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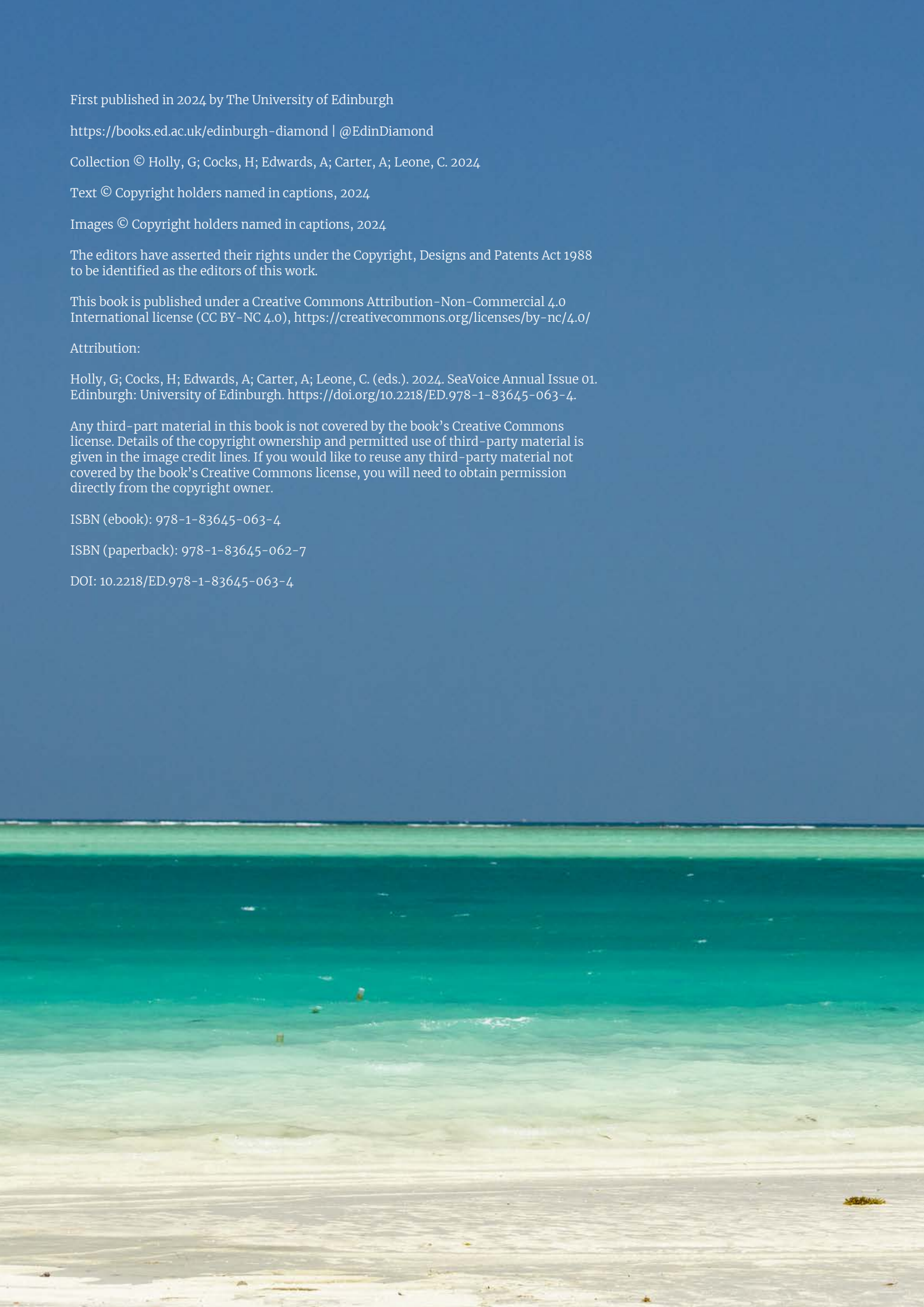

Sylvia Earle and Dona Bertarelli
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FOREWORD

It is our pleasure to introduce the first annual edition of SeaVoice, a magazine where messages of hope, inspiration, and change in the realm of ocean advocacy and conservation will be amplified. In the pages of this magazine, we embark on a journey to amplify the voices that too often go unheard, those of ocean advocates, artists and researchers, as well as those of indigenous communities, marginalised populations, and grassroots activists who are on the front lines of ocean stewardship and resilience. Sea creatures who cannot speak for themselves will be honoured, with thoughts about how to safeguard their future, so fundamental to securing our own.

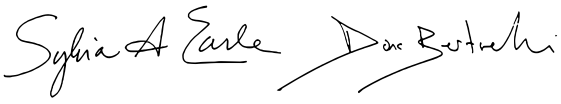
Throughout history, the ocean has been deeply intertwined with cultural practices and beliefs. The people of islands and coastal communities around the world have developed unique traditions, habits, and rituals that revolve around the sea. From seafaring myths and legends to maritime festivals and ceremonies, the ocean has become an integral part of cultural identity. It has inspired art, literature, music, and dance, reflecting the deep connection between humans and the marine environment. Fishing, aquaculture, and maritime trade have provided livelihoods for generations, shaping local economies. Now, in the 21st century, the lives of people closely linked to the sea as well as those who live far inland are being impacted by unprecedented changes to the temperature, chemistry and the nature of life in the vast blue realm that contains 97 percent of Earth's water and embraces 97 percent of the planet's biosphere.

During years on and under the ocean, we have personally witnessed this exceptional time of change. Since we began exploring the sea, much new knowledge has been learned about the nature of the ocean and why it matters to everyone, everywhere, all of the time, but also, how much has been lost. The planet is rapidly warming, the diversity of life swiftly declining. Half of the coral reefs, kelp forests, and seagrass meadows are now gone, largely owing to human impacts. We have seen the lives, livelihoods, and cultures of humans torn along with unprecedented disruptions in the fabric of life on the land and in the sea. But we have also witnessed reasons for hope.

It is encouraging to witness recent commitments to safeguard the diversity of life by protecting at least 30 per cent of the land and sea by 2030, including the High Seas, the blue heart of the ocean. Now, across the world, people are coming together with policies that reflect acceptance of the message we and many colleagues have been conveying for years to governments, donors, partners, scientists and communities globally. If the ocean is in trouble, so are we. It is and we are. There is time, but not a lot, to reverse the decline and achieve harmony with the natural systems that underpin all that we care about including our very existence.

SeaVoice tells stories that explore the collision of culture and climate with our ocean, rivers, and lakes, amplifying voices of the people who work, live, and survive by bodies of water. As you journey through these pages, we invite you to read with an open heart and mind, to learn from those whose voices have too often been silenced or ignored, and to join us in our mission to create a more just, equitable, and sustainable future for our ocean, and therefore for life on Earth, humankind very much included.

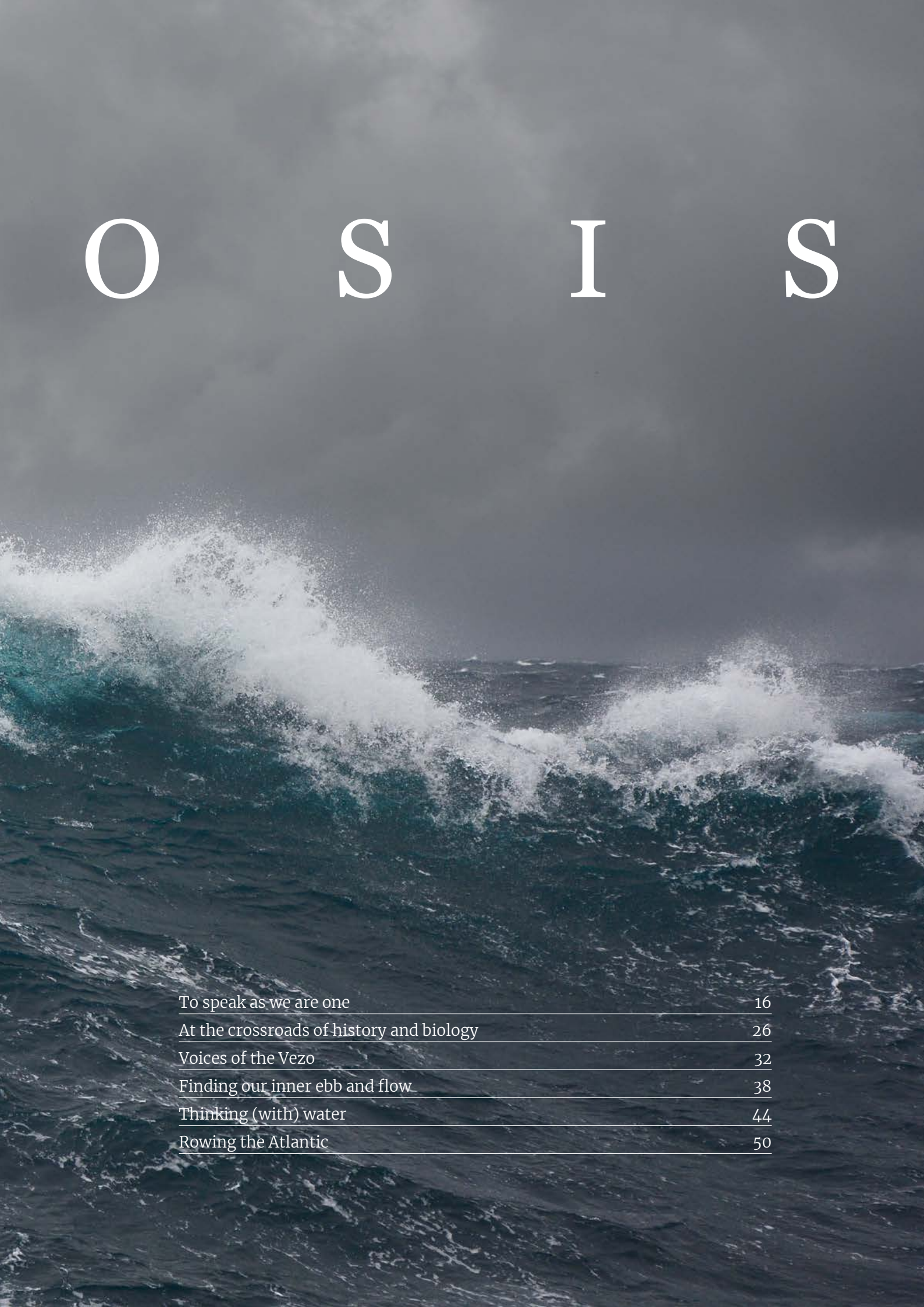
Sylvia Earle and Dona Bertarelli



Graduate Student evaluating traditional shipbuilding methods in Al Max, Egypt © Alicia Johnson

PART 1

O S M



O S I S

PART 1

OSMOSIS

by **Georgia Holly,**
Editor-in-Chief and Founder of SeaVoice

Aquaphile or not, there is something very human in the need for water, both physiologically, and culturally. Our language is littered with water-centric sayings, such as 'water under the bridge' in English, 'Maji hufuata mkondo' (water follows current), in Swahili, or in Japanese, 水の流れと人の行末 (lit. 'the flow of water and future/fate of people' meaning, like the flow of water, the future of human beings is uncertain). We cannot present a human experience of the sea without painting a portrait of the richness and resilience of different cultures. Both sea and culture are tapestries woven by collective experiences, traditions, and beliefs, and it is through these tapestries that we can gain a deeper appreciation for the interconnectedness of humanity and the environment. Yet, if we were to take a snapshot of our current relationship with the sea, some would say, it's complicated.

In the sea we see ourselves, but if we were to ask, what would the sea see in us?

From the sea's perspective, humanity may appear as both a marvel and a paradox. It has witnessed the rise of civilizations, the ebb and flow of cultures, and waves of remarkable achievements, but it has also observed the consequences of recent human actions, particularly in the context of climate change.

We named our first Volume of SeaVoice Osmosis. Representing the flow of water across a semipermeable barrier, we chose this name for its connotations of interconnectedness, blending of ideas, the exchange of knowledge, and changing perspectives. To collect the following stories we asked ocean scientists, advocates, athletes, philosophers, and community members, 'what does the ocean mean to you?'; 'how does it inspire you?', and we received many answers, with one unanimous theme.

In Volume 01: Osmosis, you will find stories which highlight the deep and ancestral connections humans have with the sea, and the intricate linkages between nature and culture in the ocean. Our multi-national authors tell stories which span from scientists surfing on Celtic coasts, to guardians of Indigenous Tagbanua waters in the Philippines. This Volume weaves stories together to present a new perspective in ocean conservation: one with community and culture at its core. Dive in, and learn about the personal and global osmosis between people and the sea.


© Chris Yacoubian, The Cornish Camera Co.

To SPEAK *as* WE ARE ONE

by **Clint Bryan Gallaron, Coastal Science and Policy Master's student, University of California, Santa Cruz, and Emma Segarino, President, Ocam-Ocam Women Managed Area Management Council**

Balangay, the traditional boat of the Philippines
© Clint Bryan Gallaron

Part One: Clint's Call.

This section is written by Clint Bryan Gallaron, Coastal Science and Policy Master's student, University of California, Santa Cruz

Look at our corals; they all got black and already destroyed by illegal fishing. Are we all happy about the current state of our sea?

This was the first thing I saw when I checked my Facebook page on a sunny morning after I returned to the Philippines.

The post was shared by Emma Segarino, a mother, a wife, a fisher, an indigenous Tagbanwa, a community leader, and a friend of mine from a small fishing community called Ocam-Ocam in Busuanga Island, Palawan, Philippines. I have known Ate Emma (the term "Ate" is used by Filipinos to address any woman of seniority) since 2018 when I started working with her and other women in the community to establish a Women-Managed Area (WMA) in part of the waters of her local village. This initiative aimed to conserve the fish population, protect the coral reefs and seagrass habitats, and sustain the local fishing livelihood, while empowering women in the small-scale fishery.

I first met Ate Emma during our initial consultation for the Women-Managed Area (WMA) project while working with Community Centred Conservation (C3) Philippines: a local, grassroots, community-led NGO which aids in developing environmental stewardship models to protect the environment, and generate income for women, LGBTQ+, and unemployed youth, in partnership with the USAID Fish Right Program. Initially, Ate Emma observed the team's activities in the community with neutral interest. However, everything in her changed once she was invited to participate in a community-based assessment for reef fish and coral reefs. From that moment on, she began actively engaging with and organising our activities.

It remains a mystery to me what prompted her sudden commitment to this challenging task. It could be that she recognised the need for change, or perhaps she had a preexisting desire to advocate for marine conservation and needed a platform. Nonetheless, despite the challenges posed by the global pandemic, Ate Emma and other dedicated women in the community tirelessly mobilised efforts to establish the WMA. Their determination led to Ate Emma being elected as the president of the WMA Management Council, which represented a significant step forward in advancing the cause for legal recognition by the Local Government of Busuanga.

This is not, however, a simple story, and we are not here to tell a sanitised version of the truth.

Woman weaving © Clint Bryan Gallaron

Part Two: Listening to Emma's voice

This section is written by Emma Segarino, President, Ocam-Ocam Women Managed Area Management Council

In March 2018, I had the opportunity to meet C3 Philippines. They invited me to their meeting regarding the Marine Protected Area (MPA) and how to care for and safeguard our marine resources within our community. I was reluctant to attend at first because I was one of those who opposed and disagreed with protecting it. I had no reservations about damaging it; I was indifferent, caught up in my concerns, and unaware of the significance of preserving it for the future.

As days and months went by, I actively participated in meetings, seminars, and advocacy campaigns. Through these experiences, I deeply understood the importance of preserving and protecting our marine resources and natural environment. During this time, I acquired knowledge and found inspiration to safeguard these precious resources.

The voice of coastal communities belongs to coastal communities, as they improve their livelihoods and environment.

With a membership of approximately 50 women, our goal was to protect the marine environment adjacent to our community. In March 2019, I was entrusted with leading the women as the president of our association. Subsequently, the Covid-19 pandemic prompted a lockdown in Busuanga. Despite the challenges, we still pursued our objectives in our community. The pandemic did not hinder us from conducting seminars and training sessions. The hardships we faced were not barriers that could deter us from pursuing our goals for the betterment of our youth and community.

As more days, months, and years passed, I continued to venture forth. I persistently attended seminars to gain knowledge and, most importantly, to reach my dream for my community: a sustainable livelihood. We crafted a proposal for our floating restaurant, a venture led by my group of women, and we journeyed to Siete Pecados, an established MPA in the nearby town, for a study tour. There, I truly understood the significance of nurturing and safeguarding Mother Nature. That's when I realised the importance of having an MPA—a place of conservation that can lead to a thriving ocean. This was the point where I fell in love with and developed a deep attachment to nature and the seas. In a heartbeat, I wholeheartedly decided to support and protect it for generations to come.

I admit that during those times I became pretty aggressive. As the president of the WMA Management Council, I mandated strict management measures because I wanted our community to resemble Siete Pecados—a place teeming with abundant fish and vibrant corals. I envisioned a future where tourists and locals would flock to our area. I was driven by the aspiration that our youth wouldn't have to go elsewhere seeking employment, similar to what other MPAs offered.

Soon however, some community members became angry with me, accusing me of being the sole beneficiary who would prosper from my actions. During a public consultation organised by the municipal council, I was caught unprepared when someone had created a petition against our women's association, negatively implicating our Barangay Captain and the individuals who were supporting us. Similar to how I once felt, they refused to protect our area because they claimed they had no livelihood to gain from it. Far worse, they saw the protected area as a bane to their fishing and gleaning livelihoods. In some of the darkest moments, I told myself they couldn't tarnish my reputation or destroy my character. I tried to display strength and courage during this time, outwardly showing that I was resolute. However, deep inside, I wished to escape and hide from their sight. But I realised that I couldn't do so. So, I continued onward.

In those times, no one gave me strength except those who wholeheartedly trusted and believed in my capabilities. I'm grateful for those who cared for me despite having no prior connection to me. During that time, I saw and felt their genuine concern for me, and I truly appreciated their unwavering support in my battles. So, until now, I have persisted in facing life's challenges, in confronting uncertainties head-on. They are the reason and inspiration behind my ongoing fight to stand up for what's right.

And as time passes by, I'm thankful for the many days and months that went by. I'm pleased to see the changes happening in a place they once didn't want to protect, to a place where I see fewer illegal fishers. I know they're beginning to see the beauty I've been striving to create here in Ocam-Ocam. I'm happy that someday we'll all come together, united and cooperative, for the betterment of our community. I won't give up on this, for as long as there's life, there's hope. With patience and hard work there will be a bountiful harvest in due time, and everyone will rejoice in the collective triumph.

Despite all the hardship, I extend my gratitude to those who caused me pain and those who held ill feelings toward me.

But don't worry; I harbour no anger towards them. They are, in fact, the reason I've grown stronger and continue to confront life's challenges, and the inspiration that drives me to persevere and champion the welfare of all. I thank them, as they've inadvertently made me resilient in my fight. Thank you for relentlessly backing me up.

Thank you to all of you who supported the women's managed area. I won't forget any of you, and I won't stop working toward my dreams for the women, and our community. I know you're all there to support our goals.

Read the full article at SeaVoice.online

Balangay, the traditional boat of the Philippines
© Clint Bryan Gallaron

Part Three: The flow we both follow

This section is written by Clint Bryan Gallaron

Contrary to my expectations, the challenges presented by familial tensions, old disputes, and evolving cultural norms did not discourage Ate Emma from pursuing her dedication to the WMA, if anything, her passion only intensified. Despite the numerous unsuccessful attempts, she remained unwavering in her advocacy for the WMA, tirelessly engaging with the community. She went above and beyond, seeking alliances with other organisations to further the cause.

It came to a point where I was worrying about Ate Emma and her family's safety, though thankfully, nothing bad happened. The story of Ocam-Ocam spread and set an example to other areas in Busuanga and beyond on what to do and what not to do in setting-up community area-based conservation initiatives. Almost two years since the WMA project was parked, Ate Emma and the women of Ocam-Ocam are still standing, working on advocating that someday their families, friends, and neighbours will realise the importance of this kind of initiative for the next generations.

To be honest, I typically avoid getting caught up in politics, especially when it directly involves me or my work. Usually, I would prefer to step away rather than continue investing my energy in a seemingly "lost" cause. However, I find myself unable to resist rooting for Ate Emma. I once asked her what kept her going, what motivated her to stand up for her community? On the surface, I may try to attribute her resilience to the capacity-building training and field trips, exposing her to other nearby MPAs, recalling our conversations where she expressed gratitude for our unwavering support of her and the Ocam-Ocam community.

With deeper introspection, I can't help but think that this resilience in character by Ate Emma is, in reality, rooted in her being and culture, and nurtured by the mutual respect and deep connection that we have cultivated together with her, and the connections that she has cultivated with the women in the community. Initially, I felt foolish for forming deep personal connections with the people I work with. However, as time passed, I was drawn to Ate Emma and the other community members. Working with them no longer felt like work at all. I have gained a sense of responsibility for these connections. But these take time to develop- I mean, a lot of time. In fact, it took me at least three years working with the community to forge a "good enough" relationship with them. But without this relationship, I would not have found Ate Emma, after many years, still voicing out the necessity for the Ocam-Ocam community to work together to protect their fisheries and marine habitat. I would not find her sending me messages as I write this article that she will continue to fight for the future of Ocam-Ocam because we believe in her and the rest of the women.

Our shared experience connects me to Ate Emma, allowing me to gain knowledge of a part of her worldview that others might not have access to. That relationship is not perfect: sometimes I disagree with her and sometimes she disagrees with me. However, we always find ways to resolve disagreements because we simply respect each other.

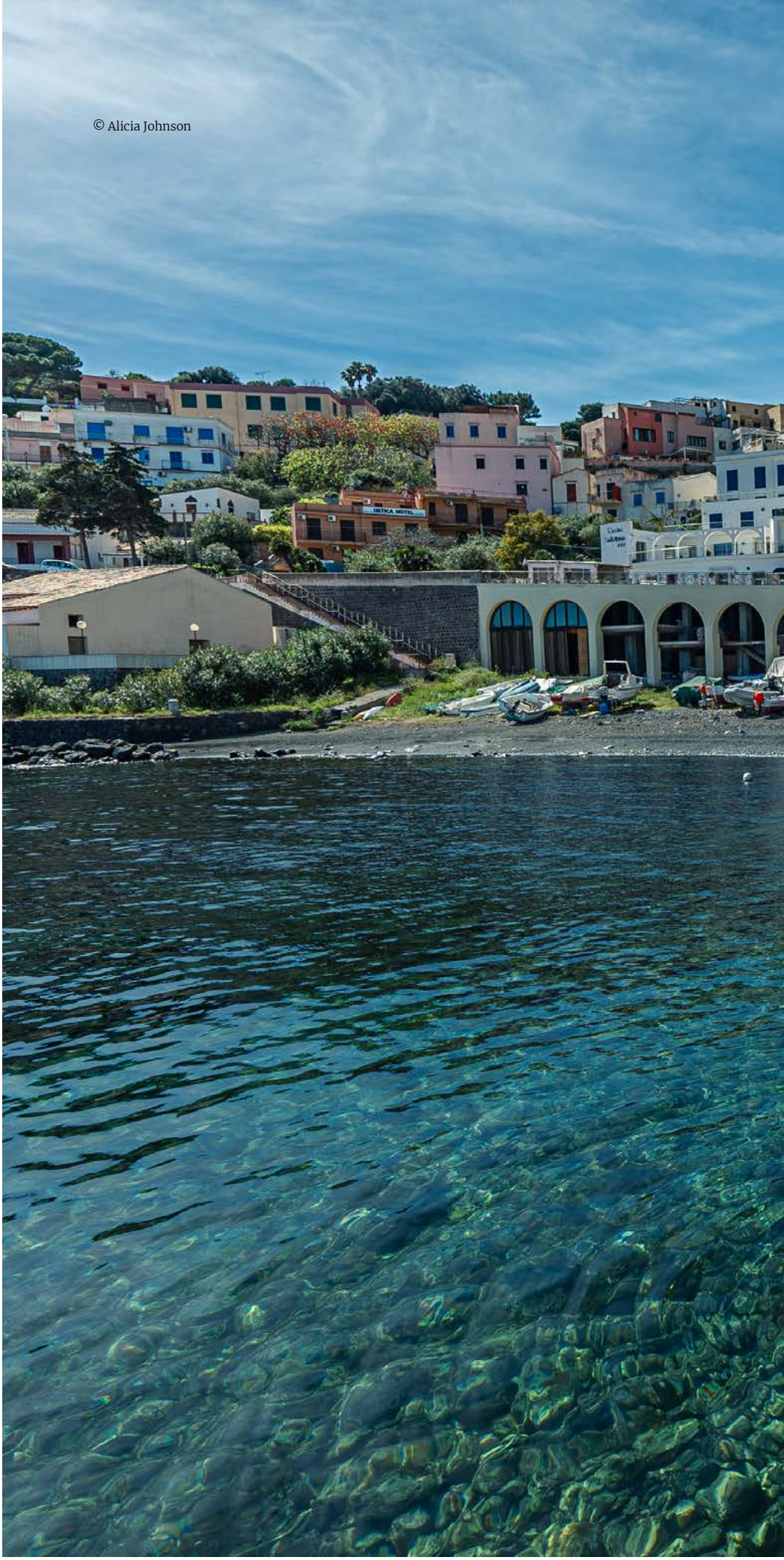
My relationship with the Ate Emma and the community has helped me become a more holistic marine conservation practitioner. For the first time, I realised that we had formed a lasting connection, with genuinely sustainable impacts for the community with which we work. I believe this is the most impactful thing I have done in my career. Unfortunately, learning relationship-building did not come from my formal academic training. Working in the field, emphasising genuine community-based conservation, and learning by doing has steered me on a path where I can practice conservation in this way.

I want to end this article by leaving a message to young people out there in the marine, environment, and climate arena. We may not have much in common other than the dream and love for our work. We are unique individuals with unique experiences and perspectives, so I am not here to generalise my experience for you and prescribe the correct things to do. I am here to tell my story and hope that this will relate to you in some small way. However, I recognise that we share something in common - the desire to contribute to achieving a just and sustainable world.

I know it takes time, effort, resources, and failures. You will often find yourself in a place and time you think doesn't serve you any purpose, and maybe, at worst, you will later see this path isn't really for you and choose another. Whatever the result, I feel that this is something worth venturing into. But for me, I will continue building relationships with Ate Emma, the Ocam-Ocam community, and the people of Busuanga Island at the forefront of my work as a marine conservation practitioner, because in conservation, it is really people that are at the centre of all we do.

Clint © Clint Bryan Gallaron

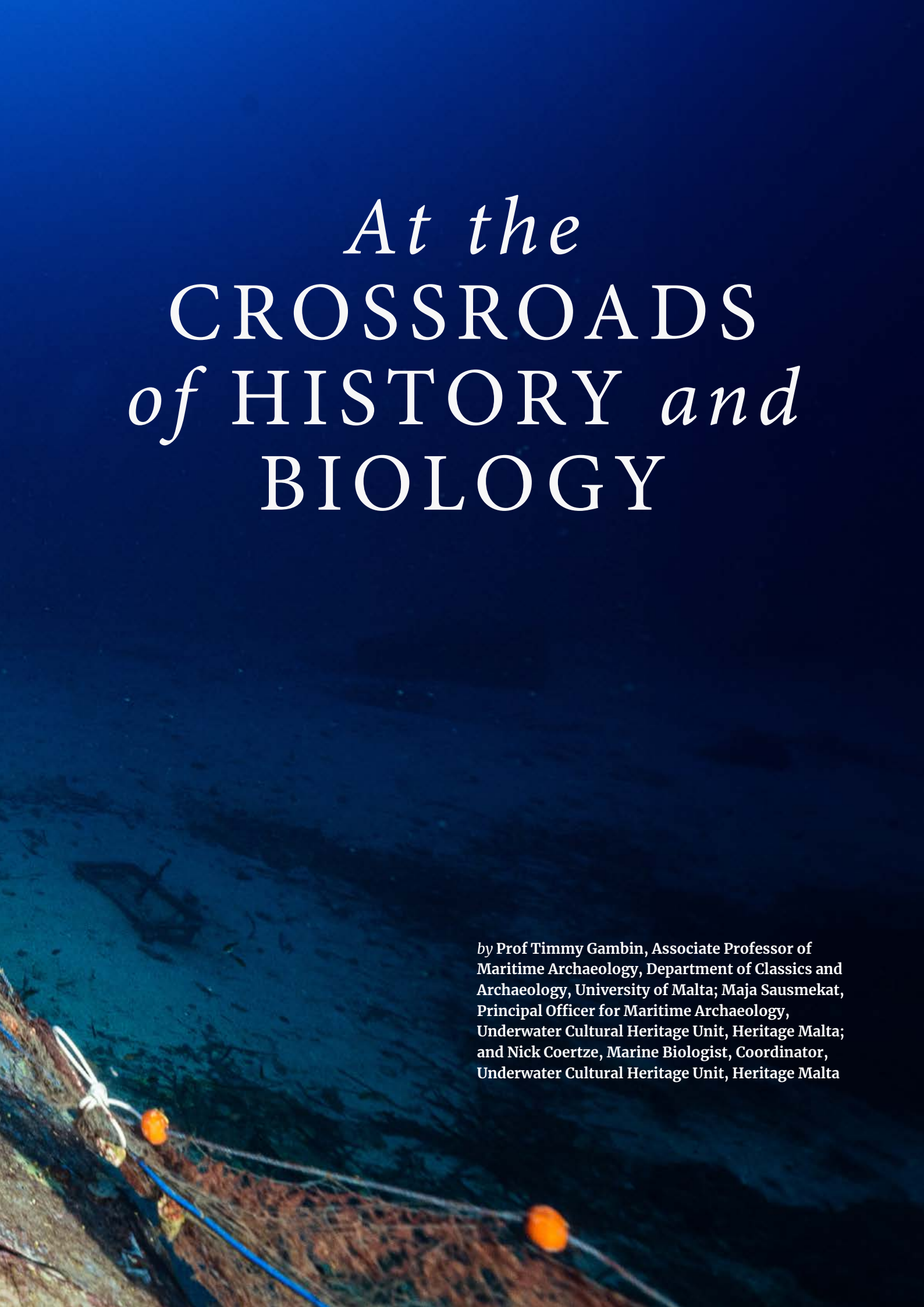
So, in your journey towards that goal, I would encourage you to consider building reciprocal and enduring relationships with the people, the belief, and the very place where you want that change to happen at the foundation of your work, if you haven’t done it yet.


