

An aerial photograph of a rocky coastline. The water is clear and greenish, revealing the seabed. Three small motorboats are in the water. One boat is near a sandy beach, another is further out, and a third is near the bottom right. The rocks are large and grey, with some green algae or seaweed on them. The sky is not visible.

GLOBAL  
GHOST GEAR  
INITIATIVE®

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# GGGI 2022 ANNUAL REPORT



# LIST OF 2022 SUPPORTERS/FUNDERS

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The team at PMDP Hawaii  
removes a ghost net

Photo Credit: PMDP



## GLOSSARY OF TERMS

**A-BPF**—Best Practice Framework for the Management of Aquaculture Gear

**AFAD**—anchored fish aggregating device

**ALDFG**—abandoned, lost or otherwise discarded fishing gear

**APEC**—Asia-Pacific Economic Cooperation

**C-BPF**—Best Practice Framework for the Management of Fishing Gear

**CANAINPESCA**—National Chamber of the Fishing and Aquaculture Industries, Mexico

**CARICOM**—Caribbean Community

**CIMARES**—Inter-Ministerial Commission for the Sustainable Management of Seas and Coasts, Mexico

**CONANP**—National Commission of Protected Areas, Mexico

**CONAPESCA**—National Commission of Aquaculture and Fisheries, Mexico

**CRFM**—Caribbean Regional Fisheries Mechanism

**DFAD**—drifting fish aggregating device

**DFO**—Department of Fisheries and Oceans, Canada

**EC DG MARE**—European Commission Directorate General for Maritime Affairs and Fisheries

**ETR**—electronic timed release

**GCFI**—Gulf and Caribbean Fisheries Institute

**GESAMP**—United Nations Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection

**GGGI**—Global Ghost Gear Initiative

**ILBI**—International Legally Binding Instrument (to End Plastic Pollution)

**IMO**—International Maritime Organisation

**INAPESCA**—National Fisheries Institute, Mexico

**INC**—Intergovernmental Negotiating Committee

**IUU**—Illegal, unreported and unregulated (fishing)

**MARPOL**—International Convention for the Prevention of Pollution from Ships

**MSC**—Marine Stewardship Council

**NANCI**—North American Net Collection Initiative

**OSPAR**—Convention for the Protection of the Marine Environment of the North-East Atlantic

**PROFEPA**—Federal Attorney for Environmental Protection, Mexico

**SDG**—United Nations Sustainable Development Goal

**SEMARNAT**—Secretariat of Environment and Natural Resources, Mexico

**SEPESCA**—Secretariat of Fisheries and Aquaculture of the State of Baja California, Mexico

**SRE**—Ministry of Foreign Affairs, Mexico

**UNEA**—United Nations Environment Assembly

**UNEP**—United Nations Environment Programme

**UAV**—unoccupied aerial vehicle

**UN FAO**—United Nations Food and Agriculture Organisation

**VFD**—Vanuatu Fisheries Department

**VGMFG**—Voluntary Guidelines for the Marking of Fishing Gear



# FOREWORD GOVERNMENT OF MONTSERRAT

The British Overseas Territory of Montserrat, in March 2019, was excited and delighted to sign on to the Global Ghost Gear Initiative (GGGI), making it the 14<sup>th</sup> government globally to do so, and making it the first member state of the Caribbean Community (CARICOM) to pledge official support for the GGGI.

The GGGI lends synergy with the Government of Montserrat effort to advance its paradigm shift in improving the governance and management of its fisheries and ocean resources, including support for Montserrat's 2016–2021 Agriculture Strategy and Marketing Plan. As a result, the Government of Montserrat embarked on an ambitious program to reverse ocean degradation due to the current and emerging critical issues such as plastic pollution from various sources including fishing gear. This vision is being made possible through collaboration with strategic development partners such as the GGGI with shared goals, as well as adequate and sustainable long-term financing.

The Government of Montserrat was approached by the GGGI through the Gulf and Caribbean Fisheries Institute (GCFI) to potentially implement a predictive model and fisher survey analysis for Montserrat under a grant from the Government of Canada—Department of Fisheries and Oceans and the Canadian Coast Guard. GGGI member Natural Resources Consultants (NRC) was contracted to create this desktop analysis and predictive model. This study conducted by NRC consolidated and overlaid various data sets on oceanographic

and benthic conditions as well as fisheries effort data from Montserrat, which created a baseline understanding of the conditions that might lead to gear loss.

These fisher surveys and predictive model provided the Government of Montserrat a clearer insight into the abandoned, lost and discarded fishing gear (ALDFG) situation in Montserrat and as a result will inform policymakers in the evidence-based decision-making processes in ocean resources governance and management to prevent, mitigate and remediate ALDFG within waters of National Jurisdiction.

This is seen as the first critical step toward implementing future ALDFG-related work, and the Government of Montserrat is looking forward to working proactively with the GGGI to implement future ALDFG projects based on the outcomes of the predictive model.

The ultimate goal of these efforts is to reduce ALDFG with knowledge-based and technological solutions and working with fisherfolk on the ground. Montserrat's objectives are to collaboratively promote, protect and unlock further socioeconomic opportunities, while restoring the ocean back to the healthy and prosperous resource that we really need, and the GGGI is helping us to achieve these goals.



**ALWYN R. PONTEÉN, MSC,  
CHIEF FISHERIES AND OCEAN  
GOVERNANCE OFFICER**  
Government of Montserrat

## CONTENTS

- 6 FOREWORD—GOVERNMENT OF MONTSERRAT
- 8 GALVANIZING GLOBAL ACTION
- 10 MORE PIECES TO THE PUZZLE
- 16 KEY ACHIEVEMENTS IN 2022
- 20 JOANNA TOOLE LEGACY
- 22 GGGI MEMBERSHIP AS OF DEC 31, 2022
- 24 REPUBLIC OF KOREA AND SPAIN JOIN THE GGGI AT OUR OCEAN CONFERENCE, PALAU
- 26 WORK STREAM UPDATES
- 42 CONFERENCES AND EVENTS
- 48 GGGI MEMBER HIGHLIGHTS
- 56 LOOKING AHEAD
- 58 ENDNOTES

Cover Photo Credit: Giselle Veve



# 1

## GALVANIZING GLOBAL ACTION

In a world full of upheaval—including more frequent climate-related disasters, the continuation of the COVID-19 pandemic, social turmoil and war—we remain connected as a species by the ocean, whether we recognize this connection or not. The ocean surrounds us all, and it provides the conditions required for life on this planet. And yet, the ocean remains under threat from myriad sources, most of which are caused by humankind.

Fortunately, there is a strong and increasingly urgent movement to protect the ocean, emphasized by an historic resolution at the United Nations Environment Assembly (UNEA) 5.2 in March 2022. There, UN Member States endorsed a resolution to forge an international legally-binding instrument to end plastic pollution, with the instrument to be completed by the end of 2024. This incredibly ambitious resolution has resulted in the Intergovernmental Negotiating Committee (INC) to develop the scope and details of the Internationally Legally Binding Instrument (ILBI) to End Plastic Pollution over a series of five meetings through the end of 2024. The first of these sessions—INC-1—took place in Punta del Este, Uruguay from November 28–December 2, 2022, while the remaining four meetings will take place in 2023 and 2024 in France, Kenya, Canada and the Republic of Korea respectively.

Also in 2022, the International Maritime Organization (IMO) announced that a mandatory

goal-based requirement for the visual marking/identification of fishing gear will be developed, based on a strategy recommended by both the Global Ghost Gear Initiative's (GGGI) Best Practice Framework for the Management of Fishing Gear (C-BPF) and the [United Nations Food and Agriculture Organization's Voluntary Guidelines for the Marking of Fishing Gear \(VGMFG\)](#). The new IMO gear marking mandate will be addressed in the [International Convention for the Prevention of Pollution from Ships \(MARPOL\) Annex V](#), which generally prohibits the discharge of any garbage into the sea, with some limited exceptions.

We must build on this unprecedented global action on plastics, and ensure that abandoned, lost and discarded fishing gear (ALDFG) is included in this discussion as the most harmful form of aquatic debris. Others within the global community also have recognized the harm caused by ALDFG<sup>1</sup>. The upcoming IMO requirement for the mandatory marking of fishing gear will be a major milestone in the effort to understand how gear travels across the ocean, and the ILBI to end plastic pollution represents a once-in-a-generation opportunity to address ALDFG at a truly global level. We plan to build on this momentum for global action on plastics and ensure that our work and the work of our members are highlighted at the international level to galvanize action on ALDFG. This report outlines the successes of the GGGI and some of its members in 2022.





# 2

## MORE PIECES TO THE PUZZLE

Although ALDFG is recognized as the most harmful form of aquatic debris, there remain massive unknowns related to the scale of the issue. However, more research is done each year, and 2022 saw some significant new studies that help add more crucial information about the magnitude of the issue.

### A NEW GLOBAL ESTIMATE OF FISHING GEAR LOSS

The [October 2022 issue of \*Science Advances\*](#) featured a much-anticipated article by Richardson et al. that quantifies the amount of ALDFG entering the ocean annually, separated by gear class. The basic methodology included carrying out detailed interviews with fishers focused on amounts of fishing gear losses, causes and prevention measures in seven carefully selected countries across the globe, and comparing the results with global fishing effort data to predict a baseline of global gear loss. The article also notes that an earlier estimate of 640,000 metric tons of annual gear loss is outdated and ill-quoted ([Richardson et al., 2021](#)).

Rather than focusing on the mass of lost gear, which is problematic given that mass is not necessarily commensurate with impact (e.g., a gillnet weighs much less than a seine net but is much more impactful in terms of species mortality upon loss of the net), this research estimates amounts of loss in terms of proportion/percentage, size (length and area) and numbers (count) and approximates per-vessel and

global fleet-level losses. In sum, the paper estimates that about 2% of all gear deployed by commercial vessels—including from gillnet, purse seine, trawl, longline, and pots and trap fisheries—is lost annually. This amount includes an estimated 25 million pots and traps, nearly 80,000 square kilometers of nets, nearly 740,000 kilometers of monofilament longline, and more than 13 billion longline hooks, the latter of which—when combined with other pressures from climate change, overfishing, and so forth—correlates well with the global decline of sharks and rays.

While the results from Richardson et al. provide a long-desired approximate baseline of annual loss that is needed to guide ALDFG prevention and mitigation efforts and interventions, there are some notable caveats and unknowns remaining. The paper notes that the amount of loss in artisanal fisheries, recreational fishing, and illegal, unreported and unregulated (IUU) fishing has yet to be quantified; and given the scale of these activities, the amount of loss is likely to be significant. Additionally, the data collected via fisher surveys come from 451 total surveys across seven countries; while a laudable sample size, there remains a considerable margin for error for extrapolation into a global context. Finally, the study doesn't account for the release and eventual loss of fish aggregating devices - tens of thousands of which are deployed around the world every year to aggregate fish primarily in pelagic tuna fisheries. Although FADs themselves are not explicitly capture gear, FADs are deployed in huge numbers around the world and contribute to unintended ghost fishing and habitat damage, as

outlined in many sources, including the GGGI C-BPF. Despite these uncertainties and remaining questions, this study is a crucial piece of the global puzzle and is certainly the best attempt to date to quantify gear loss around the globe. The study also points to other areas of research upon which the global community can build to further refine the results.

