one of the most worrying pollutants in the region.

For this reason, the adoption of mechanisms that guarantee the right of every person to a healthy environment and promote sustainable development through the prevention of the generation, recovery and comprehensive management of hazardous waste, urban solid waste and special handling will be promoted; prevent the contamination of the sites with these residues and carry out their remediation.



• The Caribbean Sea Commission

- Established in 2006 under the auspices of the Association of Caribbean States (ACS)
- UNGA recognized it through resolution A/RES/61/197 entitled "Towards the sustainable development of the Caribbean Sea for present and future generations"
- CSC six priorities: sargassum, pollution, regulation of microplastics, ocean governance, disaster risk reduction and climate change impacts (sea level rise and forced migration



• “Microplastics in the Caribbean: Sources, Impacts and Monitoring Methodologies”

- Held virtually from , Monday, October 31st - Friday, November 4th, 2022
- Collaborating Partners :



- **Objective:**

- To disseminate knowledge on the major sources and impacts of plastics pollution of the Caribbean Sea, with a specific focus on the current status of pollution by Microplastics

- **Agenda**

- Held from 10:00-14:30 hours (-4 GMT), 4 Hours per day with 30 minutes refreshment break, 20 hours in total.

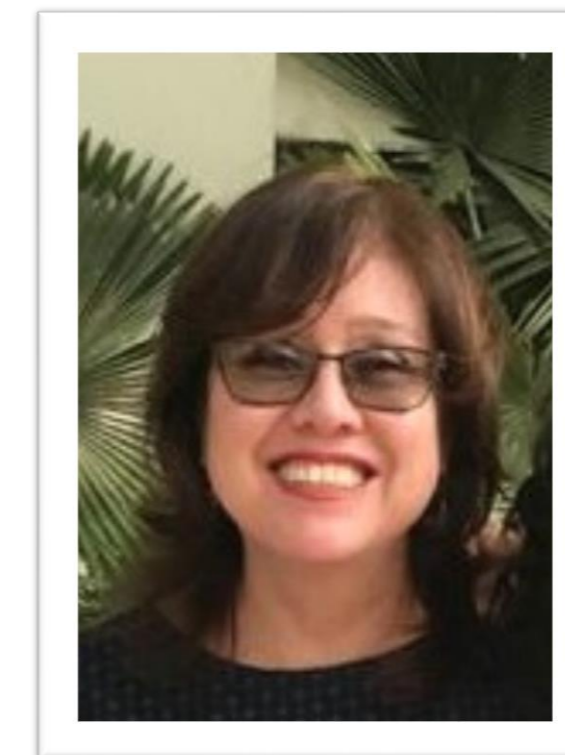
- **Topics per day**

1. The large marine ecosystems of the Greater Caribbean and their importance for tourism, fisheries and new blue economy opportunities
2. State of Knowledge of Microplastics in the Caribbean Sea
3. Microplastics contamination in different environments
4. Human Health impacts and remediation
5. Governance Frameworks, Policies and legal responses & Best practices to address plastic pollution



Highlights

- 22 facilitators from 12 countries
- 458 attendants from 52 countries
- Simultaneous translations to English, Spanish and French
- Active Discussions and participation



• Presentations

DAY 1 - The large marine ecosystems of the Greater Caribbean and their importance for tourism, fisheries and new blue economy opportunities

Mangroves micro ecosystems - Oliver Gros, Professor of Biological Organisms, Université des Antilles

Ecosystems in the Caribbean- Dr Anjani Ganase, Coral Reef Ecologist, Institute of Marine Affairs

The Caribbean and Tourism - Tenisha Brown-Williams, Research Assistant/Adjunct Lecturer/PhD Candidate, The University of the West Indies

DAY 2- Microplastics in the Caribbean Sea - State of Knowledge

Marine Litter - Aleke Stöfen O'Brien, Assistant Professor (Research/Ocean Sustainability, Governance & Management), [World Maritime University](#)

Overview of Microplastics with non-invasive methods in marine species in the Caribbean - Dalila Aldana Aranda, Professor of Center for Research and Advanced Studies of the National Polytechnic Institute, Mexico City (Cinvestav)

Microplastics status in the Caribbean - La Daana Kanhai, Lecturer Department of Life Sciences. The University of the West Indies St. Augustine

Microplastics in the Amazon - Caribbean Basin - Martinelli Filho, Professor, Federal University of Pará, Faculty of Oceanography

Microplastics pollution in water, sediments - Luisa Espinosa, Lead Researcher, Instituto de Investigaciones Marinas y Costeras (INVEMAR)

DAY 3- Microplastics contamination in different environments

Microplastics in Beaches - Nelson Rangel Buitrago, Full Professor of Geology at the University of Atlantico, Barranquilla, Colombia