© Alicia Johnson


BENVENUTI A USTICA

Diver collecting sponge samples from HMS Nasturtium © John Wood/Heritage Malta

At the CROSSROADS *of* HISTORY *and* BIOLOGY



by **Prof Timmy Gambin, Associate Professor of Maritime Archaeology, Department of Classics and Archaeology, University of Malta; Maja Sausmekat, Principal Officer for Maritime Archaeology, Underwater Cultural Heritage Unit, Heritage Malta; and Nick Coertze, Marine Biologist, Coordinator, Underwater Cultural Heritage Unit, Heritage Malta**

If you were to stand and look out to sea, would you consider the multitude of shipwrecks that dot the seabed? Would you think of the tragic stories behind them or the life that is flourishing on them now? These sites, by their very nature are often out of sight and out of mind, invisible to the majority and only accessible by the few, but the sea doesn't only create a barrier between us and these sites, it also protects and preserves them. In turn, they become havens of marine biodiversity, often likened to island oases on otherwise barren seabeds. This is particularly true for deep-water sites, often the only distinct feature on an otherwise barren seabed.

The Crossroads

As we answer questions such as, "what is heritage?", and "who does it belong to?" we then come to another conundrum. Can we separate tangible heritage from the natural environment? Over time, as the purpose of these areas evolve to become ecological niches, do the species which colonise them become heritage too? We now look to WreckLife, an initiative seeking to bridge the knowledge gap that exists on marine species associated with historic wrecks.

That wrecks act as artificial reefs is no secret, with scuttling projects occurring the world over to attract marine life and divers alike. Just last year the Maltese tourism authorities scuttled the MT Hephaestus, a bunkering oil tanker that had previously foundered on the coast after a bad storm. The impact of artificial reefs go beyond the immediate benefits to the marine environment, and ripple further outward. The socio-economic value attributed to artificial reefs on a global level run into the billions, related primarily to recreational activities and food production, becoming important sources of income for local communities. In Malta, the placement of wrecks as artificial reefs relates primarily to the island's diving tourism. Locations and depths of scuttled wrecks are chosen with specific questions in mind, like will most divers be able to reach the wreck at this depth? What is the infrastructure like around the site? Are restrooms, shops, or restaurants available in the vicinity? All these questions factor into the decision that is eventually made on the location of an artificial wreck reef, with the full knowledge that the benefits will trickle to dive centres, dive boats, sea-related stores and to hotels and restaurants. This is why scuttled wrecks are rarely found deeper than 30 metres, opting to cater to many divers rather than the minority that are able to dive deeper than 50 metres.

There is, however, a deeper story. The historic wrecks beyond 30 metres can also be considered artificial reefs, not always intentionally scuttled but beneficial, nonetheless. Whilst artificial reefs in shallower waters have been studied, the connection between historic wrecks and species that inhabit the benthic zone – meaning the seabed – at this depth is less well understood and studied. For us this is an essential missing piece of information, as almost all surviving historic wrecks around the Maltese Islands are located beyond 50 metres, and what they all have in common is the remarkable quantity of marine life present.

A new approach

As scientists study wreck sites, investigators tend to focus on either the archaeological value of the site in its many variations, or on the marine life on individual objects [1]. Rarely have we focused on combining both these elements, or why these sites are important on a broader scale – for the environment, and for the people who live and work around them. Studies focused on natural and cultural heritage in the deep seas are particularly infrequent - mostly owing to accessibility constraints [2]. Here at WreckLife, we seek to bridge this gap to understand how deep-water historic wrecks act as artificial reefs, to be considered as "islands of biological diversity." The wreck acts as a substitute to natural rocky reefs and overhangs, imitating natural features, and transforming "into artificial reefs through colonisation by microorganisms, who establish and preserve the habitability of the built structure." [2]

Particularly in the deep sea, vast expanses of the sea floor remain barren and desolate, lacking distinct features that could serve as a solid foundation for marine organisms to settle upon. Many marine species disperse by drifting or floating as larvae, carried along by ocean currents. During their drifting phase, these larvae rely on encountering a sturdy structure like a rocky outcrop or reef where they can anchor themselves and thrive. Instead, they encounter shipwrecks, where diverse surfaces provide abundant opportunities for colonising organisms to seek refuge, find shelter, and foster biological diversity. Complex ecosystems emerge around these shipwrecks, serving as a unique hub for biodiversity. However, the characteristics of each shipwreck site differ. Depth, temperature, light penetration, water currents, surrounding seafloor topography, and other environmental factors, contribute to variations in the abundance and variety of life colonising and thriving at each site. Having established the link between biology and history, the intention is to now dive deeper into the ecological signature of historic deep-water shipwreck sites in Malta, through the WreckLife initiative.

The other side

The dark side of the synergy between historic wrecks and marine biodiversity also warrants exploration. The impact of wrecks, particularly metal ones, on the surrounding environment remains poorly understood. More specifically, it is the polluting potential of these wrecks that raise concerns. This is especially true when it is estimated that about 1.5 million tons of shipping were lost in the Mediterranean during the Second World War [3]. The primary tragedy here remains in the massive loss of human life. However, the consequences of sinking vessels that were carrying fuel and armaments have only recently started to have a detectable impact. The structural integrity of these wrecks is weakening as a result of almost a century underwater. Eventually, the fuel currently contained within the ship's hull will spill and the only variable is when (certainly not if). Critically, oil spills cannot be treated as national problems, the sea and its currents does not differentiate between national borders. What starts in one country will almost certainly negatively affect neighbouring countries. When researching these wrecks, it's often easy and convenient to forget that there's a dark side. Faced with the reality, it becomes harder for heritage managers to ignore what is essentially a global problem.

To highlight how biology and history intersect, we'll now take a dive into two shipwrecks, each with its own biological signature and story to tell. First, let's visit the older wreck - that of HMS Nasturtium, a British minesweeping sloop.

HMS Nasturtium

The sloop formed part of Britain's Emergency War Programme. Mine laying at sea intensified during the First World War, both offensively and defensively. Defensive mine laying had the express aim of protecting a nation's coastline, ports, harbours, and shipping lanes, whilst offensive mine laying concentrated on laying mines in the enemy's waters in the hope of incapacitating the opposing fleet. Minesweeping vessels were purposefully built to counter this underwater threat and would literally sweep the sea, clearing a safe path for other vessels to follow. HMS Nasturtium formed part of the Arabis-class, the largest of the five classes of minesweeping sloops constructed. Launched in December 1915, HMS Nasturtium was based in Malta searching for submarines and mines. In April 1916, a minefield laid by the German submarine U-73 claimed several vessels, one of which was the sloop. Steaming approximately 10km off the coast of Malta, HMS Nasturtium struck a mine on her starboard side, flooding the boiler rooms and expelling a significant amount of coal causing a list to port that slowly flooded the vessel. Even though several attempts were made to tow HMS Nasturtium, the sloop ultimately sunk on 28 April 1916.

Today, the wreck lies approximately 12 nautical miles off the coast of Valletta and rests on a sandy seabed at a maximum depth of 67 metres. The site was first discovered by fishermen and is in a good state of preservation, now clothed in a colourful colonisation of sponges.

Sponges are one of the simplest forms of multi-cellular animals, lacking organs and a nervous system. They feed through filtering water through their porous bodies and capture nutrients from the surrounding ocean currents. The widespread distribution of both sponges and gorgonians makes them excellent indicators of habitat health. The density of sponges on HMS Nasturtium, often also noted by visiting divers, spurred the decision to carry out a sampling experiment to begin quantifying and qualifying the marine life present on the site. Technical divers descended to the site and collected various sponge samples, guided by specialists from the University of Malta's Marine Biology department. These were then fixed, preserved, and later analysed by taxonomic specialists from the Centre for Advanced Studies of Blanes research institute of the Spanish National Research Council.

The dominant species identified from the collected sample was identified as Aplysina cavernicola. This is a species of sponge that is native to the western Mediterranean where it typically grows in caves, with its base attaching to hard surfaces and colonies of small finger-like protrusions growing from it. HMS Nasturtium acts as that all-important substitute for the hard surface on which the species normally grows. On this wreck this species is clearly thriving. The information gathered through these exercises allows heritage managers to develop a deeper understanding of how these shipwrecks are impacting the surrounding environment, and how in turn, that environment is impacting the wreck. Of note, this species is protected both nationally and internationally. Thus, the presence of protected marine life adds another level of protection to the wreck site and vice-versa, with protected wrecks providing legally protected zones with minimal human interference.

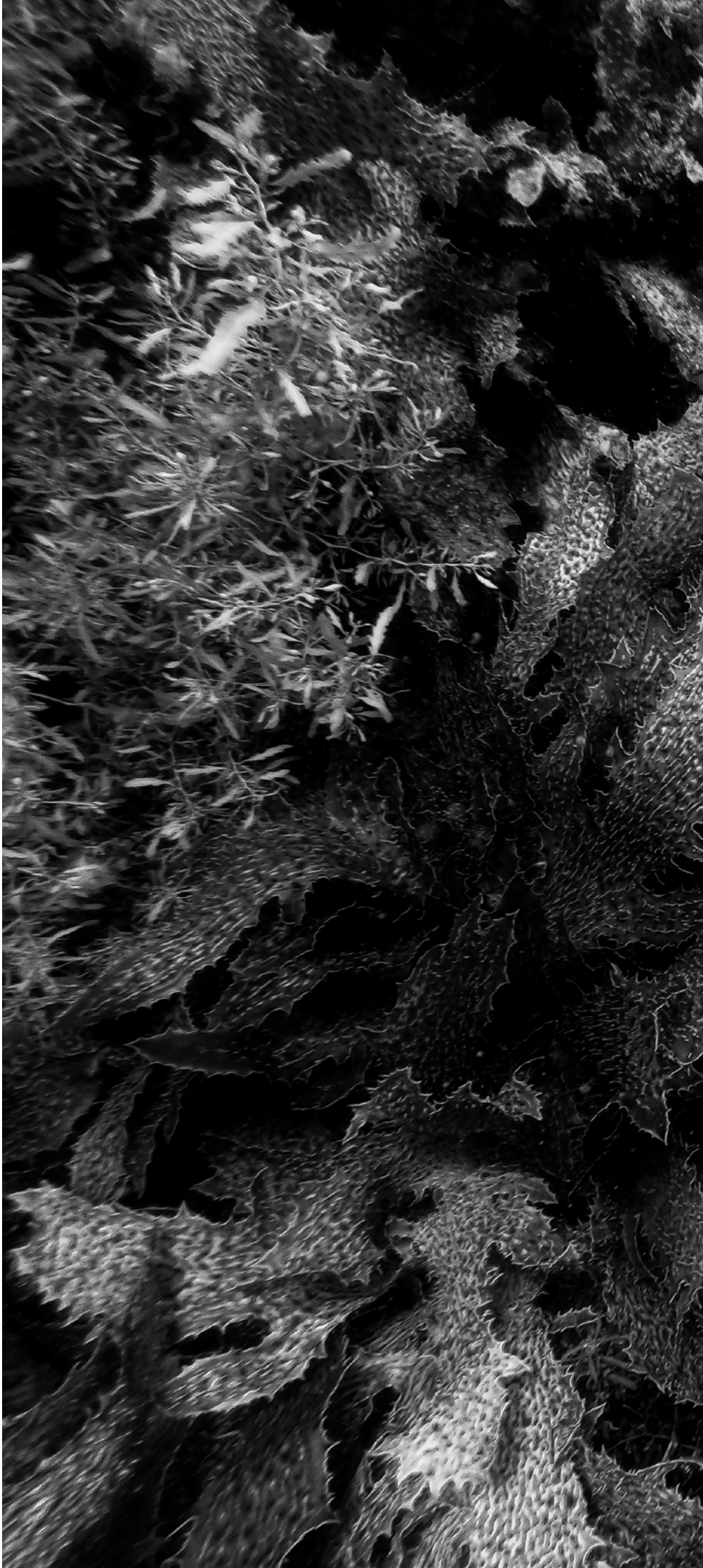
HMS Olympus

Let's now don our fins to focus on another historic shipwreck and delve into the case of HMS Olympus. This Royal Navy submarine played a crucial role during the Second World War as part of the "magic carpet service," which involved supplying Malta with personnel and essential supplies such as fuel, food, and other necessary provisions. However, operating in the vicinity of the Maltese Islands was a dangerous exercise due to the intense bombing and underwater mine laying conducted by Axis forces. In a tragic turn of events, HMS Olympus embarked on its departure from Malta in the early hours of May 8, 1942, transporting her own crew and those of two other recently sunk submarines. Catastrophically, HMS Olympus struck a mine on her way out of the Grand Harbour, resulting in its sinking and the devastating loss of 89 servicemen. This incident still stands as the worst submarine disaster in the history of the Royal Navy. In 2011, the wreck site of HMS Olympus was located at a depth of 115 metres. Resting upright on a sandy seabed it is currently the deepest historical wreck site open to divers. The wreck remains largely intact, except for damage on the starboard side where the mine struck. The open hatch on the conning tower serves as stark and poignant reminder of the crew's efforts to escape the sinking submarine. To honour the memory of those who lost their lives, a memorial plaque was placed on the submarine by a dive team from the University of Malta in 2017, coinciding with the 75th anniversary of the loss of HMS Olympus.

The marine ecological importance of HMS Olympus lies in the growth of gorgonians, and especially the rare black coral – Antipathella subpinnata - on the site. Gorgonians are colonial coral organisms with a tough, yet flexible axial skeleton covered with living tissue. The term "black coral" stems from the coral's black skeleton. Underwater black coral is confusingly white, however as soon as it's brought to the surface and the tissue layer dies off, it turns black. Both obtain nutrients from feeding on microscopic food particles in the water column while gorgonians can also obtain nutrients through a symbiotic relationship with marine algae. Black corals lack photosynthesizing algae, which allows them to live in deeper waters unrestricted by available light sources, growing in depths up to 600 metres. The species has a slow growth rate and longevity that allows them to live for up to a millennia. These types of corals are vital in the sense that they are biodiversity hotspots, creating complex forest-like structures that allow other species to grow and thrive. This is not the only wreck in Maltese waters with such a dense concentration of black coral, suggesting that in a world of rising sea-temperatures, ocean acidification, and increased storm frequency, submerged cultural heritage sites are providing essential opportunities for marine life to grow and flourish.

Faced with adversity brought about by challenging conditions (such as depth) as well as the threat of climate change, we as managers of Malta's underwater cultural heritage made a strategic and largely unique decision to adopt a multi-faceted approach. We believe that combining archaeology, heritage, and the environment (in its broadest sense) provides a holistic approach to dealing with issues that go beyond simply protecting the wreck itself. It is imperative that the synergies between natural and cultural heritage are not only observed and recorded but studied, respected and recognised as being inseparable – this is true for the past, the present and our shared future. Considering this, next time you look out to sea, think of the culture-defining histories contained just under the surface, and the complex interactions between history and biology that are changing and evolving our landscapes, stories, and heritage every day.

Read the full article at SeaVoice.online



VOICES *of the* VEZO

by **marine scientist Amber Carter, University of Edinburgh**

Along the turquoise waters of southwest Madagascar live the Vezo, a people whose livelihoods and culture have been intricately connected to the ocean since their arrival in Madagascar some 2,000 years ago.

In villages nestled between the coast and Madagascar's unique endemic spiny forest, the dry conditions limit the possibilities of agriculture. Meanwhile, isolation and poor road infrastructure hamper opportunities for other types of economic development. Consequently, the Vezo people continue to rely almost completely on the ocean for their food security and income, just as their ancestors have done for millennia.

However, like millions of other small-scale fishers living across the tropics, the livelihoods of Vezo fishers are on a knife edge. Overfishing is driving down fish populations, and climate change and habitat destruction threaten the fragile mangrove, seagrass and coral ecosystems on which they rely.

Over their lifetime, elders in Vezo communities have witnessed an unprecedented transformation of Madagascar's marine environment. They have seen the inception and rapid evolution of industrialised fishing, as well as the consequences of habitat destruction and climate change.

Pirogues on the beach in Ambatomilo © Garth Cripps

Community filmmakers getting footage for a Voices of the Vezo film in Ambatomilo © Garth Cripps

In a region where written records are rare, this transformation has largely gone undocumented. Elders hold invaluable knowledge about historical ecosystem conditions critical for informing locally relevant fisheries management and conservation measures. Yet, as this generation ages, the window to document this knowledge is rapidly closing.

Over the past four years, as a marine scientist working in southwest Madagascar, I have become very aware of this challenge. However, despite any insights my research might uncover regarding the history of ecosystems in the area, I recognise that the most crucial custodians of this information are the Vezo youth. As the next generation of leaders, they are destined to become stewards of their marine ecosystems.

Motivated by this recognition, I founded Voices of the Vezo – a community-led filmmaking initiative with the ambition to engage local youth to create short films that would document the transformations of the marine ecosystem and its profound impact on Vezo lives. Supported by marine conservation organisation Blue Ventures, I teamed up with Symphorien Maniry Soa, a self-taught filmmaker from the Vezo village of Andavadoaka. Symphorien has been using film and music as educational tools on health and environmental issues for several years.

Over the course of two months in 2022, Symphorien and I led filmmaking workshops in four coastal villages – Andavadoaka, Ambatomilo, Tampolove and Ampasilava. With a local team, we travelled up and down the remote coastline often using traditional modes of transport – such as a wooden dug-out canoe and zebu cart – carrying with us two camera set-ups and a pop-up cinema.

In each village, we held a filmmaking workshop teaching camera skills and interview techniques. After this crash course, the Vezo youth took control of the cameras. They became documentarians, capturing insightful interviews and visually compelling footage to tell the story of Vezo life.

Once the filming was complete, the youth groups took on the task of creating the story and editing the films. They used large sheets of paper to create storyboards, mapping out the sequence of interviews and footage. Symphorien and I would then take a day to edit the films, carefully transforming the storyboards into short documentary films. Before we left the village, the youth were able to present the films to their community in our pop-up cinema.

After a dearth of community events in recent years, a hangover from the social restrictions of COVID-19, these evenings were very popular, drawing crowds of up to 200 people.

In total we supported the creation of seven films, each serving as a valuable record of Vezo culture and traditions, capturing tales of disappearing traditions and ways of life.

A Vezo fisher sorting her catch of buzeke (sea urchins) © Amber Carter

Amber (right) documenting a fisher sorting his catch © Amber Carter

They also paint a vivid picture of how the marine ecosystem has transformed within a single generation. Elders share tales of a time when they feared swimming in the sea because of the high presence of sharks, a stark contrast to the younger generation, many of whom have never encountered a living shark

One unexpected but exciting outcome occurred in the village of Ambatomilo. For several months, the community in Ambatomilo had struggled to reach a final decision on creating a no-take zone (an area closed to fishing) to help restore fish populations. After community members watched the Voices of the Vezo film and heard the strong endorsements for a no-take zone from community members, a collective recognition emerged. This newfound awareness catalysed decisive action, and the no-take zone has since been successfully implemented. As a marine scientist, embarking on the Voices of the Vezo initiative marked a formidable learning curve for me as I attempted to blend my background in ecology with art and social sciences for the first time. Witnessing the Vezo youth become champions of their own narratives, with a newfound motivation to document and raise awareness about the challenges confronting their community, was incredibly inspiring.

The magnitude of the ocean emergency presents a vast and intricate challenge, particularly for communities like the Vezo, whose livelihoods hinge on a healthy ocean.

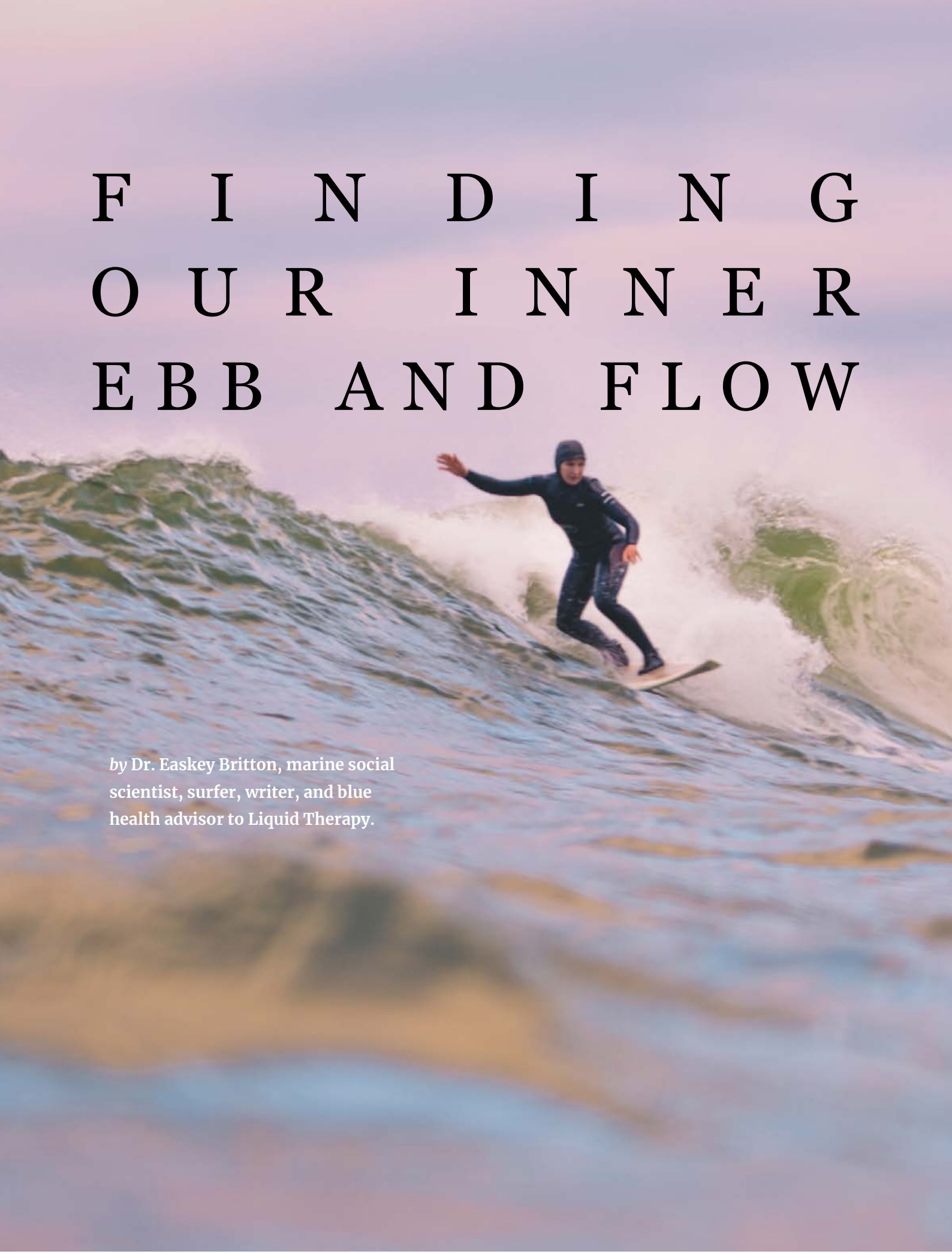
It's evident that conventional conservation science alone won't suffice at the necessary pace to address these pressing issues. To effectively support these communities, we must engage in co-producing knowledge, bolster local leadership, and embrace innovative (and unusual) approaches to research.

Blending disciplines and thinking beyond the boundaries of traditional conservation science is imperative in navigating the complexities of the ocean crisis and fostering a sustainable ocean future.

You can watch all Voices of the Vezo films and read more about the broader potential of filmmaking in community-based conservation and management in our published scientific article at voicesofthevezo.org

Voices of the Vezo was supported by a NERC E4 Doctoral Training Partnership Studentship at the University of Edinburgh, Blue Ventures and the Scientific Exploration Society Sir Charles Blois Award for Science and Adventure.

FINDING OUR INNER EBB AND FLOW



by **Dr. Easkey Britton, marine social scientist, surfer, writer, and blue health advisor to Liquid Therapy.**

Easkey surfing © Alice Ward

Something remarkable happens when we come into direct physical contact with saltwater.

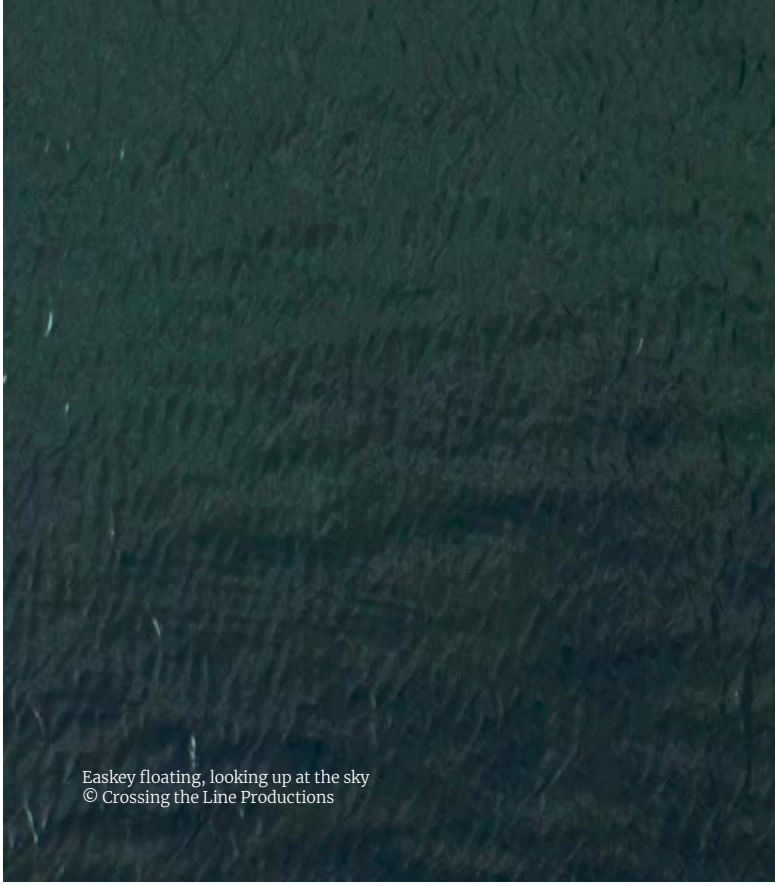
Immersion in the sea is to feel transported to elsewhere, as if moving through a portal to another world — not only moving from the solidness of land to the fluidness of water but also moving from the 'head' into the body. It's this, I believe, that offers such healing potential — restoring lost connections, bringing us back home to ourselves, to inhabit not only our bodies more fully but the world. It's the importance of this embodied connection with the Earth's waters for our wellbeing and for the health of the planet that I explore in-depth in my new book, Ebb and Flow: Connect with the patterns and power of water.

Anthropologist Tim Ingold [1] has written that our skin is porous. It's this porosity that I feel when I go into the sea. Preparing to immerse myself requires a listening and understanding of place built up over time, acquired from countless hours of observation and direct encounters with sea conditions and weather patterns. This creates an intimacy with place.

"Water entangles our bodies", writes feminist scholar Astrida Neimanis [2], so that we become more "oceanic eddy" than isolated entity. To be immersed in the Atlantic waters off the west coast of Ireland is to be held in the mix of sweet rust coloured bog water and the golden-green iodine of kelp forests. It is to enter into the territory of the wild Atlantic salmon. Or at least it used to be, before the salmon stopped returning to their spawning rivers.

As a surfer, there are so many different dimensions to my encounter with the sea influenced by temporal cycles of change - tidal, lunar, weather, seasons, life cycle, motherhood. Irish poet-philosopher John O'Donohue's words come to mind, to be a surfer is to be in"silent conversation" with the personal elements of a place, of a wave creating its own narrative. Sometimes when surfing or swimming there is a reluctance in me to return to shore, my selkie mind awakened. A selkie is a sea creature from Gaelic mythology, often depicted as a shape-shifting "seal woman", a seal with the ability to take human form on land. Her belonging, like mine, is between worlds. Yet, for all her freedom and wild abandon the selkie tightly grips her seal skin when she comes ashore, refusing to let it go even for a moment. I wrote in my book, Saltwater in the Blood, that,

"A selkie's skin holds her power – her ability to return to sea. If it is stolen she is trapped on land and without it can never return to her sea kin. It represents her identity and her freedom, her intimate connection to the more-than-human world, where the ocean becomes the realm of the unseen, the darker edges of the unconscious. Without her seal skin she would be lost and would forget her calling, slowly dying inside." [3]



Easkey floating, looking up at the sky
© Crossing the Line Productions

I marvelled at the sensation of lightness and the connection with new life growing in my watery womb.