### AN UPDATED ESTIMATE TO ALDFG'S CONTRIBUTION TO PLASTICS IN THE NORTH PACIFIC SUBTROPICAL GYRE

In [2018](#), [Lebreton et al.](#) published a study that quantified the amount of fishing gear in the North Pacific Subtropical Gyre. At the time, it was estimated that at least 46% of the plastic debris 5 centimeters (cm) and greater in size within the gyre was comprised of fishing gear or fishing-related items<sup>2</sup>. The authors compared land and ocean-based sources of marine plastic debris, noting that because buoyant plastics represent about 60% of the total global plastics, it is estimated that nearly half of plastic marine debris may rapidly sink to the floor. When this research was conducted in 2015 and 2016,

the gyre's surface was dominated by polyethylene and polypropylene fragments, and it included an estimated 42,000 metric tons of megaplastics such as fishing nets, and approximately 20,000 metric tons of macroplastics such as crates and eel trap cones.

A follow up paper published in [2022](#) by [Lebreton et al.](#) provides an update to the earlier research and shows that a significantly higher proportion of the gyre's floating macroplastics (5 cm and greater) is comprised of fishing gear and fishing-related items than originally recorded in the 2018 study. Results demonstrate that between 75% and 86% of the floating plastic mass in the gyre could be considered ALDFG (including gear such as nets and ropes but also buoys and hard plastic fragments—such as parts of bait boxes—that originate from fishing activities)<sup>3</sup>. The difference between the composition of coastal and offshore plastic debris reaffirmed findings from other studies that indicate plastics originating from land-based sources tend to stay near shore or break down into smaller fragments before currents transport them to the gyre.<sup>4 5 6</sup> Lebreton et al. also sought to identify the origin of all of the collected plastic waste, based on the writing observed on some of the items. However, the sample size for





making this identification was quite small: of the ~6,000 items found (~546 kilograms (kg)), only 201 (3.3%) of the items had identifiable markings on them, making firm assessment of the origins of the plastic challenging. Still, the study reiterates that ALDFG and fishing-related items contribute a significant portion of the plastics found in the North Pacific Subtropical Gyre.

## ADDITIONAL ALDFG STUDIES AND REPORTS FROM AROUND THE WORLD

In addition to the papers noted above, several other papers also released in 2022 shed more light on the proliferation of ALDFG around the world.

- [A report by the International Union for the Conservation of Nature \(IUCN\)](#) looked at the impacts of marine plastics, including ALDFG, in Phước Tinh and Loc An, in Ba Ria Vung Tau Province, Viet Nam. The report found ALDFG to be a significant problem with economic costs to surveyed fishers in gillnet and pot/trap fisheries, though more research needs to be done to effectively quantify this cost across the region.
- [A paper by Riyanto et al.](#) examined ALDFG loss, primarily in the form of gillnets, in Pangandaran, Southern Java, Indonesia. The report found that the average number of gillnets lost annually during 2015-2019 was 4,612 pieces of net, equating to 224,584 linear meters (m) or 7,740 kg. Of the fishers surveyed in the study, 98% reported they had lost gear in the past year<sup>7</sup>.
- [A study by Daniel et al.](#) conducted interviews with 390 fishers operating ten different types of fishing gear, to get a quantitative estimate of ALDFG generated in the fishing-intense coastal state of Kerala, India. The report found that 11.6% of the total gear used is lost, with 7.5% abandoned and 2.3% discarded<sup>8</sup>. Interestingly, the study found that motorized large and small mesh ring seines showed the highest likelihood of loss, representing a combined total of 65.2% of losses reported, with gillnets—traditionally

the gear class with highest risk of loss globally—representing 35.05% of losses reported. This study helps to illustrate the highly complex and regionally-specific reasons for gear loss around the world and why it is so challenging to make global assumptions of gear loss rates from limited data sets.

- [Our Sea of East Asia Network \(OSEAN\)](#) produced a report on the impacts of marine debris, including ALDFG, on wildlife in South Korea. The document outlines several case studies of marine life caught in debris—primarily, fishing gear—and provides a detailed breakdown of gear types and of species found to be impacted.
- GGGI and UN FAO co-authored a [Report on Good Practices to Prevent and Reduce Marine Plastic Litter from Fishing Activities](#) under the GloLitter Partnerships project. The report consists of a desktop study outlining information on existing ALDFG-related projects, including a series of case studies on good practices from around the world to address ALDFG. The report outlines the main achievements of these project case studies and highlights areas that should be the subject of future research<sup>9</sup>.
- Aquaculture has not been left out of the discussion either. [A research literature review by Drury et al.](#) examined whether wool ropes could be a suitable alternative for use in seaweed farms, which typically use synthetic plastic ropes that are known to shed microplastic into the marine environment<sup>10</sup>. Ultimately, more research needs to be done to determine whether natural material fibers, such as wool, can be viable alternatives for synthetic plastic ropes in the fishing and aquaculture sectors. However, the fact that this research is taking place emphasizes the importance of the issue.

The list above is not exhaustive, but it demonstrates that more focused studies on ALDFG and its impacts around the globe are being conducted each year, with each study bringing us a step closer to understanding the full scale and impacts of ALDFG. However, much more research is necessary to accurately quantify the impacts of ALDFG in a global context.





## ALDFG IN THE MEDIA

In 2022, there has been a sharp increase in the number of media pieces about ALDFG, bringing greater global public attention to the issue. Below is a list of articles and related media about ALDFG published around the world:

- APN News: [HCL Foundation launches ‘Dive to Retrieve’ campaign to retrieve ghost nets off Chennai coast](#)
- Bangor Daily News: [‘Ropeless’ lobster gear could be put to test in area closed to protect right whales](#)
- Bangor Daily News: [Volunteers recover nearly 5,000 pounds of trash from Gulf of Maine](#)
- Bangor Daily News: [Watch These Divers Search a Maine Harbor for Ghost Gear](#)
- CBC: [Sperm whale found dead off Cape Breton after swallowing 150 kg of fishing gear](#)
- CBC: [This group is cleaning up fishing gear scattered by Fiona in Newfoundland and giving it new life](#)
- Daily Sabah: [Volunteer Divers Clean up Ghost Nets in Turkey’s Marmara Sea](#)
- EcoWatch: [Enough Commercial Fishing Gear Lost in Ocean Each Year to Stretch to Moon and Back](#)
- Forbes: [Lighted Nets Dramatically Reduce Bycatch Of Sharks](#)
- FOX 13: [‘Ghost gear’ kills thousands of fish, marine animals each year](#)
- Greenmatters: [“Ghost Gear” Is a Bigger Threat to Marine Life Than You May Realize](#)
- The Guardian: [Dumped Fishing Gear is Killing Marine Life](#)
- Hurriyet Daily News: [Ministry to introduce QR code tags to prevent poaching, ghost nets](#)
- Hurriyet Daily News: [Some 21,200 square meters of ghost nets removed](#)
- Maui Now: [86,000 pounds of ghost nets removed from single reef in Northwestern Hawaiian Islands](#)
- The Medium: [Should We Fear Predatorial Marine Animals Or Should They Fear Us?](#)
- Monaco Tribune: [Prince Albert II Foundation joins battle against the curse of ghost nets](#)
- Saltwire: [Shoreline, island clean ups net more than 190,000 pounds of ocean trash in tri-counties so far in 2022](#)
- Science: [‘Astounding’ amount of fishing gear lost in ocean each year](#)
- Spectrum News: [Healthy Seas Brings International Marine Protection Effort to San Pedro](#)
- The Star: [Volunteers clear over 36kg of ‘ghost nets’ from waters off Tanjung Simpang Mengayau](#)
- Tri-City Herald: [Plastic rope washes ashore in southwest Washington. In Whatcom, it finds new life](#)
- Washington Post: [Maine lobster losing ‘sustainable’ label as 2 seafood guides warn against it](#)
- July 19, 2022: VIDEO/PHOTOS: [Over 4,700 Pounds of Trash Removed from the Gulf of Maine During Sailing Expedition with Ocean Conservancy, Rozalia Project](#)

## STORIES FEATURING GGGI STAFF AND MEMBERS

- BBC World News Climate Critical: [Ghost Gear and Plastic Pollution](#) (featuring GGGI Associate Director Joel Baziuk)
- El Pais (Spain): [España se suma a la lucha contra las redes de la pesca fantasma](#) (*Translation: Spain joins the fight against ghost fishing*) (op-ed by Ingrid Giskes, Ocean Conservancy senior director of the GGGI and international government relations and Felipe Victoria, Ocean Conservancy senior manager for policy, international plastics)
- The Guardian: [Abandoned Fishing Gear is Killing Marine Life and Poisoning Our Oceans](#) (response to above article by Ingrid Giskes, Ocean Conservancy senior director of the GGGI and international government relations)
- The Guardian: [‘An invisible killer’: how fishing gear became the deadliest marine plastic](#) (featuring quotes from Ingrid Giskes, Ocean Conservancy senior director of the GGGI and international government relations)
- InnovaSpain: [“Es un mito que Europa y los países occidentales le den mayor importancia a la sostenibilidad”](#) (*Translation: “It is a myth that Europe and Western countries give greater importance to sustainability”*) (featuring Ingrid Giskes, Ocean Conservancy senior director of the GGGI and international government relations)
- Living on Earth: [Fishing For Plastic](#) (featuring GGGI member Enaleia)
- Miami Herald: [Ditching plastic shopping bags isn’t enough to protect Florida’s marine life | Opinion](#) (op-ed by Ocean Conservancy staff Jon Paul ‘J.P.’ Brooker, director of Florida conservation; Ingrid Giskes, senior director of the GGGI and international government relations; and Nicholas Mallos, senior director of the Trash Free Seas Program.)
- Modern Farmer: [The Oyster Farmers Working to Address Aquaculture’s Big Plastics Problem](#) (featuring GGGI Associate Director Joel Baziuk)
- Press Herald (Maine): [Small Maine island yields huge haul of abandoned fishing gear](#) (featuring Maddie Black, Ocean Conservancy communications manager)
- Treehugger: [4,700 Pounds of Ghost Gear Collected From Gulf of Maine](#) (featuring Chris Dorsett, Ocean Conservancy vice president of conservation programs)
- WABI: [Thousand of pounds of ‘ghost gear’ cleared from Maine waters](#) (featuring Maddie Black, Ocean Conservancy communications manager)



# 3

## KEY ACHIEVEMENTS IN 2022

### 1 INITIATED THE NORTH AMERICAN NET COLLECTION INITIATIVE (NANCI) PROJECT

Our signature project, the North American Net Collection Initiative (NANCI), is combating ghost gear by: establishing North America's first transnational program to recycle end-of-life fishing nets, producing the first predictive model and map of ghost gear hotspots in Mexico, building capacity among fisheries stakeholders for implementing gear management best practices, and working with the Mexican federal government in helping draft a national strategy to address ALDFG.

### 2 LAUNCHED DATA PORTAL 2.0

The GGGI Global Data Portal upgrades were completed and version 2.0 is now live, allowing registered users to source, filter and query data on ALDFG from around the world and download and interact with data for research purposes. In September, Canada announced that it would be the first country to contribute data to the GGGI's data portal as part of the country's broader national requirement for fishers to report lost gear.

### 3 DEVELOPED A DRAFT REGIONAL BEST PRACTICE FRAMEWORK AND GEAR MARKING COMPENDIUM FOR APEC, TO BE LAUNCHED IN 2023

At the request of the Asia-Pacific Economic Cooperation (APEC), we began the development of an ALDFG Best Practice Framework, tailored

to the APEC region, building on the global guidance offered in the GGGI C-BPF and applying the principles therein to APEC-specific economies. We also developed and APEC customised Gear Marking Compendium building on the guidance in UN FAO's VGMFG.

