



Xacobeo 21-22



CIM  
Centro de Investigación Mariña  
Universidade de Vigo

2022

Communicate the Ocean

SCIENTISTS  
meei ARTISTS



2021 United Nations Decade  
of Ocean Science  
2030 for Sustainable Development





# SCIENTISTS meet ARTISTS

## *Communicate the Ocean*

The infinite blue of the oceans remains an unfathomable mystery to most of us. To approach these worlds, comprehend the species, the processes and the oceanic dynamics has been a staple in the history of humanity. In many occasions, scientists live with enthusiasm each discovery or progress in their research, but this effort and passion rarely reaches the public in a comprehensible way.

**Scientists meet artists** is an initiative in which science and art go hand in hand in an action promoted by Campus do Mar and the Centro de Investigación Mariña of the Universidade de Vigo (CIM) supported by Xunta de Galicia. Illustrators and scientists met and worked together for a year to produce 12 plates that celebrate the Decade of the Oceans of UNESCO. The artworks are inspired by concepts and processes related to the marine environment. They can be downloaded for colouring using QR codes, which also access the original ideas that inspired them.

January

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November

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December

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# Sea cucumber, a great unknown. What is its role in the oceans?



**Tania Ballesteros Otero**

She is a biologist and has an Inter-university Master Degree in Marine Biology. She has been working in different marine companies in the fields of aquaculture, project management, field-work and quality research. During the last five years, her professional activity has been focusing on the culture of marine organisms (microalgae, mollusks, echinoderms, and fish) and the study and management of marine resources.

Researcher



**Clara Cerviño**

She is biologist and scientific illustrator. Graduated in Biology from Universidade de Santiago de Compostela and she studied two masters at Universitat de Barcelona. In Portugal, she participated in a Training Course in Scientific Illustration at Universidade de Aveiro. Since then, she works as a professional scientific illustrator. Furthermore, she is member of the advisory committee of Ilustraciencia and teacher in the academy of the same name.

