MER Newsletter

January 2025

The Editor Column

I am delighted to have the chance to contribute this editorial note to the MER Newsletter.
I have been part of the MER community since the start of the 2022/23 academic year when I took over the role of programme lead at the University of Southampton. Working in the MER consortium has been a true privilege because, although I have been involved in higher education at undergraduate and postgraduate levels for many years, I have not often encountered such a friendly and committed group of academics endeavouring to provide exceptional opportunities for their students. One important part of these efforts is the production and publication of the newsletters, led by Belén González-Gaya and Johan Etourneau, which support communication within the community and beyond.

As 2024 comes to a close, the MER programme is also reaching the end of the MER2030 EMJMD format. For this reason, over the last few months I have been leading a complete internal review of the study programme to comply with the UK Curriculum & Quality Standards Accreditation (QSA) at the University of Southampton. The active engagement of the lead staff from all Partner Universities has been central to this task and has demonstrated the impressive cohesion that makes the MER consortium unique. I am very grateful also to MER students who contributed with very positive feedback of their experiences, either in interviews or in written form, to the evaluation process. Finally, I extend my gratitude to Dr. Andrew Desbois from the University of Stirling, who has served as external advisor, bringing his expertise to help shaping and supporting the continuous participation of the University of Southampton in the MER. The QSA procedures have offered me an opportunity to look back into the MER history and appreciate the continuous evolution of the teaching and learning framework. It has also been a pleasure to learn more about the Partner Universities, the contributing staff from each institution, the innovative teaching activities incorporated in the master training, and the impressive career progression of many MER alumni over the years. This exercise has reinforced my belief that this is a very special programme and the whole MER community should feel proud of the almost twenty years of successful delivery.

In early 2025, we will continue working together, as always under the remarkable leadership of Ionan, with a particular focus on the application to the EU for the renewal of the Programme. We hope that these collaborative efforts will result in an extension of the MER and enable us to continue training marine environmental experts from around the globe for another six academic years.

Dr. Cecilia D'Angelo
Associate Professor
School of Ocean and Earth Sciences
University of Southampton
NOCS, Southampton, UK

Southampton, 27th December, 2024

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MER Student awards September 11th, 2024. PiE-UPV/EHU

Manu Soto (PiE-UPV/EHU)

The beginning of the 2024-2025 course started with a flourish, the thesis vivas from the 2022-2024 cohort. It was a great celebration full of science, reunions and learning... and of course, the well merited prizes!

These are the Awards 2024 approved by the **JPB**:

PROF MB COLLINS AWARDS TO THE BEST PRESENTATION

Helene Olsen and **Daniela Restrepo** ex aequo

CALLYPSO PRIZE TO THE BEST MSc ON MARINE ENVIRONMENT

Kristiana Wolf-Blake

U LIÈGE OCEANOGRAPHY & OCEAN PROTECTION PRIZE

Lea Franziska Seidel and **Benjamín Andrés Pérez López** ex aequo

Congratulations to all of them!

Belgium international week November 26-29th, 2024. Brussels

Sylvie Gobert

An evening of testimonials and memories after a semester at the University of Liège

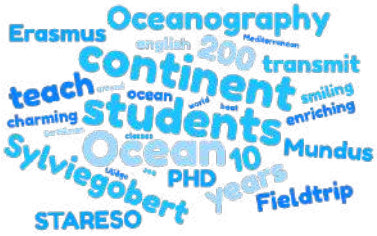
Marine Ecology Class

We would like to thank the Erasmus Mundus students of the 2023-2024 cohort present at ULiège. Thanks also to A. Alverra, A. Bart, Th. Billen, I. Noirot, Th. Jauniaux, P. Lejeune, J. Schnitzler, L. Michel. Thank you to Saint Nicolas who spoiled our well-behaved students with chocolates, candies and mandarins. Sylvie Gobert, Krishna Das and Romain Garcia Garcia.

Alors on 'dive'...

To celebrate International Week, an event was organized to showcase the Erasmus Mundus MER/Master in Oceanography programs at the ULiège. The evening aimed to highlight the experiences of current Master's students, as well as insights from their supervisors, university officials, and alumni who are now pursuing doctoral or post-doctoral studies. The event was streamed live, allowing friends and family from around the world to join and follow the testimonies.