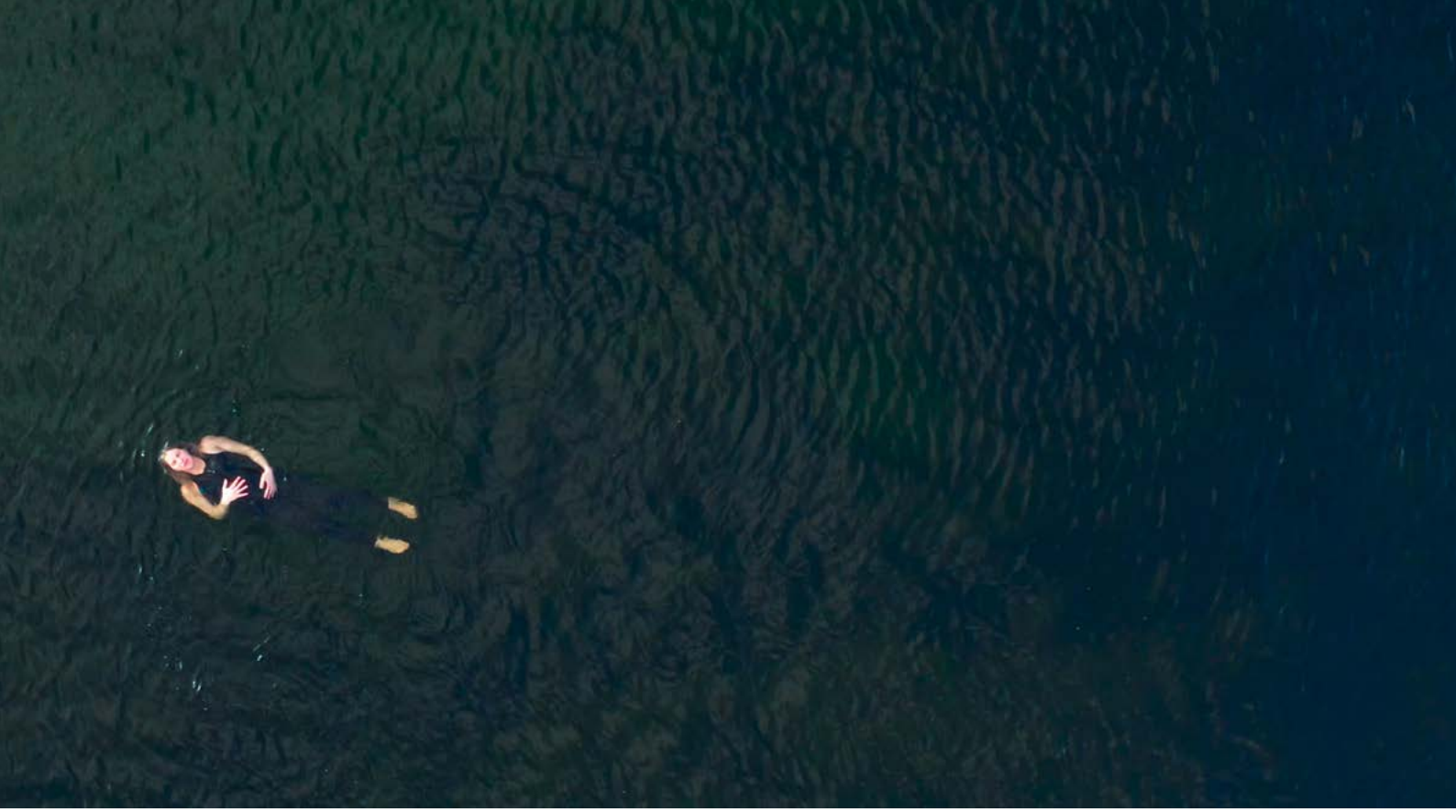
Surfing is to actively participate with the more-than-human, living world — the ocean that breathes us all into existence. The sea shapes our experiences and feelings through its own powerful, non-human agency. This shaping effect is what creates a sense of becoming. To surf is at once to be both fully engaged and to let go. We surrender our sense of groundedness and solidness to floating free so we may be at the mercy of untameable, changeable currents, flows and more-than-human environments. When experiencing disconnect or event disassociation, a powerful way to reset is through immersion. The movement and touch of water and waves ignite something in the body, in fact it triggers a whole cascade of changes in our emotions, feelings and how we sense the world around us. It's why water can be such a potent way to reconnect and come back home to our bodies after a traumatising experience.

Then, off the west coast of Ireland, there's the cold. Immersion in cold water stimulates our entire nervous system and awakens our lungs and hearts in new ways. The chill adds to the sense of immersion, igniting thousands of cold water thermo-receptors on our skin. Immersion in cold water creates 'thermal stress' that triggers a freeze-fight-flight response in the body. This releases a flood of adrenaline and norepinephrine, the neurochemicals that energise and sharpen focus, along with the mood-boosting neurotransmitter, dopamine. The cold water triggers a whole physiological cascade of changes in the body, including an anti-inflammatory response. This reduced inflammation is linked to an array of physical and mental health benefits including the reduction of depression and anxiety, improved mobility and pain relief, and better sleep [4].

It's never easy or comfortable getting ready to get into a cold ocean in the middle of winter, with sideways wind and rain, or gale-force south-westerlies blowing. But being comfortable with being uncomfortable is what creates a powerful sense of self-actualisation and achievement. Take the wipeout when surfing, for example. To wipeout well requires a letting go of control after getting tossed off the wave and held under in an environment we can't freely breathe in, our instincts screaming, 'escape'. The moment I fall two things happen — at first I bring my awareness into the softness of my animal body without any analysis, simply staying with the physical sensations of how the water is moving me.

The mental chatter of panic quietens and I'm lost in the feeling of being swayed like kelp. Second, a shift in consciousness happens, an almost out-of-body experience, where I am able to witness all that is happening. When a hold-down gets really intense I take my mind elsewhere into a blue mind state through a practice of visualisation, calming the body, conserving oxygen. Blue mind, first coined by marine biologist and author Wallace J Nichols in his 2014 book of the same name, acts as the antidote to 'red mind', our stress response. Blue mind is experienced as an inner state of calm. Proximity or connection to water can heighten this state by engaging all of our senses; the mind is both openly aware and fully and effortlessly absorbed in the moment.

I wrote in Saltwater in the Blood how these 'wipeout' moments are an invitation to soften into the force of the wave rather than resisting it, allowing ourselves to be reshaped and revealed. Perhaps even more than wave-riding, wipeouts can offer a feeling of the aliveness and intelligence of the water as it mixes with our own flesh and blood. This intimate and visceral connection with water reminds me of the simplicity and power of these moments and encounters in nature, even if they are fleeting. It's this quality of immersion that I tapped into for the birth of my twins.



We begin life immersed in the amnion, in the saltwater of the womb. The water protecting us, absorbing shocks, helping us grow, shaping our movement, supporting everything we will become. I learned from water protector and Mi'kmaq elder Dorene Bernard of women's particular connection to water as water keepers, with the ability to bring forth new life from the water inside us. I craved contact with saltwater throughout my pregnancy and yet I never realized how much my relationship with water would change when I became pregnant.

As a lifelong surfer my body is my ocean-going vessel, but during my pregnancy I lost that. When I went into the sea, I felt sea sick for the first time in my life if the water was too rough or choppy. I couldn't trust my breath or my lungs when held under a wave as my cardiovascular system worked in overdrive, circulating over twice as much blood to support new life growing inside me.

During pregnancy, when I was no longer physically able to surf, I discovered the profound benefits of going for regular sea dips in nothing but my bare skin. Cold water immersion can carry some risks – sudden immersion without first acclimatizing the body can trigger a cold water shock response, causing the heart rate to go up at first. However, I greatly minimized any risks with a gentle and gradual buildup of regular immersion, combined with deeper, slower breaths and a growing familiarity and understanding of both my body and the body of water I was entering.

A recent medical study suggests that regular cold water immersion could lead to a reduction in difficulties during labour and negative birth outcomes [5]. The cold water, combined with the novelty associated with environmental stimuli of the sea (breaking waves, moving currents, changing weather fronts), created a low-dose stress response in my body that helped build resilience and adaptive capacity during a very challenging birth and recovery from emergency surgery. Even in the moment of crisis, I was able to access a profound experience of trust in my body and the birth process. I activated memories of myself and my twin babies in the ocean together, in the womb of the world, visualising the silky touch of swaying kelp, the dazzling, dappled light of sun through sea water as I lost consciousness.

Returning to the sea has allowed me to begin to welcome and inhabit my forever-changed bodymind in a new way — seeking joy, presence, play and connection over challenge, risk-taking and fear as I navigate the postnatal shift from 'me' to 'we'. The distinction between the body and the mind is, in reality, a false one. They are one and the same, completely interdependent ways and mediums of how we experience our sense of self in the world. Immersion is never a one-way act. Water is the greatest solvent, dissolving and holding the memory of all that it comes into contact with. When a body is immersed in water, the water knows. It responds and is forever changed. So much of Ebb and Flow is about how we might learn to simply be, fully inhabiting our own watery bodies so that we are better able to listen to the world around us and receive the message water has for us.

Immersion can ultimately awaken a deeper understanding of the vulnerable nature of the ocean, what Ronan Foley and other health geographers refer to as a "blue attunement" [6] – becoming aware and responsive to the body of water we are interacting with, enabling a deep form of listening. Immersion can awaken a wish that a more beautiful ocean is possible for all our children to immerse themselves in. Becoming a mother has reinforced for me the need to dig deep, to offer blood, sweat and tears to encourage the restoration of water and to honour and celebrate its rare and precious life-giving force. My hope is that we will come to understand our interdependence with watery places and beings, and to sense and feel the aliveness of these connections. To feel that we too are water.

Easkey surfing © Alice Ward

THINKING *(with)* WATER

by **Prof. Claudia Egerer, co-author of**
Water Lore: Practice, Place and Poetics [2]

Island of Tjörn © Claudia Egerer

Exceeding definition and measurement, [w]ater is H2O, hydrogen two parts, oxygen one, but there is also a third thing, that makes it water and nobody knows what it is. [1]

DH Lawrence

Aquatic entanglements

A glacier shifts quietly into the arctic ocean. A storm rages in the South Pacific. An endless sea of microplastics drifts silently between the two – and the global thermometer ticks steadily, relentlessly, towards the tipping point. We know about humanity's role in this accelerating harm to life on our planet. But what is the role of story-telling in this mass of silent destruction? What do creative narratives about water tell us that we don't already know? They tell us another story, a story that predates both language and writing, one that is not bound by the empirical and quantitative analysis of scientific inquiry. It is a story that links water and human and narrative in innumerable ways, and therein lies hope. We know that civilizations arise near water, just as literature tends to arise in settlements near water. With my focus on water and its link to the stories we tell, especially in times of climate change, nay, climate *crisis*, let us start with the observation that water and stories constitute basic needs – we cannot live without stories just as we cannot live without water. Storytelling is as old as humanity. Every experience, every encounter, every event, is immediately turned into story as we make sense of the world through narrative. Stories create relations which in turn create meaning. The flow of water, in its eternal cycle, is another connective, meaning-making element and, just as water cleanses, stories provide catharsis. Water is not only the source of all life, it is also the spring of imagination, dreams and rituals, and has been, as I noted elsewhere [2], an inherent part of culture, imbuing art and literature with a plethora of meanings as far back as the *Gilgamesh* and Homer's wine dark sea. We think with and through stories, and as water has a powerful hold on the cultural imaginary, we might say that water is an inherent part of our thought processes, not least through the multitude of tropes it gives rise to.

Aquatic affinities

The sea is in my blood, literally, for as Rachel Carson notes, "each of us carries in our veins a salty stream in which the elements sodium, potassium, and calcium are combined in almost the same proportions as in sea water" [3]. I have lived by the sea all my life so it is little wonder it has shaped my sensitivities, nor that it has found its way into my research. For some time now I have immersed myself in the environmental humanities, tracing the intricate interrelations between human and nonhuman, living and nonliving, with water as the great connective. The North Sea, Skagerrak to be precise, is the sea where I spent my youth and the photograph is of that secret place only to be reached by boat. This is the spot where many of my projects took shape and to this day, I write with the sea just outside my window, trying to grasp something at the edge of vision, something Virginia Woolf referred to as a fish that "swayed … hither and thither among the reflections and the weeds" [4]. Our basic understanding of embodiedness as acquatic, linking human and nonhuman bodies of all kinds of shapes, is what we have in common, but I arrived from a different route, via the stories we call literature, shaping my understanding as I read on. So, for me, from the very beginning, stories and water have been entangled in more ways than I can count, and they influence each other in a multitude of ways. Stories, we know, can be told in different ways, and stories, like bodies of water, are difficult to contain, even in print, especially in print, they live their own lives, escaping the confinement of language into a realm that exists as much in image as in verbal expression –

hence my focus on thinking water, imaginings of water, tracing how stories understand water. River stories, from source to sea and the other way round, seem to reveal that there really is no beginning, so, like water springs, stories are not autochthonous but migrant, peregrine, seeping out of and into other bodies of text in more knotty ways than terms like intertextuality can embrace. Hence what follows is not a fully-fledged essay but a collection of thoughts – memorable personal moments interspersed with academic inquiry – about thinking (with) water.

Environmental Humanities Doctoral School at Askö Marine Laboratory

We are faced with the intricate yet vexed relationship between the entanglements of water and stories with human and nonhuman concerns as they take on new urgency in times of climate change, when despite the fact that scientific evidence is gaining more momentum every day, we seem to be oddly incapable of taking in the scope of what is at stake – life as we know it. We were convinced that the answer to the climate crisis is to be found in the humanities, in the human, to be precise, not in technology as so many argue. We decided to explore these issues at Stockholm University's field station Askö Marine Laboratory, an island and nature reserve in the Trosa archipelago, and part of the network European Marine Biological Resource Centre (EMBRC). At the end of May, 2019, we took the PhD students enrolled in our Human Footprints course to Askö where we spent three days living and eating together, immersed in questions of water and deep time. Literally immersed as most of us started the day with a swim in the cool clear sea; academically immersed through David Farrier and Michelle Bastian's talks.

Drawing on connections between deep time, water and stories, Farrier reminded us to also think of deep time as deep future, and the anthropogenic damage lasting for an unforeseeable time through the persistence of what Michelle Bastian and Thom Van Dooren termed the "new immortals" – microplastics, radioactive waste, to name a few [5]. Drawing on poetry by Elizabeth Bishop and Seamus Heaney, Farrier left us with a powerful impression of poetry's capability to put "multiple temporalities and scales within a single frame," thickening our lived presence with the "awareness of other times and places". What emerged in these lectures and talks is the tentative formulation of a philosophy where the human-centred ethics we have lived by for centuries makes room for an ethics that is sensitive to the nonhuman in a variety of ways, and in which water plays a pivotal role as connective. Microplastics may litter the sea, visible in the Great Pacific Garbage Patch and on our shores, but also enter into any and every organism on this planet. The three days on Askö left us with much food for thought and started a process of how we, as individuals, can combat pollution of marine environments.

Affinities with rivers

Our exploration, once centered on the sea, now extends to rivers, beginning with the majestic Whanganaui River in New Zealand, which we now fondly refer to as Aotearoa. "Ko au te awa, ko te awa, ko au – I am the river and the river is me" encapsulates our newfound understanding. Reflecting on a pivotal moment in 2018, during the "Deep Time and Deep Water – Water as a Being" workshop at Stockholm University, led by Karin Dirke, Christina Fredengren, and myself, a profound shift occurred. Earth systems scientist Daniel Hikuroa's words, honoring the indigenous Sami people and connecting our sacred mountains, springs, and oceans, emphasized our profound interconnection. Hikuroa's talk, "Te Mana o te Wai – The Charisma of Water," immersed us in Māori cosmology, revealing water as an ancient kin and waterways as ancestors. This understanding resonates with my personal projects on water, including novels exploring solace along rivers and the Whanganui River's legal recognition. In a poignant moment, first love and the sea intertwine, closing with Caledonian Peregrinations, a tale of unexpected unity. This realization of water as "an ancient kin" shapes our journey, reminding us that our relationship with water extends beyond the physical to a deep, ancestral connection.

Riparian narratives: Paper rivers

Invoking the mood of "ancient kin," let's take a look at a woman's personal relationship with rivers, their love of water shaping their narratives. Olivia Laing's riparian biography-cum-nature story, *To the River: A Journey Beneath the Surface* [6], following the river Ouse from source to sea, with Virginia Woolf as a spectral companion. Olivia Laing's *To the River* had me hooked on its first phrase, "I am haunted by waters;" an aquaphile recognizing a kindred spirit. I read it in one go, taking delight in its exploration of the Ouse from source to sea as much as in the literary ghosts that peopled its pages, headed by Virginia Woolf, who drowned herself in that river in March 1941. I was enchanted by the sheer poetry of its language, river water "the milky green of sea glass, full of little shafts if imprisoned light". The recognition of our shared conviction that the "river was the bearer of secrets" and "the pleasure of abandoning myself to something vastly beyond my control" struck a note. Laing observes that "humans by necessity must once, like all animals, have been attuned to the dark frequency by which water travels" and that despite the white noise of mobile phones, she often finds herself "drawn by chance or instinct to a pool or stream" she had had no idea existed. By the same token, poetic souls seem to possess a knowledge that isn't available in its entirety by university education, even though those barred from it feel deprived; outsiders. Virginia Woolf notes this gap: "Insiders write a colourless English. They are turned out by the University machine. I respect them …They do a great service like Roman roads. But they avoid the forests & the will o the wisps".

Laing dreams of "rivers [she] knew only from books turning like snakes through their shifting terrains," Alph in Kubla Khan, Conrad's Congo, Huck Finn's Mississippi – "no more than paper rivers". Still, Laing feels "almost drunk upon them, for they were the true source of [her] own obsessive hydrophilia". Virginia Woolf's presence in Laing's mind and her book about walking a river reveals her insights into a fellow writer's affinity with water:

Water, in Woolf's personal lexicon, represented a way of slipping the superficial self – the self who played bowls, or minded when a hat was criticized – and ducking down into a deeper, nameless realm.

But more than that, Laing recognizes that water seeps into Woolf's style, noting that when she "writes about writing, which is often, the images she employs are liquid". And it is this ubiquity of watery images that connects the two writers, where Laing sees a "mackerel sky" and describes the Brooks as a land "so flat and intermarried with water".

Te Awa Tupoa: The Whanganui River and legal rights

Let me whet your appetite by a brief mention of the 2017 Te Awa Tupua (Whanganui River Claims Settlement) where the New Zealand government granted the Whanganui River its own legal identity. Going back all the way to the Treaty of Waitangi in 1840 and set in motion by the signing and celebration of Ruruku Whakatupua, the Whanganui River Deed of Settlement, taking place at Ranana on the Whanganui River Road on 5 August 2014, the Te awa Tupua brings us back to the close connections between river and Māori: Ko au te awa, ko te awa, ko au – I am the river and the river is me.

Some facts from the Whanganui District Council, Te kaunihera o Rohe o Whanganui: "In 2017 legislation giving effect to the Deed of Settlement was introduced as Parliament passed an historic bill to recognise the special relationship between the Whanganui River and Whanganui iwi. It also provided for the river's long-term protection and restoration by making it a person in the eyes of the law… The move reflected Whanganui iwi's unique ancestral relationship with the river. Iwi who lived along the river not only relied on it as an essential food source, but held with it a deep spiritual connection" [7]. But what does it mean to declare the river "a living and indivisible whole"? How should we approach and understand Aotearoa New Zealand's decision to grant the Whanganui River human rights and how does this move affect our understanding of human-nonhuman relations? What does it do to our understanding of stewardship? What does it mean when a government decides that a river (but not all rivers) is to be seen as having the legal status of a person? For me, the most challenging, and promising, is the coming together of what would appear to be mutually exclusive philosophies – one based on ideas of human exceptionalism, the other on notions of kinship. Yet for scholars in the environmental humanities these notions of kinship, of being-with, of thinking-with, are by necessity replacing a paradigm that posits the difference, and superiority, of humans from all other organism.

By way of getting more insight into kinship-based thinking about the Whanganui, let me refer you to an essay by Anna M. Gade, Vilas Distinguished Achievement Professor in the Gaylord Nelson Institute for Environmental Studies at University of Wisconsin–Madison. As a participant in the "Coming Together of Peoples Conference" sponsored by Indigenous Law at the University of Wisconsin–Madison in the Spring of 2018, her contribution has resulted in the post "Managing the Rights of Nature for Te awa Tupua" published September 5, 2019 and updated October 12, 2019 [8]. I leave you to read and ponder her words as they describe the coming-together of peoples and the river with an insight and clarity that instils hope at a time when hope seems to be in short supply.

What I have engaged with here are narratives in which water is more than a resource at our disposal, in which water is characterised by a value beyond calculation, adding something that is lost in discourses concerned mainly with utility, with finding a technological solution to what is seen as a technological problem. These narratives suggest a change of perspective, invite us to see that it is a problem of the human, of the human understood as an individual both separate from, and in control of, the nonhuman environment which serves mainly as a backdrop to human needs and desires, a thinking that underpins much of traditional humanist thought. Increasingly, though, we turn to narratives that seek to formulate an alternative to this mode of understanding the human as separate from the rest of the living, reminding us of John Donne's credo that "No man is an island,/Entire of itself,/Every man is a piece of the continent,/A part of the main" [9].

Read the full article at SeaVoice.online

Sara and Ann with their boat: Making Memories © Rabia Jones

ROWING *the* ATLANTIC

by **Sara Brewer, the Oldest Woman to Row the Atlantic**

On Sunday, 8 March 2020, aged 64, I became the oldest woman to have rowed any ocean, a journey I undertook with my rowing partner, Ann Prestige. We set off from La Gomera in the Canary Islands as part of The Talisker Whisky Atlantic Challenge to row 3000 miles, unsupported, to Antigua. It took us precisely 86 days, 8 hours, and 59 minutes. Our boat, Making Memories, was 24' long and 7' wide, with two cabins, one at either end. It had an open deck area with rowing positions for two people which we shared during the day and rowed singly at night – two hours on, two hours off. By the end of our journey, we had raised £66,000 which we shared between Alzheimer's Society and Street League, a charity which encourages young people into work through the medium of team sport. Beyond any tangible accomplishment, through this remarkable journey I discovered a profound connection to the ocean. It remains with me as a place of solace and wonder.

Setting Sail and Breaking Records

When we left La Gomera on 12 December 2019 it was the culmination of two years of preparation including learning how to navigate, how to manage our calorie intake, radio protocol and Mayday procedures should the unthinkable happen. Although, when the nearest vessel could be hundreds of miles away, calling for help through the internationally recognised Mayday signal was of little comfort. Despite the intensity of the training and the strength of my conviction, nothing could have prepared me for that first night. We had started the race at the tail end of a massive storm system and had been warned that the conditions would be rough. Out of sight and sound of La Gomera harbour, its well-wishers and bunting proclaiming The World's Toughest Row, when darkness fell and the moon rose just enough to show the height of the waves, I realised what the bunting had proclaimed, and I was terrified. It was impossible to steer our little boat against the constant battering of the waves and I questioned everything that had led me to this place, to the danger I had invited in and the foolhardiness that allowed me to think I could even attempt the crossing. But in that moment of fear also came exhilaration. This was the moment of truth when everything I had learnt was being put to the test: just one small boat, two people and the immense expanse of the Atlantic Ocean. It was intoxicating. In the madness of that first night, a massive tuna leapt out of the water and crashed down just feet away from the boat, its underbelly shining white in the moonlight. It was the first of many creatures to accompany us on our journey.

Dolphins would sometimes make a joyful appearance, and we became the beneficiaries of private displays of acrobatic brilliance as they swam in formation alongside us. Once, as we rode up the front of an approaching wave, four dolphins positioned themselves side-by-side within the wave. They seemed to float above the top of the boat, and as I looked up, we faced each other. I still see them in my mind, that brief moment of connection which may have been no more than my imagination, but which remains with me, as powerful now as it was then. The dolphins only joined us when the sea was calm and never when bad weather threatened, but a more constant companion was a bird– which appeared at dawn each morning and left as dusk was setting in. We looked out for the bird every day and grew anxious if it didn't appear. In an environment of constant change, it is surprising how often we seek a pattern.

The seascape changed constantly, and we soon became accustomed to adjusting our bodies in sync with the movement of the boat as though it were some sort of symbiotic dance. At times, huge waves came towards us in majestic formation and from the top of each crest it seemed possible to see to the edges of the earth. Where the sea meets the sky and all around for 360 degrees, there was nothing but the constant roll of wave upon wave, as far as the eye could see. We surfed down those waves in an effervescence of foam, drawing the oars in so as not to risk breakage. But mostly, we experienced a confusion of powerful choppy waves which collided and reshaped to produce ever-shifting angles. In one moment, they would loom ominously, only to vanish in the next heartbeat. At such times it was impossible to detect any sense of direction and holding a steady course became a constant challenge.

Confronting the Ocean's Trials

As we reached the thousand-mile mark, the challenge was set to intensify. We steered by a system of wires which ran through the boat, with one end attached to a footplate and the other to the rudder. One thousand miles into the row the wires sheared, and now a pivotal choice lay before us – repair them or send out a Mayday call. In our minds there was no choice, we had to fix them and together we developed a plan which enabled me to swim to the back of the boat and reattach the lines. My heart was pounding as I prepared to enter the water, and my mind ran to the terrifying depths which lay beneath me. I realised that if anything happened to me, I needed to know that my last sensation was the touch of another human being and I asked Ann if I could hold her hand. That touch was so important, just the simple act of holding hands gave me the courage to continue.

After two thousand miles, the lines sheared again, but this time conditions were too rough to enter the water. We waited at first, for hours, hoping the conditions would improve and steadily moving further and further from our set course. Eventually, we decided to attempt to find a pattern in the waves so that we could enter the water at a relatively safe moment. We counted the waves between a fast-moving, powerful force, which seemed to be beneath the surface, and which we could feel but not see. I have no other way to describe this phenomenon, but we did find a pattern. I knew I had six waves after its appearance to get in the water, reattach the line and get out. It was enough.

In retrospect, I couldn't help but notice how the same problem presented different obstacles to overcome on these two occasions. When the lines first sheared, we needed to find a solution and I needed to calm my fear. But, in reality, there was little danger. I was attached to the boat by a line and harness and the water was relatively calm. On the second occasion, we knew what to do, we just needed to work out when best to do it. I was not afraid, and yet there was real danger. It made me realise that fear of the unknown is often greater than fear of a known danger. But fear is not without benefit. In an environment where risk is a constant companion, fear is a valuable tool to mitigate risk and we quickly learnt to assess risk and respect the overwhelming force of nature.

Evidence of the power of nature was never far away. Once we were hit so hard by a wave that we narrowly escaped capsize. Ann took the full force, and it is a wonder she did not go overboard. I can see her now, knocked out of her seat holding a shattered oar. We hadn't even seen the wave coming. It came, hit and was gone in an instant. I had been about to open the cabin door. If I had done so there could have been devastating consequences as water would have filled the cabin and made the boat top-heavy, thereby losing its ability to self-right. That would have been the end of our row.

There are some who say that ocean rowers are complete novices during their first crossing, and thereafter they are experts. I do not agree. There are far too many variables in nature. Each crossing is unique, and obstacles which some surmount may simply not be encountered by others. However, as our journey progressed, we were learning how to be more creative at problem solving and navigation was an area where we had to be particularly creative.

Navigating the Waters with the Help of Unexpected Visitors

By day we navigated with the use of a deck repeater, a small, digital display relaying essential navigation information, which gave our bearings and speed. The main navigation equipment was housed inside the stern cabin, the door to which had to remain locked when not in use as it acted as a vital buoyancy aid in case of capsize. We could also track our position in relation to the sun to ensure we had not spun around.

By night we navigated with the extra help from the moon and the stars, following a silver path which seemed to be laid out especially for us. On such a night, I saw a large meteorite entering the earth's atmosphere in a ball of fire. It lasted for several seconds and drew my thoughts towards our place in the universe. With no light pollution and the night sky as a backdrop, I no longer felt I was on an isolated ocean but a part of some larger whole. I was on a planet within a solar system within a universe and rather than making me feel small, it opened up a whole vista as I realised that we are all part of something so big it is beyond comprehension.

But the moon did not, of course, rise every night, and the stars were often obscured by clouds, so we tried as best we could to navigate by the deck repeater and a damaged compass that had no backlight making it difficult to see in the dark. Curiously the worse the weather became, the better we were able to navigate. This was thanks to the unexpected behaviour of birds. It started when a storm petrel landed on Ann's oar and settled on the boat, it showed no fear towards either one of us. The petrel was joined by others until finally the roof of the cabin was covered in birds seeking shelter from the wind. The darkness meant that we felt rather than saw the waves but the faint glow from our navigation light meant we could just about make out the shapes of the birds. I noticed that, from time-to-time, the birds moved as one to face the wind. I began to realise that each time they turned was an indication that we had spun and needed to adjust our bearing. It might not have been the most sophisticated, or indeed reliable means of navigation, but it demonstrated how much we can learn by observing nature. The birds stayed with us throughout the night, leaving again as dawn broke.