Impacts of microplastics in mangrove/sensitive ecosystems- Mrs Wendy Nelson, Analytical Chemist, Institute of Marine Affairs

Presence of Microplastics in fishes and water -Clare Morral, Professor, Department of Biology, Ecology and Conservation, St. George's University,

Nanoplastics - Pierre-Yves Pascal, Université des Antilles Systématique-Adaptation-Evolution

DAY 4 - Human Health impacts and remediation

Microplastic Research at the U.S. Environmental Protection Agency– Kay Ho, Calista Mills; Troy Pierce - USEPA

An overview of the effects of nanoplastics in fish- Mariana Teles Pereira, Ramón y Cajal Researcher, Department of Cell Biology, Physiology and Immunology, Institute of Biotechnology and Biomedicine, Universidad Autónoma de Barcelona

Bio-remediation - Amelia Ferres, Professor, Universidad Nacional Autónoma de México, Ciudad de México, México.

Circular Economy - Cristina Cortinas, President of the Cristina Cortinas Foundation

Surveys of perception of plastics and State of cleanliness of beaches - Alethia Vazquez Morillas Professor-Researcher, Universidad Autónoma Metropolitana.

DAY 5- Governance Frameworks, Policies and legal responses & Best practices to address plastic pollution

Best Practices - legislation to address Microplastics pollution in the Caribbean Sea – Senator Beatriz Paredes; Member of the Senate of the Republic of Mexico and Christopher Corbin, Coordinator of the United Nations Environment Programme (UNEP), Cartagena Convention.

Best practices at landfills- Shalina Rooplal Basel Convention Regional Center- Caribbean



Did you know?
Microplastics have now become part of our food chains. Microplastic (MP) contamination has been well documented across a range of habitats and for a large number of organisms in the marine environment.



Participate to our special webinar
Microplastics in the Caribbean: Sources, Impacts and Monitoring methodologies
Free registration: <https://bit.ly/3Cz1hWX>




Did you know?
Small microplastics are a human health concern as in laboratory tests, microplastics have been shown to cause physiological and chemical damage to human cells.



Participate to our special webinar
Microplastics in the Caribbean: Sources, Impacts and Monitoring methodologies
Free registration: <https://bit.ly/3Cz1hWX>




Did you know?
17% of species affected by the presence of plastic in the ocean are on the International Union for Conservation of Nature Red List of Threatened Species (UNESCO Ocean Literacy Portal).




Participate to our special webinar
Microplastics in the Caribbean: Sources, Impacts and Monitoring methodologies
Free registration: <https://bit.ly/3Cz1hWX>




Did you know?
Bioaccumulation of microplastics and associated chemical additives are concerning fact as plastic materials are generally carcinogenic, with the potential to affect human endocrine systems.



Participate to our special webinar
Microplastics in the Caribbean: Sources, Impacts and Monitoring methodologies
Free registration: <https://bit.ly/3Cz1hWX>

Did you know?
Currently, there are about **50-75 trillion** pieces of plastic and Microplastics in the ocean (UNESCO Ocean Literacy Portal).



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• Discussions and Conclusions



- As an immediate step the presentations will be compiled and shared through our various networks – websites, social media etc.