A welcoming word with Isabelle Noirot Krishna Das and Sylvie Gobert

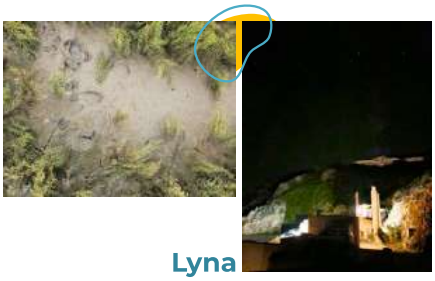


Biggest shock when you came in Belgium

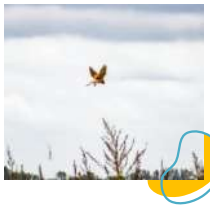
Your future or your dreams

Feelings about your master

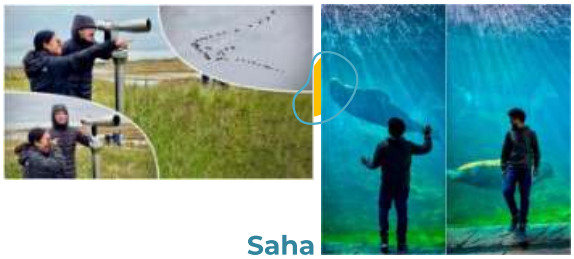
The winners of the photo contest



Lyna



Islam



Saha

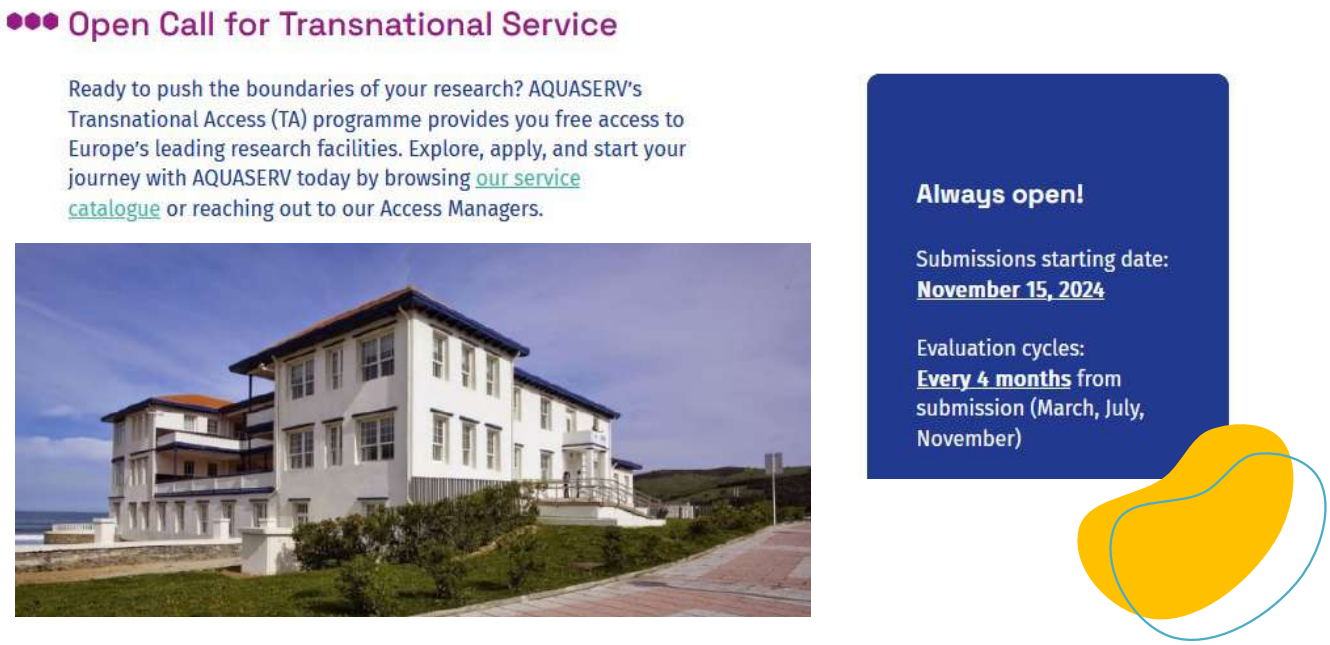
STARESO-Corsica | ULiège campus | Pairi Daiza | Zwin at Belgian coast

Playlist of Lyna: *https://open.spotify.com/playlist/4QIRwveKTMQVujYlESWB0Q?si=_IFpAkezSee68bxL1d4W_A&pi=xvUj9DveRNezo*

Willing to return to PiE-UPV/EHU for an up to 1 month research stay?

Xabier Lecube

If you are doing research outside Spain you can apply to come back to Plentzia.
More info: xabier.lecube@ehu.eus



Apply for an opportunity to carry out 'your own research project' on *Aquaculture, Fisheries or Marine Biosciences* in PiE-UPV/EHU, through an AquaServ Transnational Access project! https://www.aquaserv-ri.eu/transnational-access-call

JPB Meeting
January 14-15th, 2025. Bordeaux

Johan Etourneau

During two days, the **Joint Programme Board (JPB)**, including representatives from the five MER universities (UPV/EHU, UL, SOTON, UAc, UBx), met in Bordeaux to prepare the new Erasmus Mundus application, namely **sosMER**, by improving the current structure of the master's programme and providing additional support.

This application aims to secure the renewal of Erasmus Mundus financial support for future students enrolled in MER for the next 6 years. By the summer, we should know the outcome. Let's all keep our fingers crossed for success.

In addition, the JPB visited potential locations in Bordeaux where the MER Summit 2026 will take place. The exact location will be given in due time.

We hope to see you all at this event!

RiMER Part 1. February 3rd-7th, 2025. Aquarium Donostia - San Sebastián

Belén González-Gaya

As a welcoming course for the new 2024-2026 cohort, the first part of the RiMER will be held in the amazing venue of the Donosti Aquarium. During 4 days, each one dedicated to a hot marine science topic including Sustainable Ocean Services, Climate Change and Marine Pollution, the students will enjoy scientific talks in the morning and round discussion tables in the afternoon. And even some surprises at night! The last day will be devoted to the INGURUDOK workshop, a presentation of ongoing MER PhD Thesis, as inspiring examples for the new generation.

Stay tuned for more info on the invited speakers!

RESEARCH in MARINE ENVIRONMENT & RESOURCES (6 ECTS) - RiMER
PART I (3 ECTS): FEB 3-7, 2025, AQUARIUM, Donostia-San Sebastián
PMBBS "Women Marine Scientists' Day": MAY 9, PiE-UPV/EHU, Plentzia
PMBBS "Turquoise Day": JUN 9, PiE-UPV/EHU, Plentzia
PART II (3 ECTS): JUNE 23-27, 2025, PiE-UPV/EHU, Plentzia (Bizkaia)

Organized by: MER Master (UPV/EHU)
MER Consortium, Res Ctr Exper Mar Biol & Biotech (Plentziako Itsas Estazioa; PiE-UPV/EHU), U Basque Country

Coordinators:
Esther Irigarai, Aquarium SS
Julien Mader, AZTI-BRTA
Jörg Schafer, U Bordeaux
Sylvie Gobert, U Liège
Cecilia D'Angelo, Soton
Patricia V Garcia, U Azores
Manu Soto, PiE-UPV/EHU
Jon Saenz, PiE-UPV/EHU - Chair
Ionan Marigómez, PiE-UPV/EHU - Chair

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* and MER2030 EMJMD "Research in Marine Environment and Resources" (6 ECTS)

Supporting Institutions:

- Gipuzkoako Fundazio Ozeanografikoa - Aquarium SS
- University of the Basque Country (UPV/EHU)
- EACEA, Erasmus Mundus / Erasmus + (EMJMD - Key Action 1)

To the 2024/2026 Cohort: Your Adventure Awaits in Plentzia!

As 2024 draws to a close, we bid farewell to many cherished chapters in the history of this master's program, one of them being the inaugural season of **MER-mates**. This podcast was our love letter to science, a way to bring the groundbreaking work happening around us straight into your ears.

Sure, when we started, we had our share of uncertainties and mistakes along the way (who doesn't?), but we captured something special: the fleeting moments of our journey through this master and the boundless passion for science shared by our teachers, researchers, and fellow students.

But as one chapter closes, a new one begins, and this one is yours to write. With the resources, facilities and guidance from our teachers, staff and us, you have everything you need to shape the next season of MER-mates. This is your chance to redefine what science communication looks like, to share your perspective, and to leave your mark on this ongoing story.

Think of it as more than just a project- it's an opportunity to unleash your creativity, connect with amazing people, work as a team, and shine light on the incredible scientists around you. Give them a voice, bringing their science out of the pages of journals and into the ears of the people in a fun way.

Trust us: your time in Plentzia will fly by, but your words and voices can be captured forever.

As we hand over the mic, we leave you with two tasks only: take what we started, make it better, and make it yours.

So, with that, ahoy "me maties"! The podcast ship awaits for you at the Plentzia Marine Station, and needs new captains, so all aboard! Bidai on!

Xabi & Sam

You can listen (and follow!) all the podcast episodes here: *https://open.spotify.com/show/1ygkUV13B7BIaCreYO8AIb?si=2f0283b56e7e49af*

If you want to take over with the podcast get in touch with Belen.gonzalez@ehu.eus

Xabi Larrinaga & Samuel York, MER Mates podcasts. MER cohort 2022-2024

Ink-credible Adventures: My Experience Studying Octopuses in Corsica

Hello there, I am Lea, one of the freshly graduated students from the MER2030 Master's in Marine Environment. I am also one of two lucky students, who received the Oceanography and Ocean Protection Prize at the graduation ceremony. In the next few pages, I would like to tell you a little bit about my Master's thesis internship and my experience during that time. Grab your snorkels and dive with me into my journey to discover the octopus's gardens.