The Realm of the Gods

There were times when the beauty of the ocean was so awe-inspiring that I felt I had strayed into the realm of the gods and had no right to bear witness. Bright, clear mornings in particular evoked a feeling of wonder, when the sky was a radiant red and the warmth of the sun brought comfort. On clear days we often saw weather fronts coming in and could spot the arrival of a squall, a sudden violent wind often accompanied by intense rain, from many miles away. It was fascinating to watch the drama unfold before our eyes. It is easy to see how sailors of old became superstitious, imagining the work of a capricious hand when disaster struck. But the ocean is without fear or favour, it just is. It cannot be conquered because it offers neither resistance nor help.

Neither is the ocean benign. Our little boat gathered about it a small ecosystem as barnacles attached themselves to the hull and small fish followed the food trail left when we washed our dishes in the ocean. Small fish attract predators and flying fish, perhaps in an effort to escape, often landed on our deck. The birds also saw us not only as a place of refuge in a storm but as a possible source of food. My eye happened to follow a bird's flight as it dived into the water next to our boat and, as I looked down, I saw what looked to be the triangular shape of its wing-tip, half-in and half-out of the water. It took a little while for me to realise that my eyes had lost the bird, which had no doubt dipped behind another wave and, rather than being the tip of a wing, I was looking at a shark's fin.

At this point we were roughly 2,800 miles into our journey, and I had been considering swimming to the stern of the boat to check the rudder before we reached the rocky coastline of Antigua. Needless to say, I decided to risk the rocks rather than the shark.

A Deeper Commitment

One day we noticed that small amounts of Sargassum weed began to appear which soon multiplied to form long trails slowly drifting past us. It was the first vegetation we had seen in a long time and was a sure sign that we had entered the Sargasso Sea. Occasionally a piece of what looked like rounded driftwood floated past – I took no notice until I saw other pieces of similarly-shaped driftwood following one another in line. As one piece came close to the boat, a small head with impossibly large eyes rose up, held my gaze, blinked and was gone. It was a sea turtle and far from being a dead piece of driftwood it was very much alive. As I looked into its eye, the enormity of my journey seemed to merge with the epic voyages of these marine creatures. Much like sea turtles that traverse boundless oceans to return to their birth shores, I sensed an echo of their enduring voyages in my own undertaking.

We were nearing the end of our journey and had suffered three broken oars out of the six we started with, which meant we could no longer row together. This proved to be a problem as we drew closer to Antigua when strong currents worked against us. With only one rower, we lacked the power needed to turn the boat. It was as we were taking rescue instructions over the satellite phone that I managed to turn the boat by taking small strokes with the oars, just chipping away until finally we were released from the prevailing current. It was certainly not strength, at this point I had lost 17 kilos due to the intense nature of our journey.

The oars were not the only things that had taken a battering. During the journey we both suffered from painful saltwater boils which form through the constant abrasion of salt crystals on the skin. The salt in the ocean is far more concentrated than in coastal waters where it is diluted by fresh water from rivers. Nothing we did could prevent the formation of these boils, though the liberal application of Sudocrem brought brief, but welcome, relief. Sitting on layers of foam, held together with cable ties, and attached to the rowing seats also proved invaluable and was the only way we could manage the pain whilst rowing. These boils lasted for some time, and even after the row I had to lie on the floor of the aircraft on my way home rather than sit on my still tender backside!

When we reached Antigua, we had gone so long without seeing land that the island seemed to rise out of the ocean like a mirage. We were soon joined by yachts, small pleasure craft and even paddle boards and, as we entered the harbour, the crews on the super-yachts stood at their bows and blew their horns to welcome us in. It was a welcome like no other I have ever experienced.

Now, three years later, I still feel privileged to have witnessed the extraordinary beauty of our planet. Amidst the vast expanse of the ocean, a realm often misconceived as barren and isolated, we found a profound connection. Here, the waves became our home, the marine life our companions, and the skies our ever-changing canvas. Guided by celestial bodies and sea creatures, we were witness to an ocean that left its mark on our human endeavours. I am the oldest woman to row any ocean, but what started out as a challenge and adventure grew into a profound awareness and sense of responsibility to protect our ocean and its creatures. I hope that by sharing my story I can inspire others to share my passion and cherish our oceans.

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SPORT


© Claudia Amico

Pew Bertarelli OCEAN LEGACY

The Pew Charitable Trusts and Dona Bertarelli created the Pew Bertarelli Ocean Legacy Project with the shared goal of using the best available science to support the establishment of ecologically significant, large, and effective marine protected areas (MPAs) around the world.

These scientifically proven, cost-effective tools minimize biodiversity loss and promote healthy, resilient ocean systems in the face of a changing climate for the benefit of nature and people. They also provide multiple economic benefits by improving fisheries, creating sustainable tourism opportunities, increasing food access for local communities, and bolstering livelihoods.

Through collaboration with governments, Indigenous and local communities, scientists, and others, the Pew Bertarelli Ocean Legacy Project has helped secure designations or commitments that have safeguarded nearly 13 million square kilometers (5 million square miles) of ocean — including in the waters surrounding Ecuador, Mexico, Chile, New Caledonia, Australia, South Georgia and the South Sandwich Islands, Ascension Island, and Tristan da Cunha.

Today, the Pew Bertarelli Ocean Legacy Project supports marine conservation in four regions — the eastern tropical Pacific Ocean, the Mediterranean Sea, the Southern Ocean, and the western Pacific Ocean — to strengthen the health of the ocean and communities connected to the sea for years to come.

PART 2

C O M M

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U N I T Y

PART 2

COMMUNITY

by **Annie Edwards, Head of Partnerships at SeaVoice, and Amber Carter, Head of Communications at SeaVoice**

"*To be native to a place we must learn to speak its language*", writes Braiding Sweetgrass author Robin Wall Kimmerer. How do you speak the language of the sea? Ask sea communities.

While the open ocean is emptied by industrial fishing, plastic accumulates on local shores, and climate change alters ecosystems and sea levels, it is the coastal communities that feel the weight of these changes. Across the globe, the culture and livelihoods of people living along our coastlines are tightly intertwined with the ocean. These communities have the most to lose from ocean degradation yet the most to gain from sustainable stewardship. They often hold deep knowledge of the sea informed by generations, offering profound insights into the state of our seas.

Communities manifest in many forms, from geographic locales to shared interests and beliefs. What unites the people in a community is a shared sense of values and a story that defines an aspect of who they are. In SeaVoice, we strive to share the ocean stories of communities most connected to the sea.

"*I work in marine conservation and therefore I work with coastal communities*", explains Katherine Arroyo-Arce as she explores the role of non-governmental organisations collaborating with coastal communities in Latin America, emphasising, "*The voice of coastal communities belongs to coastal communities*". With conviction and strength, SeaVoice's Community contributors describe how they're catalysing transformative tides of change. Some are adapting, like the fishers in Baja California transitioning from shark fishing to embracing environmental tourism and conservation. Others innovate, such as the women of Puntarenas, Costa Rica, crafting resilient and vibrant leather from fish skins. Along the Red Sea, the diving community provides opportunities for new generations of Egyptians while preserving centuries-old shipwrecks. Articles in Community demonstrate the pivotal shift to "community-led" rather than "community-based" research and collaborations, and how there is still much work to do.

Motivated by the rapid deterioration of our blue spaces and the precious life they support, community efforts are rising to form our ocean's future. Read these stories, and learn to speak the language of the sea.


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One of the teammates on the football team, nicknamed 'boy', holding a Mkoko Mweusi sapling
© Imara Bella Thorpe

M I K O K O

by **Imara Bella Thorpe,**
Mida Creek Conservation Community

MANGROVES

Planting a mangrove sapling
© Imara Bella Thorpe

Journey through the mangroves…

You are exploring a secret passage, from source to mouth. In this case, 'source' being the edge of the mangrove forest and 'mouth' opening into the main water body of Mida creek. Walking down the passage, deeper into the forest, the mud under your bare feet becomes softer and eventually your feet are underwater. The incessant rolling of the tides from the strength of the moon, move this body of water in oscillations, night and day. It's the late afternoon, just after high tide. It was a full moon last night, so the water level is close to the source, where a familiar large tree lives on the path (*Avicennia marina*). As you walk down the track, the mangroves close in around you and the leaves brush against your body. Mangrove shoots and the shells of small creatures residing here multiply beneath your feet. You stop to look around at the dense forest layers from the soil to the sky, far into the green shaded depths. The trees are majestic, but their value spreads beyond this intrinsic beauty and mystique. The species that live here hold medicinal uses and the straight poles of the Mkoko Mweusi (*Ceriops tagal*) can be likened to bamboo and are used for construction.

The memories of civilisation drift away, and the forest is eternal. Despite your vulnerability, you feel at ease.

This feeling of being exposed is born from the constant changes and unknown surprises that nature holds, yet the comfort seeps in as you reconnect with nature. The water gradually becomes deeper, and you begin to swim as the path melts into a tributary. Mangrove roots sprawl like spiders' legs in the deep turquoise water of the creek. Above water, the mangrove forest whispers sounds of clicking crabs scurrying across the roots, leaves softly dancing with the wind and water lightly seeping through the spaces between. Underwater, there is more silence. It is dark and eerie as only pockets of sunlight filter through the compact canopy and dark organic matter is deposited and mixed with the white ocean sands. Fish are sheltered by mangrove remains in the deepest sections of the curving flow. This is their breeding ground and nursery for their children. Eventually, they will return to the reef where they will spend most of their life. Comprehending the lives lived by these creatures is difficult as they are hidden well. If you look carefully, you may see a blue phase speckled bush snake, camouflaged well from birds of prey by having evolved to replicate the turquoise water. Existing among the mangroves, it is hard to ignore the amount of organisms this ecosystem supports, and importantly, how you fit into it.

Swimming through the mangrove creeks is one of my favourite activities in an area where I have been travelling for the holidays my whole life. Kenya is my home, but having been raised in Nairobi, I still feel like a tourist in many parts of the country. There is often a large divide between tourists and locals, with little mixing. This makes my experience in Mida Creek even more meaningful, as it is an opportunity to break through this invisible yet palpable wall. I am acutely aware of the privileges I have in this world. I am lucky enough to not have to think about these trees in purely transactional terms, such as their uses in construction and charcoal production. This is a story about worlds colliding.

My most recent visit to Watamu was this August. To get to Nugu Nuts, the hostel where I was staying, I had to ride on the back of a *boda* (motorbike in Kiswahili; a popular form of transport in the area). En-route, I was conversing with the boda driver, Elvis, as he drove down an uneven dirt road. Jumping between Kiswahili and English (Kenya's national languages), we chatted about what we do in life, and we found some common interests. I study Ecological Science at the University of Edinburgh and one of Elvis' many jobs is as an ecological tour guide. Recently, with some friends, he started a community project for mangrove restoration in Mida Creek. He pointed out a sandy road to the left that would lead to their mangrove nursery. Elvis said that they planned to start moving and planting the saplings tomorrow. The site was just behind Nugu Nuts so I couldn't help but to get involved! Instead of the holiday I had planned (consisting mostly of relaxing), I ended up planting trees for a few hours a day and constantly meeting new faces. I interacted with many people, young and old, most being from the Giriama tribe. Members from a local junior boy's football team were also encouraged to volunteer along with the older members of the community.

When we arrived at the site, the numerous red and grey crabs promptly fled into their tunnels. Everyone was in good spirits, and we all laughed and joked together while digging and planting in the mud. I learned greetings and phrases of the local language, Kigiriama, which is closely related to Kiswahili, both being Bantu languages. A popular Kiswahili phrase is *tuko pamoja*, meaning "we are together/one", and this sentiment was clearly felt throughout the experience. It was in these moments that Elvis also recounted how his passion for ecology "just came into my life when I was 10 years old, back in primary school, when we were conducting beach clean ups organised by private sectors and hotels". It put the power of this project into perspective and indicated how it could fuel future generations of community engagement. After long hours under the sun, when efficiency began to wane and the pace slowed, we headed to a restaurant on the roadside where Elvis' sister, Evelyne, prepared lunch. I tried a delicious local juice that was made from avocado and pineapples to go with a main dish of *Samaki* (fish), *ugali* (maize meal in a dough-like form) and *sukuma wiki* (collard greens, onions and spices). Throughout the meal, we chatted about other activities involving the community, like beach and mangrove shore clean-ups and the Prawn Lake Conservation Group, which is a restaurant sourcing local seafood. Their future goals are to make the mangrove project more business-oriented so they can support their livelihoods. From my observations and time spent volunteering, I suggested that more women get involved. There seemed to be a gender imbalance, and having more women engaged in the project would only help to enhance the community benefits.

My involvement in this mangrove restoration played out organically, borne from beautiful coincidences. It is from these paths crossing, that others have also been able to get involved. One of the main forms of job creation from the project is becoming an ecological tour guide. By building friendships with tourists, they have garnered more interest and sponsorships. More recently, an American organisation focused on forest restoration has taken part by donating recording instruments and training some of the community members to monitor the sapling growth and health. There has been a natural succession to building this project, which happened through the kindness, modesty, and hard work of the community.

Why mangroves?

Globally, there are approximately 70 species of mangrove. Nine of these grow in Kenya, which makes them easy to identify. The mangrove forests represent 3% of natural forest cover, taking up 60,000 hectares along the coastline. Mida Creek is a tidal creek in a tropical climate, with a dense drainage network through the mangrove forest [1]. These tidal creeks are an important transition zone where fresh and saltwater mix. Unfortunately, there has been a high rate of mangrove deforestation (around 6.5%) over the past few decades [2].

Mangroves are a vital ecosystem to maintain due to a number of ecosystem services they provide: timber, reducing erosion, dampening impacts from storm surges, and being a refuge and nursery for a number of animals. Mkoko Mwekundu (*Ceriops tagal*) is the species that is most popular in its use as a building material, so its numbers are declining fast. Mkoko Muthu (*Avicennia marina*) is used for its medicinal properties; to treat burns, ulcers and arthritic pain [3]. The losses of these trees are negatively impacting human livelihoods through decreases in fisheries, shoreline stability, and resource sustainability. Whilst on exchange in Australia this past year, I was also able to work in the southernmost mangrove forests comparing different methods of mangrove restoration through seed planting. The main problem was the removal of mangroves for more space on the beach by the locals. This turned into a damaging cycle of beach erosion, and the ocean started to eat away at their backyards.

Fortunately, there is now a growing understanding of the importance of mangroves in supporting the bodies of water they inhabit and the communities surrounding them. With more community engagement, the future is looking prosperous. A Kiswahili proverb says it perfectly, *Mazingira ni chanzo cha* kufuzu, meaning ‘the environment is the beginning of success’.

As we support nature, she will support us.

Capturing a moment in time

During most activities I take part in, I try to capture them through some sort of lens. Whether it’s a Nikon D5300 or a phone camera. Although I study science, I am a creative. I use these images to restore my memory of the experience and inspire new projects. I post the photos with a meaningful caption and respective locations, in hopes to inspire somebody to stop scrolling along the relentless algorithm and look towards their local green spaces. These images are also always a reminder of the things I’ve done, what I love and why I do it. When I’m so far away from the reality of my home, stuck behind a computer in grey, freezing Scotland, I can look at these images and remember what I live for. I want to encourage people to put even a small amount of effort into expressing and communicating things that they believe are for the greater good of the planet and humanity. To share their experiences with storytelling.

Special thanks to all the organisers and sponsors of the project, you can find their Instagram handles here:

@Miti_mingi_pamoja @Elvoso_ecology
@Earth_grower @Watamubackpackersnugunuts

Digging holes for the saplings to be planted © Imara Bella Thorpe


© Shannon Moran

NGOS *in* COASTAL COMMUNITIES: A LATIN AMERICAN VIEWPOINT

by **Katherine Arroyo-Arce, Fundación MarViva**

Costa de Pájaros © Fundación MarViva


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DIANA

In a few decades, the relationship between the environment, resources, and conflict may seem almost as obvious as the connection we see today between human rights, democracy, and peace.

Wangari Maathai, 2004

I work in marine conservation; therefore, I work with local communities. Such an essential relationship between ocean governance and coastal populations is sometimes not so obvious. Nor is its linkage with human and democratic rights. At least, this is the case in most of Latin America.

Gabriel García Márquez, a Colombian writer, is the foremost exponent of the literary movement called magical realism. In his books, situations that may seem strange and peculiar are normalised and presented as part of the characters' daily routines.

Magical realism is not an out-of-context invention. It is a reflection of how the core of Latin American culture has been built based on colonialism and oppression [1].

Why is the most biodiverse place in the world also the most dangerous region for environmental defenders? [2] Why are communities constantly facing restrictions on access to their natural resources and ecosystems? Why is speaking up extremely dangerous, but at the same time, lives are continuously threatened if we don't raise awareness? Why is conservation perceived as synonymous with poverty? Colonialism can take many forms. And as a Latin American who works in a marine conservation NGO based in Costa Rica, I think about this almost every day. My biggest fear is replicating any form of oppression through well-intentioned activities. Because I'm certain that we, ocean advocates, all mean well. We are optimists! We want to be helpful. But to what extent might we be creating an undesired relationship with communities? A relationship in which locals rely more on NGOs than on themselves?

During university, where I majored in environmental law, I developed skills in two areas that have inspired me since childhood: environmental conservation and democratic rights. Law school did not teach me about their relationship, but volunteering in local communities and conservation projects did. Over time, I understood that isolating local people from decision-making about their environment is a huge mistake. Effective conservation depends on the timely involvement of people.

Systematic oppression is a fact. It is a variable to consider when addressing marine-related projects in coastal communities. In this context, through years of working with local leaders, I understood the value of empathy; I gained skills to put my interest into perspective with local concerns; I learned to compromise. To have a meaningful relationship with local stakeholders, I understood I'm not their superhero, because the first thing you should do is to put your privilege aside.

In this context, what is the right way for local and international NGOs to approach coastal communities? How can the international community's desire to "give a voice" to coastal communities be adequately addressed?

During these last five years working for Fundación MarViva, a non-governmental organisation that promotes the conservation and sustainable use of ecosystems and marine resources of the Eastern Tropical Pacific, my colleagues and I have carefully avoided replicating certain types of actions that don't feel respectful of local stakeholders.

El Golfo represents the heart of artisanal fisheries. It includes the village of Nicoya, one of the few Blue Zones (where people live the longest and the healthiest) in the world. Usually, when Costa Ricans think about the conformation of our territory, we recall the Gulf of Nicoya and its peoples' desire, back in 1824, to become Costa Rican citizens. We celebrate this historic decision, the Annexation of Nicoya to Costa Rica, every July 25th with corn tortillas, horchata, *bombas* (rhymes), and songs about *sabaneros* (cowboys), bull riding, and the beaches of Guanacaste.

Seabird in the Golfo de Nicoya © Fundación MarViva

I also think about Don Enoc, a fishers' leader from the coastal community of Colorado, and how happy he was when he knew I would move to Edinburgh, Scotland, to pursue a master's degree in marine systems and policies. I think about Félix, Coordinator of Communities at MarViva who's from Nicoya, and about the way he and his family have welcomed me every single time I've been around with *gallina achiotada* (the most delicious chicken in the whole world) and mangos. Hospitality is also demonstrated through a fresh croaker ceviche prepared by Don Manrique and Doña Mónica, the owners of Cama-Pez de La Costa, a responsible fish processing and distribution plant in Costa de Pájaros.

Beyond its people, el Golfo is comprised of estuaries, mangroves, islands, and reef systems. These ecosystems support fishing, tourism, shellfish extraction, and salt production. One-third of Costa Rica's fishery products come from the Gulf of Nicoya [3]. However, the impacts of illegal, unreported, and unregulated fishing are notorious, contributing to social conflicts and discouraging good practices. These factors converge in an area with the country's highest poverty and unemployment rates, where access to basic human development rights is limited.

Operating within this context, NGOs should contribute, yes! But not through patronising, false expectations, or imposing agendas disconnected from local needs and priorities. At the end of the day, the resilience of coastal communities will rely on their conservation efforts, ability to transcend oppression, and power to influence decision-makers.

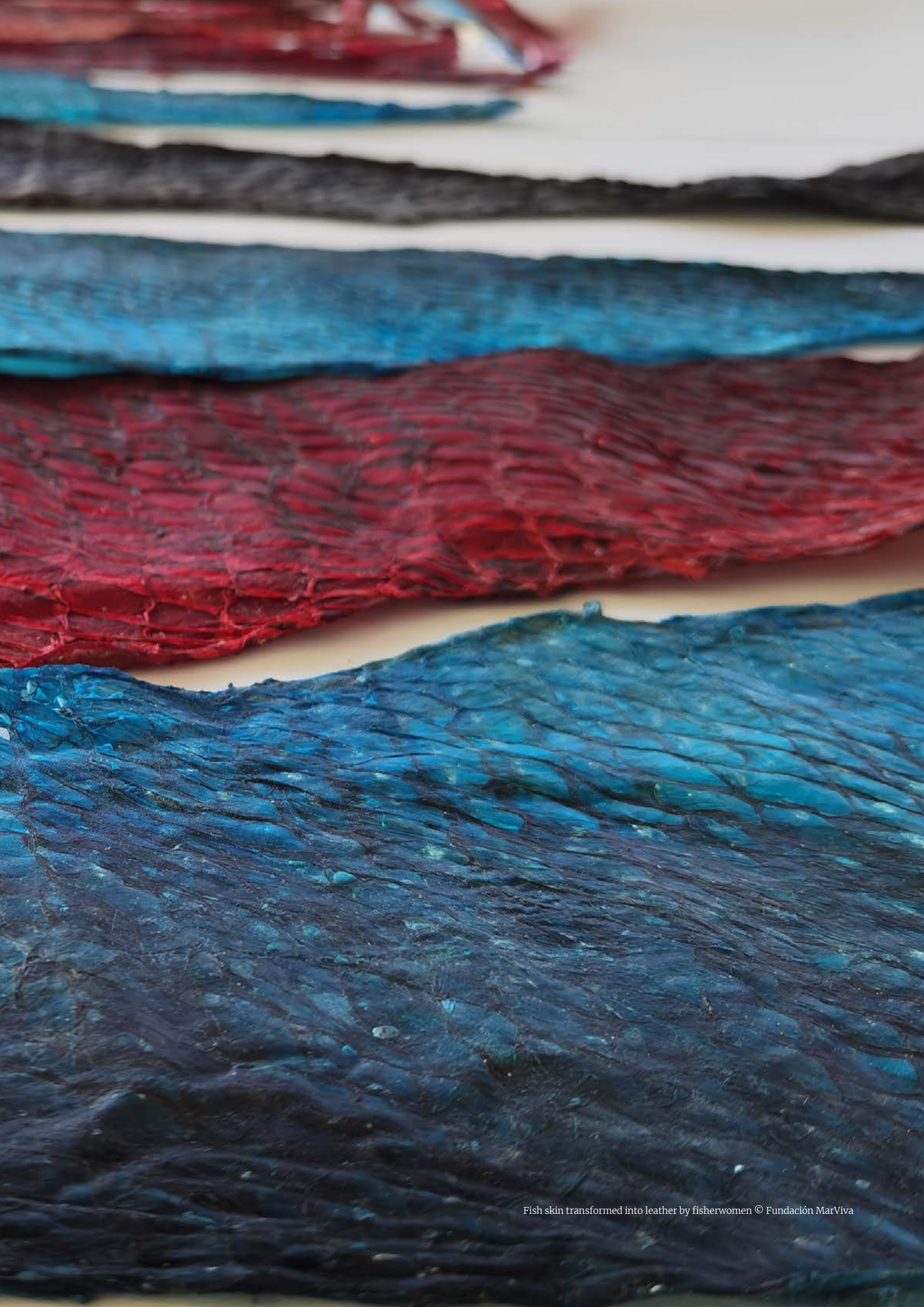
The voice of coastal communities belongs to coastal communities, as they improve their livelihoods and environment.

In MarViva, the Gulf of Nicoya is not just Félix's hometown. Along with improving coastal ecosystems, we intend to enhance lives integrally. To do so, we first work on strengthening policy advocacy skills. Guided by this philosophy, we have supported various initiatives that build a sense of citizenship amongst fishing communities. These include providing strategic support to fisheries associations regarding specific policy decisions taken by the fisheries authority without proper consultation. For instance, empowering leaders to address congresspeople directly has resulted from the implementation of voluntary local governance structures such as La Red del Golfo (The Gulf's Network) and the Comité de Pesca Responsible (Responsible Fishing Committee). MarViva is not their spokesperson but their enabler.

Beyond citizenship empowerment, coastal communities also engage in activities to improve marine conservation and fisheries governance. The participatory biological monitoring programme is an example of communities generating data to inform decisions. In 2023, communities from Colorado, Pochote, and Níspero provided data demonstrating that current fishing gear may not be selective enough to ensure that the harvest abides by the minimum legal sizes.

Oppression and fisheries' overexploitation are also addressed by encouraging complementary productive activities. In Puntarenas, for instance, MarViva is currently supporting a group of fisherwomen to grow their economic potential and engage in the transformation of fish skin into leather. Called *Piel Marina* (Marine Skin), they're powerful, high-value products.

A deep sense of apathy is constantly present in magical realism narratives. But there is also space for optimism. In Latin America and El Golfo, there is always a way to find beauty in challenging times and move from sad to happy tears in a blink. Through my time working here, I believe NGOs are actually meant to learn from local communities and grow resilient together to drive oppression away.



Fish skin transformed into leather by fisherwomen © Fundación MarViva

COMMUNITY, COLLABORATION, *and* BIODIVERSITY

by Emma Bolton and Nadine Greenhalgh, Basecamp Research

The Heritage Malta team collects marine samples 101m underwater at one of the wreck research sites ©Heritage Malta

Oceans and their rich biodiversity have long been integral to humanity's development, as our dependence on the sea is wide-ranging and richly layered, from transport routes to cultural practices. With climate, pollution, and biodiversity crises looming, humanity has the opportunity to turn to the oceans for a path forward. The sea offers a wealth of biodiversity, with millions of species holding unexplored genetic and chemical diversity which can support the Blue Economy and global health [1]. Encoded amongst the genomes of these organisms may be proteins that can be used to solve our biggest global challenges, from breaking down plastics to sequestering carbon.

Changing the Narrative on BioDiscovery

Nature has long been the solution to many of our world's greatest challenges. The first antibiotic, penicillin, was discovered serendipitously in Sir Alexander Fleming's London laboratory when a fungal contaminant landed on an open plate and was observed to inhibit bacterial growth [1]. Additionally, Taq polymerase, the enzyme that has revolutionised the widely-used molecular biology technique PCR by providing stability through high temperatures, was discovered in the bacteria Thermus aquaticus in a hot spring in Yellowstone National Park. Despite the importance of these incredible discoveries, biodiscovery efforts historically have been disconnected, with a gulf between biodiversity and biotechnology. We see this in Yellowstone National Park, where despite the phenomenal commercial success of Taq polymerase, the park did not receive any compensation for its role in facilitating the discovery by protecting and allowing scientists access to the geothermal habitats in which Thermus aquaticus and many other unique thermophiles thrive [2].

These, and other examples, inspired Basecamp Research to work towards accelerating global biodiscovery. Our mission is underpinned by the 1992 Convention on Biological Diversity and the Nagoya Protocol, an international legal instrument for the conservation of biodiversity, the sustainable use of its components and the fair and equitable sharing of the benefits arising out of the utilisation of genetic resources. Through mutually beneficial collaborations, Basecamp Research is bridging the gap between biodiversity and biotechnology, building a biodiversity value chain that ensures fair and equitable benefits resulting from the utilisation of genetic resources.

A rebreather diver shines a bright torch over the tail end of the Fairey Swordfish aircraft wreck at 70m depth © Heritage Malta

Partnering with Heritage Malta to Explore the Marine Environment

We were keen to find partners equally curious about underexplored marine environments and eager to support access and collaboration in marine biodiversity research. In this effort, we were fortunate to become acquainted with the scientists, curators, and historians at Heritage Malta's Underwater Cultural Heritage Unit. In early 2023 we began planning a collaborative biodiversity project based around shipwrecks and crashed aircraft sites under its management. Basecamp Research's initiatives dovetailed perfectly with Heritage Malta's Humboldtian approach to underwater heritage management. This legacy is fundamental to the Maltese community and its sense of national identity. The concentration of submerged cultural assets makes the seabed around the Maltese Islands an ideal 'lab' to explore how anthropogenic inputs impact natural biotic assemblages. As part of Basecamp Research and Heritage Malta's collaborative biodiversity agreement, Basecamp Research provided Heritage Malta with a portable molecular biology DNA laboratory, training, and employment in advanced DNA technologies, augmenting their ability to monitor the seabed.

How can shipwreck remains from past societies affect our present and future health?