### 4 DRAFTED AN ALDFG ACTION PLAN FOR THE CARIBBEAN REGION

In collaboration with the GCFI and the Caribbean Regional Fisheries Mechanism (CRFM), and based on the GGGI C-BPF and our own work in the Caribbean, we developed a draft ALDFG action plan for the Caribbean region, which includes feedback from Caribbean stakeholders.

### 5 PRODUCED "FISHER VOICES" VIDEOS FOR MAINE AND VANUATU, HIGHLIGHTING FISHER EFFORTS TO ADDRESS ALDFG

We developed two short videos focusing on ALDFG prevention and removal efforts in communities in Maine, USA and in Vanuatu, highlighting fishers' perspectives about ALDFG and how best to deal with ALDFG from a local perspective.

### 6 HELD MULTIPLE ALDFG CAPACITY BUILDING VIRTUAL WORKSHOPS

The GGGI hosted and/or participated in ALDFG capacity building workshops with dozens of stakeholders from Maine and Rhode Island, USA, and from Mexico and Vanuatu.







**7 SPAIN AND SOUTH KOREA BECAME THE 19<sup>TH</sup> AND 20<sup>TH</sup> GGGI MEMBER GOVERNMENTS**

At the Our Ocean Conference in Palau in April 2022, the governments of Spain and South Korea joined the GGGI, solidifying their commitments to address ALDFG.

**8 GGGI NAMED AS A LIAISON TO CEN-CENELEC T/C 466 ON CIRCULAR DESIGN OF FISHING GEAR**

The GGGI was confirmed as a liaison organization for the European standards body CEN-CENELEC Technical Committee 466 to assist with the development standards for sustainability, circularity and life cycle management of fishing gear.

**9 GGGI NAMED TO THE FRIEND OF THE SEA TECHNICAL ADVISORY COMMITTEE**

The GGGI was named to the Friend of the Sea Technical Advisory Committee to provide advice on the committee's technical certification standards with regard to ALDFG.

**10 GGGI WAS GRANTED OFFICIAL OBSERVER STATUS FOR OSPAR**

The GGGI was granted official observer status for the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR), the mechanism by which 15 European national governments and the European Union cooperate to protect the marine environment of the North-East Atlantic Ocean.

**11 GGGI C-BPF WAS REFERENCED IN THE MSC STANDARD REVISION 3.0**

The GGGI's C-BPF was confirmed as a key reference document in the Marine Stewardship Council's (MSC) version 3.0 standard revision, which, among other things, increases requirements surrounding ALDFG prevention and mitigation measures for MSC-certified fisheries.

**12 7<sup>TH</sup> INTERNATIONAL MARINE DEBRIS CONFERENCE (7IMDC)**

At the 7<sup>th</sup> International Marine Debris Conference in Busan, South Korea, the GGGI presented two posters and hosted 12 technical sessions to highlight the importance of addressing ghost gear in the broader marine debris space from monitoring and data collection to strategic collaboration and partnerships, to technology innovation and design, and everything in-between.

**13 UNITED NATIONS OCEAN CONFERENCE**

The GGGI co-hosted a side event titled "Public-Private Partnerships to Share Knowledge and Resources for Impactful Solutions to Address Marine Pollution," spotlighting the role of partnerships in reducing the prevalence of shipping-related and fishing-related marine plastic litter. The GGGI also made a speech from the floor during the plenary, provided judges for the Youth and Innovation Forum, and participated in a panel discussion with representatives from MSC and the Canadian Department of Fisheries and Oceans in the UN Media Zone.

**14 ALDFG AND THE ILBI**

The GGGI's early participation in the negotiations for an ILBI to end plastic pollution (commonly referred to as the "global plastics treaty"), including at the UNEA 5.2 meeting in Nairobi in February, helped set the stage for specific measures to combat ALDFG being included in the text of the ILBI.

**15 THE GGGI MULTI-YEAR STRATEGY**

At the close of summer, the GGGI gathered in Santa Cruz, California to reflect on our accomplishments and set a course for the future of the program. The work retreat laid the groundwork for the GGGI's second multi-year strategy, with near and long-term goals for each pillar of our work set through 2030.



# 4

## JOANNA TOOLE LEGACY

### 2022 JOANNA TOOLE GHOST GEAR SOLUTIONS AWARD WINNERS

In 2022, thanks to generous funding support from the Government of Norway, we were able to extend our Joanna Toole Ghost Gear Solutions Award. The award was first introduced in 2020 to honor GGGI cofounder, United Nations worker, and former World Animal Protection campaigner Joanna (Jo) Toole, 36, whose life was tragically taken in the Ethiopian Airlines crash in March 2019. The 2022 awardee was the Uganda Junior Rangers.



### UGANDA JUNIOR RANGERS: COMMUNITY-LED MANAGEMENT OF END-OF-LIFE FISHING GEAR AND ALDFG IN LAKE VICTORIA, UGANDA

This project was designed to address ALDFG along various fish landing sites around Lake Victoria, Uganda; analyze ALDFG impacts on the health of Lake Victoria fisheries; educate the local community on ALDFG; map ALDFG waste and disposal sites; and dispose of damaged and discarded fishing nets left in Lake Victoria or found on its shore.

The Junior Rangers focused the study on four centrally located fish trading towns around Lake Victoria: Jinja, Mukono, Kampala, and Entebbe. Additional research was done on two rural fishing coastal towns in Masaka on Lake Victoria and in Nakasongola on Lake Albert. In each town, efforts were made to recover and recycle ALDFG, and the ALDFG landing sites were categorized into three levels, according to the severity of the ALDFG issue in each landing site. In many areas, people were burning fishing gear in the absence of any other means of disposal. The study also included fisher interviews to ascertain the primary causes for gear loss/discard and to gain the perspective of those most impacted by ALDFG.

The project also included a public education campaign with information boards placed in each town to highlight the damage that ALDFG does to the environment and to the economic stability of fishing-reliant towns. Additionally, the Junior Rangers held community workshops to raise awareness of ALDFG and its impacts. The education component of the project reached a total population of 50,000 people.

Through volunteer recruitment and community action, more than 46,000 pounds of fishing gear were collected from the shores of Lake Victoria. The Uganda Junior Rangers team worked with Brainbow from the Netherlands, Ghost Network from Portugal, OneEarth-OneOcean from Germany and Glen Mattsing of Circular Ocean to provide expert guidance to communities about achieving a circular system of collecting, recovering, and up-cycling all ALDFG gear in Uganda.





# 5

## GGGI MEMBERSHIP AS OF DECEMBER 31, 2022

MEMBERS

We greatly appreciate the continued membership of the organizations below as we strive to unite the global community to address ALDFG.

### MEMBERS (130)

- Aldi UK
- Aquaculture Stewardship Council
- Aquatic Life Institute**
- Archipelago Marine Research
- Austral Fisheries
- Australian Marine Conservation Society**
- Axiom Cycling Gear
- Beyond Plastic Med Beyond the Reef**
- Biosfera**
- BlueCycle
- Blue Marine Foundation
- Blue Ocean Gear
- Blue Ventures
- Bracenet
- Bumble Bee Seafoods
- Bureo
- Calao Africa
- Cape Breton Environmental Association
- Centre for Sustainable Design
- Cet Law
- CIDCO
- Claire Potter Design
- Coastal Restoration Society
- Commercial Fisheries Research Foundation
- Co-op UK
- CNR-ISMAR
- Commonwealth Scientific and Industrial Research Organisation
- Cornwall Seal Group
- Research Trust
- CSR Geosurveys Ltd.
- Darden Restaurants
- Ecotrust Canada
- Emerald Sea Protection Society
- Enaleia
- Environment and Food Foundation
- Erub Arts
- Fathoms Free
- Fauna & Flora International
- Fish21

- Fisheries Institute of Sao Paulo State (Lost Fishing Gear Project)
- Fourth Element
- Frabelle (PNG) Ltd.
- Friend of the Sea
- Fundy North Fishermen's Association
- Ghost Diving Foundation
- GhostNets Australia
- Go Green Malawi**
- Gorgan University of Agricultural Science and Natural Resources
- Gorton's Seafood**
- Gulf of Maine Lobster Foundation
- GWR Polymers, Ltd.
- Hawaii Pacific University
- Healthy Seas
- Humpback Whale Institute
- Innerspace Exploration Team
- Innovative Coating Solutions
- Italian National Institute for Environmental Protection and Research
- KIMO International
- Lidl UK
- Local Independent Sea Anglers
- Manta Caribbean Project
- Mare Nostrum
- Marks & Spencer
- Monterey Bay Diving
- MRAG
- Myanmar Ocean Project
- Natural Resources Consultants

- Neptune's Army of Rubbish Cleaners
- Nestlé
- Netuno**
- Nomad Foods
- Northern Prawn Fishery
- Northwest Straits Foundation
- Ocean Brands
- OceanCare
- Ocean Conservancy
- Ocean Legacy Foundation
- Ocean Outcomes
- Ocean Wise
- Odyssey Innovation Ltd.
- ORCA

- Our Sea of East Asia Network (OSEAN)**
- Pacific Islands Development Forum
- PADI AWARE Foundation
- Papahānaumokuākea Marine Debris Project (PMDP)**
- Parley for the Oceans
- Patuakhali Science and Technology University
- Pelagic Data Systems
- Pesquera Azul
- Petty Harbour Fishermen's Co-operative**

- Pew Charitable Trusts
- Plastix
- Prince Albert II of Monaco Foundation**
- Project AWARE
- Pronatura Noroeste
- Red Lobster
- RESQUNIT
- Sainsbury's
- Satlink
- Save the Med Foundation
- Seafoodmatter
- Seal Centre Pieterburen

- Sea Farms Ltd.
- Sea Mammal Education Learning Technology Society
- Sea Pact
- Secretariat of the Pacific Regional Environment Programme
- Stand Out For Environmental Restoration
- Steveston Harbour Authority
- Surfers Against Sewage
- Surfrider Foundation Hawai'i
- Tangaroa Blue Foundation
- T. Buck Suzuki Environmental Foundation
- The Marine Mammal Centre
- Teem Fish Monitoring, Inc.

- Tengah Island Conservation
- Tesco
- Thai Union Group
- TierraMar
- Titan Maritime
- Tri Marine
- TUNACONS
- Uganda Junior Rangers
- University of California, Davis
- University of Victoria—School of Environmental Studies
- Waitrose & Partners
- Walmart**
- Watamu Marine Association
- Work Dynamics, Inc.
- World Animal Protection
- World Wildlife Fund

### GOVERNMENTS (20)

- Canada
- Dominican Republic
- Iceland
- Independent State of Samoa
- Kingdom of Belgium
- Kingdom of the Netherlands
- Kingdom of Norway
- Kingdom of Spain
- Kingdom of Sweden
- Kingdom of Tonga
- Mexico
- Montserrat
- New Zealand
- Republic of Korea
- Republic of Palau
- Republic of Panama
- Republic of Vanuatu
- Tuvalu
- United Kingdom of Great Britain and Northern Ireland
- United States of America

### KEY AFFILIATES (4)

- European Commission
- Directorate General for Maritime Affairs and Fisheries (EC DG MARE)
- OSPAR Commission
- United Nations Environment Programme (UNEP)
- United Nations Food and Agriculture Organization (UN FAO)

\*New members are shown in bold.



# 6

## REPUBLIC OF KOREA AND SPAIN JOIN THE GGGI AT OUR OCEAN CONFERENCE, PALAU

At the 8<sup>th</sup> Our Ocean Conference hosted by Palau, the GGGI was delighted to welcome the Republic of Korea and Spain joining as our 19<sup>th</sup> and 20<sup>th</sup> member governments.

During the commitment speeches from the plenary floor, Spain's Deputy Prime Minister Teresa Ribera announced that Spain would be joining the GGGI.