Name	Organization	Marine Litter Monitoring Related Activity - Name of Initiative/Title of Project/	Status	Description of Activity
Dailia Aidana Aranda Cristina Cortinas	CINVESTAV IPN Fundación COortinas	1. Impacto de la contaminación por micro plásticos en la fauna silvestre y su efecto en la reproducción y reclutamiento. 2. Elaborar Atlas de riesgo Economía Circular	Actividades en curso	Impacto de la contaminación por micro plásticos Economía circular comunitaria
		LAC Cities Project	Pre-inception Phase	Reduce marine plastics and plastic pollution in Latin American and Caribbean cities through a circular economy approach
		Promar Project	Ongoing	Prevention of Marine Litter in the Caribbean Sea through Circular Economy Approaches
		Community Based Projects on Marine Litter	Ongoing	Reduction of plastics entering the marine environment and documenting best practices
		Regional Data based and Information Platform	Ongoing	Develop Regional Information Platform relating to Marine Pollution and Marine Biodiversity
Christopher Corbin Nelson Rangel-Buitrago	UNEP Cartagena Convention Secretariat Universidad del Atlántico - Colombia	Working Group on Marine Litter/Plastics Litter Impacts on scenery and tourism on the Caribbean Region	Ongoing Idea	Support coordination and identification of emerging issues relating to Marine Litter and Plastics Management within the framework of the LBS Protocol on Marine Pollution Measure how litter (macro/meso/micro) is affecting
La Deana Kanhai	The University of the West Indies, St. Augustine Campus, Trinidad	The status of marine debris/litter and plastic pollution in the Caribbean Large Marine Ecosystem: 1980-2020	Completed. Kanhai et al. (2022) published in Environmental Pollution.	The objectives of the study were to assess the state of knowledge about: (i) the distribution, quantification, sources, transport and fate of marine debris/litter and microplastics in the coastal/marine environment of the CLME and, (ii) the effects of plastics on biodiversity
La Deana Kanhai	The University of the West Indies, St. Augustine Campus, Trinidad	The Human Dimension of Plastic Pollution in Trinidad & Tobago	Data Analysis Phase of	The overall goal of this project was to better understand the human dimension of the use, disposal and leakage of plastics to the environment of Trinidad and Tobago. The specific aims were to (i) assess current behaviours of Trinobagians related to their use, reuse and disposal of plastics, (ii) understand the behavioural drivers and, (iii) use an evidence-based approach to develop a catalogue for systematic, psychology-informed interventions that are tailored to specific behaviours and stakeholder groups
La Deana Kanhai	The University of the West Indies, St. Augustine Campus, Trinidad	Abandoned, Lost and Otherwise Discarded Fishing Gear (ALDFG) in Trinidad and Tobago	Inception	The overall aim of this project is to better understand abandoned, lost or otherwise discarded fishing gear (ALDFG) in Trinidad and Tobago. The specific objectives are to (i) identify the causes and drivers of fishing gear loss in T&T, (ii) use a participatory mapping approach to identify hotspots of ALDFG accumulation in T&T
La Daana Kanhai	The University of the West Indies, St. Augustine Campus, Trinidad	Plastic Pulse TT	Grant Application Submitted to GEF SGP. Feedback received from National Steering Committee. Revisions In Progress	The overall goal of this project is to foster community-driven advancement of knowledge about the impacts of plastics and other environmental pollutants on threatened biodiversity in the Caribbean.
José Eduardo Martinielli Filho	Instituto de Geociências, Universidade Federal do Pará, Belém, Pará	Microplastics in the Amazon: current knowledge and new contributions Microplastics distribution in Amazonian aquatic ecosystems RECOLIXO: rede de coleções de lixo marinho (Network of marine trash collections) AmazonMix: Amazon and Para plume and mixing impact on the ecosystem Pesquisa Ecológica de Longa Duração (PELD) do sistema de recifes mesofóticos da Foz do Rio Amazonas (GAR3): Biod	Ongoing project, Achieved project 03/21 Ongoing, Ongoing, Ongoing	Focus on literature review on microplastics at the screening for microplastics baseline data; distribution Communication and outreach project, direct to b Scientific project. Brazil - France cooperation Scientific project based on the GAR3: Great Am
		Inventario nacional de fuentes de contaminación plástica	Ongoing	Development of a national inventory to be used i
		Microplásticos en ambientes marinos	Ongoing	Research project including monitoring of plastic i
		Los plásticos y el ambiente	Ongoing	Project for science dissemination through the de
		The Gulf of Mexico begins here	Beginning	Analysis of the flow of plastics from Mexico City i
Alethia Vázquez Morillas	Universidad Autónoma Metropolitana, México	Identificación de plásticos Innecesarios en playas de México	Finished	Analysis of plastic pollution in Mexican beaches i
Tenisha Brown-Williams	Green T&T	Reducing Environmental Footprint and Improving Eco-friendly Blue Economy by Supporting Blue Flag Certification for four Small Tourism Boat Operators in Tobago	Ongoing	Assisting boat tour operators in becoming more i
		Green Key certification for the Accommodation Sector in Tobago	Ongoing	Assisting tourist accommodation providers in bet

Additional resources

Guidelines and Manuals

Manual for the ecological restoration of mangroves in the Mesoamerican Reef System and the Wider Caribbean (Available in Spanish and English)
Collaboration between UNEP Cartagena Convention
<https://www.unep.org/cep/resources/toolkits-manuals-and-guides/manual-ecological-restoration-mangroves-mesoamerican-reef>

The State of Nearshore Marine Habitats in the Wider Caribbean
<https://www.unep.org/cep/resources/report/state-nearshore-marine-habitats-wider-caribbean>

Regional Strategy and Action Plan for the Valuation, Protection And/Or Restoration of Key Marine Habitats in the Wider Caribbean 2021 – 2030
<https://www.unep.org/cep/resources/report/regional-strategy-and-action-plan-valuation-protection-and-or-restoration-key>

Regional Nutrient Pollution Reduction Strategy and Action Plan for the Wider Caribbean Region
<http://gefcrew.org/carrcu/19JGM/LBSCOPS/Info-Docs/WG.41INE.10Rev.1-en.pdf>