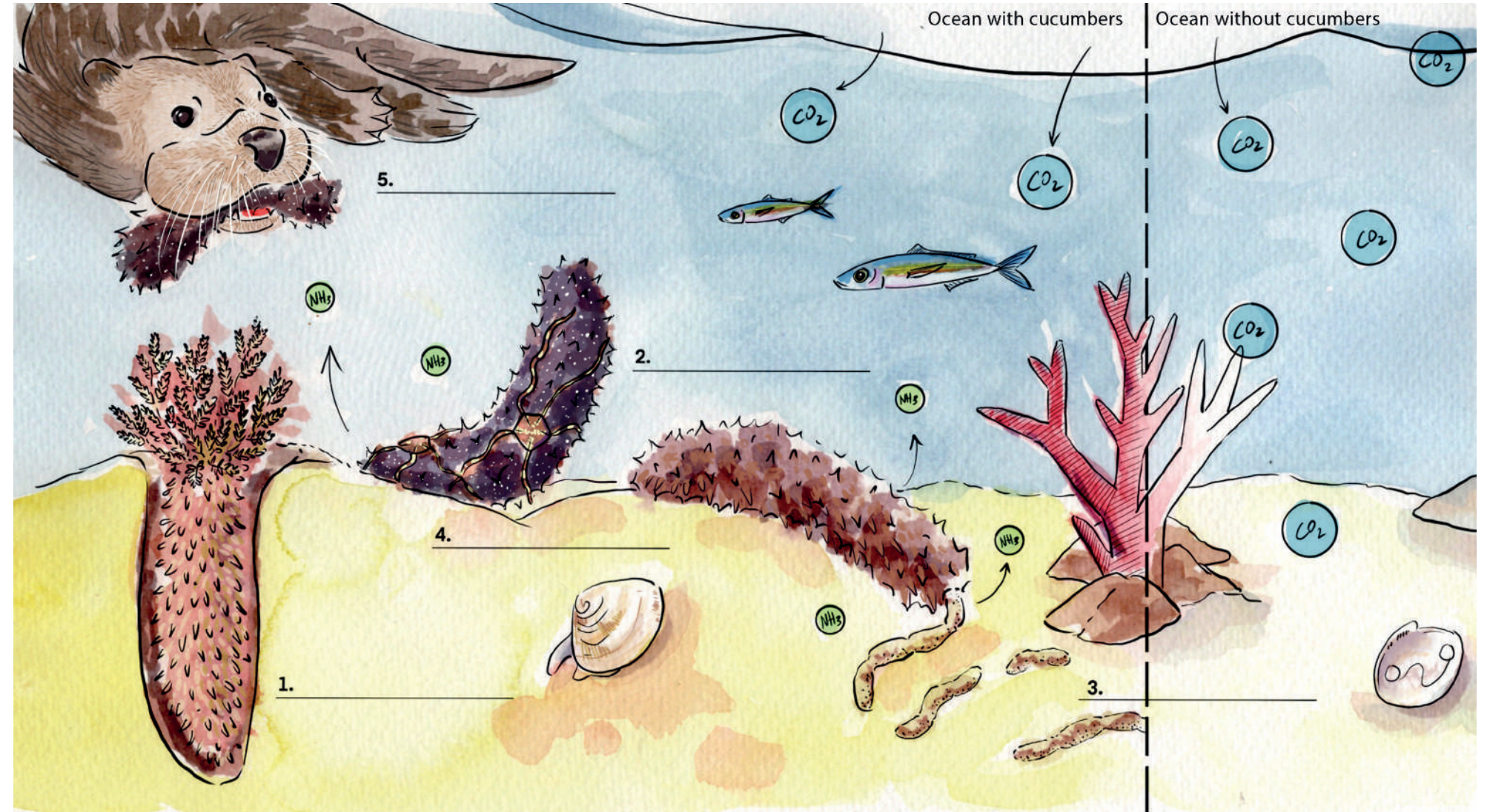
Illustrator



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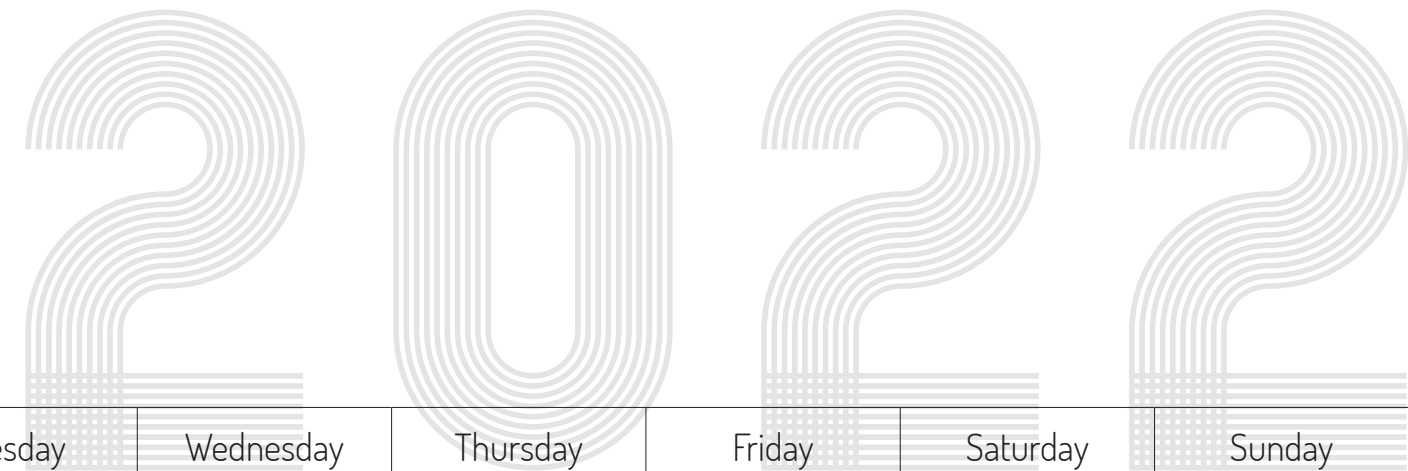


Sea cucumbers are very important animals in the ocean because: 1. those that live buried help to aerate the sea bottom, 2. the type of food (detritivorous) favours the recycling of nutrients, 3. they reduce the acidity of the ocean, counteracting one of the effects caused by climate change, 4. they are home to other animals, increasing the number of species (greater biodiversity) and, 5. they serve as food for other animals (trophic chain).