As a GGGI member, Spain will work closely with the GGGI and regional bodies like OSPAR on setting ambitious national and regional targets on recycling and extended producer responsibility (EPR). Spain's sub-directorate general for marine protection will lead the implementation of Spain's commitment to the GGGI.

Alongside Spain, the president of Korea's National Institute of Fisheries Science and deputy minister of

oceans and fisheries, Dong-sik Woo, announced that the Republic of Korea would also be joining the GGGI.

The Republic of Korea has already begun its efforts to address ghost gear by working on the research and development of new fishing gear material sources, real-time tracking and reporting of gear to support effective retrieval, a deposit-return scheme for retrieved gear, and the implementation of the UN FAO's Voluntary Guidelines on the Marking of Fishing Gear.

The GGGI looks forward to the continued collaboration with Spain and the Republic of Korea to address ALDFG in capture fisheries and aquaculture systems along with our 18 other member governments, and looks forward to welcoming additional governments in 2023 and beyond.



**“The health of maritime ecosystems does matter, and I think that working together we can achieve much more than going on our own. We in Spain are working on different initiatives: developing a protocol to identify, to assess, and to retrieve ghost gear; working to establish concrete collection rates for recycling; and developing extended producer responsibility regimes. We encourage other countries to join this initiative and commit effort towards a cleaner, safer, and more resilient ocean.”**

**—Teresa Ribera, Deputy Prime Minister of Spain**

Photo Credit: Ministry of the Presidency, Government of Spain, via Wikimedia Commons



**“The Korean government has thus far made various endeavors to prevent ghost fishing and reduce marine debris. It gives us great pleasure and excitement to join global efforts to tackle this issue by becoming a member of the GGGI.”**

**—Dong-sik Woo, president of the National Institute of Fisheries Science and Deputy Minister of Oceans and Fisheries.**



# 7

## WORK STREAM UPDATES

The GGGI works across three main work streams—building evidence, defining best practice and informing policy, and catalyzing and replicating solutions. Below is a summary of the work the GGGI has done in 2022 across these work streams.

### BUILDING EVIDENCE

#### CANADA BECOMES THE FIRST COUNTRY TO SUBMIT NATIONAL GEAR LOSS DATA TO THE GGGI DATA PORTAL

As of 2020, Canadian commercial fish harvesters were required to report their own lost fishing gear—as well as other lost gear they encounter during fishing operations—to the DFO Canada, via a new mandatory but “no fault” reporting system. The system allows users to record a location and description of the lost gear from any online device and submit this data to the DFO Canada online database. Understanding the location and circumstances of gear loss helps the government to target gear retrieval efforts, better quantify and improve awareness of the underlying causes for gear loss, and develop solutions to ALDFG in Canadian waters. Importantly, as deployed gear is required to be marked in Canadian fisheries, this system can also lead to the return of fishing gear to its owner if found during recovery operations. In September 2023, Canada became the first country to contribute its national ALDFG dataset to the GGGI’s global data portal. In doing so, Canada further cemented its commitment to the issue of dealing effectively with ghost gear both nationally and globally.

As the world’s largest freely available repository for ALDFG data, the GGGI data portal informs strategic research, projects, and policy recommendations for the GGGI and the portal’s other users.

### ALDFG PREDICTIVE MODELS

The GGGI and NRC have produced a series of ALDFG predictive models in various geographies around the world, including Grenada, Jamaica, Lake Erie, Mexico, Montserrat, Puget Sound (WA), and Vanuatu. The models compile numerous datasets such as weather, bathymetry, fishing effort, gear classes, and known areas of gear loss to identify where ALDFG is most likely to occur in a specific geography. These ALDFG predictive models are designed to guide where resources should be allocated to address ALDFG including where to conduct ALDFG survey operations. We hope to jointly make these documents publicly available in 2023.

A prime large-scale example of these predictive models is the one created for both the Pacific and Atlantic coasts of Mexico. When Mexico became a GGGI member in 2021, it committed to combat ALDFG, starting by building evidence and knowledge on the issue in local waters. In 2022, with our NRC partners, a predictive model identifying locations of fishing gear loss or accumulation in Atlantic and Pacific Mexico was developed as the foundation for the GGGI’s signature NANCI project. To develop this predictive model, many partners collaborated by providing valuable data to the model. Collaborators included local partners Pronatura



Noroeste and Manta Caribbean Project, both of whom conducted UN FAO-designed fisher surveys in all 17 Mexican coastal states to determine causes of gear loss and areas of known gear loss. Information from these fisher surveys was used to refine the predictive models in the Atlantic and Pacific marine waters of Mexico. World Wildlife Fund (WWF) Mexico also provided the GGGI and NRC with positional data of ALDFG found during WWF’s Bahia Banderas Ghost Gear Survey 2021. Approximate ALDFG recovery locations were extracted and georeferenced from reports from the International Committee for the Recovery of the Vaquita and from the GGGI Global Data Portal.

The predictive model can provide guidance when determining where to apply resources to address ALDFG. The model also will assist in evaluating the scope of the problem and potential preventive action in Mexico, including planning for ground-truthing surveys and gear removals to be conducted in 2023.

### DEFINING BEST PRACTICE AND INFORMING POLICY

#### GGGI C-BPF IS REFERENCED IN MSC STANDARD 3.0

MSC aims to set standards for fisheries sustainability. Certified fisheries must meet criteria for protecting

against overexploitation of fish populations, maintaining ecosystem productivity, and abiding by applicable fishing management regimes. While some MSC-certified fisheries have worked independently to address ALDFG in their supply chains, no consistent or codified means for evaluating gear loss previously existed in the assessment process. With the MSC in a position of global leadership in the seafood certification space, the MSC in October 2022 released its Standard 3.0, which adds additional requirements about ALDFG. Standard 3.0 also includes a direct reference to the GGGI’s C-BPF for MSC assessors to use as a guide when determining whether a fishery meets these new requirements about ALDFG. The new version of the Standard goes into effect on May 1, 2023.

### IMO MAKES FISHING GEAR MARKING MANDATORY

The most significant advance to date in international mandatory measures to address ALDFG has been the announcement by the IMO’s Marine Environmental Protection Committee (MEPC) of a mandatory goal-based requirement for the marking of fishing gear. The GGGI will continue to work as part of the Clean Shipping Coalition at the IMO’s Pollution Prevention and Response (PPR) subcommittee to help make



draft amendments to MARPOL Annex V and the associated guidelines. The GGGI, working as part of the coalition, will also help develop a circular to the MEPC to promote the use of fishing gear marking systems, internationally recognized guidelines, and technical support documents.

### APEC-SPECIFIC BEST PRACTICE FRAMEWORK DEVELOPED

In collaboration with sponsoring APEC member economy USA and co-sponsoring APEC economies Thailand and Malaysia, the GGGI worked with project partners to develop a best practice framework to address ALDFG in APEC member economies. The project included:

- production of a Best Practices Guide for the Management of Fishing Gear specifically for the APEC region and APEC member economies, including references and dedicated case studies. The Guide builds on the GGGI C-BPF, the GGGI Best Practice Framework for the Management of Aquaculture Gear (A-BPF); UN FAO VGMFG to create an APEC-specific document for managing and preventing ALDFG.
- facilitation of a regional ALDFG workshop for APEC member economies and stakeholders in the APEC region, based on previous regional workshops successfully conducted by the GGGI and UN FAO. This included developing workshop materials, producing a report summarizing the workshop activities, discussions and findings; and developing and analyzing pre- and post-stakeholder surveys to inform the final Best Practices Guide for the Management of Fishing Gear for the APEC Region;
- production of an accompanying Compendium of Gear Marking Schemes specific to the APEC region and APEC member economies.

The APEC Workshop on the Best Practices to Prevent and Reduce Abandoned, Lost, and Discarded Fishing and Aquaculture Gear took place over three days in a

virtual format (due to COVID-19 restrictions) from May 17–19, 2022. The objectives of the workshop were:

- Building awareness of tools and methods to manage ALDFG in the APEC region, including familiarizing participants with the GGGI Global Data Portal, C-BPF and A-BPF, and with the APEC roadmap and previous work on ALDFG;
- identifying innovative and successful approaches to manage ALDFG in the APEC region;
- gathering feedback on two draft documents: Managing Abandoned, Lost, or Discarded Fishing Gear and Aquaculture Equipment in the APEC Region, and Compendium for the Marking of Fishing Gear in the APEC region.

### DRAFT CARIBBEAN REGIONAL ALDFG ACTION PLAN

In collaboration with GCFI and CRFM, the GGGI developed a draft Regional ALDFG Action Plan for the Caribbean region. The action plan—based on the GGGI C-BPF and information that the GGGI has carried out in the Caribbean since 2018—was targeted at fishers and fisheries managers to provide guidance on best practices to avoid gear loss during fishing operations and to inform future fisheries management decisions. The draft document underwent a round of feedback from stakeholders across the Caribbean region, facilitated by GCFI and CRFM, to ensure that recommendations in the action plan were appropriate. One of the key observations identified during the creation of the document—and confirmed by the GGGI’s work in the region to date—was that there are substantial differences in the causes of gear loss across different countries in the region, which makes it challenging to create a regional document that remains applicable to all actors. The GGGI will continue working with stakeholders in the region—including GCFI, CRFM, member states and others—to refine the action plan over time and ensure it remains comprehensive and fit for the purpose.

## CATALYZING AND REPLICATING SOLUTIONS

### GGGI SIGNATURE PROJECTS

#### NORTH AMERICAN NET COLLECTION INITIATIVE (NANCI)

The GGGI’s signature NANCI project is the first transboundary ALDFG project of The project scope includes data gathering, fisher surveys, predictive ALDFG models, targeted ALDFG survey and removal work, the development of a national strategy to prevent ALDFG in Mexico, and the establishment of a transboundary end-of-life net collection system.

Working with partners Pronatura Noroeste and Manta Caribbean Project, on-the-ground fishers surveys were conducted to perform a nationwide assessment to learn about the causes, frequency and impacts of ALDFG across all coastal states in Mexico. Working together with NRC, and using data collected from these fisher surveys, a predictive model has been developed to identify areas for potential gear

loss in the Pacific and Atlantic waters of Mexico and to direct efforts where the potential for ALDFG presence is more likely.

In 2022, GGGI, working together with the Inter-Ministerial Commission for the Sustainable Management of Seas and Coasts (CIMARES) and WWF Mexico, drafted the first national strategy to prevent, mitigate and remediate ALDFG in Mexico. In September 2022, the GGGI co-hosted an ALDFG Action Plan Workshop in Mexico City. Twenty officials from the Mexican government participated, representing the more than 12 Mexican government agencies tasked with addressing this issue at the national level. By the end of 2022, the plan was preapproved by federal agencies, and it is now being prepared for final approval and publication in Mexico’s official gazette.

Working with Bureo, an EOL fishing gear collection hub to process nets from Mexico was established in Ensenada (in Baja California, Mexico, near the U.S.



Photo Credit: Claudia Cecelia Olimon





Photo Credit: OC Edgar Lima

border), where EOL fishing nets are being collected, preprocessed, packed and sent to Bureo's new facility in Oxnard, CA. Bureo is a specialist in creating solutions to EOL fishing nets. It works with local communities and fishing companies to collect EOL fishing nets to be recycled into Bureo's NetPlus material, which can then be made into new products such as skateboards, sunglasses, and more. By the end of 2022, 14 tons of EOL gear from Mexico were sent to be recycled and another 55 tons were collected for processing.