During this collaboration, rebreather divers collected sediment samples from eleven wreck sites that lay up to 106m deep on the seabed around Malta. The samples were taken at varying proximities to the wreck sites, with the objective of understanding how the microbial diversity and ecosystem functioning is influenced by the presence of wrecks and the associated buried weapons and explosives. Sample collection involves gathering a tablespoon of sediment - genetic sequencing only requires a small volume, helping mitigate its environmental impact. DNA sequencing technology characterises microbial communities by reading the individual strands of DNA in these samples - this information will help us understand how the microbial diversity changes with wreck site and depth whilst also discovering novel proteins and biochemistries that could emphasise the importance and value of marine ecosystems. Working with Heritage Malta, we're also furthering our understanding on how buried explosives could be impacting the marine microbial ecosystem.

From this partnership, Heritage Malta's biodiversity priorities included increasing the awareness of the heritage and legacy of Malta's archaeological sites, implementing new technologies for biodiversity monitoring, and advancing cutting-edge research.

Three rebreather divers (part of the Underwater Cultural Heritage Unit dive team) carrying out photogrammetry work on the wreck, which is an aircraft wreck site that lies at 55m depth and is well preserved

Malta's incredibly rich historical past is mirrored in the diversity of its underwater heritage.

Beyond the Mediterranean

It is estimated that marine microorganisms make up 70% of the ocean's biomass, and roughly half of the world's total biodiversity, yet 95% of the ocean remains unexplored, uncharted, and unseen [3]. Over billions of years of evolution, the marine microbiome has generated extensive arrays of genetic diversity, offering a huge untapped resource for novel compounds that could be applicable for sustainable biotechnological solutions.

Sea sponges, for example, serve as a natural pharmacy, harbouring unique genomes and an ecosystem of symbionts that together express an array of bioactive compounds that have been found to have antibacterial, antiviral, and anti-inflammatory properties among others [4].

Prioritising marine research and development efforts are crucial to explore the diversity of marine microbes and to unlock the potential to create sustainable, biology-based solutions. While the marine world presents a rich genetic resource for novel compounds, access to these resources needs to be managed to ensure their sustainable and equitable use.

Data sharing and reactive sampling to tailor specific research projects are crucial to advancing marine research. Basecamp Research is establishing a baseline reference atlas of microbial biodiversity spanning diverse ecosystems worldwide, and we share data reports with our biodiversity partners through access and benefit sharing collaborations to expand knowledge of our earth's ecosystems.

By implementing new technologies, local communities are given the resources to study their biodiversity, providing scientists and stakeholders with a non-invasive, cost-effective method for conservation monitoring.

Basecamp Research aims to identify novel applications from these marine samples for sustainable biotechnological applications. In the event of commercialisation of protein sequences identified from the samples collected in this collaboration, Basecamp Research will share a portion of the related revenue with Malta. By connecting biodiversity research and conservation organisations with biotechnology companies, Basecamp Research is creating a biodiversity value chain to protect our natural world and build a sustainable future for all.

To collaborate with Basecamp Research, please contact biodiversity@basecamp-research.com

© Shannon Moran

CORNWALL'S

by **Rob McDowell,**
Cornish Maritime Trust

The heritage vessels - Ellen (1882), Barnabas (1881), Softwing (1900) © Cornish Maritime Trust

SEAFAIRING LEGACY

I was born in Malawi, where three generations of family trampled the dusty paths before me. Looking back over the decades, I feel privileged having had opportunities to live in and explore wild places, often with mentors and conservation visionaries along this journey. My roots are Southern African, however, the wilds of Cornwall now flow through my blood, where community, the ocean, and old wooden boats capture a new spirit of adventure.

There's an old saying down here in the south, that translates into something like "*give a friend a fibreglass boat and an enemy an old wooden boat*"! But perspectives are changing, as history is ingrained into the weather-beaten fabric and knots of these pieces of living history, capturing the lives and souls of past generations – lives that we should not forget.

Reliving and cherishing our history are not mere reflections on the past; they are threads that weave through the present, keeping communities vibrant and alive.

Kernow a'gas dynergh - Welcome to Cornwall

When people imagine the UK, they might conjure up images of antiquated seaside towns and perpetually overcast skies. However, there's more to its coasts than meets the eye. Picture instead crystal-clear waters, imposing cliff faces and the wild fury of our south westerly storms. This is Cornwall.

As I write this in Mousehole (a harbour village that dates back to around the 1280s and pronounced mow-zel), we are facing the wrath of Storm Ciarán. This is a weather bomb that's gusting 85mph and conjuring offshore waves that measure 15 to 20 meters. It's during times like these, that I think about the sailors of old, bravely navigating treacherous headlands with limited navigation. Or of fishermen, who built an industry based on their own observations of nature and inherited skills, rather than relying on machines. Cornwall's cultural marine heritage weaves a rich tapestry that has profoundly shaped communities in the UK.

Luke Powell, Cornwall's boat-building luminary, is a seaman who epitomises free-spirited sailing with the conviction that wooden vessels are living, breathing creatures that sculpt our lives and community. To walk barefoot on the deck is to experience a pure connection. In a conversation with Rick Stein, the renowned chef and restaurateur, Powell once said that "*traditional boats are about love and passion, not money and maths*". Eat in any of Stein's award-winning coastal restaurants and you'll find the same passion and love that underlies the cyclical connection between clean oceans, sustainable fishing, and the proud, hardworking community emblematic of Cornish coastal life.

However, as links to our roots are gradually forgotten or replaced, we feel there's a cost that needs addressing. As our coastal community diversifies to adapt to the pressures of demand, our cultural landscape is rapidly eroding away. Sit in a coffee shop, drive through the fishing village of Newlyn, look at the cars and the properties being renovated and this change is easy to spot. We cannot slow down 'progress', however, we are in a position to try and do our bit to manage it.

Connecting with this heritage is a way to establish a profound link with the ocean and the myriad of ways it has touched people's lives for centuries.

Sailing along the Cornish coast © Chris Yacoubian, The Cornish Camera Co.

The essence of sailing

Today, traditional sailing vessels stand as guardians of history, narrating stories of our forefathers while inspiring curiosity and wonder. Tanned sails above a black hull will always attract the attention of passers-by and plant a multitude of questions in the minds of seafarers and land-lubbers alike. Listen to discussions on the quay as these vessels ghost by, and the overheard murmurings may go something like:

'Have you ever seen sails like that before?',
'Where has she come from?',
'Look at the size of those oars!',
'How old is she?',
'What's her history?',
'How do they store the catch?',
'I bet she leaks and costs a fortune to upkeep'.

Here, we're talking of our lugger Barnabas. Built on a beach in 1881 as a St Ives mackerel driver, she's a double-ended dipping lugger, 40ft long, has two masts, weighs 15 tons and is the flagship of the Cornish Maritime Trust.

Vessels like this once formed the livelihood of most Cornish fishing communities, as familiar as a bus or a tradesman's van. A century ago, a fleet numbering in the thousands navigated our coast, harvesting our waters with nets and longlines. Today, Barnabas stands as the sole original survivor from this era. Our charitable trust has the privilege of owning three of the oldest, rarest and most traditional of Cornwall's fishing fleet. These vessels represent three diverse styles of working rig, capturing a cross-section of maritime history in the form of lug, gaff and spritsail rigs. From one point of view they are all museum pieces, and many suggest they should be preserved (and viewed) out of the elements and under cover. For us, that would miss the point. The heritage and soul of these vessels are in their timber, canvas and crew, but even more so, the tradition is working the vessels purely under sail. In essence, sailing with no engine – just the wind and elements guiding us.

But what is the cost of our maritime heritage? This is a question we regularly debate. Without dedication (to preserve), enthusiasm (to sail) and notably maths (to cover costs), the foundation to sustain these vessels and keep them sailing diminishes. Each season, as sharp teeth snap at our budgets for maintenance costs, sailing expenses and educational outreach, we find ourselves grappling with the same questions: is it all worth it? How long can we go on? Toby Floyer, the Trust's chairman speaks for us all,

"To skipper or crew one of these vessels is more than worth it. It's an honour that is gilded by the actions of our forefathers."

The crew cooking dinner on Barnabas
© Chris Yacoubian

Putting the past into perspective

In 1969, while most were fixated on a moon landing, HRH The Duke of Edinburgh and a select few founded the UK's National Maritime Trust, aiming to recognise and save a fleet of vessels for the nation. Our trio of vessels made the cut. Despite the passing of several decades, these vessels are miraculously still afloat and educating a nation through traditional sailing.

On Barnabas' 140-year celebratory sail in 2021, emotions surged and tears rolled down Sharon's cheeks as she helmed Barnabas for the first time. Sharon is a direct descendant of the vessel's first owner Barnabas Thomas, and this was a dream come true.

Just recently, the oldest surviving relative of Barnabas Thomas made contact with us. He shared a few poignant memories from his St Ives childhood during the 1940s. On one occasion, he was referred to as a 'little git' and sternly told to 'bugger off' the boat. The 'fish room' below deck apparently brimmed with the last catch, so the crew were frantically gutting away, in order to offload and meet the next tide. However, his nostalgic recollections also paint a warm picture of Barnabas seated in an old rocking chair, pipe in hand, as he carried a stone hot water bottle up to the old fisherman's bedroom.

An old scene remembered

Before Barnabas (the vessel) stopped fishing in the mid-50s, she was seen coming alongside the quay in St Ives, Mr Thomas Snr on the tiller and Barney (his son) with a long oar sculling. A snippet of banter captures the conversation of two local fishermen looking on at the scene:

"*She 'amben bin caulked from the garboard up for 81 years.*"
"*My, 81 years, a but owlder than you but not so owld as me.*"
"*Es, but she's in better condition than both a we.*"

Simply translated, the garboard is the first plank laid on the boat's hull and caulk is a mixture of cotton and oakum (hemp) fibre that is driven into the wedge-shaped seams between the planks around the hull to keep the water out. These two "old boys'" are implying that after 81 years, they are leakier than Barnabas!

Looking to the future

Preserving our maritime heritage goes beyond safeguarding history; it's about ensuring the lifeblood of our communities continues to flow.

Preserving the past is what we do, but right now the future is our focus. The question is "*How do we honour Cornwall and its maritime history, culture and community while also preserving the heritage and skills that keep these vessels recognised and importantly, shipshape?*" We believe the answer is to sail them, to gain wider interest and exposure. In doing this, we also importantly relive the experiences of our fore-bearers, understanding the challenges they faced and the skills they honed. It's about more than keeping wooden hulls afloat; it's about navigating our shared past and creating a sustainable future.

There's a "Red list of endangered craft" classification now. I'm told, our vessels, their types of rig and the skills to sail them form part of the endangered and critically endangered red list categories. It's hard to appreciate what we often take for granted, until it's at risk of being lost. If traditional vessels stop sailing, we won't just be losing a sailing vessel, but a complete heritage experience from our community. This is the extinct category.

Over the next three years, our charitable trust will work towards raising money for the boat's restoration and training young sailors to help the cycle continue. We ultimately need new masts, sails and electronics, but the list is long! We have recently partnered with an RYA-affiliated training centre in Newlyn, just 200 metres from our moorings. Here, we link theoretical courses with practical seamanship on our vessels. It's an exciting endeavour, and recent donations include a 22ft lugger solely for the education programme. This Sennen Cove Crabber is now used as a stepping stone, for crew to gain vital experience, confidence and leadership skills. Our ultimate goal is for certified graduates to skipper and crew traditional vessels or to secure jobs in the maritime industry. By fostering a sense of pride and ownership in the community, we believe this is the key to sustainability. This can be achievable through educating a new generation with the skills and desire to preserve our maritime heritage on land or at sea. In doing so, we'll all play our part in helping to strengthen the community and importantly, preserve the vessels bestowed on us over a century ago.

Our living history isn't a static relic but a dynamic force that shapes the present and the future. Understanding this force is the key to how we can continue to thrive as a coastal community.

When the decks are sprayed with saltwater and our bow ploughs through the swell, it's at times like these that the crew physically experience real-life aboard. They aren't just voyaging into the past; they're proactively participating in the continuity of our maritime heritage.

We have an exciting 2024 season ahead, which includes sailing to north west Scotland to make and fit new masts. We felled three Douglas fir trees last month in preparation for this community event! From here, we will head to Cork for an oyster festival, the Scilly Isles for their wild beaches and then to Falmouth, Mousehole, Brest and Douarnenez for traditional boat festivals.

Together, by cherishing and understanding our history and coastal waters, we aim to keep our community not just alive and sustainable, but thriving. If this story has caught your imagination, you'd like to sail with us or would like to contribute to any element of the project, we'd love to hear from you.

Dreckly! (Cornish for 'at some time in the future...')

The Cornish Maritime Trust
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Barnabas
Barnabas is a 40ft 1881 twin masted St Ives dipping lugger. She's classified as a class 1 mackerel driver and is the last one sailing world-wide. Crewed by five to 10 and tightly sleeps seven. She is based in the Old Quay, Newlyn, Cornwall.

Our Aims
The aim of the Cornish Maritime Trust is to help preserve Cornwall's maritime heritage by maintaining and sailing working vessels from the days of sail. As volunteers, we try to educate community about our maritime heritage, and in doing so, train people in the skills associated with traditional sailing.

The Barnabas crew setting sail © Chris Yacoubian, The Cornish Camera Co.


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The SCUBA DIVING COMMUNITY *of* EGYPT'S RED SEA

by **Alicia Johnson, Centre of Maritime Archaeology and Underwater Cultural Heritage, Alexandria, Egypt**

Imagine being underwater and surrounded by thousands of twinkling golden fish (sea goldies), a colourful reef, and a mysterious shipwreck looming in the distance. A white tip reef shark casually swims by, and your heart skips a beat. Thirty minutes later, you're climbing up the boat's ladder and greeted by local dive instructors who help remove your SCUBA gear, make a cup of instant coffee, and excitedly talk about the amazing marine life you just saw. Leaning against the boat's railing, feeling the fresh salty breeze dance across your face, sipping coffee, and staring into the hazy landscape as the setting sun illuminates the mountains, you can hardly believe that you've had the chance to dive the Red Sea.

Divers Exploring Numidia shipwreck, Brothers Dive site © Alicia Johnson

Shipwrecks of the Red Sea

Beyond a world of wonderous marine species, historical shipwrecks draw SCUBA divers and maritime archaeologists alike. Egypt's expansive history of maritime trade is corroborated by copious shipwrecks from numerous civilisations; however, one wreck stands out as a bucket-list item for adventurous divers: Thistlegorm. Sank in 1941 by a German/Nazi Luftwaffe aircraft, PADI ranks Thistlegorm as one of the world's top wreck dives, and the wreck generates an annual revenue of $5 million for Egypt's Red Sea [1]. Thistlegorm lives up to her hype. Divers are immersed in a moment of history, swimming the labyrinth of the 128m ship scattered with remnants of Nazi bombings, machine guns, anti-aircraft guns, a motorcycle, and live ammunition.

While the increase of visitors to the Red Sea has provided economic opportunities for the local population, tourism development has come increasingly into conflict with protection and conservation of Red Sea resources. Outlined by the 2001 UNESCO Convention on the Protection of Underwater Cultural Heritage, historical shipwrecks of the Red Sea have the potential to be economically and culturally enriching; however, Underwater Cultural Heritage (UCH) sites are a non-renewable resource and unmanaged divers can degrade UCH sites over time [2].

Egypt's diving community

As I've been a dive professional within the Egyptian diving community for several years, I've noticed how this community is prideful of its marine environment and tries to be proactive with personal preservation efforts. Aboard the 2022 "Wrecks at Risk" project, an extension of Project Thistlegorm, I saw local dive guides removing old mooring lines from Thistlegorm (endearingly called "The Old Lady" by local instructors). Outreach to involve the dive community is appreciated and divers show great interest in being a part of surveys, site clean-ups, protecting heritage sites, and promoting the beauty of their underwater world to the greater public.

The Wrecks at Risk expedition showcases the importance of involving the local dive community, and we found dive crews and operators are enthusiastic about being actively involved in UCH projects. As academic funding is often limited, I have seen that outreach with the dive community can leverage citizen science (and enthusiasm) to create initiatives for site clean-up and monitoring. Divers take pride in a site for which they feel responsible, and thus UCH sites such as Thistlegorm, Dunraven, or Carnatic stand to be more visited and cared for if the local community is involved in their protection [3].

Evaluating the propellor of the Dunraven shipwreck © Alicia Johnson

Considering the *Carnatic*'s loss of soft corals and *Thistlegorm*'s recently detached anchor, man-made holes appearing in the hull, recorded objects going missing, and damage caused by direct-to-wreck moorings, I have personally seen what can happen to an unmanaged heritage site: a free-for-all rampage of destruction.

A career in diving: Opportunities for Egyptians

Despite Egypt's reliance on tourism, the country's tourism sector has faced numerous obstacles in recent decades. Egypt's 2011 Revolution increased regional volatility and led to the departure of numerous non-Egyptian SCUBA guides; however, in their place, many young Egyptian men gained the opportunity to pursue positions offering improved economic stability. A decade later, Egypt's place within the SCUBA industry has created a diverse community centred around tourism, local participation, leadership, and business ownership. In a country such as Egypt, recognising the positive economic impact of tourism from heritage and UCH sites allows heritage managers a clearer understanding of public interests and effective approaches to develop heritage management plans [4].

As of 2023, I have not seen any shipwreck (in Egypt and open to the public) with a site management plan. Sure, there are proposals and ideas, but decisive inaction is the norm. I've also heard the frustrations expressed by the dive community regarding problems like pollution, looting, inexperienced divers breaking corals, and problematic mooring systems to access wrecks. While the dive community expresses the desire to see improvements, they do not have the personal capacity to enact changes. In my opinion, academic studies undervalue the importance of public engagement and underestimate the influence that social media can play to preserve historical shipwrecks of the Red Sea and beyond.

The Worldwide Diving Community

Whereas terrene-based cultural heritage sites can appeal to a larger demographic, the dive industry is a billion-dollar-a-year industry comprised of international participants travelling regularly and having a disposable income [5]. Recreational SCUBA diving contains high-value tourists who hold a propensity to support cultural heritage preservation due to their financial background. Not only can divers afford to support preservation of UCH (park fees, etc...), they often want to see these sites preserved. The diving industry economically supports the local dive community; recognising the economic incentive of preserving UCH sites can facilitate cohesive outreach efforts to mitigate pollution and looting. A holistic approach of considering the needs and wants of all involved stakeholders offers the best future for preservation of UCH.

The perks of a commercial background; leveraging capitalism for outreach

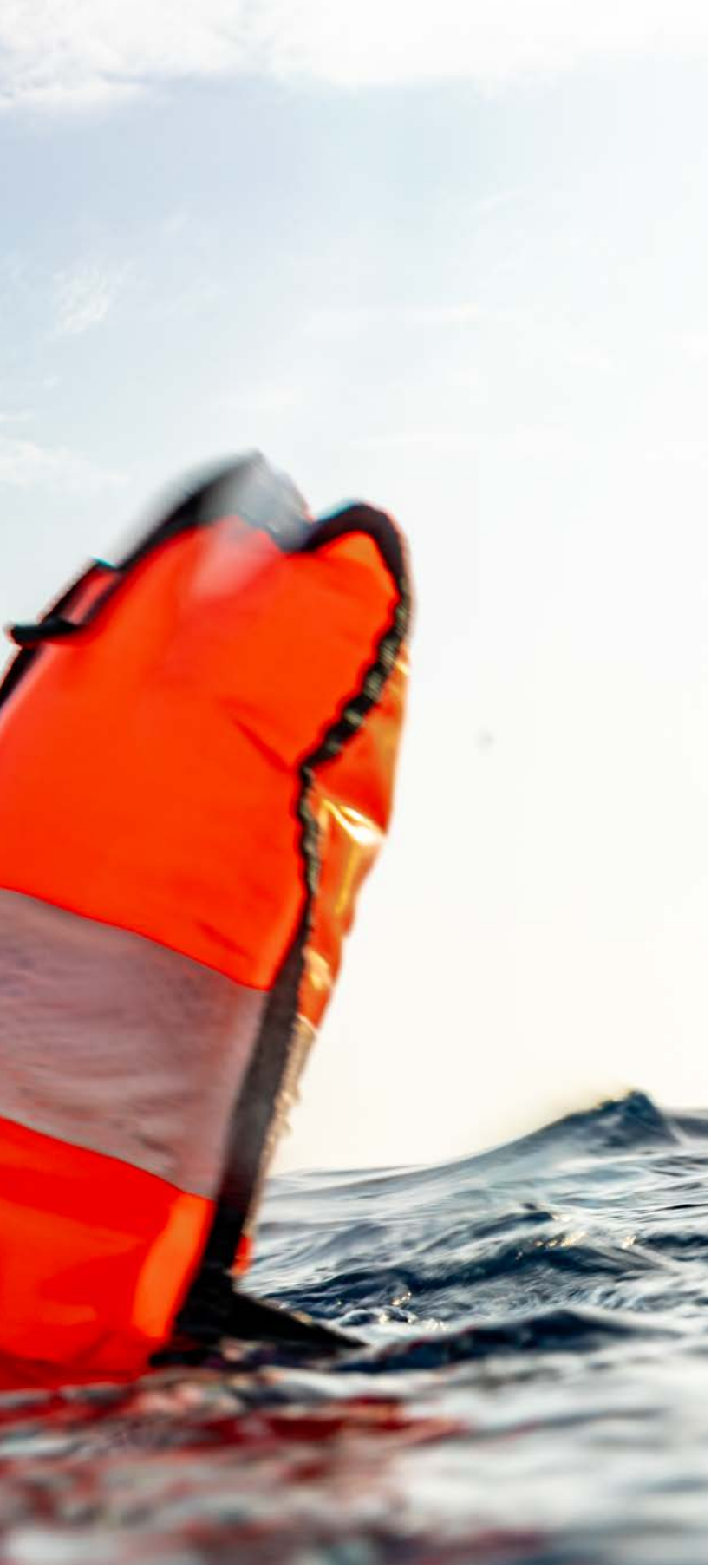
Over the years, I have created numerous videos, photographs, and blogs about heritage sites across social media channels, garnering over 250,000 unique views and interactions. If I can show people the beauty of their world, the hope is that they'll want to visit and protect the sites captured by my lens. Digital storytelling can teach a wider audience about diving and underwater heritage, and connect interested people to blogs, project websites, and site locations. Collaborating with local dive shops and international organisations (such as SSI, PADI, CDWS, etc.) is a cost-effective approach to reach a broader audience, involve the local community, and raise awareness about the importance of UCH to the greater public. Through my experiences, tourism businesses love a techie with a nice camera and a knack for online marketing and video/photography editing. Leveraging my knowledge of social media management has allowed me to offset most of my diving costs, gain access to some beautiful places, and learn invaluable perspectives from those around me. By being a curious person with a dive bag and a camera, I've partnered with many dive businesses to create eye-catching, informative content for people interested in visiting Egypt and diving the Red Sea.

As recreational diving gains popularity, Egypt's Blue Economy, driven by SCUBA diving, is emerging as a pivotal force in the country's growth. Divers play a crucial role in maritime archaeology and UCH preservation—an often overlooked yet fervent group, as seen with Egypt's diving community. Collaborative engagement with this community fosters support, awareness, and protective initiatives for historical shipwrecks. Facing bureaucratic and financial limitations, conducting outreach within the dive community proves useful for gathering vital information and safeguarding the Red Sea's archaeological sites. Active involvement can deter looting, enhance cultural heritage appreciation, and provide crucial support for field documentation, monitoring, and surveys. Effective collaboration between government entities, NGOs, maritime archaeologists, and the diving community is key to preserving the invaluable UCH resources of the Red Sea against the threats posed by human activity. Cultivating public recognition and support is achievable through strategic community and social media outreach. If we want people to care about our underwater cultural heritage, we need to show them why. A picture is worth a thousand words and as an underwater photographer, my recommendation is to showcase the world in high definition and infused with a touch of educational humour.

We must answer:
Who cares?
What do they care about?
When do people care?
How can we make people care?
And why do they care?

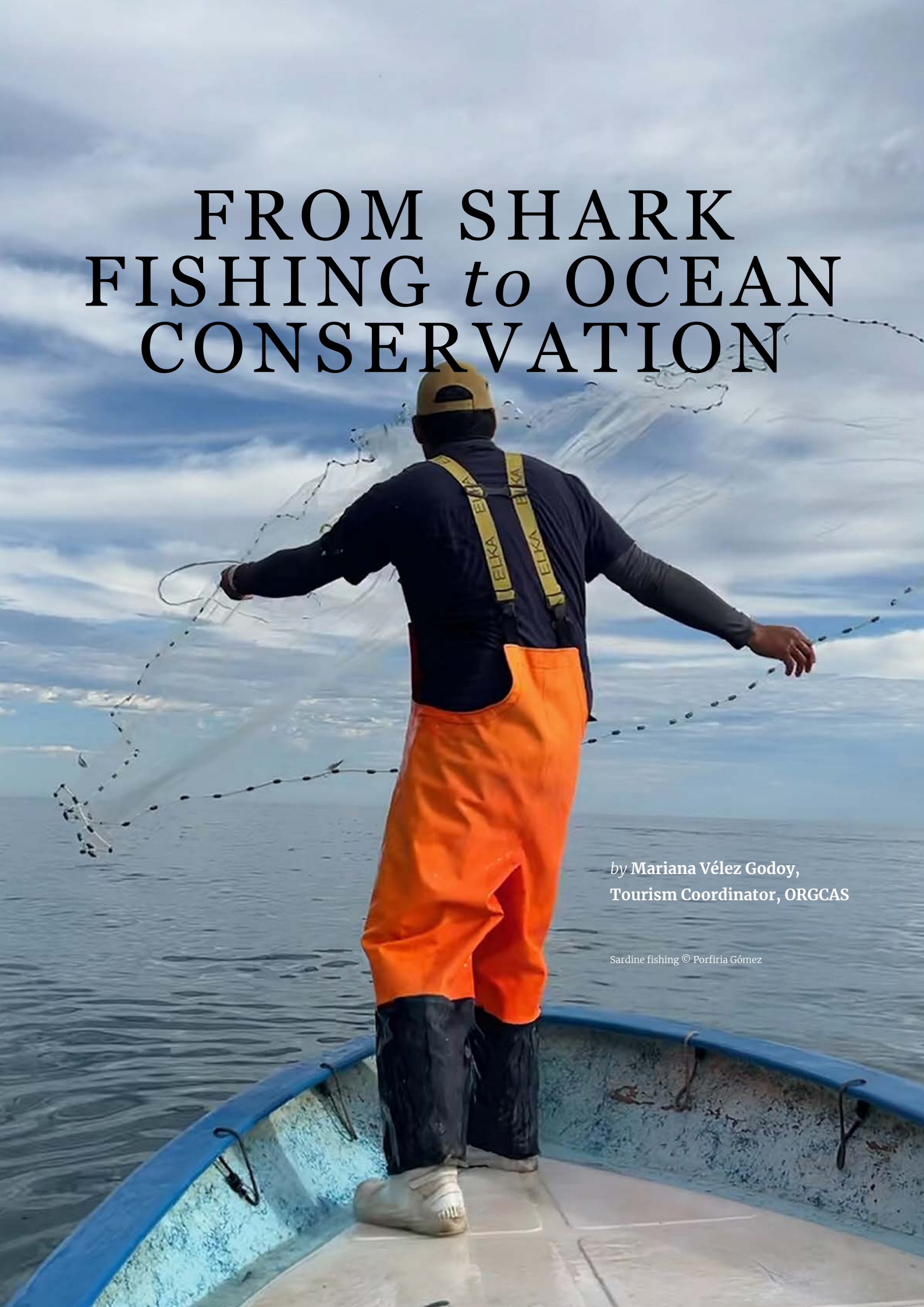
A colorful coral bursting with life in the Northern Red Sea. Taken while on board the dive safari HammerHead II © Alicia Johnson

Lebanese SCUBA Diving Instructor and Lead Guide for Hammerhead Fleets Safari, Manal Sleit, breaches the surface as she leads a group of divers in the Southern Red Sea © Alicia Johnson



FROM SHARK FISHING *to* OCEAN CONSERVATION

by **Mariana Vélez Godoy, Tourism Coordinator, ORGCAS**



Sardine fishing © Porfiria Gómez

It’s 6 a.m., and the sun is rising on the horizon. Alberto* prepares for his day by gathering his tools — knife, sharpener, rope, boots, glasses, and, most importantly, he says, motivation — to help him weather the seven hours he'll spend at sea that day.

Alberto was born in Agua Amarga, a community in Baja California Sur, Mexico. He is a small-scale coastal fisherman, an activity that his brothers, uncles, and grandparents have carried out for generations.

“My teacher said that I wouldn't want to go to university because I was always leaving school to fish,” Alberto says. “I recently saw him and told him that I was still doing what I love.”

Fishing is an essential part of the local culture in Baja California Sur, the southern tip of a peninsula that extends down Mexico’s northwest coast. The two bodies of water that surround it — the Pacific Ocean and the Gulf of California — are home to one of the richest biodiversity hotspots on the planet. Near Cerralvo Island, where Alberto works, a variety of species — from sardines to top predators such as sharks—make up the ocean food chain, which local fishers and coastal communities depend on.

Shark meat is consumed throughout the country, and fins are exported to the Asian market. Shark fishing continues to be a common and legal practice there, except for a shark fishing ban between July and August when sharks are breeding.