How I got my project and prepared for it

Between the first and second year of the degree, I found myself at the STARESO marine station doing the marine placement. Under the supervision of Sylvie Gobert, I was helping Bachelor students from Liège complete their course projects. Meanwhile, I was on the hunt for a thesis project of my own. In a stroke of luck (or maybe an octopus arm pulling some strings), I was introduced to the scientific director of the marine station, Michel Marengo. With my then-broken French, I managed to convey my passion for cephalopod research to him. To my surprise, the marine station had an octopus project lined up for the exact time frame I needed! Before I knew it, I was signed up for an internship co-hosted by STARESO and the University of Liège, with Sylvie Gobert as my main supervisor.

An *Octopus vulgaris* found hanging out in a *Posidonia oceanica* meadow during the day. The white colouration is a sign of warning: better not get too close to me!

Fast forward to February, and I'm in Calvi, Corsica, ready to start my adventure. But first, there was a small hurdle to tackle: since the French are kind of special (but of course we love them anyways), scientific diving in France requires you to pass a special professional diving certificate. Sounds easy, right? Well, you are wrong! The entire course was taught in French and despite eight years of classes and a refresher course in Liège, my French was about as smooth as a barnacle-covered rock. As if the language problems weren't enough, the water was 16 degrees cold with waves strong enough to make even a humpback whale queasy. Sounds like a recipe for disaster? Wrong, again. I managed to pass the course after a week-long battle, with only one small mistake on my exam (which I wrote in French). You can imagine, how proud I was. Finally, my internship could officially begin!

The Project Pulpettu

My Master thesis was done in the framework of one of the biggest projects, that the station undertook in 2024. The nearby Marine Park of Cap Corse and Agriate had tasked STARESO with an important mission: to determine the abundance and density of the common octopus *Octopus vulgaris* in its waters. Several local fishers had claimed that these eight-armed creatures were becoming scarcer, and their catches are not what they used to be. *Octopus vulgaris* is one of the most fished octopus species in European waters and is especially common on the menu in Mediterranean countries. Unfortunately, there are not many laws to

protect this animal, which plays a vital role in the food chain of the Mediterranean Sea and the North-Eastern Atlantic Ocean. The suggested decline around Corsica was concerning, not only for seafood enthusiasts, but for the ecology and the health of the entire ecosystem.

O. vulgaris caught in a fishing trap.

The problem was that no studies had been done on the abundance of *O. vulgaris* in the Marine Park around Cap Corse. So trying to figure out whether this species had actually declined in these waters, sounds almost like Mission Impossible. This is where our study (including my thesis) stepped in as a preliminary study, laying the groundwork for future research. My main focus lay in comparing three different methodologies for studying octopuses and their efficiency in determining abundance and density.

Here is what we did:

1. Baited traps: We left these in the water for 24 hours, hoping to lure octopuses with an irresistible sardine snack.

2. Clay pots: These were left in the water for one to three months, aiming to provide a shelter for octopuses living nearby.

3. Visual observations: We put on our scuba gear and observed octopuses during both day and night dives.

Octopus length, weight and sex was recorded from the individuals, that were caught in traps. All octopuses were released after the measurement procedure.

To add another layer to the study, I also compared findings from within the Marine Park and the Bay of Calvi, where the STARESO marine station was located.

Octopus anecdotes

For six and a half months, I was in absolute heaven! Most weeks, I got to dive at least once, sometimes more and spend some time with my favourite aquatic animal – the octopus! Watching these creatures hunt, hide, rest, escape, and even interact with us humans, was a privilege I can hardly describe. They would latch onto our fins, explore our cameras, and even try to pull our hands into their shelters – all with their eight curious arms. One adventurous octopus glued itself to our torch and eyed us with a mix of wariness and interest, before then detaching itself and swimming off into the deep blue.

An octopus staring intensely at the photographer. This individual found a temporary home in one of the pots put into the water in the framework of the project.

When you look into the eyes of an octopus and it stares back at you, you cannot help but wonder what it thinks. We are told, octopuses are one of the most intelligent animals on Earth, with an incredible ability to learn new things. I always wondered whether they thought we were stupid. Our inability to change our skin and camouflage, the fact that we only have two arms, and that we cannot breathe underwater, makes us completely useless in aquatic environments, compared with the other animals that live there. So in their eyes, we must stand out like an elephant trying to fit into a group of mice.

The octopus fever was contagious. Soon, the whole station was infected by it and we would discuss recent readings or fun octopus facts during our lunch breaks, which all colleagues took together. In our free time, a few of us would go snorkeling in the station's harbor, trying to find these fascinating creatures closer to home. At one point, we had four resident octopuses, each with its own personality. Some were bold, others shy and a few completely uninterested in us humans. By the time I left Corsica, all our eight-armed friends had moved on. Indeed, *Octopus vulgaris* is known for having multiple hide-outs at a time and staying in one spot for only a few days or weeks before finding a different shelter. It was a bittersweet goodbye, but it was time for them to move on to their next adventure.

One of the resident octopuses, called Luna, in her den in the station's harbour.

The life of an octopus

Not only did we get to interact with these wild animals (when they chose to, of course), but one of the main goals of the study was to observe their natural behaviours, both day and night. During the day, we most often found them inside their dens – holes or crevices in which octopuses hide their squishy and vulnerable body from predators while they rest. Spotting an octopus den can be a bit of a treasure hunt: some hide-outs are given away by scattered rocks and hard remains of their favourite meals in front of it. But more often than not, the octopuses conceal their dens masterfully into the environment, just as they do with the camouflaging abilities of their bodies. The highest chances of finding *O. vulgaris* was at night. Most of them were observed probing their arms (yes, arms, not tentacles!) into rock cavities to catch a tasty meal, made of small crustaceans or molluscs.

However, the highlight of our observations, was witnessing two octopuses in the midst of reproduction. This event is rare enough to see, even during their mating season between January and October. The male sticks its third right arm (the hectocotylus) into the female's mantle cavity to transfer its sperm. This process can take several hours, and the male is ever so cautious to keep his distance from the female, who is known for her cannibalistic tendencies. Octopuses are solitary creatures, only pairing up to reproduce before going their separate ways.

Unfortunately, reproduction marks the beginning of the end of the short life for these impressive creatures. Males gradually stop feeding, and eventually die, while females retreat to their dens to lay and care for their eggs. With undying devotion, they oxygenate and protect their unborn offspring for a few weeks, but once the eggs hatch, the mother's life comes to an end. The life of *Octopus vulgaris* is short, only 9 – 15 months, but they certainly make the most out of these few months.

Say cheese (or better siphon)! This individual clearly enjoyed being in the spotlight and posing for one of our researchers.