The GGGI also led workshops to raise awareness about the scope and impact of ALDFG in the Gulf of Mexico and the Caribbean, and to increase the uptake of gear management best practices. During March 17–18, 2022, a workshop in Ensenada brought together 35 participants from at least 15 regions in Mexico, mainly from Mexico's Pacific Northwest. Attendees were from a variety of sectors in Mexico, including NGOs, federal and state government (Navy, Inapesca, Conanp, Conapesca, Foreign Affairs and Sepesca), fishing industry (Canainpesca and fisher representatives), and the seafood private

sector. During the March workshop, Bureo and Grupo Pinsa (a tuna and sardine production and commercialization company) signed an agreement to provide EOL nets to Bureo's collection and recycling program. On July 27, 2022, another workshop, this time in Cancun, brought together 33 participants from the federal government (Navy, Semarnat-Profepa, Semarnat-Conanp, various natural protected area (NPA) directors, foreign affairs), state governments (Yucatan and Quintana Roo), NGOs (WWF, Parley for the Oceans, CoBi, Coral Reef Alliance, Grupo Tortuguero, Amigos de Isla Contoy and the Manta Caribbean Project), private sector (Bureo and Ola Mexico), academia (Metropolitan Autonomous University and the Center for Research and Advanced Studies of the National Polytechnic Institute (CINVESTAV)), and fishers from Campeche, Quintana Roo and Yucatan. Workshop topics across both workshops included best practices for gear management and interactive sessions focused on issues such as using the GGGI Ghost Gear Reporter app and solving hypothetical ghost gear case scenarios.

### CARIBBEAN PROJECT

The GGGI has been working in the Caribbean region since 2018. In 2022, the GGGI—with funding from the Government of Canada's Ghost Gear Fund and in collaboration with GCFI—carried out several additional activities in the Caribbean, building on our work in previous years.

In collaboration with the Government of Montserrat and NRC, we completed an ALDFG predictive model for Montserrat. Using data collected by the Fisheries and Ocean Governance department of Montserrat through the implementation of fisher surveys provided by UN FAO, and also using additional data sets analyzed by NRC, a heat map and accompanying narrative report were generated outlining the most likely areas for gear loss around the island of Montserrat. This model will be used by the Fisheries and Ocean Governance department to better understand the key causes of gear loss and to implement preventative measures to minimize future gear loss and the resulting impacts on local fisheries.

Building on the successful unoccupied aerial vehicle (UAV) surveys the GGGI undertook in Jamaica in 2021, we have expanded this work to include surveys in Trinidad and Tobago. Using proprietary methodology developed by Wolf Fish Ltd., we gathered aerial survey data and imagery to further refine the GGGI's machine learning algorithm to auto-detect ALDFG in near-shore coastal environments. Complementary to this, we engaged the University of the West Indies to conduct UN FAO fisher surveys in both Trinidad and Tobago to obtain a better understanding of the key causes of gear loss across both islands. In 2023, we will use the results of both sets of surveys to engage NRC to produce an ALDFG predictive model for Trinidad and Tobago, similar to the model created for Montserrat, to better inform fisheries management policies.

Building on our previous work in Jamaica testing innovative new gear technologies, we engaged with our local partner—the Jamaica National Fisheries



Photo Credit: Resqunit

Authority—and with Resqunit to test the company's new electronic timed release (ETR) version of its proprietary combination escape hatch and emergency retrieval buoy for pots/traps. Feedback from fishers who participated in the initial round of testing indicated that the technology worked very well but that the original biodegradable cotton "rot cord" that held the buoy in place took too long to biodegrade and trigger the device. The ETR units, however, can be programmed to deploy at a set time, which could be hours, days or weeks after the trap is set. Unfortunately, COVID-19-related production delays pushed the on-the-ground testing into 2023.

Together with GCFI, we plan to co-host a virtual workshop in early 2023 on EOL solutions for fishing gear in the Caribbean region. The workshop will focus on alternative means of disposal that are more realistic and well-suited to the Caribbean context. The workshop will be informed by the draft ALDFG action plan the GGGI created as a result of our work in the wider Caribbean region, which identified that there have been very few "traditional" options—such as recycling—for EOL gear.



## VANUATU PROJECT

The GGGI has been working with partners—including the Vanuatu Fisheries Department (VFD), Vanuatu Environmental Science Society (VESS) and NRC—since 2007 to increase community uptake of best practices for managing fishing gear in Vanuatu and to gather ALDFG data for the. As a continuation of the GGGI’s work in Vanuatu, the project team has built on lessons learned during earlier activities and has expanded engagement with local stakeholders. The project has continued to help raise awareness about ghost gear in Vanuatu while building capacity and generating community buy-in to effectively reduce and prevent gear loss going forward. Overall, the findings and outputs generated through the project will add to the evidence base and help to refine best practices for gear management in Pacific Island nations—where the use of FADs is expanding—with a goal that these best practices can then be adapted and applied to other small island developing states with similar characteristics.

During 2022, project activities focused around three key areas. The first activity involved scaling up the testing of new gear-tracking technologies specifically to track anchored FADs (aFADs) in Vanuatu if they break loose from their moorings. Two different gear-tracking technologies were tested during this project phase: Blue Ocean Gear’s (BOG) Farallon Smart Buoys and Collecte Localisation Satellites’ (CLS) Novel Argo Observing System (NAOS) GenTrackers. Working with VFD, BOG and CLS to test the gear-tracking technologies and helped to identify strategies for efficiently deploying and monitoring tracking devices in Vanuatu. This in turn will reduce the likelihood of aFADs becoming lost and potentially damaging the environment if they drift into coral reefs or other sensitive habitats. The BOG units effectively tracked aFAD locations at sea, and were able to withstand regular submersion in high current areas; the CLS NAOS GenTrackers performed well tracking aFAD locations in low-current areas under normal weather conditions. Extreme weather events can affect both types of units but seemed to have a greater impact on the CLS units, as these are more likely to stop working when submerged. VFD can use this information to

refine when, where and which types of tracking units are deployed as Vanuatu’s aFAD program continues to grow. Convening VFD staff from different divisions for the capacity-building workshop helped to break down institutional silos and further integrate the aFAD tracking program across the department.

The second activity involved convening a stakeholder training workshop on best practices for gear management. In December 2022, the GGGI—together with NRC, VFD and VESS—convened a two-day workshop in Port Vila to build capacity for reducing ALDFG and for improving aFAD management and tracking in Vanuatu. Among the 18 participants were representatives from BOG, CLS and UN FAO’s FishFAD program, in addition to the GGGI, VESS, NRC and VFD staff. To strengthen integration of the aFAD tracking program across VFD, staff from VFD’s research, compliance, community-based fisheries and development and fish capture divisions participated in the workshop. Presentations featured project results to date, an overview of Vanuatu’s aFAD program and of the BOG and CLS tracking units, protocols for retrieving lost aFADs, and other efforts to address ALDFG in Vanuatu—including an EOL fishing gear buy-back scheme led by VESS. Participants were highly engaged in the workshop, and there was ample time dedicated to in-depth discussion and next steps, such as improving coordination between VFD’s development division (which is responsible for deploying aFADs) and the research division (which is responsible for deploying aFAD tracking units). The workshop also allowed for BOG and CLS personnel to conduct in-person training on the units and on their respective web interfaces.

During the workshop, key priorities identified—which will be used to help inform future work in the region—include:

- Reviewing fishing regulations concerning gillnets and the draft FAD management strategy;
- Aligning ALDFG management within the Vanuatu National Action Plan for Marine Debris;

- Raising awareness about project results with Vanuatu government agencies;
- Using additional data to identify potential hotspots for fishing and gear loss;
- Training on the use of the GGGI Ghost Gear Reporter App and Global Data Portal;
- Removing gillnets from Banban (an area in southeast Espiritu Santo, Vanuatu’s largest island, which has been identified as a hotspot for gillnets);
- Providing assistance for cleanups called for in community management plans; and
- Continuing to research additional locations of gear loss.

The third activity involved expanding the EOL gear buy-back pilot program to a new site. The buy-back program has offered a way for fishers to return their nets at the end of their useful life and receive a small payment for doing so. This allows for the

EOL nets to be collected in a responsible manner (rather than being disposed of at sea due to a lack of alternatives) while giving a small extra source of income to local fishers. Building on the successful gear buy-back piloted on Vanuatu’s island of Efate earlier in the project, VESS planned to host a buy-back on Espiritu Santo during this project period. VESS selected the Espiritu Santo location based on ghost gear surveys showing many gillnets on the reef off the south coast of that island. The original plan to host the buy-back in December 2022 was thwarted by a significant cyberattack on Vanuatu’s government computers, which made it difficult for VESS to communicate with fisheries officers in Espiritu Santo to organize the event. As a result, this activity will be pushed into 2023.

## GULF OF MAINE AND RHODE ISLAND PROJECT

Our main project partner, the Gulf of Maine Lobster Foundation (GOMLF) held two “grapple events” in Harpswell, ME that resulted in the removal of 42,000



Photo Credit: Josh Swan—Media Northeast





Photo Credit: Jackie McGarry

pounds of debris and engaged ten fishers over four days. During these events, local partners/fishers used a grapple (small metal hook tied via rope to the vessel) to retrieve debris from the seafloor and bring it ashore for proper disposal. Of the debris removed, 18,000 pounds of lobster traps were crushed to be recycled, and 24,000 pounds of debris, rope, buoys and cable were sent for disposal. One of the fishers who participated in the events has been working on this issue with GOMLF for more than a decade. This year, his son—who now owns his own lobster boat—was able to participate as well.

In August 2022, we hosted a two-day workshop in Portland, ME for 12 lobster fishers and associated local stakeholders in the Gulf of Maine, including the head of the Maine Lobstermen’s Association and other representatives from nonprofits with ties to local fisher communities that represented a diverse geographic distribution. The workshop, which was facilitated by our project consultant Ocean Outcomes (O2), had the following key objectives: 1) To highlight best practices related to preventing, mitigating and remediating the effects of ALDFG; and 2) To facilitate information exchange between the GGGI and local fishery stakeholders to identify and understand key drivers of gear loss in the region and to discuss existing and possible future solutions.

The workshop consisted of presentations and interactive idea-generating sessions geared towards developing consensus, understanding and collective thought on solutions to ALDFG. This included presentations from the GGGI, O2 and local ALDFG knowledge experts in the region such as Erin Pelletier, GOMLF; Susan Inglis, Commercial Fisheries Research Foundation; Jim Buxton, a Portland, ME commercial fisherman and dive expert; and Campbell ‘Buzz’ Scott, OceansWide. We had planned to conduct a workshop in Saint John, Newfoundland and another in Halifax, Nova Scotia in 2022 as well, but Hurricane Fiona postponed those plans. Those workshops will now be held in 2023.

In early August 2022, we participated in a workshop called, “Planning a Ghost Gear Removal Program

for Rhode Island,” hosted by our local partner, the Commercial Fisheries Research Foundation (CFRF). This workshop helped build partnerships with fishers, coastal communities, and environmental organizations in Rhode Island to develop a sustainable ghost gear management and removal plan. We participated in this workshop to provide technical guidance and share lessons learned. The GGGI also joined CFRF’s advisory council for ghost gear removal, and we will meet regularly with the CFRF advisory council as it prepares to launch its ghost gear retrieval program in early 2023. In 2023, we also plan to work with CFRF to develop gear retrieval protocols for Rhode Island and conduct UN FAO-developed fisher surveys in Rhode Island.