The rest of the year, shark fishers go out on the ocean almost daily, and it’s a job that’s never done alone.

“You separate into teams: one team fishes for sardine, and with that sardine, others go for bigger fish,” Alberto says.

Those bigger fish will then be set up as bait in the fishers’ buoys to lure sharks.

“It is an exciting job in the sense that everything is a mystery,” Alberto says. *“It is a strong feeling you get when fishing a shark — the adrenaline rises when you grab the rope and feel the weight.”*

Despite wanting to pass on artisanal fishing as a legacy, many fishers hope that their children have options other than shark fishing — a practice that is becoming less and less sustainable economically. On most days spent shark fishing, time and fuel costs exceed income because no sharks are caught or because the sharks are too small.

"Sometimes you have to navigate many miles offshore with swell, cold wind, and many hours of sun," Alberto says. *"It can be a difficult and dangerous job."*

Some local shark species are endangered or threatened, impacted by rising ocean temperatures and industrial fishing. For example, hammerhead sharks are one of the populations most affected by overfishing and high demand for their fins in the Asian market.

With sharks at risk, so are the livelihoods of the artisanal fishers who depend on them.

"I would like to do something else for a living," Alberto says. "*One of the options we thought about is tourism. Here is a good place to do it."*

This is why, in 2021, ORGCAS, a marine conservation organisation based in Baja California Sur, approached community in hopes of leveraging their deep knowledge and relationship with the ocean to find ways to protect sharks and increase local communities' connections with nature.

Together, they created the Shark Project, in which they help local shark fishers build new livelihoods that are economically sustainable, value the fishers' knowledge, and reduce pressure on ecosystems. ORGCAS chose to work with shark fishers because they have a deep understanding of how sharks are key species for the ocean's balance. One of the project's main goals is to raise awareness of the fact that a shark is worth more alive than dead.

Alternatives to shark fishing might include citizen science, conservation tourism, or only targeting sustainable fish. Alberto participates in all three of these. The project provides fishers with the resources needed to make the transition, conducts scientific research, and creates spaces for exchange and education.

Since the project began, the nine fishers directly involved in the project have received job training and work permits and have undertaken more than 200 expeditions for activities other than shark fishing. Collectively, they've raised enough alternative income to purchase two new boats for the Shark Project.

The fishers' new boat for tourism activities
© Paulina Castelio

Fishermen from Agua Amarga fishing for a shark
© Paulina Castelio

"Being with ORGCAS provides that little window of hope that one day we can stop fishing for sharks and dedicate ourselves to other things," Alberto says.

For example, only a few years ago — before there was tourism — most fishers were afraid of orcas and would move away from them. Now, when fishers know that there are orcas nearby, they respectfully come closer so that tourists can watch them and fulfil their dream of meeting these special animals.

"For me, tourism is a picnic day, like going for a walk with people so they can enjoy an experience that marks your life," Alberto says.

The alternative livelihoods pursued through the Shark Project have created a sustainable source of income for the fishers and their families comparable to what they earned in shark fishing. In a good season, a team of four to nine fishers can earn up to $300 USD per day working in conservation tourism, which is about the same as what they would have earned on a good day fishing for sharks.

However, there are challenges. During the last busy season, the growing number of tourists and boats — well beyond those that are part of the Shark Project — generated harmful pressures on the marine ecosystem. As shark tourism is not regulated in the area, there is a lack of control over the activities at sea, which brought a wave of harassment of marine species, as well as other bad practices by newly arriving tourism operators.

For these reasons and others, mass tourism — on a scale much greater than the tourism hosted by fishers who are part of the Shark Project — represents a significant threat to the area, especially because current laws that regulate marine activities are complicated and not easily enforced.

Alberto and other fishers came together to evaluate the different protection options for their region and to request that the government take the coastal communities' uses and customs into account when shaping new protections.

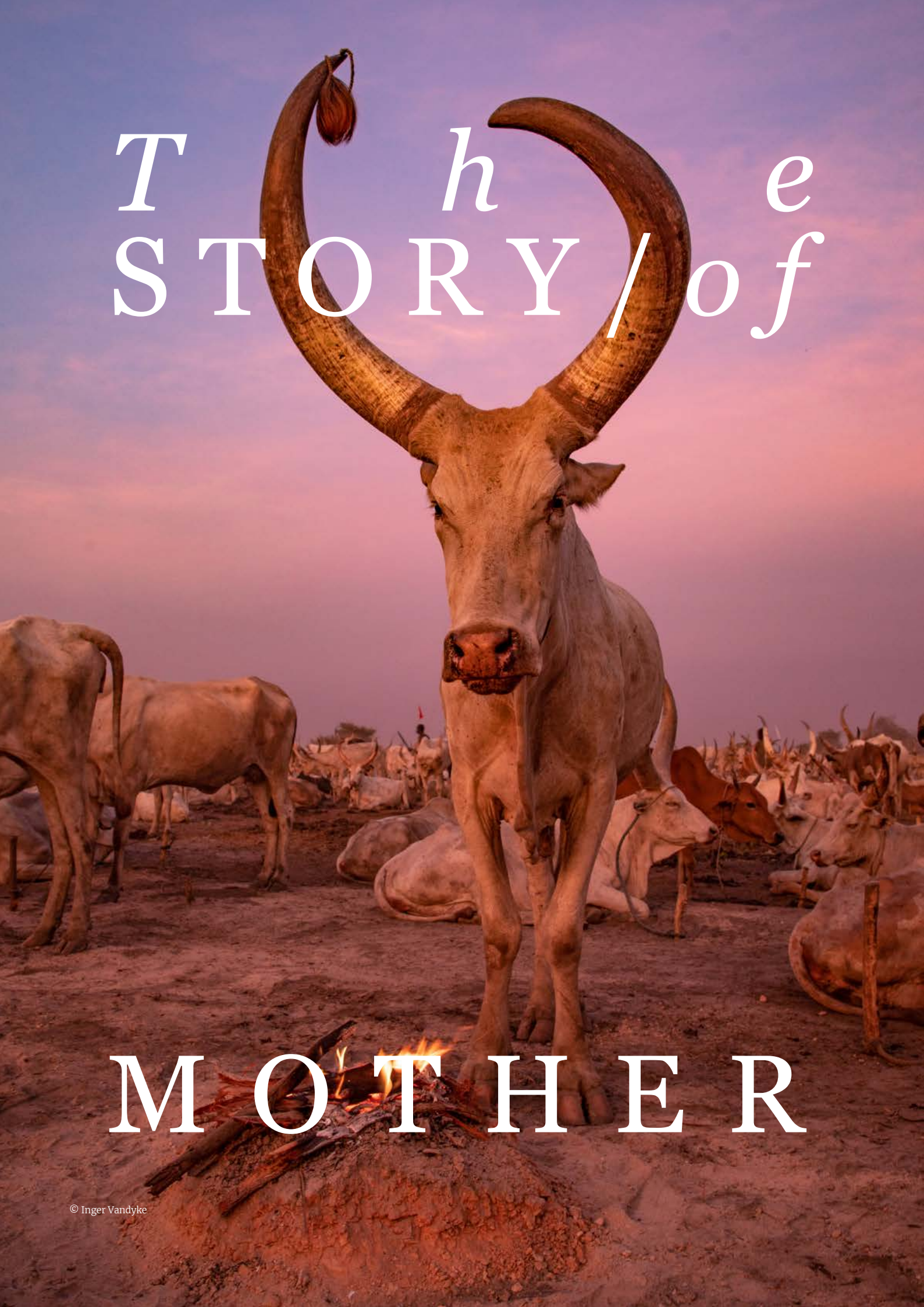
"We are getting organised. We want to be able to have a say in what we want for our area and do something before there's nothing else to protect," Alberto says.

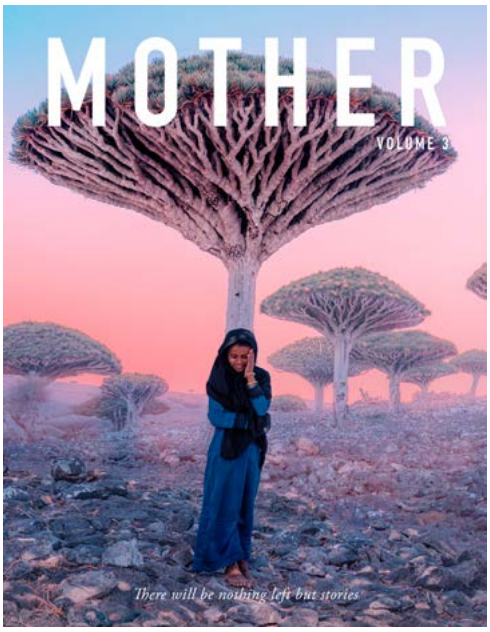
The fishers and ORGCAS support the creation of the nearly 20 million-hectare Dos Mares Biosphere Reserve in the waters surrounding Baja California Sur, which would limit the entry of industrial fishing, regulate tourism, and provide a large area for local activities to occur. The reserve would also help advance a global conservation initiative that seeks to protect 30% of the ocean by 2030, known as 30x30.

Alberto says he longs for a day when he will once again see a large school of sharks, like in his old shark fishing days. Only this time, he'll be on a boat with tourists, introducing them to the magic of the place he calls home.

**Name changed to protect the fisher's identity.*

This story is provided by the Pew Bertarelli Ocean Legacy whose aim is to work with partners to advance the global 30x30 goal, in collaboration with artisanal fishers and local communities for the benefit of future generations.





"In a perfect world, there would be places where nature and animals are held sacred, where they can be truly wild, and humans only enter to feed the spirit. These untouched places would be the natural capital set aside and entrusted with sustaining life on Earth. Unfortunately, this dream is far from reality, and as a society, we are nowhere close to achieving this goal. For photographers, images become a bridge between the realm of humanity and that of nature. We build awareness and empathy to create a greater understanding and generate awareness of the responsibility of what it means to be human..."

Cristina Mittermeier,
Mother Vol. One

Volume 3 is coming this summer.
Cover photo by Kristina Makeeva.

We tell stories for hundreds of years to share our knowledge and connect to the people and nature around us. We learn and teach through words and emotions; in today's world, it is easy to lose touch with our mother nature and our creativity. The pressure of creating becomes bigger than the process itself, and where time once was treasured and used for storytelling, it's now running through our hands. We are under constant pressure to create and share. I want us to take a moment and step back, to stop scrolling and start feeling again. This was the start of the nonprofit magazine Mother, trying to change that narrative by celebrating the power of storytelling, photography, and arts. The magazine, created exclusively by women, serves as a platform to support female artists and storytellers while fostering a deeper connection to Mother Nature.

Behind the magazine is Melissa Schäfer, a wildlife and nature photographer who started as a creative portrait photographer until she found her calling in documenting the changing Arctic and the polar bears of Svalbard.

In 2020, Melissa and her partner Fredrik Granath published their book *"Polar Tales."* Melissa founded the nonprofit *"Mother"* magazine, channeling the power of female photographers and storytellers worldwide. Her work has been published in The New York Times, National Geographic, GEO, and many others. She organizes expeditions in the Arctic with Fredrik and their Motherbear Productions.

"SMOKE SWIRLS ABOVE A PLAIN in remote South Sudan. Just before sunrise, statuesque nomads rouse themselves and their beloved cows to life. Bare feet and cloven hooves stir the golden dust of Africa into the morning sky while the jingle of cowbells, yipping children, and braying cattle herald the start of a new day in the world of South Sudan's Mundari people. Their days begin with chores. Young men are tasked with rubbing fire ash into the pelts of cows to prepare them for a day of life in the searing African sun. The ash from the fire acts as both a sunblock and an insect repellent for men and beasts. Children run through the camp of untethering cows, collecting milk for their families and gathering fresh cow dung into mounds that, when dry, fuel the overnight fires they've just woken alongside. And so begins another day in the life of the Mundari, the almost mythical cattle people living at the birthplace of Africa's White Nile..."

Vol.02: Article *"The Mundari"* by Inger Vandyke

PART 3

G E N


S E A

© Charlie Fenwick

PART 3

GEN SEA

by **Hannah Cocks, Head of Creative at SeaVoice, and Carla Leone, Managing Editor at SeaVoice**

We have found ourselves increasingly distanced from the wild embrace of the sea; bound by concrete, fettered by wealth, and hindered by our fears and inhibitions. Today more than ever, in the space age, we are looking away from Earth and neglecting the very essence that sustains us: the womb of our existence. Yet, just as a small change on the ocean's surface can trigger profound transformations for creatures in its depths, the tireless efforts of individuals over the years have sparked a new wave of blue thinking.

This movement is permeating society, giving rise to a new generation of forward-thinking ocean advocates who might turn the tide for our exploited ocean. The marine environment faces unprecedented threats, and so this blue generation has been borne both of profound wonder and grim necessity. A sense of unity has taken hold in the world of marine conservation, as more people are inspired to rebel against the status quo. In this volume, we follow individuals who galvanize others with innovative initiatives and dreams of a better world—a better ocean.

We reached out to activists and individuals driving innovative change across continents. We wanted to tell their stories and understand what drove their conviction. From the establishment of a Blue School in the Namibian desert to the formation of a women's surfing group in the chill waters of Scotland, a tapestry of hope began to emerge. We bore witness not only to the activism of our authors but also to the lives they've inspired, individuals who live and work with the ocean to demonstrate that environmental and social change are inseparable.

Rachel Carson's words, written in 1951, ring truer than ever as we continue our cursed march towards the tipping point: "It is a curious situation that the sea, from which life first arose, should now be threatened by the activities of one form of that life. But the sea, though changed in a sinister way, will continue to exist: the threat is rather to life itself."

In the face of this adversity, the temerity of a blue generation rises, defiant against persistent adversaries polluting not only our environment but also our minds. Industries pump sewage into our waterways, governments endorse unsustainable environmental nightmares, politicians sow division with fear and hate, and even the unassuming consumer drives the demand and then throws litter from their car window. In this inimical atmosphere hope still grows, surging forward, unstoppable, like a wave continues to crash onto the shore. The message of this volume is resoundingly clear: though one soul may spark a flame, it is the collective endeavour of many that will breach the walls of apathy – a rising tide of change; generation sea.

Our Gen Sea authors hope to educate, empower and inspire, encouraging us to work together to protect our blue spaces. In this volume, we pay homage to the trailblazers and visionaries of the oceanic frontier—stewards of change who understand that transformation lies not in the hands of one, but in the collective awakening of a generation.

The CORAL WOMEN *of* INDONESIA

by **Mélissa Bergeron,**
Slow Explorer and Gender Equality Advocate

Coral Catch Superwomen getting ready to protect and restore the reefs of Indonesia © Valerie Blanchard

As the world witnesses the alarming global decline of coral reefs, a surge of restoration projects has emerged worldwide. While the growing commitment to protecting the ocean's biodiversity is vital for preserving this precious environment, the increased involvement of individuals underscores a concerning reality — the prospects of establishing a career in the sector are becoming far from equal. As a woman, your path will be strewn with obstacles, particularly if you hail from a minority background in a developing country. The odds of turning your conservation dreams into reality seem almost insurmountable.

Fuelled by a dream to reduce the gender gap in marine science and actively protect our oceans, Rose started training local women from across Indonesia to set up their own coral restoration projects. The aim is clear: to build a strong network of female leaders protecting the reefs of Indonesia.

This isn't just about saving coral; it's about breaking barriers, defying the odds and creating a powerful force for change.

A woman who found a home in the ocean

"The voices of women are frequently not heard." These words were pronounced in 2019, by United Nations Secretary-General António Guterres, urging action to reach gender equality in marine science. Although there is still little data on this issue, research has proven that women are underrepresented in the marine conservation industry [1]. The issue is not that women are unwilling to pursue a career in ocean conservation. In fact, they occupy more seats at universities than men [2]. However, their prospects for decision-making roles are notably limited. The higher you go in the hierarchy, the fewer the females: the leaky pipeline keeps them at the doorstep [3].

Rose never studied marine science, but her heart always beat faster close to the ocean. In 2012, she left the Netherlands with only a backpack and a head full of dreams to explore Indonesia, Nepal, and Sri Lanka and figure out what a life full of purpose would look like. She didn't explore Kathmandu nor climb Lion Rock because once her feet touched Gili Air, Indonesia, she never left the island. She began work as a SCUBA instructor and was saddened by the declining diversity of marine life on the archipelago. This led her to establish Gili Shark Conservation in 2015 with two friends. Within a few years, hundreds of enthusiasts were trained to conduct surveys underwater, from shark and turtle identification to coral restoration projects. Due to their efforts, people from all over the world were gathering precious data every day to protect the marine protected area, Gili Matra Marine Reserve.

In 2020, a global pandemic forced the team to put the projects on pause. As a beacon of light in the midst of chaos, Rose was thrilled to discover new life growing in her belly while the pandemic gripped the world. Breastfeeding her daughter kept her awake for long hours, which she used to consider how she and her colleagues might fund their conservation projects without the help of international visitors. A sign came in the form of a message from the United Nations — they were providing grants to coral restoration projects.
But with thousands of research teams working all around the world on that issue, they would need to do things differently to draw attention to Gili Air. One night, it clicked: What about working exclusively with local women?

Coral Catch Superwoman Yasmin collecting coral fragments
© Zoe Lower


EARCH TEA
Lung

Founder Rose Huizenga and the Coral Catch Superwomen getting ready for another coral restoration dive © Valerie Blanchard

Sweeping away the barriers

As her excitement translated into words and she shared the project with her husband and close friends, concerns began to surface. Will participants have the physical strength needed to carry and set up equipment? Will their families allow them to travel so far away? Will they embrace their skin growing darker in a society that idealises lighter tones? As barriers were rising one by one, her determination only continued to grow. If she wanted to know the answers to these questions, she had to ask those concerned. So, one day, Rose posted a message on social media asking if anyone wanted to apply for a scholarship in which they would be taught how to set up their own coral restoration project. Although she faced doubt from those around her regarding the interest of local women in getting involved, she received one hundred and fifty applications from women living all over Indonesia ready to dive into coral restoration. Coral Catch was born.

The United Nations didn't select Coral Catch as a grantee, but the engine was already on. Rose found the funding to start a small pilot, and six months later, four women were starting a nine-week training programme created to give them the skills to set up and monitor a coral restoration site.

Today, twenty women have graduated from the coral restoration programme on Gili Air. Coral Catch's Superwomen: the Coral Catch trainees are called this for a reason. They are mastering tricky, diverse and invaluable skills. If you hear the engine roaring, it's because they are welding rebars, building the structures that will host their coral fragments. Setting up a restoration project requires management skills, so they attend workshops to give them the knowledge to plan their projects, find funds, and manage their social media. They show up every day motivated to physically and mentally commit to their work restoring the marine environment, acting as role models for other women in their communities. Their strength, determination and bravery impress the team every day.

Marine conservation only works with the community being actively involved, so the women spend their time on land spreading awareness and sharing their love for the underwater world. Pass by the school and you will see the children smiling, sharing what they have learned about the challenges the ocean is facing. Enter the dive shop and you'll see local women in the pool learning how to swim. Coral Catch programmes teach that education is a very strong tool for change and the women have heard this loud and clear. After benefiting from the incredible Gili Matra Marine Reserve as a training ground, they are always eager and excited to give back to the local community.

Creating room to design a bright future

Coral Catch quickly became more than a scholarship programme. Imagine four women from different educations and cultures living together for nine weeks, sharing their room, their dreams, and their fears. For the first time, they are connecting with women to whom they can express similar worries: How to combine career and motherhood? How to take care of your mental health? How to deal with being the first one taking a different path in the family?

Empowering women is providing a space for women to feel safe and heard. Then, let the magic happen and you'll see a whole universe of new prospects open up.

Rose has made it her mission to train and empower one hundred women to pursue a career in marine conservation in the next five years. Day after day, batch after batch, this dream is coming true. Women from every corner of Indonesia have joined forces to safeguard and revive the nation's reefs. Initially, she had reservations about whether they would revert to their prior lives after completing the programme. To her delight, every single one of these inspiring Superwomen chose to share their passion for the ocean with the world. Today, they are actively contributing to marine conservation, pursuing careers in the diving industry, or securing scholarships to advance their studies in marine science. Witnessing these ocean advocates come together to preserve the incredible biodiversity of their homeland is the most gratifying reward anyone could ask for.

Expanding the sisterhood

To grow the project and convince more sponsors to join, she reached out to female marine scientists and diving leaders to join the sisterhood as ambassadors. She was overwhelmed by the outcome. Not only did she receive extremely enthusiastic replies, but these professionals went above and beyond in supporting the Coral Catch initiative. They not only expressed their willingness to endorse the Coral Catch image, but also generously offered to share their knowledge and build the womens' confidence. This has become a pivotal aspect of the programme, as it allows trainees to recognise that experts from around the world support and endorse their mission.

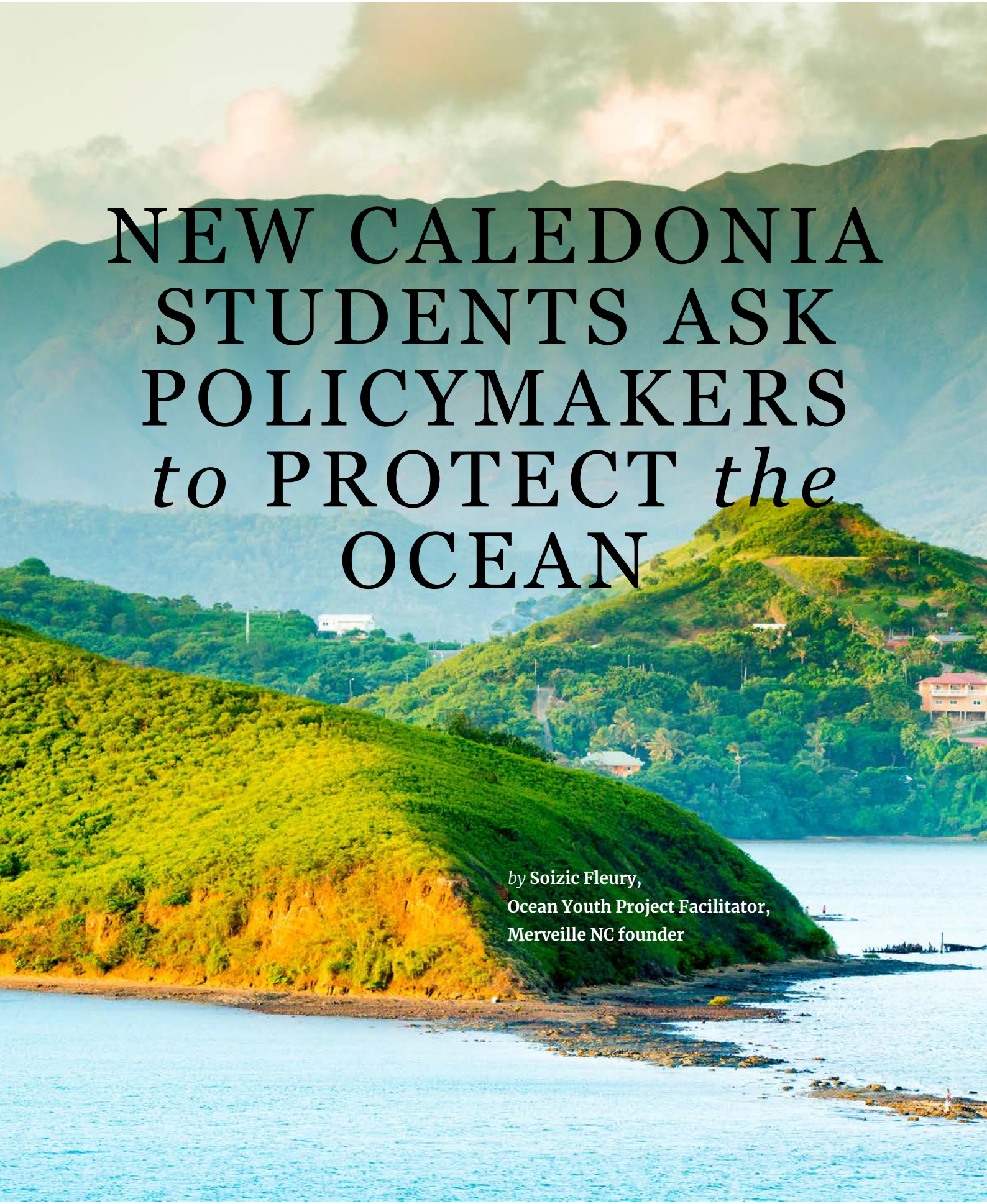
The feeling of being part of a community that shares your values is sometimes all you need to start moving mountains.

The Coral Catch team is now solely run by a team of former Superwomen. Cenna, 24 years old, was one of the first women to benefit from the programme before going back to Java to work on marine research projects. The Coral Catch team were so proud to see her don Coral Catch's colours again this November, this time as Lead Scientist and Programme Manager for the 2024 Superwomen. For some women, Coral Catch is a catalyst for a complete change in their career path. Wika, 28 years old, worked in marketing and communications in Bali before joining the programme. After 9 weeks on Gili Air as a trainee, she'll keep her wetsuit but change her hat to join the Coral Catch staff as an intern, helping maintain the coral restoration site in the water and engage the local community on land. With the trust built between the women during the scholarship being so precious, Coral Catch hopes to preserve that safe space even after the programme is finished. Caterina, a marine biology student freshly certified by a PADI Divemaster Scholarship and former Superwoman, is joining the team in January to coordinate the Coral Catch alumni. The circle comes back around, those who benefited from a springboard to pursue a career in marine science are now helping others to dive into the beauty of the underwater world.

There is still much work ahead to restore Indonesia's reefs. An even more challenging task lies in achieving gender equality across the marine science sector. However, one thing remains clear: we're on the right path, expanding the horizons for marine science one day at a time. Ultimately, attaining gender equality in the marine conservation industry and addressing environmental challenges share the same finish line — a world where our oceans are a safe space, both for the creatures that dwell there and for the women working towards protecting them.

Visit our website at coralcatch.org and follow our Instagram @ coralcatch for more information or to get in touch!

Coral Catch Superwomen Qinthan and Aulia attaching coral fragments to artificial reef structures
© Florian Allgauer



NEW CALEDONIA STUDENTS ASK POLICYMAKERS *to* PROTECT *the* OCEAN

by **Soizic Fleury,**
Ocean Youth Project Facilitator,
Merveille NC founder

An atoll in the Ouvéa lagoon of New Caledonia
© Pacificbluefilm via Wikimedia Commons

Students Maël Baillif and André Jeit work together during a Master Ocean Youth 30x30 workshop
© THOMAS BOUCHER/Pew Bertarelli Ocean Legacy

Seventeen-year-old Maël Baillif and teenagers from across New Caledonia teamed up in 2023 to tell government decision-makers why they feel it's important to protect the area's majestic marine environment.

As the programme facilitator, I coached Maël and 21 other students from 12 schools as they participated in a series of workshops aimed at giving a voice to New Caledonian youths who are passionate about preserving marine spaces around the South Pacific archipelago they call home. *"The many activities we did enabled me to see the different aspects of the protection we owe to the oceans and the harmful elements that impact them, and to discover all the players involved, which wasn't initially obvious to me,"* Maël said.

Through the programme—called Master Océan Jeunesse 30x30, or Master Ocean Youth 30x30, which grew out of an adult version of the program the year before—the students, ages 15 through 17, attended sessions at their respective schools from April through November and then came together for a collective capstone workshop. I was impressed by their capacity to work collectively and their dedication to protecting the ocean that has been central to their upbringing.

During the workshops—co-organised by The Pew Bertarelli Ocean Legacy Project and New Caledonia's Academic Delegation for Education and Sustainable Development—the students learned about "30x30", a reference to the Kunming-Montreal Global Biodiversity Framework, a global agreement under which nations have committed to protecting at least 30% of the global ocean by 2030.

The workshop discussions included the New Caledonia government's recent decision to, starting in 2024, highly protect 10% of the 1.3 million-square-kilometre Natural Park of the Coral Sea, which encompasses all of New Caledonia's waters.

The Natural Park of the Coral Sea provides habitat for sea turtles, sharks, dolphins, whales, and seabirds and houses important ecosystems such as coral reefs, seamounts, a deep-sea trench, and other sites that are critical for wildlife migration and breeding. The park also includes areas that are culturally important to New Caledonia's drawings, comics, and animations.

The oceans are magnificent places teeming with life, and we must protect them

The teens centred their 30x30 visions on four themes: protect, respect, integrate, and act for the future. Maël's group focused on "protect", with a view toward preserving biodiversity. For example, one of her team's recommendations for the government was to *"protect the natural heritage of the Natural Park of the Coral Sea by taking a precautionary approach to keeping the park in as good a condition as possible and preserving it from threats".*

The teens gathered for their capstone workshop in November in the capital city of Nouméa at the Southern Province Centre of Nautical Activities to work together on final presentations. They then presented to representatives of New Caledonia's government, customary senate, and provinces who visited the final workshop to receive the students' recommendations for how and why New Caledonia must conserve its marine treasures for this and future generations.

"These activities enabled me to meet young people from all over the country, with whom I quickly formed strong bonds," Maël said.

The students hope their recommendations will influence how the government shapes the future management of the Natural Park of the Coral Sea, including later this year when the government reviews the park's management plans during a renewal process.