Life outside of work

After each week of diving, researching and octopus-observing, I traded my wetsuit for adventure gear on the weekends. The island of Corsica has a lot to offer: snowshoe hiking, wilderness camping, snorkelling, hiking trips, going to the bar, firework-watching and trying some of the local cuisine.

Safe to say, I enjoyed life in the small town of Calvi and the nature surrounding it to its fullest. Everyone working at the station was incredibly kind, and although the language barrier made it hard for me to connect with people in the beginning, I soon had become a part of the group like everyone else. Sharing a common passion and love for the ocean and its inhabitants, certainly breaks down barriers and brings people together.

Being so close to the sea and being able to explore and enjoy the underwater world whenever I chose was a privilege I took for granted – until I left. I spent six and a half amazing months living in a place where others only get to vacation, studying my favourite sea creatures and soaking up every bit of fun I could. It's no surprise that I miss the island, the people and the work a lot. And although my time there is over for now, I am hopeful that I will find my way back to the "island of beauty" one day!

Lea Franziska Seidel
Cohort 2022-2024

Bloom dynamics of the toxic benthic dinoflagellate *Ostreopsis* along the Basque coast (S-E Bay of Biscay) during 2022-2024

Toxic microalgae are a group of small photosynthetic microorganisms that, by their very nature, disrupt the socio-economic activities of the regions where they bloom, affecting human health, tourism or fisheries.

Figure 1: *Ostreopsis* cell under a light microscope

Depending on their ecology, there are two different types of microalgae: planktonic microalgae, which live in the water column, and benthic microalgae, which live attached to a substrate. Among the benthic microalgae with toxic potential found in the Bay of Biscay, the genus that has received the most attention in recent years due to its abundance and impact on bathers is *Ostreopsis* (Figure 1). This genus of dinoflagellates was originally found in warm, tropical waters. However, the rise in the temperature of our oceans over the last few decades, coupled with the vector provided by the ballast water of ships, has meant that several of the species normally restricted to these warm areas have appeared on our coasts. Thus, cells of the genus *Ostreopsis* were first observed on the Basque coast in 2007. Since then, several studies have confirmed their regular presence and sometimes at high abundances, especially during the summer months.

In the summer of 2021, bathers on the beaches of San Sebastian suffered symptoms similar to those usually caused by aerosol poisoning in waters with high abundances of *Ostreopsis*, and the presence of a great concentration of this genus in the water was subsequently confirmed. This fact, together with the presence of massive growth of microalgae of this genus a few days earlier on the beaches of Biarritz, Bidart and Saint-Jean-de-Luz, which led to their closure, alerted the authorities to the problems associated with these microalgae.

In addition to *Ostreopsis* cf. *siamensis*, the only species found in the studies carried out on the Basque coast so far, the presence of *Ostreopsis* cf. *ovata* was confirmed on the French-Basque coast during the summer 2021 episodes. The latter has been responsible for numerous toxic episodes on the Mediterranean coasts in recent years, whereas the toxicity of *O.* cf. *siamensis* remains unclear.

This information led us to carry out an environmental monitoring study of *Ostreopsis* over three annual cycles on the Basque coast to better understand the ecology and the toxic potential of this microalga. To this end, samplings were undertaken from March 2022 to December 2024 in a monthly basis in five beaches: Mutriku, Zumaia, Zarautz, Ondarreta (San Sebastian) and Hondarribia.

Moreover, the sampling was intensified during the summer period by adding another sampling site (La Concha, in San Sebastian) and reducing the frequency to fortnightly or even weekly. Physico-chemical data were collected during sampling, and, due to the ecology of *Ostreopsis*, two types of samples were collected: water column samples and epiphytic samples (microalgal cells attached to macroalgae).

Regarding the environmental parameters, the observed data were, in general, consistent with the coastal ecosystem under study. Thus, the water temperature generally ranged between 12 and 25°C, with the highest values occurring during the summer period. Oxygen saturation exhibited considerable variability, depending mainly on the macroalgal coverage of the substrate, whereas pH and salinity were rather stable, generally ranging between 7.5 and 8.5, and between 32 and 36, respectively.

In terms of the observed abundances of *Ostreopsis*, there is a huge amount of data and it is difficult to go through all of it in this short article. Therefore, I will only present some highlights of the most recent study we have published, as it is quite representative of my entire PhD project. The objective of **this work** was to study the abundance of *Ostreopsis* during the summers of 2022 and 2023 in the coastal waters of San Sebastian, specifically examining the differences in the *Ostreopsis* abundances between two nearby sites (Ondarreta and La Concha beaches), which differ mainly in their substrate characteristics (Figure 2).