#### INDONESIA PROJECT

Led by the Government of Indonesia’s Ministry of Maritime Affairs and Fisheries in collaboration with the GGGI, the objective of the ALDFG 3R Pilot Project is to deliver pilot projects for the full ALDFG lifecycle across the “3Rs”—to reduce, retrieve, and recycle ghost gear—and to explore a circular economy blueprint that could be developed in Indonesia. In addition to generous funding from the Government of Netherlands, the activities are also being supported through funding from Bumble Bee Seafoods. This second phase of the project expands on the work that commenced in 2017 to assess the practical and economic feasibility of various gillnet gear marking options for small-scale and artisanal fisheries, prove gear marking could form part of a comprehensive fisheries management system to help reduce ALDFG and IUU, underpin and strengthen the provisional recommendations to the (then) draft UN FAO VGMFG, and scope the viability of a net recovery and/or recycling project.

The ALDFG 3R Pilot Project consists of 3 core work streams:

- **Reduce:** Identify evidence about ghost fishing and implement relevant ALDFG reduction and mitigation measures as outlined in the GGGI C-BPF.



- **Retrieval:** Encourage stakeholder collaboration initiatives towards removing or recovering ALDFG and improving port waste reception facilities.
- **Reuse and Recycle:** Explore innovative approaches for recycling ALDFG.

To expand the engagement and exposure of Indonesia’s 3R ALDFG Pilot Project, GGGI Policy Specialist Hannah Pragnell-Raasch was invited to be a guest speaker at the eDuFish webinar on Ghost Fishing. The event provided a unique opportunity to discuss the project alongside members of the Indonesian Government, including Dr. Hendra Yusran Siry, secretary of the Directorate General of Marine Spatial Management, Ministry of Marine Affairs and Fisheries, Indonesia and Ir Mansur, director of Fishing Vessel and Fishing Gear, Directorate General of Capture Fisheries, Indonesia. Over 100 attendees joined the event in addition to a live-stream on YouTube, allowing the GGGI to foster further engagement and awareness of the ALDFG 3R Project with Indonesian constituents, which is particularly important considering we have been unable to travel to Indonesia to date and engage with stakeholders on the ground due to the COVID-19 pandemic.

#### PACIFIC NORTHWEST

The Pacific Northwest region of Washington State and British Columbia is an area of incredible biodiversity and, as a result, significant fishing activity, particularly for Dungeness crab and various salmon species. There has been significant work done in the region previously by several GGGI members: Northwest Straits Foundation and NRC. This significant work includes the creation of the Puget Sound Crab Pot Prevention Plan and the Reporting, Response, and Retrieval (RRR) Program for newly lost nets, a program being conducted in coordination with the Washington Department of Fish and Wildlife.

Building on this previous work, the GGGI and NRC focused on preventing negative impacts

from ALDFG in the Washington Salish Sea (WASS) by evaluating the existing RRR program and comparing the areas of lost nets to habitats of species listed under the U.S. federal Endangered Species Act; conducting interviews with tribal fishers to better determine key reasons for gear loss, using the UN FAO survey methodology; and removing existing derelict Dungeness crab pots from marine habitats in areas where crab pots are regularly lost during fishing operations. Overall, the response and retrieval portions of the RRR program were found to be working well. However, significantly more newly lost nets were found than were reported lost, showing that there is room for improvement in motivating accurate gear loss reporting in the program.

The side-scan survey, remote operating vehicle (ROV) verification and gear removal portions of the project—carried out by NRC and Fenn Enterprises in the Port Gardner area near Everett, WA—were aimed at eliminating damage, caused by the loss of deepwater crab pots, to marine habitats that are critical to the recovery of rockfish in the WASS. Once identified, pots were removed with the assistance of the ROV, either by attaching the ROV’s manipulator arm to the target pot directly and with the pot being pulled to the surface via the ROV umbilical cord, or by using the ROV arm to attach a grapple to the target pot and then hauling the pot up onto a vessel via a winch. Overall arising from 19 linear (km) of side scan sonar surveys, 73 derelict crab pots were identified with side-scan sonar and investigated, with 37 removed, 31 disabled but left in place, and the remaining five not found.

In 2023, we plan to expand on this activity by building capacity amongst fisheries managers and stakeholders to prevent pot loss, assessing the feasibility of requiring all online recreational crab licenses purchased with point-of-sale education on loss prevention, and building capacity amongst tribes and agencies to report and respond to lost gillnets.

#### GGGI SMALL GRANTS

##### EMERALD SEA PROTECTION SOCIETY (CANADA)

The Emerald Sea Protection Society (ESPS) project consists of targeted ghost gear recovery operations off the coast of British Columbia and media outreach to raise awareness of ALDFG. The original plan was to purchase a boom crane to increase the lift potential of the ESPS field vessel to pull ALDFG from the water to the surface. However, the vessel was deemed incompatible with a boom crane after an engineering assessment. For this reason, ESPS is using funds allocated to this project to upgrade the ROVs, GPS systems and associated hardware that the society uses to detect and remove ALDFG.

In February and March 2023, an ESPS field crew completed ghost gear surveys and recovery activities in the region of Port McNeill, British Columbia. The crew concentrated its survey and recovery effort on Alert Bay near Port McNeill. Throughout the areas surveyed in Alert Bay, the crew did not observe a wide distribution of gear, but did observe a higher density of gear at a few different locations. The amount of gear discovered

was less than what the crew anticipated in the survey areas, though an estimated 10,494 pounds of ALDFG was recovered by the crew. The gear that was suitable for recycling was sent to the Ocean Legacy Foundation recycling center in Steveston, British Columbia and the remainder of the recovered gear, which was too heavily contaminated to recycle, was sent to a local landfill for disposal. Inclement weather conditions and strong currents had significantly limited the crew’s capacity to safely survey and recover ALDFG. During its activities, the crew observed that the eelgrass was flourishing in Alert Bay, and they believe that with a more extensive cleanup effort, the seabed habitat would not take long to recover.

With respect to outreach work, ESPS is working with a professional videographer to record footage with the field crew in April 2023, with support from the GGGI Small Grants Program. The film will showcase ESPS work regarding ALDFG. The film will be used to educate the public about ALDFG and the contributions of ESPS and the GGGI to addressing this global challenge.



Photo Credit: Emerald Sea Protection Society, Shayd Johnson





#### HAGAMOS MÁS (MEXICO)

Fundación Hagamos Más por Santa Rosalía (Hagamos Más) is an organization in Mexico that works in fishing communities to promote community participation and women’s empowerment on a variety of issues. Through the GGGI Small Grants Program, Hagamos Más is implementing a “weigh and pay” program for the recovery of ALDFG and other plastic marine debris from Mexico’s west-central Gulf of California coast, and is conducting outreach activities with fishing communities in Baja California Sur, Mexico. Women from fishing communities are being trained and paid to become communicators for the program, an approach that has reached nearly 840 people in four priority communities so far. These women are dedicated and effective teachers, and they have become community leaders in the effort to mitigate ALDFG in their local environment. The “weigh and pay” program began after educational seminars were completed in the communities, and the collection of ALDFG has totalled more than 8.6 metric tons of monofilament and silk mesh nets.

Entire families have been involved in searching for ALDFG and have completed successful community-wide removals. The successful education and training of women, families and communities is resulting in a healthier environment for people and in economic benefits for local fishers. The successful training and fishing gear removals have inspired communities to continue efforts to mitigate the deadly impact of ALDFG. These efforts also have created alliances with public and private institutions in the region, including with fishers and with the four priority communities that rely on fishing activities to survive.

#### PATUAKHALI SCIENCE AND TECHNOLOGY UNIVERSITY (BANGLADESH)

Patuakhali Science and Technology University is implementing a project to assess ALDFG and marine debris in the Bay of Bengal and to raise awareness of the issue in Bangladesh’s southern coastal districts.

Two locations in coastal Bangladesh that are highly impacted by ghost gear were selected as project sites: Kuakata (Patuakhali) and Dariarnagar and Najirartac (Cox’s Bazar). Two groups in each location were organized to collect ALDFG, including local youth groups for beach collections, and near-shore and artisanal deep-sea fishers for at-sea collections.

To date, 2,882 kg of synthetic nets have been collected along with 1,029 kg of various other plastics, including jars, tourist debris and polyurethane bags. A survey of 200 fishers was also conducted to determine the current levels of awareness and practices about ALDFG in the selected regions. The survey identified seine nets and gill nets as the most widely used gear types for fishing in these regions of Bangladesh and noted that these nets typically cause the most negative impacts on marine biodiversity and the economy. Survey results also indicate that the most common causes for ALDFG were inclement weather, conflict with other vessels and negligent fishing operations.

Unfortunately, there were no local facilities available for ALDFG collection, disposal or recycling in the project areas, highlighting the acute need for port-side reception facilities and appropriate disposal opportunities in Bangladesh. A multi-stakeholder training and awareness campaign, dubbed ‘Ghost Gear Gathering,’ was organized in March 2023 involving researchers, the Bangladesh ministry of fisheries, livestock administrators, local leaders, volunteers, fishers and local youth. Promotional awareness materials were prepared and distributed to the relevant stakeholders. A similar ‘Ghost Gear Gathering’ will be conducted in Cox’s Bazar later in 2023. The project has had a positive impact in raising awareness, and the project has the potential to inform the development of public policy about the mitigation of ALDFG in Bangladesh’s Bay of Bengal.

#### STICHTING GHOST DIVING (GREECE)

Stichting Ghost Diving is implementing a project dedicated to locating ALDFG in Mediterranean waters using unoccupied aerial vehicles (UAVs)





Photo Credit: Nikos Vardakas

in near-shore coastal environments. Through the course of this project, Stichting Ghost Diving is working with fellow GGGI member Wolf Fish Ltd. to perform aerial surveys using UAVs to gather information about the distribution of ALDFG along specific areas of the Greek coastline. Survey flights in areas of regional interest will return results about the type, location, and density of ALDFG, and about ALDFG impact across large regions of the coast. Information gained during the surveys will be used to: (1) locate ALDFG for removal, (2) study the impact of local fishing practices, (3) facilitate knowledge transfer between stakeholders and drone operators and the local fishing community and (4) share ALDFG data from aerial surveys to the GGGI Ghost Gear Reporter App. The experienced divers with the Stichting Ghost Diving team will also perform underwater surveys of ALDFG identified in the aerial surveys and remove the gear if safe to do so. All data from the project will be contributed to the GGGI data portal, and ALDFG imagery will be used to further train the GGGI's artificial

intelligence (AI) algorithm that is being developed to automatically detect ALDFG from aerial images.

#### SEA MAMMAL EDUCATION LEARNING TECHNOLOGY SOCIETY (SMELTS) (USA)

The SMELTS project is focused on developing technology to remove marine debris—specifically, anchored fishing traps—from ocean environments. During the course of this project, SMELTS plans to build two neutrally-buoyant marine debris lifting engine prototypes to develop techniques to recover marine debris, including anchored gear that can entangle whales and other marine wildlife. SMELTS will work with partner fishers and use commercial vessels to test new devices and techniques to identify and recover ALDFG. SMELTS will also utilize a small, portable working-class underwater ROV with gripping arms and 4k video capability to record underwater marine debris recovery efforts, which will aid in training and in the development of techniques that can be used to aid entangled whales and other marine wildlife in the future.



Photo Credit: Nikos Vardakas



# 8

## CONFERENCES AND EVENTS

Below is a list of the events, conferences, webinars, etc. in which the GGGI participated in 2022.