These young people are our next generation of New Caledonian leaders. Seeing them so inventive, creative, and exemplary in their commitment to advocate for ocean conservation brought me hope for the future of our precious marine spaces.

"The oceans are magnificent places teeming with life, and we must protect them" Maël said.

This story is provided by the Pew Bertarelli Ocean Legacy Project, which works with partners to advance the global 30x30 goal in collaboration with artisanal fishers and local communities for the benefit of future generations.


© Alicia Johnson

FISHERS *as* STEWARDS: SCOTLAND *and* SPAIN

by **Annie Edwards, Head of Partnerships, SeaVoice**

The sea is the most important thing, it's part of my life, it's everything... it is a vital cycle in our area and part of our identity", says Federico* a fisher in Lira, Galicia, the northwest corner of Spain where the Atlantic's wrath is formidable, the air pure, and forested mountains dotted with terracotta-roofed *pueblos* (towns) and Romanesque churches dip into the sea.

Winding between stacks of crab and octopus creels along Lira's harbour, Federico waxes on *el salitre* (the saltpetre, salt residue) ingrained in every Galician: *"I believe that el salitre was impregnated in each one of us, not since we were little, but since we were born"*, as they live, breathe, and eat the ocean's manifestations. Federico explains how the sea infiltrates everything from mealtime to the famous Galician *hórreos* (granaries) that historically dried conger eel and octopus, *"Any food that you eat here has a link with the sea, any construction that is built has a link with the sea, any celebration that takes place, that is, the culture itself is sea... The culinary with the sea is everything. In all the festivities, Christmas, winter solstice, Christmas Eve, New Year's Eve, we eat seafood."*

As fishers spoke of their inner salitre, Sonia*, a *mariscadora* (shell fisher) harvesting mussels, oysters, and goose barnacles, elaborated that only the local language, Galician, describes what Spanish (or English, for that matter) cannot, "*in Galician there's a word 'morriña' for when you're missing something, I feel morriña when I'm not near the sea."*

While my personal fishing catch record is pitiful and I can't surf anything beyond white water on an 8' glorified boogie board, I also feel el salitre within me, a sensation that radiates peace and joy when I'm near the sea. I spent some formative years in Santa Cruz, California, rock pooling with my mom and training as a "junior lifeguard" (something quickly forgone as it required sprinting and push-ups, we instead moseyed around Monterey Bay Aquarium). Every time I moved away from the ocean, by compulsion to Cleveland, Ohio or to Madrid, Spain, I too felt morriña. I needed white caps to quiet my inner storms and found myself learning to SCUBA dive in Ohioan pools and along Spanish coasts. Embracing the sea's essential role in both my well-being and the world's, I undertook an MSc in Marine Systems and Policies at the University of Edinburgh. However, during this programme, what captivated me wasn't the ocean's serenity, but its drama. Drawn to areas where human activity overlapped with marine worlds, I devoured books like *The Outlaw Ocean* and *Kings of Their Own Ocean* which explore the intricate relationship between humanity and the sea.

Fishers with answers

Anyone who is a friend of the ocean is a friend of mine, and I deeply respect and admire people whose livelihood is inextricably linked to the sea. In a world overly dependent on software updates and mobile crutches, artisanal fishers seem like super-people to me, relying on low-tech tools and their intuition to provide for their community while caring for the sea. So, for my MSc dissertation, I spent time in the traditional fishing communities of St Abbs, Scotland, and Lira, Galicia, Spain.

Galicia is renowned for its seafood and rugged coasts. I travelled to Lira on the Costa da Morte, translating to "Coast of Death", though locals affectionately refer to Galicia as "Gali-fornia", perhaps a nod to its surf culture. Yet, far from the cliffs of Santa Cruz, I found that if I squinted, or perhaps forgot my jacket, Galicia may be mistaken for Scotland with its green hills, biting turn-your-toes-purple waves, and piles of creels haphazardly strewn around the harbours. Galicia is known as the 7th Celtic nation, and Galicia and Scotland share commonalities beyond their Celtic origins, as both economies rely on fishing and their Atlantic coastlines are dotted with traditional ports hauling species like crab, lobster, clams, and octopus with traditional fishing gear including creels, long-lines, nets, and even hand harvesting. While both coasts have fishing traditions dating back hundreds and thousands of years, they also have glimmers of a new wave of artisanal fisheries management and ocean conservation—Lira's marine reserve was designated by fishers themselves, while St Abbs is home to the Berwickshire Marine Reserve, Scotland's first and only voluntary marine reserve.

In both harbours, I spoke with fishers who held generations of wisdom, understanding the sea better than most could dream to, yet seemed inexplicably absent from the policy and management decisions that ruled their lives.

A fishing boat makes its way to St Abbs Head
© Annie Edwards

A guardian with no power

Artisanal fishers are increasingly regarded as the guardians of the sea [1], but is that all talk? Squeezed between industrial fishing fleets, expanding offshore energy infrastructure, and well-intentioned but occasionally poorly designed "No Take Zones" in Marine Protected Areas, these guardians often get the short end of the stick.

Arriving in quaint St Abbs, Scotland on a summer day, the atmosphere was tense. As Scotland looks to establish Highly Protected Marine Areas, the government is facing backlash from fishers. This disagreement and distrust has been brewed into the fabric of Scottish communities for generations, partially stemming from the Highland Clearances (forced evictions throughout the 1700s and 1800s), a term rearing its head with fishers singing the protest song "Clearances Again" to oppose the Scottish government's Highly Protected Marine Area plans.

I collaborated with St Abbs Marine Station and Blue Marine Foundation to get in touch with the St Abbs fishers. During interviews, they expressed concerns such as: "*I'm a bit concerned about these HPMAs*", "*'It's idiotic idiots*", "*Sometimes the legislation is absolutely bloody stupid, absolutely stupid, it's almost bust the fishing industry,*" and "*You get rules chucked at you and you don't get any help*". These sentiments reflect a rift between policy and community consultation.

Galicia, Spain offers glimmers of hope, as the artisanal fishing sector is run by localised *cofradías* – translating directly to brotherhood. Cofradías are co-management organisations, meaning they're operated by fishers, for fishers, in collaboration with the regional government. The Spanish cofradías date back to the 12th Century and account for 83% of Spain's fishing employment, responsible for managing sedentary species (like razor clams and seaweeds) while the national Spanish government manages other coastal resources in line with the EU Common Fisheries Policy [1].

Working with Fundación Lonxanet, I'd chosen to interview fishers in Lira because this cofradía exemplifies the co-management of a marine reserve that allows fishing. In Lira the fishers themselves designed the marine reserve, setting aside off-limits juvenile grounds while other parts of the reserve have rotating seasonal closures. Overall, the Lira fishers seemed happy with the arrangement, saying things like, *"Co-management is good because it is a formula in which we make decisions regarding what is ours."*

But it's not perfect. Are the fishers' voices always heard? Do they really have enough power, with the Galician and Spanish governments still setting most catch quotas? At the end of the day, Federico champions co-management, admitting he's a bit of a visionary, but remarked *"Fisheries management is political management"* and questions why politicians in land-locked Madrid and Brussels are making decisions that should be left to the fishers, as another Lira fisher commented, *"Those who make the rules are never in the sea".*

From St Abbs to Lira, while contentment ebbed and flowed, the disconnect between fishers' stewardship and current management was impossible to ignore.

Generations of knowledge

Fishers are guardians not just of the sea, but of its surrounding cultural heritage. The term "marine cultural heritage" describes the evidence of past, present, and future human interactions with coastal and marine geographical or cultural areas, applying to tangible remains like shipwrecks but also intangible heritage like cultural practices, oral traditions, and fishers' knowledge [2]. There's an increasing momentum for marine cultural heritage to be more integrated into management and policy, as it's shown to drive sustainable development, engaging local groups and effecting community-level change, and thus is an essential element in achieving the UN Ocean Decade's mission to "achieve the ocean we want" by 2030 [3].

Exemplifying fishers' generations of wisdom, Federico told me that he learned fishing from generations before him: *"My father, my grandfather, the neighbour... in the end, all the wisdom that your acquaintances, your ancestors are passing on to you, will be coming to you. Even if you see a fisherman around here, 20 or 30 years old, he has the wisdom of centuries."*

This was echoed in St. Abbs, where all but one of the fishers I interviewed had learned fishing from their father – with one fisher recalling that his family encompassed twelve generations of fishers.

However, the generational flow is ebbing in a new direction. Most of the fishers in Lira and St Abbs said their children were pursuing different career paths – some still tied to the sea, like yachting tours, while others were off studying business and medicine.

Being a fisher is hard, and as top-down policies changed their livelihoods without consultation or notice, the next generation is hedging safer bets on drier ground.

When fishing goes, the fishing communities go – the youngest fisher I spoke with in St Abbs was 29 years old, fishing alongside his father, while the rest were in their late 40s, 50s, or 60s, commenting that they don't see a future for creel fishing in their harbour. While Britain's seaside towns are bouncing with life during summer, they're paradoxically depleted throughout the rest of the year, which is why some social enterprises are sprouting up like the Sea Ranger Service, which just launched in the UK to "train young people from predominately deprived coastal regions to become ocean conservationists, while paying them a salary." Will coastal youths' jobs shift from fishing to conservation, or perhaps a mixture of both?

As guardians of the sea, fishers navigate the waves through winter's rains and swells – it's their life. In St Abbs, fishers reflected, "*I like to wake up in the morning and watch the dolphins go down the coast or watch the killer whales. The ocean's there for you*" —and on why they should have more of a voice in management, they emphasised, "*It's in everybody's interest if you've got a fishing boat, to be conservation-minded because you've got to come back next year... I want it to be there for my grandchildren and my great-grandchildren.*"

Not to diminish the fierce efforts of fishers hauling lobster in the depths of winter from St Abbs Head, but the Galician mariscadoras (female shell fishers) stole my heart. This endeavour is treacherous, resulting in multiple deaths each year as it requires wading between skull-crushing rocks and crumbling waves to yank goose barnacles from rocks. Yet as I spoke to some of these women, they said "*I like it, I wouldn't trade it for any other job in the world. The sea gives you the feeling of freedom. That feeling of freedom? Yes, it is the smell of el salitre.*"

Stewards and solutions

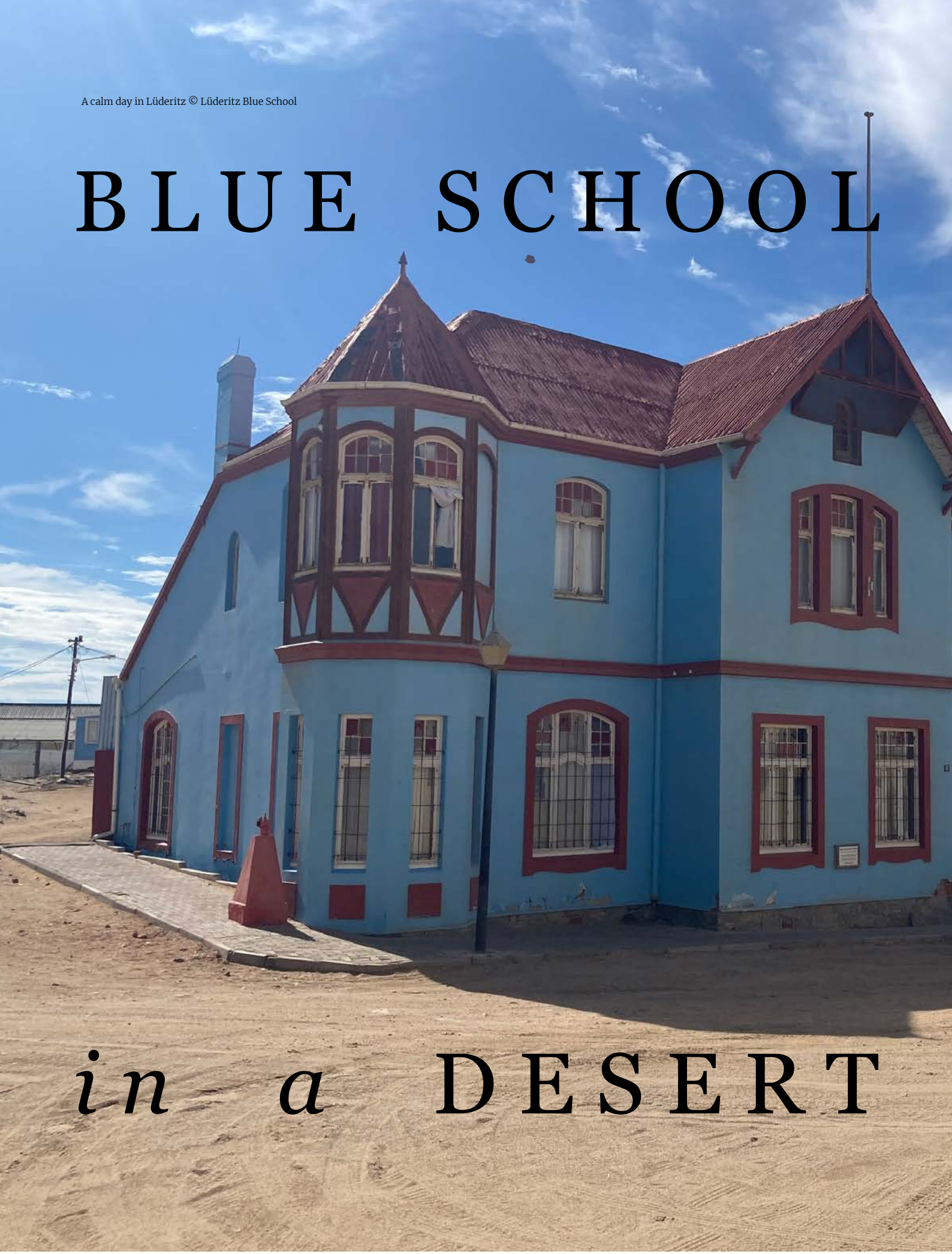
Conversations with the fishers were teaming with passion, teetering between frustration (with politicians) and love (of the sea). Fishing is as old as humanity itself. While Celtic mythology honoured salmon as a vessel of otherworldly wisdom, today Galicians are reflecting on their inner el salitre, while I browse #bluehealth and seek the sea as a reprise from screens. Despite thousands of years of history, the future of fishing is changing rapidly – artisanal fishers such as Federico face threats including industrial fishing, offshore energy, and policy changes. While many Marine Protected Areas are well-intentioned, they can forget to consult fishers like Federico who know the sea "*like the palm of my hand*" – resulting in ineffective or arbitrary boundaries while putting local communities out of work.

Fisheries management is people management. Over three billion people rely on fishing to make a living, 90% of which is artisanal fishing – representing billions of potential ocean guardians. Solutions are underway with the incorporation of cultural heritage in community-centred Marine Protected Areas in the Philippines, fishers leading shark conservation in Mexico's Baja California Sur, and trials of fisher-led management in the Outer Hebrides, Scotland.

Everything is interconnected, and if we're to coexist with changing seas and political tides, it's essential to lean into the connections between culture, livelihoods, and marine ecosystems. Keeping lessons in mind from previous generations, it's essential to engage the next generation – the youth are the ones leading climate activism, and who will be keeping harbourside towns afloat, potentially through initiatives like the Sea Ranger Service or by completely re-thinking our approaches to marine protection. As research advances "non-traditional" marine conservation models (like community and Indigenous-led marine reserves that allow for small-scale fishing) while younger people ditch traditional jobs, the tides of change feel promising. Looking at the future of coastal communities holistically, recognising their heritage and wisdom, enables multidisciplinary, collaborative solutions for the Ocean Decade. The past holds keys to the future, as currents ebb and flow, fishers should captain the change.

*fishers' names have been changed

St Abbs fisher with his creels © Annie Edwards



A calm day in Lüderitz © Lüderitz Blue School

BLUE SCHOOL *in a* DESERT

by **Marnie Allen,**
Founding Head of Lüderitz Blue School

Students working together in the classroom © Lüderitz Blue School

One January evening in 2022, after a dusty eight-hour drive from Windhoek, I arrived at the end of the road in Lüderitz – the distinctive Namibian town where the ocean meets the desert. My role here has been to work as part of a small team to establish and manage a not-for-profit school of international standard to run alongside the development of this unique town. A Blue School, with blue vision and focus on ocean education, embracing the unique environment of Lüderitz.

Two years after my arrival, I still remember my first days here and those feelings of anticipation, thrill, and nervous excitement that only new beginnings and challenges can bring. Our first weeks and months were spent in a forgotten classroom in the back of an old school building. The space had gone unused for many years and had received no mercy from the wild weather of Lüderitz. The ceiling was severely damaged, quite literally falling in, and salt crawled relentlessly up the walls, staining and eating away at the paintwork. Although this was a far cry from the brightly coloured Pinterest-worthy classrooms I, and our first three students were used to, we didn't let the unusual surroundings put us off. We would sit in that room scattered with odd pieces of loaned furniture, crowded together on our four chairs around a squeaky table. There we began with our first lessons, and the Blue School story began.

To understand the reasons why we opened a school in Lüderitz, it is important to know the background of this small town. Namibia is often referred to as a 'land of contrasts' and this is certainly true of Lüderitz. This is the place where history meets the future, where nature meets technology, where the ocean meets the desert. Perched between the Atlantic Ocean and the ancient Namib desert, along one of the most inhospitable and dangerous coastlines in the world, Lüderitz is an exceptionally distinctive place. It is famous, or dare I say infamous, for its merciless wind that produces otherworldly noises as it forces itself through the nooks of every building. While this may be true, the streets are also clean and colourful, lined with buildings from the German colonial era casting an atmosphere of an out-of-place, sandy Bavarian village. The town is also very remote - accessible by only one road and located in the restricted Tsau//Khaeb National Park, in the area formerly known as the Sperrgebiet (forbidden zone) where diamonds are mined to this day.

Historically, Lüderitz has had a reputation for being a 'boom and bust town'. At any one time, the town's economy has typically been supported by one major industry, resulting in a deep lull on that industry's departure. Despite this somewhat turbulent history, its residents, the 'Buchters', remain adaptable, resilient and innovative, and many believe that Lüderitz is entering a new era. With several blue and green projects of global significance either already starting or on the near horizon, there is a feeling of optimism spreading through the town.

With such significant development there has been a need for a high-quality school of international standard for families wishing to relocate their work, life, and leisure here. Before we opened our doors, many families chose either not to relocate to Lüderitz, or, if they did move here, their children would often be sent to boarding schools in places offering higher quality education. Lüderitz Blue School was opened, with the support of aquaculture company Kelp Blue, to aid the town in its development, offer world-class education, and act as a lighthouse for learning and opportunity in the south of Namibia.

Blue Schools – schools which engage their students and communities with marine-related topics to promote awareness, environmental stewardship, and a sense of responsibility to protect the ocean - are growing in numbers and popularity. Entities such as the Intergovernmental Oceanographic Commission of UNESCO have a strong focus on Ocean Literacy, as part of the United Nations Decade of Ocean Science for Sustainable Development (2021-2030). Blue Schools play a major role in delivering Ocean Education in both formal and informal education settings. It is believed by many that Blue Schools are the most realistic intervention to achieve Sustainable Development Goal 14: Life Below Water.

At Lüderitz Blue School, our blue vision and ocean education are embedded into our academics and extracurricular program, from the weekly Oceans Day club to the Benguela Robotics Lab – a coding and Robotics club with an ocean focus. Ocean life and love are key to our school ethos, and are very much incorporated into daily school life, with classes named after ocean animals, and school houses named after ancient ocean deities.

Opening a school with this vision in such a remote place has been thrilling and challenging, and many lessons have been learned along the way. As I look back, some seem trivial and light-hearted (such as missing the colour green) and some are more personal and profound, with various lessons on reflection, isolation, gratitude, and patience. At this exciting point in our journey, with two years of experience behind us and a strong vision for growth in the coming years, here are four lessons we have learned from opening a Blue School in a Desert.

Lesson 1: Challenges can fuel creativity and resourcefulness

The remote location of Lüderitz can be challenging for many reasons. In terms of setting up a school with a range of extracurricular clubs, it was not easy to come by specialised equipment and there was not much variety in what was available to our team.

For our academic curriculum provision, we were able to start with online content, and as we have grown, so have our resources and our library. When it came to our ocean-focussed extracurricular activities, setting up the Benguela Robotics Lab with limited resources was at first a daunting task. However, before we could source any technical equipment, the children were able to start their projects anyway, creating a range of robots from what was locally available. One of many memorable activities was building 'brush-bots' - mini robots made using googley eyes, a toothbrush head, and the repurposed insides of a toy helicopter.

Monitoring equipment and sensors are expensive to purchase, and to replace if they get damaged, so in the Benguela Lab we can teach children tinkering and robotics, harnessing attitudes in resourcefulness and problem-solving. They did not need specialised equipment to let their creativity flow, and we have seen a considerable jump in critical thinking among the students, which are skills they can carry into their future.

Lesson 2: Ocean Education is a holistic matter

At the Lüderitz Blue School, we incorporate ocean education throughout our curriculum, while also teaching Ocean Education and Culture as a standalone subject. This class is run differently from week to week. Some weeks the children learn about Marine Science, in others, about Ocean Arts. Some lessons are about Marine Cultural Heritage, some about Ocean History and some about Geography. These classes are complemented by a weekly Oceans Day, an experience-based weekly extracurricular activity, where the children visit different industry partners, meet ocean experts, and learn practical marine skills.

One student eloquently summarised our teaching aims, telling me, "the ocean is an inspiration and a passion, it's important to learn about it because it makes up most of our planet". Covering over 70% of our Earth's surface, we believe the ocean deserves more attention in school curricula, and, as a new school, we are fortunate to be able to give it the 'airtime' we believe it deserves. Another one of our students explains, "learning about the ocean is important because it represents life in so many ways - choppy and stormy on the surface, but underneath it hides a forest of different species and forms of life". Holistically teaching Ocean Education has been eye-opening, I have witnessed how different elements of the sea can appeal to different children. Some light up when learning about flora and fauna, some thrive when learning how to body-board in the cold Atlantic. Some children love the hands-on aspects like building rafts, and others thrive on teamwork through events like our annual Ocean Olympics. The ocean is broad and varied, and we have adapted our teaching to reflect its diverse and complex movements.

Blue School in a Desert ©Lüderitz Blue School

Lesson 3: Role models are important

Most people in Lüderitz never learned how to swim. Tragically, this results in drowning-related deaths every year. While we are working on a safe space to conduct swimming and sea safety lessons, we are still dedicated to showcasing the beauty and wonders of the ocean through other means. We want to teach our students that the ocean can be respected, understood, and admired, rather than feared.

Exposure to role models is one key to our school's vision, allowing us to teach by example rather than by theory alone. Essentially, children cannot aspire to become like someone they have not met or learned about. While we foster a love and care for our surrounding environment, we also aim to show children the bigger picture: many small waves make up an expansive ocean, and the possibilities the ocean can offer are equally as vast.

Growing the school has also meant relying on the time and dedication of volunteers, both within the Lüderitz community and beyond. We have been fortunate enough to lean on the local community, including our contacts at Kelp Blue, to pass on their knowledge and enthusiasm of the marine world. The school also runs an ongoing 'Ocean Lover Intern' programme, where we welcome passionate interns from overseas to assist with our ocean activities. The children have met marine biologists, engineers, scientists, students, divers, marine-focussed factory staff, water sports stars, sailors, academics, and the list goes on. We are always excited to hear from dedicated, driven young people who are keen to share their skills and passions. The diverse array of ocean enthusiasts and local community members are role models for a future in a blue world.

Lesson 4: Positive mindsets win

Visualisation is a powerful tool for success. 24 months ago, we were on that squeaky table in that dilapidated classroom wondering how to start a school when the nearest bookshop is over 650 km away. Despite various challenges, our vision and purpose have remained strong, and I have been fortunate to be surrounded by relentless optimists who only saw what that building could become, and the inspirational school it could turn into.

As time has passed, we have continued working hard together to build a beautiful school. As our enrolments and team are growing, the devotion to and knowledge of the ocean within our community is growing in unison with us.

As Founding Head of Lüderitz Blue School, in this unique and wonderful part of the world, I am optimistic that the children will reflect the passion and care that drove the foundation of their school. At a time when the future can feel like an uncertain and daunting place, we are proud to be educating the next generation of positive, responsible and caring leaders who will carry love and respect for the ocean in whatever path they take.

EMPOWERING COASTAL COMMUNITIES THROUGH CORAL RESTORATION

by **Zachary Wong, Marine Scientist, on his work with The Oceancy**

I was initially drawn to the field of marine conservation, like many marine scientists of my generation, by the captivating documentaries of David Attenborough and popular movies like "Finding Nemo", which showcase the mesmerising beauty beneath the waves. For a long time, I believed that only marine scientists could save our rapidly deteriorating oceans. However, moving to Cornwall, United Kingdom, to study a degree in Marine Biology shattered this misconception.

In Cornwall, I discovered the invaluable contribution of volunteer and community-based groups that are revolutionising the approach to marine conservation through innovative community action. Falmouth Marine Conservation is one such group, actively involved in various conservation projects that incorporate citizen science, such as seagrass monitoring and dolphin watching. These initiatives not only provide large volumes of data but also equip communities with the skills and knowledge to empower local action [1,2].

After graduation, driven by the activism I witnessed in Cornwall, I sought a role that utilised community action for a broader impact. I began work with The Oceancy in October 2023, dedicating myself to advancing a grassroots initiative in the Maldives aimed at safeguarding their precious coral reefs. Established in 2020, The Oceancy is an NGO committed to empowering marginalised local communities worldwide to manage their own ecosystem restoration projects. The Oceancy partners with locally-based NGOs to train community members and develop projects spanning seagrass, mangrove and coral restoration efforts.

Removing algae using toothbrushes
to clean the coral frames
© Zachary Wong

Collection of corals of opportunity
from a neighbouring island
© Zachary Wong

My involvement with The Oceancy brought me to Velidhoo Island, situated in the Noonu Atoll of the Maldives, where I contributed to the "Coral Again for Velidhoo" project. Launched in 2021, this community-based coral restoration project is a collaboration between The Oceancy and Baokalo, a local NGO committed to promoting social development by engaging and integrating local communities and individuals in volunteer activities. It aims to revitalise the reef surrounding Velidhoo, focussing on enhancing reef health, local skills and livelihoods. Velidhoo, locally known as the Safari Island, has a history of boat building for fishing and diving purposes. The coral reefs around Velidhoo are vital to the community, supporting the local tuna fishery, tourism and recreational activities like snorkelling and octopus harvesting. However, the local house reefs suffered degradation due to past chemical fishing and the severe mass bleaching event of 2016 [3].

For the first phase of the project, a scientific officer from The Oceancy travelled to Velidhoo Island in 2022, and collaborated with Baokalo to deploy 45 coral frames and train 10 Baokalo members. From October to December 2023, my colleague, Laura, and I worked for The Oceancy as Scientific Officers supporting the second phase of the project. This phase included training and supervising members of Baokalo, coordinating restoration work with new volunteers, engaging in science outreach activities with the local school, deploying 50 new coral frames, and conducting reef monitoring activities. just as they do on land at this time of year. In many ways, the Helford Voluntary Marine Conservation Group (HVMCG), who manage parts of the estuary, are aquatic gardeners, ensuring life is looked after and pests and problems are kept away.

The restoration project involved young Baokalo members, aged 16 to 28, who hailed from diverse backgrounds, including students, teachers, resort employees, and water sports guides. Despite their varying occupations, they all shared a common goal: to restore the reefs of Velidhoo.

From the first day, Baokalo and the volunteers extended a warm welcome, eager to show us Velidhoo and its coral reefs. Snorkelling around the island revealed small stretches of vibrant reef, where corals of all shapes and hues flourished. These reefs teemed with life, from tiny Maldivian clownfish darting in and out of their anemone homes to curious spotted eagle rays gliding past. We would find ourselves engulfed by enormous schools of redtooth triggerfish and, occasionally, green sea turtles could be seen lazily propelling themselves through the water in their coral oasis. However, amidst these uplifting scenes, the majority of the reef presented a different sight: dead coral rubble, large desolate boulders that were once vibrant with life, and the sparse presence of healthy colonies. It was evident that action was urgently needed.

Over the course of two months, Laura and I provided comprehensive training to twelve Baokalo volunteers in all aspects of the coral restoration project. They learned how to collect corals of opportunity (coral fragments that have broken off the reef), attach them to metal frames, and deploy and maintain these frames at the restoration site.

The project prioritises simplicity, using basic techniques, materials, and equipment to ensure that anyone in the community can participate. Coral fragments were secured onto the frames using cable ties, and toothbrushes were used to remove algae from the deployed frames.

We also organised presentation nights to dive deeper into coral reef science and marine issues such as plastic pollution and climate change, engaging the volunteers in broader discussions. All the volunteers showed eagerness to contribute to the project, with some assisting daily, others during their lunch breaks, and some even after working late-night shifts. Even on workdays with torrential rain, we had volunteers turning up to help.

The project also established a paid position for a local resident. Nineteen-year-old Saneeh from Velidhoo worked as an Assistant Scientific Officer, where he gained valuable scientific skills including fish and coral identification, coral reef monitoring, and data analysis. It was rewarding to see him develop these skills and actively contribute to the project. The Oceancy included this initiative to ensure that younger generations in marginalised communities have the opportunity to participate in meaningful ocean conservation projects and gain valuable experiences they might not have otherwise experienced. The involvement of the younger generation is crucial for shaping the future health of marine environments, particularly in small island communities like Velidhoo.