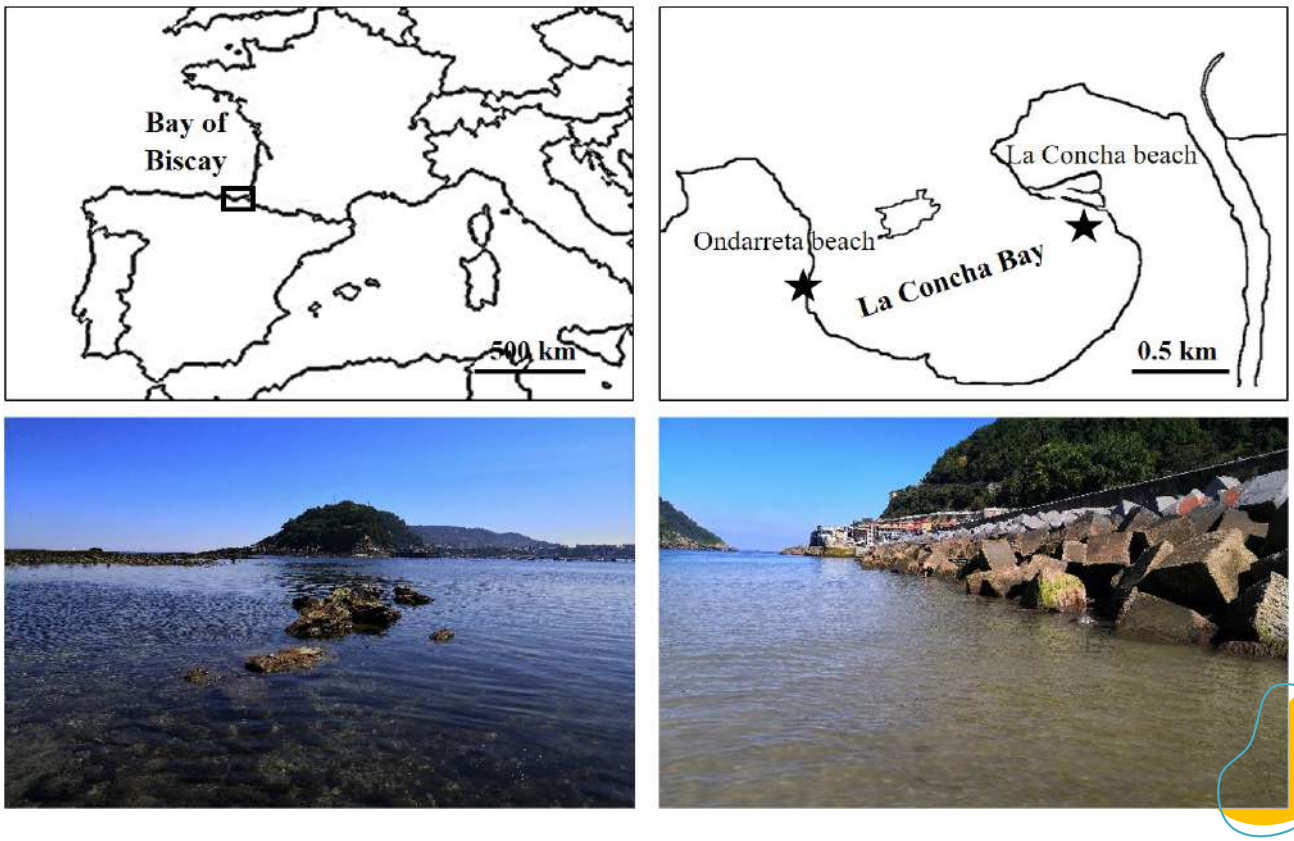

Figure 2: The maps show the location of La Concha Bay within the Bay of Biscay and the location of the two sampling sites (stars). The photos show the rocky sea floor of Ondarreta beach (left) and the sandy sea floor of La Concha beach (right).

The abundances of *Ostreopsis* spp. were significantly higher at Ondarreta beach compared to La Concha beach, with maximum abundances in the former of 1.86 × 10^6 cells/g in the epiphytic samples and 1.33 × 10^5 cells/L in the planktonic samples.

The combination of high water temperature, relatively low hydrodynamics and extensive macroalgal coverage of the rocky seabed at Ondarreta beach has made this site an ideal habitat for *Ostreopsis* and could be the reason for the high abundance of these dinoflagellates during the summer months. The substrate characteristics of Ondarreta beach seem to favour the proliferation of *Ostreopsis* blooms more than those of La Concha beach, which is characterised by a sandy seabed and a limited presence of rocks and macroalgae.

The alert thresholds set for the Mediterranean Sea were exceeded multiple times, especially at Ondarreta beach, but no cases of intoxication were reported. Moreover, molecular analyses revealed the co-occurrence of *O.* cf. *siamensis* and *O.* cf. *ovata* in San Sebastian, confirming for the first time the presence of the latter on the Spanish coast of the Bay of Biscay.

In conclusion, this PhD project aims, among others, to serve as a starting point for the establishment of an environmental monitoring programme for *Ostreopsis* by the Public Health Department of the Basque Government, which could help to mitigate future harmful events.

However, there is a lot of work that needs to be done, including the potential incorporation of additional tools, such as quantitative PCR or digital PCR, into the alert strategy on the Basque coast in order to obtain cell quantification at species level. Additionally, further research should be carried out, focusing on the factors, such as temperature, hydrodynamics or tidal effect, which influence the growth and toxicity of *Ostreopsis* on the Basque coast, as this could be the key to risk and bloom anticipation.

Yago Laurenns Balparda
PhD student, MER doctoral program

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Climate change: here-and-now problem in the Arctic

Climate change is a here-and-now problem in the Arctic, where temperatures are rising far faster than the global average and widespread changes in precipitation, snow cover, sea and land ice, permafrost, and extreme events are transforming the Arctic environment.

The Arctic climate is moving into a new state, forced by increases in atmospheric levels of carbon dioxide and other greenhouse gases. As a result, 2015 to present have been the warmest years on record in the Arctic, with a dramatic +5°C increase in January since 1900. Associated with the increased temperatures, the Arctic Ocean (AO) is experiencing radical modifications in its hydrographic properties (i.e., freshwater, salt and heat content) and in its overall circulation. Driven by increasing inputs from multiple freshwater sources (i.e., river inflow, net precipitation and melting sea ice and glaciers), the volume of freshwater in Arctic surface waters has increased by 8,000 km^3 (more than 11%) compared to the 1980–2000 period. At the atmosphere-ocean interface, the traditional Arctic icescape is changing largely due to atmospheric forcing and, to a lesser extent, increasing winter ocean heat flux, particularly in the Eurasian Arctic sector. Since the 1970s, the extent of summer sea ice has decreased by more than 40% and its thickness by 65%, with first-year ice largely replacing the thick multiyear pack ice. Finally, through the land-ocean continuum, peripheral environmental pressures (e.g., permafrost thaw, increasing river inputs and coastal erosion, atmospheric deposition) also affect the functioning of Arctic marine biogeochemical cycles, including contaminants such as perfluoroalkyl and polyfluoroalkyl substances (PFAS), persistent organic pollutants (POPs), mercury but also plastics. In particular, increased inflow of glacial meltwater and freshwater from fjords and river mouths (in addition to pan-Arctic river inputs) will dramatically alter coastal biogeochemical cycles.

The coast of Greenland, just south of Newman Fjord, 81.5 °N, 30 August 2024.
Photo : J. Bonnin

Together, these climate-driven changes within the atmosphere, cryosphere and ocean have wide-ranging consequences for Arctic marine ecological dynamics, influencing productivity, species interactions, population mixing and pathogen and disease transmission.

At the Arctic gateways, Atlantic and Pacific waters flow northward through the European Arctic Corridor and the Bering Strait, respectively, carrying heat, nutrients, and planktonic organisms to the AO. Ongoing poleward advection of Atlantic and Pacific waters already suggests that the shrinking Arctic domain may be prone to intrusions of temperate species at both of the Arctic gateways (from virus to marine mammals).

In the central Arctic, however, identifying changes in the shrinking Arctic biome is currently difficult for two main related reasons: the remoteness of these extreme regions and the severe lack of data (there are no records in large areas of the central Arctic).

To better understand the environmental drivers that are influenced by climate change, specific 'refuge' regions need to be investigated. The "Last Ice Area" (LIA), which is the last sanctuary of multiyear sea ice in the AO, is located north of Canada and Greenland. The LIA includes the Lincoln Sea and Nares Strait, which host unique endemic sea ice-dependent ecosystems. The physical, chemical, and biological properties of this region remain nearly undocumented.

Investigation area of the Refuge-Arctic project in the Last Ice Area including the Nares Strait between the northern coast of Geenland and the Canadian Ellesmere Islant and the Lincoln Sea north of the strait.

The Refuge-Arctic project: investigating the Last Ice Area

Organized as a large consortium (21 French laboratories with a strong Canadian, Danish and US collaboration), the REFUGE-ARCTIC project aimed at improving our understanding of how global change influences ecosystems and biogeochemical cycling in the AO by focusing on this still emblematic refuge of climate change. In this perspective, a research oceanographic expedition has been conducted on board the NGCC Amundsen Ice breaker between August and October 2024 in the Lincoln Sea and Nares Strait to collect water and sediment samples from contrasted environments of this arctic region. The overarching research goals of this proposal are to:

- Understand the physical, chemical and biological functioning of the last multiyear sea ice refuge in the AO, by conducting a spatial (i.e., in various arctic environments) and temporal (i.e., multiyear sea ice camps, moorings and sedimentary archives) survey;
- Investigate different high latitude fjords systems where glaciers impact the local physical, chemical and biological compartments
- Study key processes related to past, present and future climate-induced changes

Photo of the NGCC Amundsen exiting the Dobbin Fjord, 79 °N, 21 August 2024.