### MARCH

#### NORTH AMERICAN NET COLLECTION INITIATIVE (NANCI) PROJECT WORKSHOP

NANCI is the first transboundary initiative to prevent ghost fishing gear in the coastal waters of the western United States, Mexico and Canada. On March 17–18, 2022, members of the GGGI team traveled to Ensenada to lead our first workshop in Mexico on the Best Practices for Gear Management. The main objective of the event was to promote and discuss recommendations on the prevention, mitigation and remediation of ALDFG. The event also allowed for the exchange of knowledge and experiences related to ghost gear in Mexico. Topics included the application of the Best Practice Framework for the Management of



Photo Credit: Claudia Cecelia Olimon

Fishing Gear recommendations; use of the Ghost Gear Reporter App; an overview of existing efforts by the Mexican government and local partners to tackle ghost gear; and net recycling opportunities, which resulted in a new partnership for the recycling of EOL nets between Grupo Pinsa and Bureo. The workshop was attended by about 35 participants from at least 15 regions in Mexico. Among the participants were representatives from NGOs, Mexican state and federal government, academia, the private sector and the fishing industry.

### APRIL

#### OUR OCEAN CONFERENCE

The GGGI Traveled to Palau on April 13–14 for the 7<sup>th</sup> Annual Our Ocean Conference, co-hosted by the Republic of Palau and the United States Government. At the conference, we announced the addition of the governments of Spain and South Korea to our growing membership. We presented a side event titled “From Policy to Practice: Showcase of Multi-stakeholder Approaches to Address Ghost Gear Around the World,” which included participation from GGGI member governments from the US, UK, Canada and Mexico, as well as from GGGI corporate member Bumble Bee Seafoods. We also renewed the GGGI’s Our Ocean commitments and, presented an exhibition featuring the NANCI project and the EOL gear recycling process. In addition, GGGI Director Ingrid Giskes was a speaker at the conference plenary on the topic of tackling marine pollution.



Photo Credit: Felipe Victoria

#### LIGHTHOUSE LOFOTEN CONFERENCE

On April 5–6, the GGGI attended the second Lighthouse Lofoten Conference in Svolvær, Norway. The conference theme was: guiding light towards the prevention of sea-based marine litter. Kirsten Gilardi, chair of GESAMP working group 43 on sea-based sources of marine litter and a member of the GGGI Expert Advisory Council, provided the opening presentation on “A Global View on Sea-based Sources of Marine Litter: Prevention and Solutions.” GGGI Associate Director Joel Baziuk participated in a panel discussion on knowledge sharing and capacity building in the marine debris space, and he also gave a presentation on the GGGI’s A-BPF. The A-BPF, released in August 2021, provides the aquaculture industry with a practical tool to prevent, mitigate and remediate the challenge of gear loss and plastic debris arising from aquaculture operations.

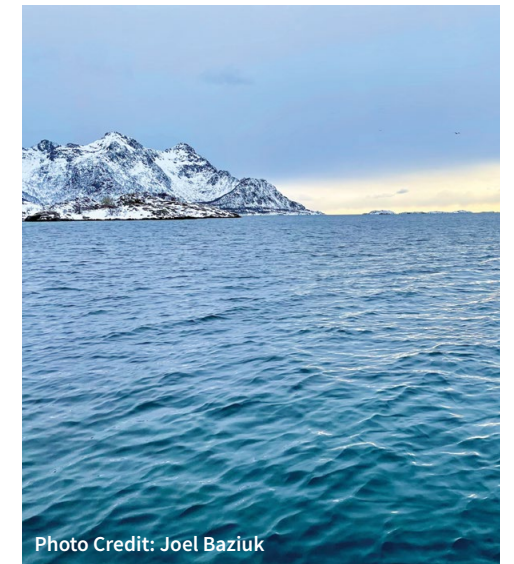


Photo Credit: Joel Baziuk

### JANUARY

- Inter-secretarial Status and Progress Report Meeting of the High-Level Panel for a Sustainable Ocean Economy in Mexico. (Virtual) January 18, 2022.

### FEBRUARY

- CA Ocean Litter Strategy Workgroup Goal 6: Ocean-based Debris and Cleanup. Hosted by NOAA. (Virtual). February 16, 2022.
- Title: eDuFish *Ghost Fishing* Webinar. (Virtual) February 25, 2022
- Title: United Nations Environment Assembly (UNEA) 5.2. (In-person, Nairobi, Kenya) February 28–March 2, 2022.

### MARCH

- Best Practices for the management of fishing gear workshop. (In-person, Ensenada, Baja California, Mexico) March 17–18, 2022.
- GGGI Government Roundtable: Working Towards Solutions to Manage ALDFG. (Virtual) March 29, 2022.

### APRIL

- Inter-secretarial Coordination and Follow-up Meeting on Mexico’s Accession to the Global Ghost Gear Initiative. (Virtual) April 1, 2022.



Photo Credit: Giselle Veve



## JUNE ROZALIA PROJECT

From June 22–27, Chris Dorsett, vice president of Ocean Conservancy’s (OC) Conservation Policy and Program, who oversees the GGGI portfolio, and OC Communications Manager Maddie Black sailed with the Rozalia Project—a longtime supporter of OC’s International Coastal Cleanup—aboard the oceanographic research vessel “American Promise” on a cleanup expedition aimed at removing ghost

gear from Maine waters. Along with the other crew members, the GGGI team recorded the gear collected using the Ghost Gear Reporter App, which uploads directly to the GGGI’s global data portal, the world’s largest repository of ghost gear data. The team made an amazing haul, recovering over 4,700 pounds of gear and marine debris. The effort received excellent coverage by a number of top media outlets, including interviews with Chris on Fox 22 News out of Bangor, ME, and with Maddie on ABC news, also out of Maine.

## UNITED NATIONS OCEAN CONFERENCE

The United Nations Ocean Conference was co-hosted by the governments of Kenya and Portugal and was held in Lisbon, Portugal from June 27–July 1, 2022. The conference theme was “Scaling up Ocean Action Based on Science and Innovation for the Implementation of Goal 14: Stocktaking, Partnerships and Solutions.” The GGGI team was busy participating in a number of events at the conference, including: judging the Youth and Innovation Forum “Innovathon” event;

organizing and presenting in a panel discussion in the Sustainable Development Goal (SDG) meeting zone; hosting a reception for GGGI members; and leading a side event titled “Public-Private Partnerships to Share Knowledge and Resources for Impactful Solutions to Address Marine Pollution”. Additionally, the GGGI announced a number of commitments to align with the 2030 Sustainable Development Goals, including enhancing government memberships in the GGGI, increasing records in the GGGI Data Portal, and generating meaningful commitments from seafood industry members to reduce ALDFG.

Photo Credit: Joel Baziuk



### MAY

- APEC Workshop on the Best Practices to Prevent and Reduce Abandoned, Lost, and Discarded Fishing and Aquaculture Gear. (Virtual) May 17–19, 2022.

### JUNE

- Regional Fisheries and aquaculture festival hosted by the Intercultural Center for the Study of Deserts and Oceans. (In-person Puerto Peñasco, Sonora, Mexico) June 7–9, 2022.
- Preventing Oil and Plastics Contamination of Ocean Regions of the North (POPCORN) Twitter Conference. (Virtual) June 21, 2022.

### JULY

- Title: Best Practices for the management of fishing gear workshop. (In-person Cancun, Quintana Roo, Mexico) July 27, 2022.
- GGGI Virtual Corporate Roundtable. (Virtual) July 28, 2022.

### AUGUST

- Ghost Gear Action Plan follow up workshop. (In-person Puerto Vallarta, Mexico) August 9, 2022.



**JULY**

**ALL-ATLANTIC OCEAN RESEARCH ALLIANCE**

GGGI Associate Director Joel Baziuk participated in the All-Atlantic Ocean Research Alliance Forum (virtual, Brasilia, Brazil, held on May 31–June 2, 2022) and a follow up ministerial event (held in person in Washington, D.C, on July 12–14, 2022), raising ALDFG as a critical issue in the All Atlantic forum. The key aims of the events were to help advance concrete objectives and orient the discussions and activities about medium- and long-term visions that single projects and initiatives have to offer to the alliance; work on how to tackle emerging priority areas for cooperative research that should be adopted and addressed at the upcoming All-Atlantic Statement; and consider equality, inclusivity and a balanced perspective in advancing the All-Atlantic Forum. Joel also participated as a panelist in a July 14, 2022 roundtable at the ministerial event on ocean stressors in Washington, D.C.

**SEPTEMBER**

**7<sup>TH</sup> INTERNATIONAL MARINE DEBRIS CONFERENCE (7IMDC)**

Taking place in Busan, South Korea, from September 19–23, 2022, the 7<sup>th</sup> International Marine Debris Conference built on the momentum of past marine debris conferences. The 2022 conference brought together governments, industry, academia, civil society and other interested participants to discuss the latest science, strengthen collaborations, find solutions and catalyze action to address the urgent global problem of marine litter and plastic pollution. The GGGI hosted 12 technical sessions in person and virtually, highlighting the importance of addressing ghost gear in the broader marine debris space— from monitoring and data collection to strategic collaboration and partnerships, to technology innovation and design, and everything in between. We were also privileged to meet with the South Korean Ministry of Oceans and Fisheries and the Ministry of Foreign Affairs to discuss their innovative solutions to ghost gear prevention and mitigation and their future plans for gear management.



**SEPTEMBER**

- Mexico’s Ghost Gear Action Plan workshop. (In-person Mexico City) September 8, 2022.
- 35th Session of the FAO Committee on Fisheries (COFI). (Virtual) September 5–9, 2022.

**OCTOBER**

- Nanci donor event (In-person Oxnard, California, USA) October 22, 2022.
- Global Seafood Alliance GOAL Conference. (In-person Seattle, Washington, USA) October 3–6, 2022.

**NOVEMBER**

- GCFI 75 (Virtual) November 7–11, 2022.
- GGGI Virtual Corporate Roundtable (Virtual) November 14, 2022.



# 9

## GGGI MEMBER HIGHLIGHTS

This section highlights some of the outstanding independent work that GGGI members are doing around the world.

### BUMBLE BEE: TARGETING KEY HABITAT IN THE BAY OF FUNDY

A GGGI member since 2018, Bumble Bee continues to signal its commitment to address ALDFG, first by investing in ghost gear prevention efforts in Indonesia and, in 2022, dedicating an additional multiyear infusion of \$1 million USD in funding toward several distinct ALDFG-related projects. Year one of Bumble Bee's five-year agenda kicked off with a project aimed at identifying and cleaning up legacy ALDFG in the Bay of Fundy.

The Bay of Fundy, located right off the coast of Nova Scotia in southeastern Canada, is home to several important commercial fisheries. Recent assessments of the Bay of Fundy's herring fishery revealed a decline in fish stocks. This led fleet managers—who are accustomed to interacting with inactive legacy fishing gear during active fishing operations—to speculate as to whether decades worth of remnant gear, from traps to trawls and of unidentified origin, could be a contributing factor in the fish stock decline. Bumble Bee's local fleet managers advocated for the company to leverage its resources and take the lead in restoring the fishing ground. Bumble Bee responded by funding the design of a project that would determine the actual location of this gear and initiate targeted retrieval efforts.

In early spring of 2022, a desktop study identified potential legacy gear hotspots by analyzing factors that contribute to the accumulation of lost gear, including factors such as the benthic environment, currents, vessel traffic and fishing effort. With potential hotspots identified, local fishers were then interviewed to help corroborate the results of the study. From May to July 2022, with good weather making on-water activity possible, two fishing vessels were outfitted to search for lost gear—by conducting geophysical surveys of the seabed to with the use of side-scan sonar equipment—and also to retrieve gear located during the sonar surveys.