Laura and I provided support through our knowledge of coral restoration, but the volunteers played a crucial role in ensuring the success of the project by contributing their extensive local ecological knowledge.

One of the major achievements of the project was the identification of a healthy reef area near a neighbouring island, which proved vital for collecting coral fragments of a species that had been lost from the Velidhoo reef following the 2016 bleaching event.

This discovery was made possible by a volunteer who frequently visited the island for recreational snorkelling trips. This knowledge not only allowed us to reintroduce this coral species to Velidhoo, but also increased the genetic diversity of the reef, making it more resilient to climate change. This shows that while scientists are important in providing sound scientific advice, the invaluable knowledge held by local communities about their surroundings significantly enhances the success of conservation and restoration projects [4].

Saneeh and the twelve new volunteers who contributed to the project are now trained and equipped to continue deploying more frames at the restoration site and other sites around Velidhoo in need of restoration. Furthermore, with the support of video tutorials created during our time on Velidhoo, these project participants are now capable of training new volunteers. For instance, during a school event, 16-year-old Mish'al demonstrated this by teaching his peers how to prepare coral frames. These volunteers will be vital to provide The Oceancy with important data to monitor the success of the project and contribute to research on community-led coral restoration projects.

The project not only influenced local marine conservation attitudes but also garnered positive support from Velidhoo's Island Council during discussions about potential future endeavours. This support from a key stakeholder is poised to create opportunities for the community to enhance local capacity through remote and in-person training, as well as to improve livelihoods through job creation and other sources of income.

During my time on Velidhoo, community interest in the project was evident, with children and strangers joining the daily operations and eagerly seeking updates on the project's progress. The growing involvement of the community in this project has instilled a belief that they can protect their coral reefs, encouraging people, especially the youth, to get involved.

I left Velidhoo feeling immensely proud of the work accomplished by Laura, Saneeh, the volunteers, members of Baokalo, and myself. Our efforts went beyond restoring the island's coral reefs; we also made a significant impact on the next generation of Velidhoo.

This project has empowered younger and older generations to engage in accessible and impactful marine conservation opportunities.

Furthermore, there is potential for growth in establishing new alternative livelihoods and enhancing local skills and knowledge through science outreach, as well as in-person and remote training. These efforts can inspire the younger generation of Velidhoo to pursue sustainable livelihoods which safeguard their precious and biodiverse marine environment.

Innovative initiatives like The Oceancy and Falmouth Marine Conservation inspire communities to actively research and restore ocean environments, equipping them with the necessary tools to take action. In today's climate, these initiatives hold greater significance than ever before, as they debunk the myth that only marine biologists can contribute to ocean conservation. In reality, individuals of any generation can make a difference—all it takes is getting involved.

Acknowledgements

Special thanks go to Laura for being dedicated to the success of the project, working many hours out in the field and in the office with me. I would also like to express my gratitude to Baokalo and the community of Velidhoo for welcoming Laura and myself, for supporting and collaborating with us on the project and sharing their experiences and culture. Additionally, thank you to the Council of Velidhoo for agreeing to meet us and discuss positive steps towards the development of the project. Thanks to the Noonu Atoll Education Centre for organising the school day event with us. Lastly, heartfelt thanks to the project's sponsor for providing important funding, and to The Oceancy for setting up this project, and to Dr Luca Saponari for the in-person and remote training for this great opportunity.

The Oceancy and Baokalo team travelling to a neighbouring island to monitor the health of the local reef © Zachary Wong

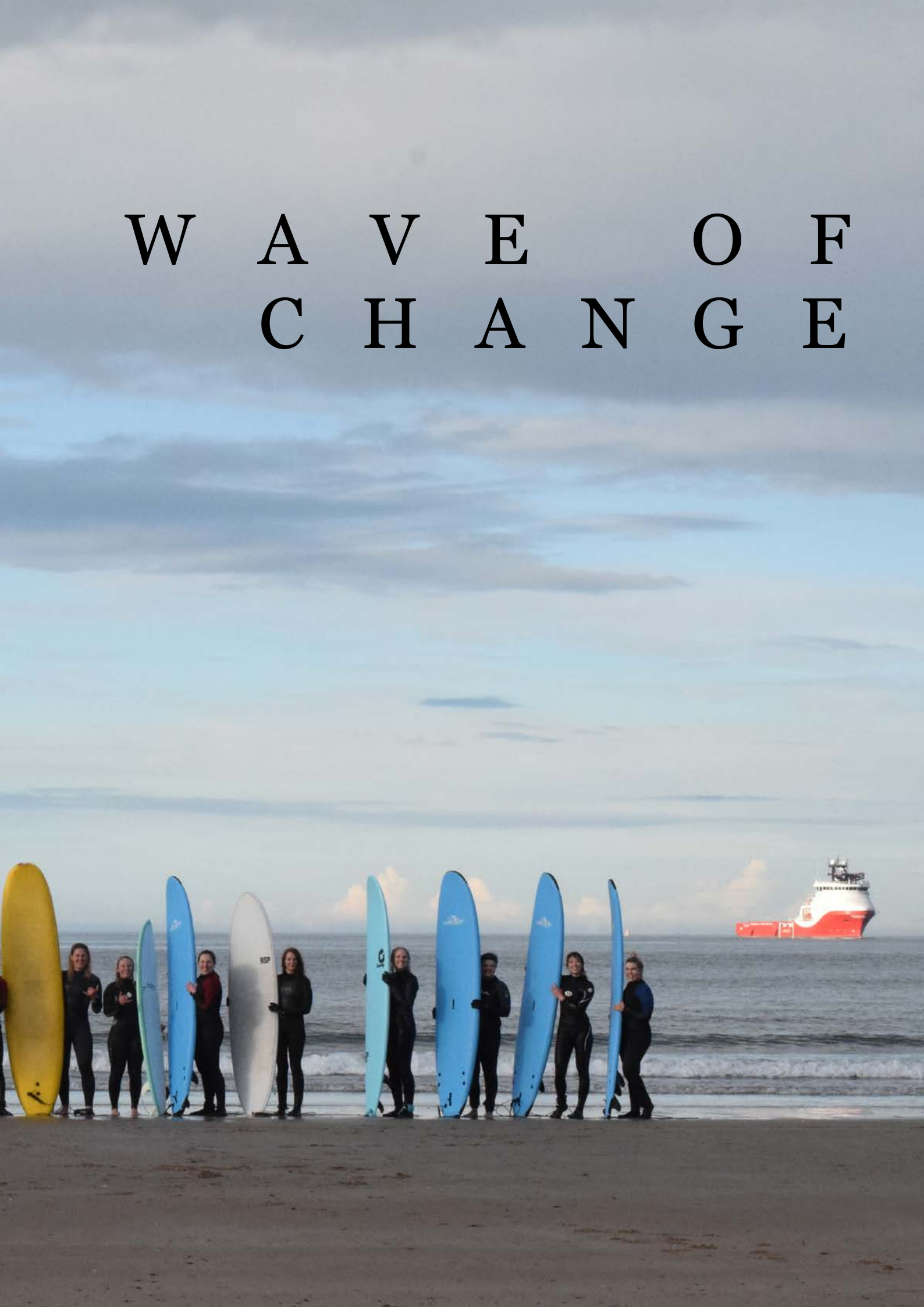
RIDING THE

by **Ruth Quigley,**
Conservation Officer at Buglife

Nestled against the North Sea, the beachfront of Aberdeen, Scotland, was once known primarily for its windswept, industrial stretches, but has undergone a remarkable transformation since 2020. During the COVID-19 pandemic, the community filled the open space with an infectious energy and activity, breathing new life into the salty, bitter wind. Local chefs launched food trucks, remote workers flocked to the beach for morning dips (or dooks, as they are colloquially known), and a surf and paddle board rental hut along with two mobile saunas appeared. While Google Maps may still label it rather unlovingly as a "wind-prone beach with a promenade", for those who have strolled its shores recently, Aberdeen Beach is a bubbling hub of activity, especially in the Footdee area.

Some of the Wavy Wahines and fellow Aberdeen surfers during their World Oceans Day event © Paul Barlow Photos

WAVE OF CHANGE



Footdee, known locally as Fittie, is a historical fishing village based at the south end of the beach at the foot of the River Dee. Amidst Fittie's revitalisation, one name stands out: Rosie Payne. It's nearly impossible not to encounter her presence at the beach, as the 23-year-old lives in Fittie and spends much of her time working in the food and coffee shop vans, befriending beachgoers as she works at Scot Surf, a rental hut along the promenade, and is also regularly spotted in the waves surfing, paddleboarding or swimming. As you walk along the promenade, Rosie's mark is even evident in the beach safety signs, which she designed during her graphic design degree, and her love of the big blue now permeates her full-time job as a Digital Engagement Officer for the Open Seas Trust.

Noticing the underrepresentation of women in the water through her work at Scot Surf – which mirrored the prevalent male domination in surfing worldwide- Rosie was inspired to take action. In 2022, Rosie and her friend Kat co-created the Aberdeen Wavy Wahines (pronounced waa-hee-nee), an all-women surf group. The term 'wahine', derived from the Polynesian language meaning women, or more contemporarily, a female surfer, serves as a tribute to Rosie's experiences surfing in New Zealand, where she spent much of her childhood and developed her passion for the sea and surfing. However, the name also holds a connection closer to Scotland, drawn from the story of the Hawaiian Princess Ka'llunani, a respected surfer who arrived in the UK in 1882 to pursue her studies and surf. Her move to the UK was influenced by her deep appreciation for her father's Scottish heritage. The connection to Princess Ka'Illunani is ironic given that, in her era, women held equal status and respect to men when navigating the waves [1].

When I asked Rosie about the creation of the group, and how they attracted women to get involved, Rosie reflected:

"A lot of women would see you with a board or in a wetsuit and they'd ask how to get into it. I sat down with Kat, a friend of mine, and we decided it was time to start something bigger. We held an initial event which was ticketed, and we had over forty sign-ups from women around Aberdeen- which was a lot more than we anticipated. This event was aimed at re-introducing existing surfers to a group of like-minded people, but also to get newbies excited and welcomed into the community."

Rosie and Kat made it clear to the women who joined that this group wasn't solely about offering guidance to beginners. It was crafted with the dual purpose of cultivating a supportive environment for those new to the water and creating a lasting surf community in Aberdeen, with gender inclusivity at its heart. Following the event's popularity, the group gained momentum and now has over seventy-five active members, ranging from recent graduates to mums, all having two things in common: surfing and the sea. The impact the Wavy Wahines has had on the women involved is apparent in the continued success of its membership. Women have reported feeling safer in the water, as well as having developed a caring community that extends beyond their surfing events, often catching up for coffee and chatting about the beach and what more they can do for the environment. Rosie commented:

"We used to see maybe one or two women in the water a month and now there's maybe ten or more, and often more women than men each surf. We've had people make friendships and have helped to change a lot of the men's attitudes as well."

Old slate Quarry on Easdale Island, Inner Hebrides © Ruth Quigley

Previously, the sight of women surfing at the beach was relatively rare, and there may have been some hesitation from the wider community to engage. However, with the consistent presence of a large group of women, Rosie says they have become recognised as regulars. As a result, male surfers have become more sociable and open to sharing knowledge and etiquette, as they have witnessed the women's commitment and willingness to learn the rules of the waves. This recognition of the women's dedication has fostered a sense of respect and camaraderie among surfers of all genders, creating an environment where everyone feels valued and supported in their surfing journey.

Rosie's dedication to this budding community is obvious, rooted in a profound sense of service and a genuine desire to safeguard our natural environment, and is flourishing through the Wavy Wahines. Initially the Wavy Wahines meetups were focussed on sharing information about safety in the water, surfing technique and etiquette, but the reach of the group has expanded with participants now involved in activities such as beach cleans and fundraising, and these events extend to the wider surf community in the name of inclusivity.

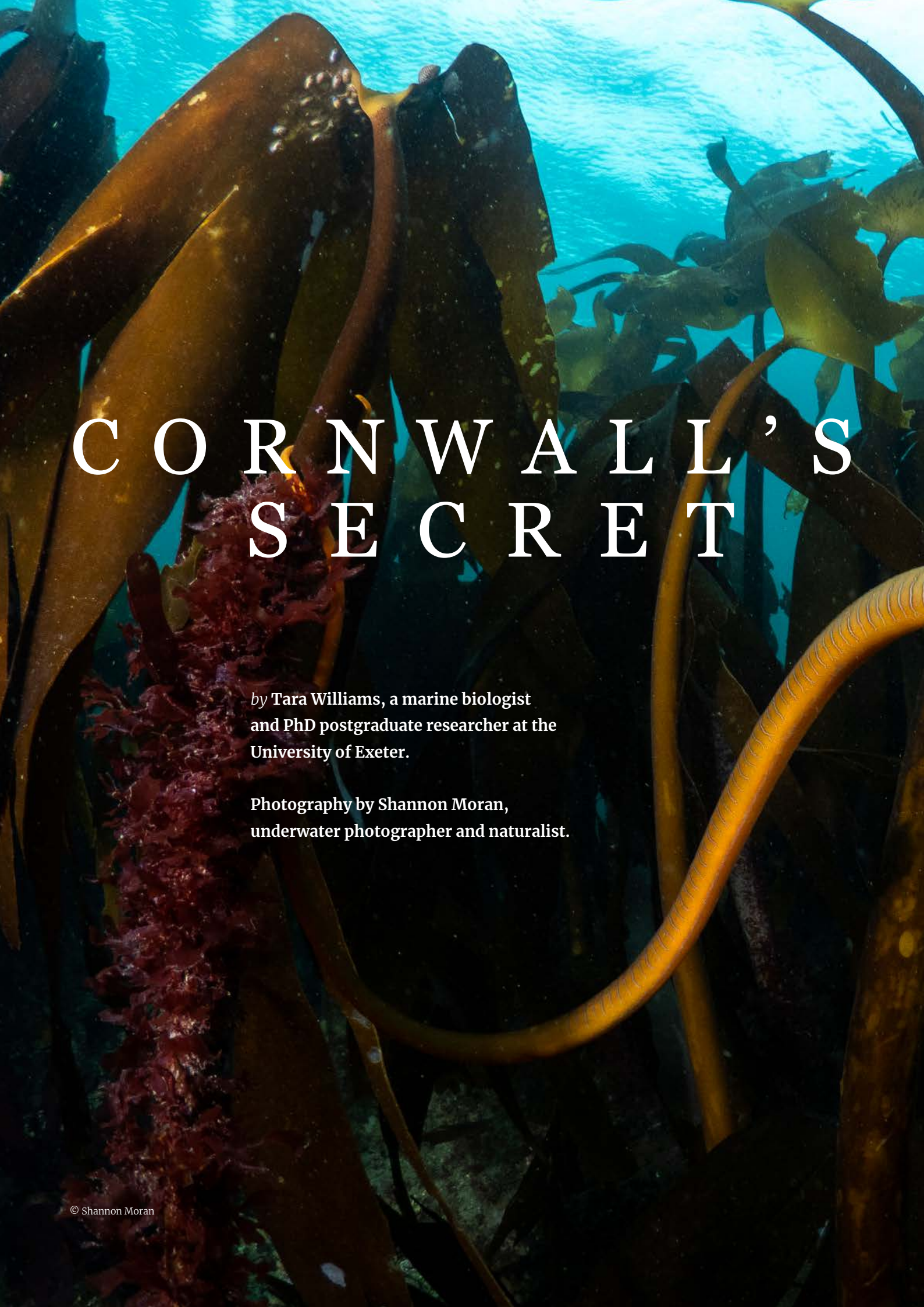
For example, to commemorate World Oceans Day in June 2023, the group organised the 'Big Blue Paddle Out' where they invited their members and fellow local surfers to get together, surf and raise money for the Marine Conservation Society. When asked whether participants had become more aware of their impact on the environment since joining, Rosie said:

"I think we've managed to evolve people's perception of why it's important to look after the environment. It might not look like there's a lot going on from above the surface, but Aberdeen is home to an astonishing amount of wildlife. From surfing with dolphins, seals and seabirds to delicate reefs along the harbour wall which are home to edible brown crabs and beautiful kelps. Whilst getting women in the water is important, it's also about educating people about the underwater world."

Aberdeen is known to be one of the best places in the UK to spot bottlenose dolphins off the coast. A viewing café was custom built at Greyhope Bay, just on the other side of the harbour wall from where Aberdeen's surf community spends its time, attesting to the thrill of surfing in a dolphin hotspot. The Wavy Wahines are already a bright light in Aberdeen, and co-founders Rosie and Kat plan to expand the group's activities to include educational workshops about environmental issues as well as wellness-focused events. Rosie also plans to grow in her role with the Open Seas Trust and to learn underwater photography. It's reassuring to have young people like Rosie driving change at the community level when it comes to environmental issues and gender equality, especially in Scotland's dark North East which, as Rosie comments, is often overlooked:

"We so often see people showcasing cool places like Bali or the Maldives, when equally if you embrace the cold you can find just as beautiful and incredible creatures and seascapes".

Here here, fellow wahines.



CORNWALL'S SECRET

by **Tara Williams, a marine biologist and PhD postgraduate researcher at the University of Exeter.**

Photography by Shannon Moran, underwater photographer and naturalist.

UNDERWATER GARDENS

Cornish communities have flourished, dwindled and regrown, but the Helford Estuary has flowed steady throughout the centuries. Beginning at the small fishing town of Gweek, the estuary branches like an azure vein bringing life to the land on its journey to the English Channel. But more than that, its waters are the lifeblood of the people who live along its shores and something of a 'canary in the mine' for wider ocean issues. Developing a greater understanding of this tidal environment could teach us as much about ourselves as it can about nature's response to a changing world...

... It is our hope that developing the garden analogy will help connect visitors unfamiliar with the marine environment with its underwater charm. We hope to show that jewel, strawberry and beadlet anemones underwater are reflections of the native, exotic and cultivated plants that cascade to sea level along the estuary.

Read the full article at SeaVoice.online

Seagrass meadows, tunnels of kelp and bloom-like cup corals grow quietly whilst spider-like crabs creep by and shoals of whitebait flutter like birds. Seasons affect the rhythm of life here too; days shorten underwater just as they do on land at this time of year. In many ways, the Helford Voluntary Marine Conservation Group (HVMCG), who manage parts of the estuary, are aquatic gardeners, ensuring life is looked after and pests and problems are kept away.

Through the Underwater Gardens of the Helford Estuary, Shannon Moran, an underwater photographer, and I, a marine biologist, are linking with local and national marine conservation groups and those using artistic media to celebrate the natural world. We hope to foster a sense of public duty to the 'marine community garden' beneath the waves and the benefits it can have for our own health. You can follow our progress on Instagram and Twitter/X: #UnderwaterGardensoftheHelford @tarracuda_ @ shannonmoranphoto @exetermarine.

From the coral experiment's 3D model
@freija.marine

OCEANIC ROOTS

by **Dr Freija Mendrik, Marine Scientist,**
Plymouth Postdoctoral Research Fellow,
National Geographic Explorer

I was very lucky to grow up right by the Jurassic Coast of Devon, in the UK. You may think that the UK is just grey and cold (and sometimes it does feel like weeks since you've seen the sun or left the house without getting soaked...), but against the backdrop of blue skies or crashing waves, the red sandstone cliffs are vibrant. The coastal path becomes alive with the heavenly aroma of coconut as the bright yellow gorse makes its seasonal return. What lies beneath the waves that lap our rugged coastline is equally unique and beautiful. I've snorkelled in the lush green of seagrass meadows, blades intertwining to form a retreat for countless marine creatures seeking refuge. Some of my fondest childhood memories are of fossil hunting and rock pooling - the best time to go can be in the winter after a big storm, and I've spent many days getting soggy as the grey drizzle rolls in. We would typically find a lot of little ammonites, and I was fascinated by these tiny windows into the past, allowing my imagination to go wild with the giant creatures that used to be in the same place we were now walking.

At some point as I grew up, that beach combing became beach cleaning. I realised more and more plastic was on our beaches, or maybe it had always been there, but I was only just understanding what it meant. I felt frustrated that us humans were not taking care of our beautiful home. With this, a huge sense of responsibility started to creep up on me: we got ourselves into this problem and so we must solve it. It felt very natural to me to want to pursue marine biology as a career, although it hasn't been easy. Now I am working to safeguard our oceans from plastic pollution which is, of course, linked to so many other threats to our planet.

I now understand how that feeling of connection to nature is so important for ensuring its protection. I recognise my privilege in that I was very lucky to have that connection instilled in me from a young age and I work to spread that connection to others. From raising awareness through social media, to talking to schools, mentoring, and taking part in science festivals. Encouraging others to take action is vital for the protection of our seas and collective action really does make a difference.

Taking action looks different for everybody. We need a systemic change to tackle the plastic pollution and climate crisis, it is not the fault of the consumer; yet everyone has a role to play. From making conscious decisions to reduce your single-use plastics waste, to signing petitions and getting involved with your local community. We are all connected to the ocean in some way at a fundamental level, it's in the air we breathe, and our collective actions do make an impact.

Read the full article at SeaVoice.online

Georgia Holly
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Arturo Rey da Silva
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Athena Trakadas
Contributing Editor

To our ocean community,

My purpose is the sea. While this involves researching, sharing, and protecting, I would be lying if I portrayed my relationship with the sea as entirely altruistic. Having spent my life by the sea, it has become the guardian of my experiences; every life-changing moment I have encountered has occurred in or around an ocean. Living away from it, even for a brief period, leaves me feeling stranded, shipwrecked. In the absence of its presence, I am left yearning its calmness. It is during these times that I realise the profound impact the sea has on my well-being and sense of belonging. The truth is, the sea has both directed my actions, and provided the stage, but I am not the only actor.

I, and the others around me, have been propelled into ocean advocacy by the visionaries and trailblazers who came before us, and we continue to be inspired by the new generations of ocean leaders, teachers, storytellers, and researchers who surround us today.

Creating this magazine has been a dream come true, and has only been possible with the exceptional individuals who have graced us with their dedication, passion, and belief in our mission. To each and every one of our contributors, we extend our deepest thanks for entrusting us with your invaluable insights, captivating stories, and breathtaking imagery. Your contributions have not only enriched the pages of our publication but have also sparked meaningful conversations and inspired action among our readership. I am truly overwhelmed by the collective effort, trust, and care that has gone in to the stories presented in this, our first annual edition. I hope we have done you proud.

Our first year of SeaVoice has shown us that ocean activism and advocacy exists in a myriad of forms. From the depths of scientific research to the heights of artistic expression, ocean conservation can only prevail if it embodies the diverse voices, cultures, and talents of individuals around the globe.

SeaVoice has been made possible with the financial support of the Pew Bertarelli Ocean Legacy, the University of Edinburgh and the Lloyd's Register Foundation through the Ocean Decade Heritage Network's Cultural Heritage Framework Programme (CHFP). CHFP is an official action of the UN Decade of Ocean Science for Sustainable Development (2021-2030) and seeks to address the role of Marine Cultural Heritage in realising a sustainable ocean. CHFP is the only endorsed programme of the UN Ocean Decade focused on cultural heritage, and works to assist and support all Decade Actions that aim to include tangible and intangible cultural heritage in their recognised initiatives.

With gratitude,
Dr. Georgia Holly
Founder and Editor-in-Chief

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We'd love to feature all of our brilliant articles in print, but you can explore them all on our online magazine at SeaVoice.online. Here you can view the thought-provoking articles listed below from our three volumes over the past year. These articles are inspiring, engaging, and thought-provoking, offering fresh perspectives that may just change the way you think about water.

V1: OSMOSIS

Coastlines are evolving as sea level rises; but what's our strategy?

Written by Dr Sophie Ward and Dr Martin Austin, Bangor University, UK

Silenced SeaVoices: the stolen, looted, and hidden histories of our oceans

Written by Dr. Arturo Rey da Silva, University of Edinburgh

In search of the elusive sharks among the reefs of India

Written by Dr. Shaili Johri, President Society for Conservation Biology Marine Program and Postdoctoral Researcher at Stanford University

The tides of knowledge

Written by Dr Paul Montgomery Ph.D., Investigação Científica Faculdade de Arquitectura da Universidade do Porto, Portugal & Reserch Fellow Trinity College Dublin, Ireland

V2: COMMUNITY

The circular economy goes beyond how we use plastic

Written by Robert Cobbold, entrepreneur, philosopher and Chief Operating Officer of Climate Tech Platform, Beach Collective

The Tse-whit-zen disaster: one incomplete dock, millions of dollars, and hundreds of disrupted burial sites

Written by Kara Denner, MSc Archaeology student at the University of Edinburgh

V3: GEN SEA

A tale of ocean literacy: increasing humanity's connection with the ocean

Written by Yolanda Sanchez, Marine Educator and Edinburgh Ocean Leader

Ocean connections; transcending time, cultures and generations

By Gail Sant, Nippon Foundation-University of Edinburgh Ocean Voices Programme

Sea Scotland: breaking down barriers to young people's engagement in policy discussion

Written by Fanny Royanez and Esther Brooker, Scottish Environment LINK

The ocean in our minds: a journey to Pitcairn Island

Written by Jason Cleland, Research Assistant, Changing Oceans Research Group, University of Edinburgh

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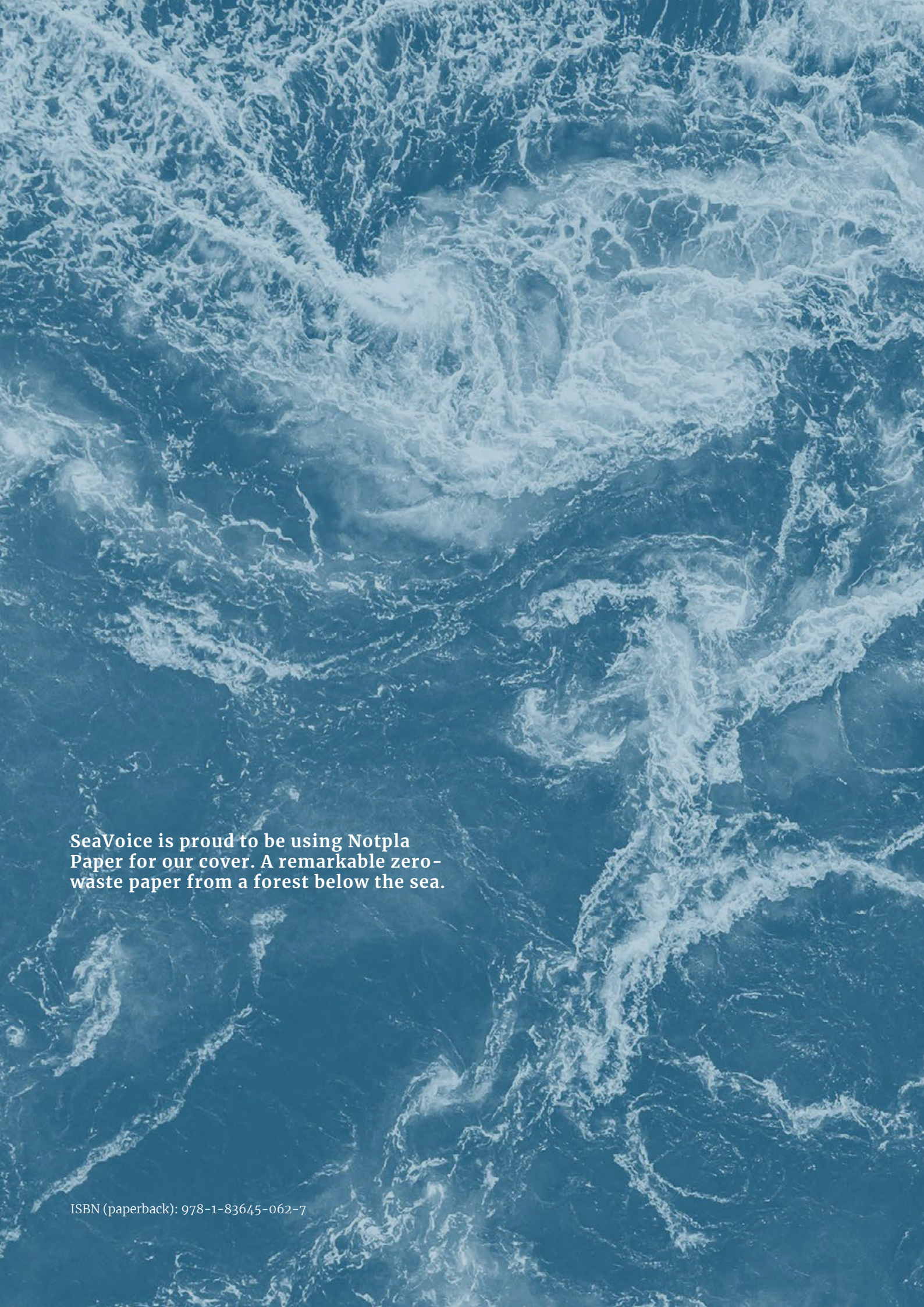

SeaVoice is proud to be using Notpla Paper for our cover. A remarkable zero-waste paper from a forest below the sea.

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