1. Aeration
2. Recycling of nutrients
3. Reduction of acidity
4. Biodiversity
5. Trophic chain



January



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17	18	19	20	21	22	23
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31						



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# Phytoplankton, our amazing microscopic friend



**Paulo Alcaraz**

He is a graduate of Marine Science from the University of Vigo. Since 2015, he has participated in several oceanographic campaigns in international waters and presented papers at international conferences. Moreover, he has collaborated in scientific dissemination activities organised by FECYT and Xunta de Galicia. Nowadays he is a PhD student at DoMar.

Researcher



**Pablo Rosendo**

Galician illustrator who resides in Vigo, with 15 years of professional experience and numerous awards. He has worked for companies, publishing houses and entities; he has published children's books, and has illustrated more than 50 school textbooks. One of his publications is *Sendas de Ons* (Ons paths) by El Patito Editorial and *Cies e Roque: Operación Reconquista* (Cies and Roque: Reconquest Venture) by Lobito Bueno.

Illustrator

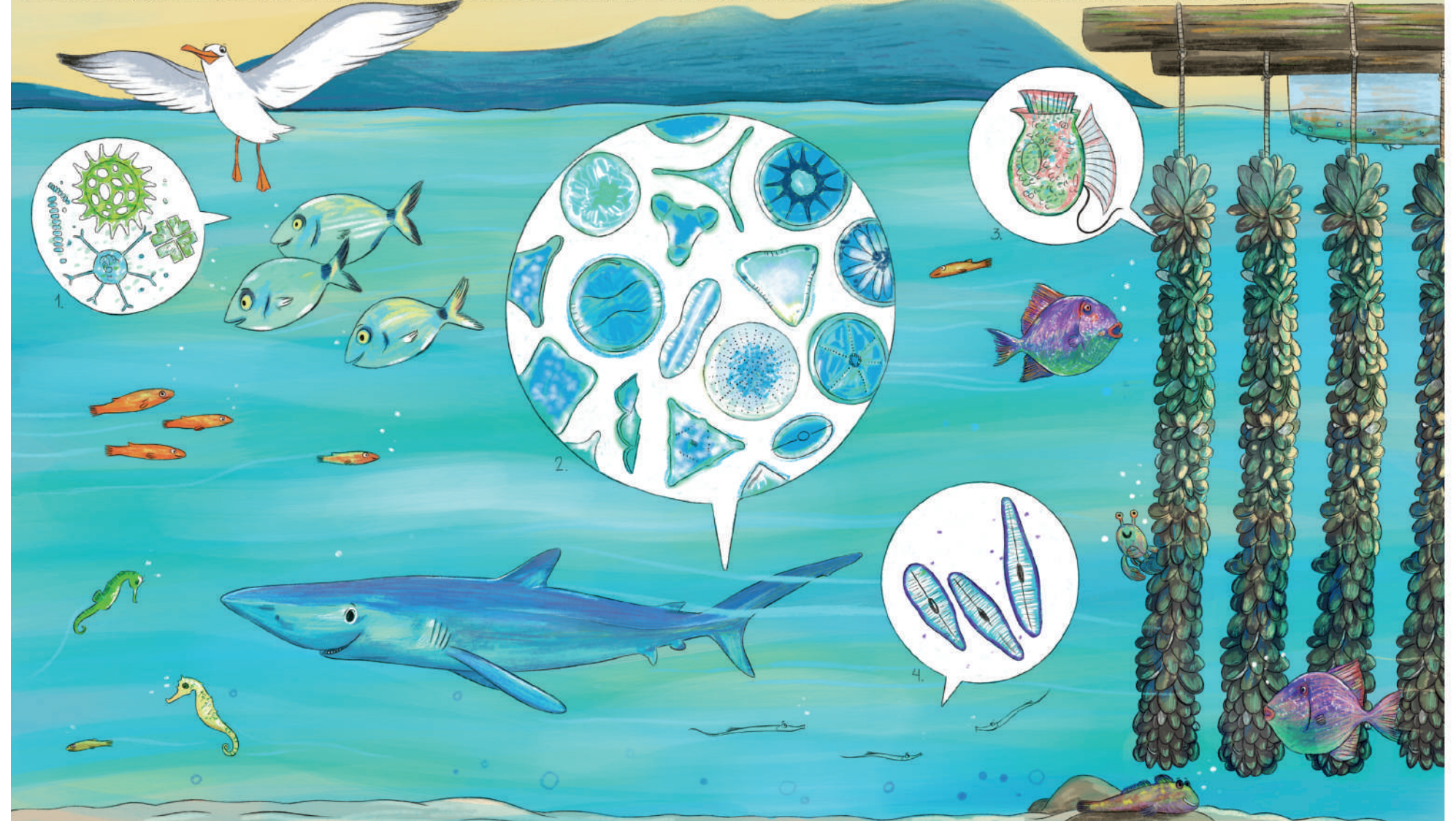


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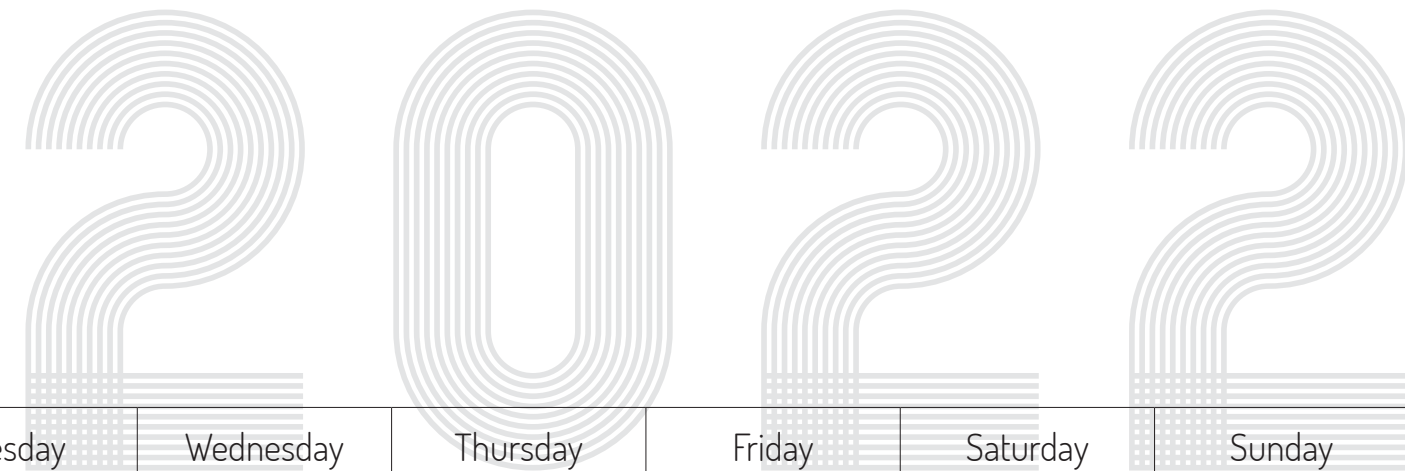