Photo: D. Archambault

While one leg of the expedition aimed at understanding the sea ice characteristics and related physics, chemistry and biology, the other leg, on which I was in charge of sediment sampling, focused mostly on fjords with variable glacier influence (land vs marine terminated), to provide new insights on those very fragile environments where the dynamic of the planktonic and benthic ecosystems are poorly known, yet.

My task on board was twofold:

- To sample surface sediments (upper 40 cm) to collect material to investigate the geochemical properties of the sediment (grain size, clay and mineral composition, organic matter content, pigments, amino acids sedimentary ancient DNA...) and to study the distribution of living and dead benthic foraminifera, a group of protists that are considered high potentiel bio-indicators of the marine environment.

- To collect longer sediment archives in order to investigate the past conditions (past surface water temperature, primary productivity, ice cover etc...) during the last 10 thousand years mostly using geochemical analyses of the sediment (grain size, elemental analyses and ratios, organic matter content and composition), microfossils (assemblages, isotopic signal of their shells) and molecular fossil (biomarkers to reconstruct paleotemperature of the water, se-ice cover).

Box Corer (left) recovery after sampling the surface sediment in the Archer Fjord and Gravity Corer (right) ready to be deloyed in the Conny Beare Fjord to collect longer sediment archives.
Photos: J. Bonnin

The Refuge-Arctic expedition was a total success as 5 fjords with different environmental conditions (with land-terminated glacier, with marine-terminated glacier, without glacier, with the influence of a local river...) and one station in the Lincoln Sea were visited and sampled. Many months of analyses and investigations are now waiting the different teams to produce very exiting results for those still largley unknown areas!

Floating ice in front and marine terminated glacier, Mackinson Fjord, 77.2°N,16th August 2024. Photo: J. Bonnin

Late at night in the Nares Strait. 80°N, 17th August 2024.

Photo: J. Bonnin

The sunny coast of Archer Fjord, 81.3 °N, 26 August 2024. Photo: J. Bonnin

Jérôme Bonnin
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EPOC Laboratory
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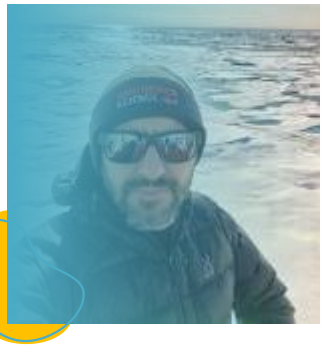
France



Jon Ander Bazeta

Current position: Administrative officer, Postgraduate & International students

Why have you chosen working in (marine science) / the university / at PiE? When did you make this decision?
In 2018, I started to prepare for civil servant examinations. Curiously, was in 2021, 2 days after my daughter was born, when I received my first job offer from the university. I started working in Leioa and after 7 months, they offered me the job at PiE.

I am from Gorliz, I have seen this building all my life, when it was a hospital, when it was abandoned and I have seen all the transformation to become a university. As you can imagine, it is the ideal place for me to work.

Which do you think is your main labour achievement?
My greatest success is to work where I work without being a scientist.

Which is the best thing about working in marine science/with marine science people for you?
When I was a child, I wanted to be like Jacques Cousteau, I had all his films and I fantasised about diving with sharks.

When I was 17 and I had to choose what to study, I was a kid who did not want to leave home to study marine biology in Canary Islands. Was much easier to study Economy in Bilbao with friends. I never liked what I was studying, but... I studied one year as Erasmus student in Groningen (Holland) and another year in Barcelona, I loved those experiences. That is why I later did a master's degree in business internationalization.

One of my biggest hobbies was doing snorkel in Armintza or “la cala del castillito”. When I was 22 years, I had the opportunity of visiting my aunt and my cousins that live in Australia. One of the most beautiful and exciting experience I have had in my life is doing snorkel in the Australian Great Barrier Reef, it was amazing.

As you can imagine, working at PiE, in my town and with international students, it has everything I have ever liked most in my life.

Which is the “B side”?
I am a frustrated economist working with scientists, somehow, sometime, I'm envious, because that's what I wanted to do too.

Last but not least, in the following weeks the “administrative staff competition” will be finished and as I don’t have enough years’ experience in the university I will probably lose my job at PiE.

Which are your personal strengths and weaknesses dealing with the master staff and students?
Three years of being the link between the students and professors. Overall, it has been a very positive experience. It is a unique position at the university because we do almost everything that an administrative in UPV/EHU could do.

First of all, I would like to talk about Feli, both of us we do the same work. Is who was at PiE when I was a totally beginner and she is is the one who has taught me everything I know, is to be appreciated.

Many students come to us with every single problem they have, they are very far from their house and many times, they think we can help them with everything. We try our best, but sometimes there is nothing we can do. For example, health problems, they have an insurance and they have to use it because sometimes Osakidetza, the public health system, is not a valid solution for them.

Most of the time are very impatience, they want answers from one day to the next, and if they do not have it, they can resend you the same email even if it is weekend. However, if we send them an email, some do not reply for weeks. For example, in November, we sent an email to those MER students who finished the Master in September, asking where to send the provisional diploma and for the moment, only 10 students of 34 have answered.

Seriously, what I like least about my job is all visa-related issues and with foreigners' offices. I know that also for non-european students is the most difficult “subject” of the Master and is frustrating because we cannot help all they/we want. The university is also not doing as much as it should because it should be a strong international students department helping with all these problems and there is not.

What is your relation with MER?
My job, as is the other Erasmus Mundus in Contamination and Environmental Toxicology (ECT+) and the local master CTA, both of them coordinated from PiE.

For how long have you been involved in the Master MER?
3 years.

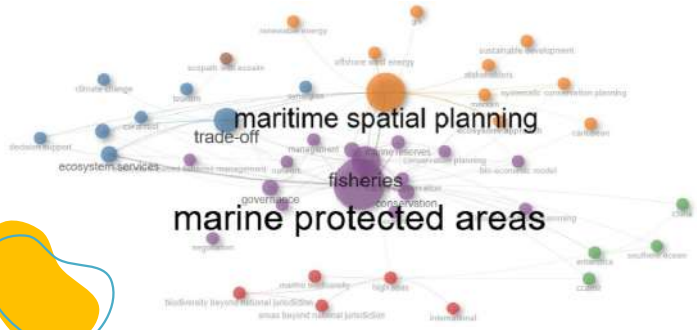
What would be your advice for the MER students and their future career in marine science?
I do not know much about science, I do not see myself qualified to advise anyone on science. Nevertheless, I have been an international student and these years have been the years in which I have learned the most in my life. Not maybe in economy, but yes in life. Living abroad is always a very rich experience, you learn a lot from many different people and you learn to do many things alone.