The effort led to the identification of four gear hotspots over an area of approximately 40 square km. Twelve days of surveys and retrievals resulted in the collection of 143 lobster traps, 100 kg of purse seine nets, and 140 kg of rope, as well as the recovery of live lobsters and crabs. The final report for the Bay of Fundy project provided recommendations for sites for further survey and retrieval efforts. The survey and retrieval work accomplished in the Bay of Fundy represents only one piece of Bumble Bee's broader commitment to addressing ALDFG. The GGGI and Bumble Bee will continue this partnership to address ALDFG in 2023 and beyond.







Photo Credit: PMDP

**PAPAHĀNAUMOKUĀKEA MARINE DEBRIS PROJECT: ‘A’OHE HANA NUI KE ALU ‘IA TRANSLATES TO “NO TASK IS TOO BIG WHEN DONE TOGETHER BY ALL”**

The Papahānaumokuākea Marine Debris Project (PMDP) was created in 2019 to protect the sensitive wildlife and critical habitats of the Papahānaumokuākea Marine National Monument in the Northwestern Hawaiian Islands from the threats of marine debris. Papahānaumokuākea is home to more than 7,000 marine species, 23 endangered species, about 14 million seabirds and 70% of all shallow-water coral reef habitat in the United States. However, due to its geographical location in the center of the North Pacific Ocean and North Pacific Subtropical Gyre, the region draws marine debris originating from all across the Pacific onto its reefs and shorelines, making the region one of the world’s largest depositories for marine debris. An estimated 57 tons of ghost nets accumulate on the shallow-coral reefs of Papahānaumokuākea each year.

PMDP undertook its first field mission in the fall of 2020. The organization conducted two separate

30-day field missions to Papahānaumokuākea in the summer and fall of 2022, removing over 200,000 pounds of marine debris (93% of which was ghost gear, by weight) and restoring over 2,500 acres of shallow coral reef habitat.

There is still an estimated 1,000,000 pounds of marine debris in Papahānaumokuākea. PMDP has developed a large-scale marine debris mitigation strategy for Papahānaumokuākea, called ‘Catch-up and Keep-up,’ with PMDP aiming to tackle the annual influx of 57 tons of marine debris entering Papahānaumokuākea each year, while chipping away at the backlog. In 2023, PMDP is scheduled to conduct two more one-month field missions to Papahānaumokuākea to collectively remove 200,000 pounds of marine debris. PMDP is looking to scale up to conducting three one-month field missions to Papahānaumokuākea to remove 300,000 pounds of marine debris in 2024 and in each year beyond. By the end of 2027, PMDP expects to remove all visible and accessible marine debris backlogged in Papahānaumokuākea, and to focus its attention and efforts on shoreline marine debris clean-ups and annual coral reef maintenance, involving the removal of smaller scale underwater ghost nets.



Photo Credit: PMDP



## MARE NOSTRUM: BLACK SEA LITTER FREE

The Black Sea is a unique marine ecosystem that provides a source of food for millions of people and is essential to the blue economy of its neighboring countries, including Romania, Bulgaria, Georgia, Ukraine, Russia and Turkey. The Sea's artisanal fleet is composed of boats operating in shallow waters using a variety of gear types and targeting a large range of species. Marine litter pollution, including ghost gear, has posed a threat to the Black Sea for decades. Because little is known about the sources of this pollution, and because there is a lack of comparable and reliable data to fill in information gaps, Mare Nostrum is rallying help from citizen scientists. In October 2022, the organization launched the #BlackSeaLitterFree campaign to mark and celebrate International Black Sea Action Day. The campaign is within the 'Developing Optimal and Open Research Support' for the Black Sea, or DOORS, project umbrella. DOORS is a new research project linking science, policy and industry for

critical Black Sea regeneration. DOORS aims to support blue economic growth and contribute to a healthy, productive and resilient Black Sea. As part of the project, Mare Nostrum brings together expertise and technology from 35 institutions from the Black Sea region and other European countries to examine and address damage to the marine ecosystem. The #BlackSeaLitterFree campaign in particular aims to raise awareness about marine litter and to empower communities to take action by filling gaps in the data about the Black Sea. The campaign includes six short educational videos—developed across four different countries—addressing different themes related to marine litter and providing easily applied solutions. Marine Litter Watch and GGGI's Ghost Gear Reporter App are two citizen science-based web apps being used as part of a global effort to combat ALDFG. Using these new data sets, Mare Nostrum developed an [online](#) platform for viewers to report marine debris in the Black Sea. #BlackSeaLitterfree is more than a hashtag: it is the path leading to a marine litter-free Black Sea.



Photo Credit: Coastal Restoration Society



Photo Credit: Mare Nostrum

## COASTAL RESTORATION SOCIETY: FIRST NATIONS ALDFG REMOVAL

In 2022, the Coastal Restoration Society (CRS) led a ghost gear retrieval project in the traditional First Nations' territories along the west coast of Vancouver Island in British Columbia, Canada. The project targeted the strategic removal of ALDFG from known sites located within First Nations territorial waters that hold high concentrations of ghost gear. These sites were identified during the successful completion of the ALDFG Removal from First Nations Territorial Waters - Phase 1 project. Removal efforts resulted in the collection of more than 1,500 tons of marine debris, comprised primarily of crab traps, nets, aquaculture-related gears and fishing lines.

Phase 1 also included the identification of priority sites for ALDFG removal operations in Phase 2 of the project. Further ALDFG survey work within Phase 2 will be guided by First Nations project partners and will target sites of high cultural, food, social and ceremonial importance. The purpose of this additional survey

work, guided by DFO and by First Nations partners, will be to develop and implement a prioritized action approach for future ALDFG removal initiatives.

In addition to ALDFG survey and retrieval work, Phase 2 of the project will deliver capacity building opportunities to First Nations partners through CRS-developed training and apprenticeships to advance skills in the areas of ALDFG surveying and retrieval, environmental monitoring, remote sensing and ROV and drone operation. With research having identified ongoing ALDFG impacts, this project will include documenting local environmental conditions and assessing sites for legacy impacts, which may present an elevated risk to threatened or sensitive marine habitats and species found along the Vancouver Island coastline. Once the project is completed, the results will be provided to DFO. The project will describe opportunities for First Nations and international partners to further develop "true cost" accounting of ALDFG, establish recovery timelines for impacted environments and guide future marine debris remediation efforts.



## SATLINK AND TANGAROA BLUE FOUNDATION: PROJECT RECON

In 2022, GGGI member and Spain-based tech company Satlink launched Project ReCon, a circular economy initiative with the aim to retrieve and repurpose satellite technology-enhanced buoys used in tropical tuna fisheries, specifically to keep the fisheries from contributing to lost fishing gear. In addition to housing a tracking device, these buoys contain integrated echo sounding technology with the capability to report the amount of biomass present underneath a buoy. Satlink encourages international commercial fishing fleets and local partners to enhance their own sustainable practices by participating in the circular economy initiative. Partners collect buoys that are no longer actively used for fishing purposes, and the partners then can give the buoys a second life, such as for small-scale scientific studies; the prevention of natural disasters and the tagging and tracking (and eventual removal) of marine debris, including ghost gear.

As part of the initial launch of the project, Satlink partnered with the Tangaroa Blue Foundation, which is a GGGI member and founder of the Australian Marine Debris Initiative. Tangaroa Blue leverages the Australian community and government through the Australian Reef Trust program to remove and prevent marine debris. Working together, Satlink and Tangaroa Blue brought Project ReCon to the Great Barrier Reef. There, FADs that may have been deployed many thousands of miles off the coast can float aimlessly before reaching beaches or getting tangled up on coral reefs. The new partnership sets the stage for more repurposing projects and for new partnership networks and collaborations in Australia and beyond.

One of Satlink's fundamental pillars involves working towards the integral sustainability of fishing activities via the technology sector. In 2022, the UN Global Compact recognized Satlink's technology as key to caring for the oceans and underwater life, awarding the company with the Sustainable Development Goal (SDG) 14 award.

Photo Credit: Satlink



## SEAFOOD MATTER: THE APPLICATION OF THE GGGI'S BEST PRACTICE FRAMEWORK BY THE PAPUA NEW GUINEA FISHING INDUSTRY ASSOCIATION

In efforts to improve the long-term sustainability of fishing in Papua New Guinea, the Papua New Guinea Fishing Industry Association (FIA PNG) worked with the nonprofit Seafoodmatter to develop a responsible sourcing policy (RSP) for the country's purse seine tuna fishery. The FIA PNG represents nine fleets and 55 vessels, 93% of which are free school (FAD-free). The RSP implements regulations and requirements across an array of international agreements—from MARPOL Annex V to UN FAO's Voluntary Guidelines for the Marking of Fishing Gear, and including the GGGI's Best Practice Frameworks. The RSP contains four key pillars, one of which focuses on reducing sources of marine litter and including procedures to prevent fishing gear loss.

FIA PNG ensured that the fisheries it represents adhere to the RSP by working with Seafoodmatter to develop a benchmark methodology and auditing tool for the RSP and by conducting annual second

party audits. Audits help fisheries understand how best practices are being integrated into fisheries and how improvements are occurring over time. Assessments are self-reported—participating companies must include photos, procedures and documentation to demonstrate adherence to the RSP— and FIA PNG reviews the reports for consistency and conducts on-site second-party inspections. Audits include seven principles, including the onboard management of gear, voluntary reporting of loss, gear marking and responsible marine debris disposal.

The initial audit occurred in 2021 and established the baseline for fleets to be measured against in following years. Results of the 2022 audit led to the first summary report that allowed the FIA PNG auditing team to verify the challenges, needs and progress of their fleets after the first year of the self-administered audits in 2021. Results showed the need for additional training and awareness of FIA PNG's approximately 1,600 crew members around fishing gear management. Not surprisingly, results also demonstrated that improvement is needed in the prevention of gear loss.



# 10

## LOOKING AHEAD

Despite the challenges of the last few years, 2022 has been another landmark year for the GGGI, with us continuing to move work on ALDFG forward in a global context. We have increased our core membership, added two new national government members, expanded our project portfolio—including both our GGGI Signature Projects and our GGGI Small Grants Program, updated our Global Data Portal, developed multiple regional ALDFG action plans, held more capacity building workshops around the world, expanded our role as advisors on multiple ALDFG, fisheries and marine-debris related technical committees and advisory groups, and increased our presence at ocean and fisheries sustainability conferences and events. Yet we still have a great deal more to do.

The GGGI wishes to sincerely thank all of our members who help to make all of this work possible. We continue to be inspired by everyone around the world working so hard every day to drive solutions to ALDFG. As the world emerges into a post-COVID reality, we look forward to seeing many of our members and colleagues around the world and to continuing to build the GGGI to address this

critical issue. Our new multi-year strategy, which we developed over many months of work, allows us to take a focused, targeted, yet inclusive approach to address ALDFG around the world. We will also be launching our “Let’s Talk Ghost Gear” webinar series in 2023 as a way to highlight the amazing work our members are doing around the world and spark meaningful discussions around ALDFG.

Moving forward, we at the GGGI will continue to focus our efforts on addressing ALDFG at scale and build upon our accomplishments to date. With a lens on equity, diversity and inclusion, the GGGI will continue to expand programs to developing nations with fisheries-dependent economies, which are often disproportionately affected by ALDFG. We also believe that greater dialogue and cooperation with the seafood industry and with governments is essential for global, systemic ghost gear solutions to succeed. The GGGI has always been about building a truly global, cross-sectoral collaboration where all perspectives are valued and considered equally to help solve one of the ocean’s greatest challenges. Together, we can realize the dream of a cleaner, healthier ocean for all.





# 11

## ENDNOTES

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The GGGI is the world's only cross-sectoral alliance committed to driving solutions to the problem of lost, abandoned and otherwise discarded fishing gear worldwide.

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FOR FURTHER INFORMATION

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