State of Marine Pollution Report
<https://www.unep.org/cep/resources/report/socar-report>

Additional Fact Sheets on Marine Pollution, Plastics, Marine Biodiversity
<https://www.unep.org/cep/resources>

Compendium of Case Studies on Solid Waste Management
<https://gefcrew.org/carrcu/LBSTACS/Info-Docs/WG.41INE.18-en.pdf>

Trash Free – Enhancing the Solid Waste Reduction Project in Jamaica
<https://www.unep.org/cep/news/video/trash-free-enhancing-solid-waste-reduction-project-jamaica>

Guidelines for the Monitoring and Assessment of Plastic Litter in the Ocean
<http://www.gesamp.org/publications/guidelines-for-the-monitoring-and-assessment-of-plastic-litter-in-the-ocean>

Report by UNEP and the Nature Conservancy on Coral Reef Restoration for Tourism Sector
<https://www.unep.org/resources/report/coral-reef-restoration-guidelines-tourism-sector>

Research Articles and Publications

Time to End Parachute Science.
Odeny B. Bosurgi R (2022)
<https://doi.org/10.1371/journal.pmed.1004099>

The Past, Present and Future of Plastic Pollution
<https://www.sciencedirect.com/science/article/pii/S0025326X22001114>

Marine Litter: Solutions for a Major Environmental Problem
<https://bioone.org/journals/journal-of-coastal-research/volume-35/issue-3/JOASTRES-D-18-00096.1/Marine-Litter-Solutions-for-a-Major-Environmental-Problem/10.2112/JOASTRES-D-18-00096.1.full>

Plastic Publications
Shared by Dr. Alethia Morillas
https://drive.google.com/drive/folders/1A9s8451LUh_x5KziwnIEvSEYWCBr_hf?usp=sharing

Scientific Publications
Shared by Dr. Nelson Rangel-Buitrago
https://www.dropbox.com/sh/2drh49lx87mx720/AACcdASE0PE-a_DighQyMmVca?dl=0

Science Magazine of the Mexican Academy of Sciences
<https://www.revistaciencia.amc.edu.mx/index.php/vol-73-numero-2/321-contaminacion-por-microplasticos>

The Gulf and Caribbean Fisheries Institute (GCFI) Reports and Publications on Harmonized Beach Litter Monitoring
<https://gpmi-caribe.org/resources/publications/>

Regional Networks

REMARCO
Research Network of Marine-Coastal Stressors in Latin America and the Caribbean.
Website: <https://remarco.org/>
Email: remarco.comite@gmail.com
Contact: contacto@remarco.org.co and luisa.espinosa@inremar.org.co

UNEP Digital Platform of the Global Partnership on Marine Litter
[UNEP GPMI Digital Platform \(gpmarinlitter.org\)](https://gpmi-caribe.org/)

The Global Partnership on Marine Litter – Caribbean Node
<https://gpmi-caribe.org/>

GEF ISLANDS Caribbean Child Projects Introduction Video
As shared by the Basel Convention Regional Centre for Training and Technology Transfer for the Caribbean
[GEF ISLANDS Caribbean Child Projects Introduction Video - YouTube](https://www.youtube.com/watch?v=j0FHwQsAP1M)

Clean Seas
<https://www.cleanseas.org/>

Caribbean Campaign video: <https://www.youtube.com/watch?v=j0FHwQsAP1M>
"Breaking up with Plastics"
This project is being implemented by the UNEP Cartagena Convention Secretariat/Caribbean Environment Programme (CEP).

Recommendations

- Recommendations to form a road map for ACS's next steps with regards to our role in regional management of microplastics pollution.
- Continue to promote dissemination of ongoing research and information on microplastics in the region.
- The development of an accessible repository for relevant research was seen as a priority action.
- Knowledge transfer needed for the harmonization and standardisation of methodologies for microplastics testing and monitoring.
- Mapping revealed several disjointed efforts regionally. Expansion of mapping to include other partnerships and networks leading to the development of a network of laboratories and/or researchers working on microplastics. (e.g expansion of the REMARCO network with additional English speaking territories)
- Continued collaboration with partners in related initiatives (working groups, steering groups etc).
- The ACS and collaborating partners must continue to promote contextually appropriate awareness building exercises to impact behavioural change.

• Recommendations continued

- The presentations and mapping have given the ACS important information and strategic partnerships so that we may add value to ongoing initiatives.
- All shared documents and presentations will be added to an accessible drive for all presenters and participants to access as needed.
- Development of a regional post graduate programme with specific focus on marine pollution and microplastics pollution.
- Documenting the proceedings of the webinar into an official report of summary of plastics management in the Caribbean .



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