My advice is, obviously try to learn as much as possible from the amazing professors that we have at PiE and around the different universities of the MER program, but also make many friends and enjoy every single moment of these huge experience. This experience is something that you are going to remember the rest of your life.

Joyce Queiroz

MER Cohort 2022-2024
joycedgrq@gmail.com

The just graduated student Joyce Queiroz (supervised by Helena Calado at University of the Azores (UAc)) has published the results obtained during her master project (defended last September). Take a closer look to her comprehensive evaluation of trade offs to enhance ocean conservation and sustainable use of marine resources. **Congrats Joyce for this relevant and necessary work to protect our oceans!**



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Nagore Blasco

MER phD student
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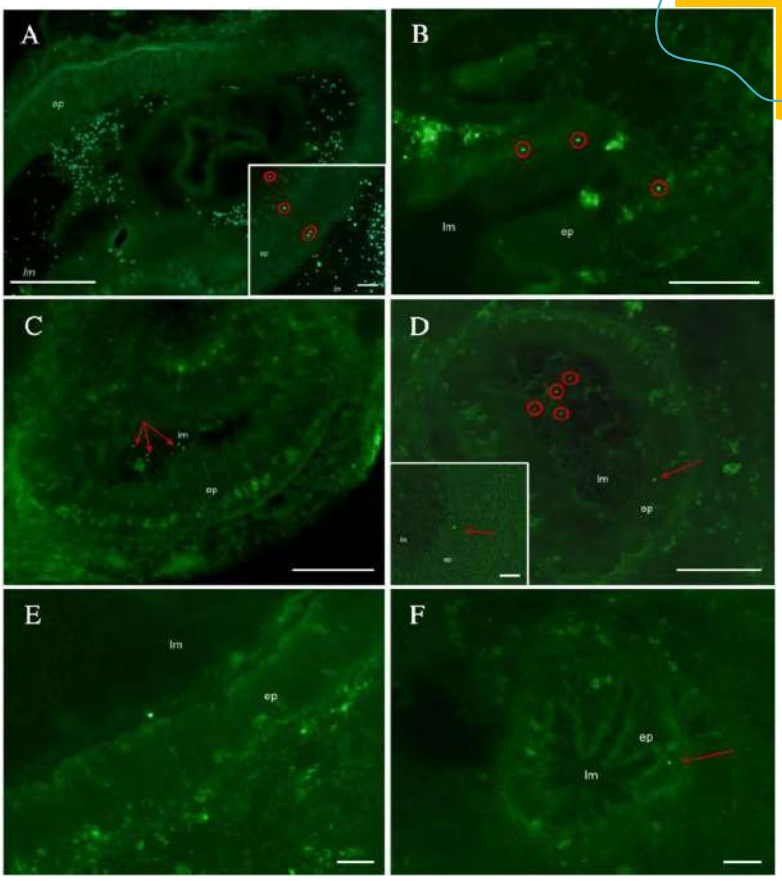
Do you remember Nagore from the last summer newsletter? After explaining us that "Life in plastic is NOT fantastic", she performed very interesting studies on the depuration time and procedure of microplastics in tissues of mussel Mytilus galloprovincialis. If you want to know more go to her publication. **Great work, Nagore!**



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Unfolding conservation NGOs: Untold stories and experiences from MERmates

The media portrays positive stories about the hallowed work which environmental conservation NGOs accomplish while muffling the criticism offered by stakeholders and communities in developing countries regarding the actual benefits. Despite their positive intentions, many of these organizations face accusations of internal mismanagement, lack of transparency in fund allocation, and prioritization of administrative expenses over on-ground efforts. Additionally, practices such as parachute science (Stöfen-O'Brien et al., 2022), where external actors dominate research and decision-making undermine local ownership and long-term effectiveness. Based on available literature and our experiences as early-career researchers working in NGOs in *The Global South* (Madrigal & Valadez, 2025), we begin this article by defining conservation NGOs and addressing recent criticisms, including common and region-specific challenges. We propose some ideas that can be useful tips for future conservation NGOs workers and if taken into account by managers, could improve working conditions for our colleagues. We also offer a translated version of this piece to Spanish and Bahasa, our mother tongues, by scanning the QR code at the end of the article.

What are Conservation NGOs?

In this article, we will refer to Conservation NGOs as those organizations addressing problems related to biodiversity loss and environmental degradation (Brockington and Schoefild, 2010; Nuesiri 2018). Their growth is tied to global environmental awareness and the need for specialized organizations to address conservation challenges beyond the capacity of national governments (Larsen, 2018). They can include big international or small local organizations, and more frequently they are becoming fundamental actors in designing and implementing conservation initiatives globally (Nuesiri, 2018).

The Not-So-Pretty Side of Conservation NGOs

Through extensive conversations between the authors of this article, we discovered that our experiences in Latin America and Southeast Asia were not isolated but reflected shared challenges across regions. Here we highlight recurring issues in the operations of some conservation NGOs.

Internal mismanagement

A key challenge for conservation NGOs is internal disorganization, which often undermines their ability to achieve meaningful conservation outcomes. As Wahlen (2014) highlights, staff frequently manage responsibilities beyond their roles, leading to inefficiencies and diluted project focus. During our time with conservation NGOs in Latin America and Southeast Asia, we observed a culture of excessive workloads disconnected from broader conservation goals. Unrealistic timelines proposed to donors often failed to align with the practical challenges of implementation, reflecting a disconnect between proposal writers and on-the-ground realities.

Work accountability and transparency

The operations of conservation NGOs are heavily influenced by their funding structures, logistical frameworks, and partnerships, often relying on external capital from donors, grants, and eco-tourism.

This dependency raises concerns about their accountability and transparency, including the disclosure of financial practices, decision-making processes, and methodologies (Brockington & Schofield, 2010; Wahlen, 2014). Donor-driven agendas and competition for funding frequently lead to exaggerated success claims in reports, prioritizing headlines over meaningful impacts (Wahlen, 2014), which unfortunately were the cases we experienced in Latin America and Southeast Asia.

Neocolonial Practices

Neocolonialism in Science refers to the perpetuation of power imbalances and exploitative practices by researchers, institutions, and funding bodies from the Global North (wealthier nations) over the Global South (Adoko et al., 2021). It mirrors colonial systems of dominance by prioritizing the interests, values, and control of the Global North, often sidelining the contributions and agency of local scientists and communities. Examples include publishing research in English-only journals inaccessible to local stakeholders («Scientific Publishing Has a Language Problem», 2023), parachute science, excluding local researchers from decision-making or authorship, and portraying Global South collaborators as secondary or manual laborers rather than intellectual equals. Neocolonialism in science sustains dependency on overseas organizations, inequity, and marginalization of local knowledge and expertise, instead of nurturing its development and self-reliance (Wondirad et al., 2020).

We have witnessed how Conservation NGOs often exhibit a discriminatory North-South “meritocracy” that sidelines local expertise and perpetuates neocolonial practices. For example, leadership positions are frequently filled based on status or foreign researchers, overlooking loca representatives and fieldworkers with years of experience in target areas. Further, research in Global South countries is often led by foreign teams, with local scientists relegated to secondary roles or logistical support, despite having comparable expertise. These systemic inequalities, as highlighted by Madrigal and Yáñez Macías Valadez (2025), extend to intellectual credit, which is disproportionately allocated to Global North researchers. We observed in the NGOs in Latin America, scientific tasks, such as data analysis, were reserved for male Global North staff, while local members, including those with advanced degrees, were relegated to physical or community-related roles.

Other examples of neocolonialist practices are the exclusive use of English in scientific publications or communications which alienates local communities and reinforces the dominance of Global North narratives in knowledge production (Pérez Ortega, 2020; Nature Human Behaviour, 2023). Although we understand the need as a globalized society to have a common language to communicate, which in this century is English, and the need to publish in international journals to reach a broader audience; only communicating and publishing the scientific findings in English, leaves local population excluded from scientific knowledge produced in their own countries, even when they were part of the scientific work.

We witnessed that the internal meetings of the organization based in Latin America with major staff from Latino origin were held in English, marginalizing the Spanish-speaking population out of the scientific advances of the organization.

We have observed condescending attitudes toward local knowledge, and failure to prioritize local time zones for people in the field. These practices sustain structural imbalances and undermine the agency of Global South stakeholders, creating what is called parachute science (de Vos & Schwartz, 2022; Madrigal and Yáñez Marcías Valadez, 2025). These imbalances are evident in project decision-making processes, where individuals from a narrow set of countries dominate, excluding local voices from the table which hinder a meaningful output to the communities (de Vos & Schwartz, 2022). For example, we witnessed a Global North-led project in Southeast Asia that sought to integrate shrimp aquaculture and mangrove rehabilitation but failed to engage local collaborators due to a 'forceful' approach, leading to stalled negotiations and minimal impacts.
The geographic bias not only marginalized Global South contributions but also entrenched a paternalistic, top-down approach. These practices undermine the capacity-building potential of conservation projects by failing to invest in local expertise. This approach not only limits the long-term sustainability of conservation initiatives but also perpetuates inequality (de Vos & Schwartz, 2022).

Other unspoken realities in environmental conservation NGOs

There are other important and concerning topics that we are not addressing, such as corruption, gender imbalance, and sexual harassment, particularly in remote natural areas. Moreover, we have witnessed firsthand how some NGOs employ skilled lawyers to protect their interests and attempt to silence workers who speak out against injustices. Managers from the Global North must be aware that if they acted with the same negligence, exploitation and degrading remarks toward people in their own regions as they do toward workers in the Global South, they would likely face legal repercussions. However, they also understand that many countries in the Global South face systemic economic and social challenges, making mechanisms for addressing grievances bureaucratic and time-consuming. This allows them to operate with relative impunity, as long as they can produce appealing pictures and videos to appease donors and ensure the continued flow of funds.

Some recommendations we would have liked to read beforehand

We are not demonizing conservation NGOs; rather, we aim to share our experiences to spark a debate that improves working conditions for our colleagues. Before entering the Environmental Conservation NGO world, we would have greatly benefited from reading an article like this—one that demystifies and critically examines what working for an NGO truly entails. With this in mind, we would like to offer some recommendations based on our experiences to graduates aspiring to work in conservation NGOs:

- **Investigate the NGO you want to join:** This means going beyond their website. Reach out to current and former employees, especially local staff living in the field. A high employee turnover rate is a red flag to consider. Additionally, review the CV of your potential direct supervisor. While a strong CV does not guarantee good leadership, it may indicate whether the person earned their position through professional merits or personal connections.

- **Professional growth:** During the interview, ask what are the professional growth opportunities offered to the staff. An unclear answer might reflect that it is not a priority for the NGOs to make their staff grow professionally. Another red flag.

- **Look out for accountability:** Once you start working in the NGO, look for transparency in budget allocations. Notice how senior staff and management handle criticism, and acknowledging areas for improvement.

- **Remember, working in a conservation NGO is a job:** Like any other job, you should not feel pressured or guilty for setting boundaries, adhering to contracted work hours, or taking your legal free days and vacations. Overexploitation fueled by the romanticization of conservation work must stop.

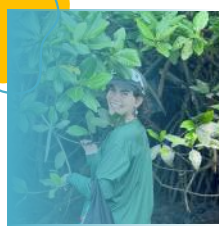
- **The law of the host country takes precedence over internal rules:** Familiarize yourself with the labor laws of the country where you'll be working, and ensure your rights are respected. Verify that your salary is fair and that your employment is legal under local regulations.

- **Your voice is your power:** If you witness injustice or illegal practices, such as corruption, local communities instrumentalization, or sexual harassment, you have the right to report them through internal or external legal mechanisms. Do not be intimidated, even if the person involved has a reputable scientific or professional background. Impunity thrives on silence and fear.

- **Speak up against xenophobia and discrimination:** Global South knowledge—traditional and academic—is just as valuable as any other. If you encounter xenophobic, anti-Latin, anti-Asian, machistas, chauvinism, or racist comments, do not remain silent. check if there are internal protocols to act against these behaviors, or actively propose to the conversation the need to create one.

These recommendations aim to empower those entering the NGO sector and to foster a more equitable and respectful work environment for all.
We want to acknowledge that, despite identifying many shortcomings during our time working with these NGOs, we do not speak for all of them. Some are indeed making a meaningful difference in conservation with integral approaches. We witnessed firsthand the positive impact of environmental education programs, particularly the dedication of teachers engaging with local communities. Similarly, we saw the benefits of mangrove restoration programs that were grounded in science and framed within a social perspective, empowering local communities to participate in conservation and fostering a sense of identity.





Shantika Maylana Shastrapariwa, Melina González and Gloria Mariño Briceño. **Cohort 2020-2022**

Full article in **Spanish** and **Bahasa**

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Roberta Moraes

MER Cohort: 2019-2021
Birth place: São Paulo, Brazil

Current status: Working as the Environment and Sustainability Lead for Jacobs in Australia and New Zealand

Since I graduated from MER (2019 - 2021), I rejoined Jacobs - a design and engineering company which provides a range of services to various markets. I first lived in the UK for two years working as a Water Engineer focused in flood risk management. Currently, I am living in Australia and trying a different type of role, working a functional / corporate environmental work and having a more holistic view of the business.

I have had the chance to attend conferences, engage in diversity and inclusion initiatives with Jacobs' Employees Networks, and work with global teams in different areas of the environmental world. I enjoy bringing the sustainability perspective to everything I do, and continue to champion the nature-based solutions concepts in the company. My picture shows me on my first day visiting the Sydney office - a reminder of the resilience MER gave me with all the moving around (during pandemic!).

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