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Phytoplankton (1, 2, 3 and 4) are the small microorganisms that live floating in watery environments. They are the foundation of the aquatic food web and marine ecosystems. In addition, they are so crucial for the life of the whole planet because they photosynthesize. Phytoplankton are extremely diverse, varying from diatoms (2 and 4) to dinoflagellates (1 and 3) and different in shape, size and color (1, 2, 3 and 4). They are the food of many fishes (1, 2 and 4) and mollusks (3) in the ocean. Also, phytoplankton are responsible for the release of 50 % of the oxygen that we breathe on the planet. They consume CO<sub>2</sub> and are a good mechanism of absorption of CO<sub>2</sub>. In fact, phytoplankton absorb a quarter of CO<sub>2</sub> that humans generate every year.





# February



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# The benefits of marine bacteria could end if we continue polluting our coasts



Alberto Gutiérrez

I have a degree in Biology and a master in Biotechnology, both by Universidade de Santiago de Compostela. Nowadays, I am a predoctoral researcher at DoMar program. During my degree, I spent an exchange year at North Dakota State University (EEUU). During my PhD studies, I spent a five-month stay at Ocean University of China and a three-month stay at Universidade de Cabo Verde. I speak English, Portuguese and I am studying B2 of Mandarin Chinese at Official Languages School.

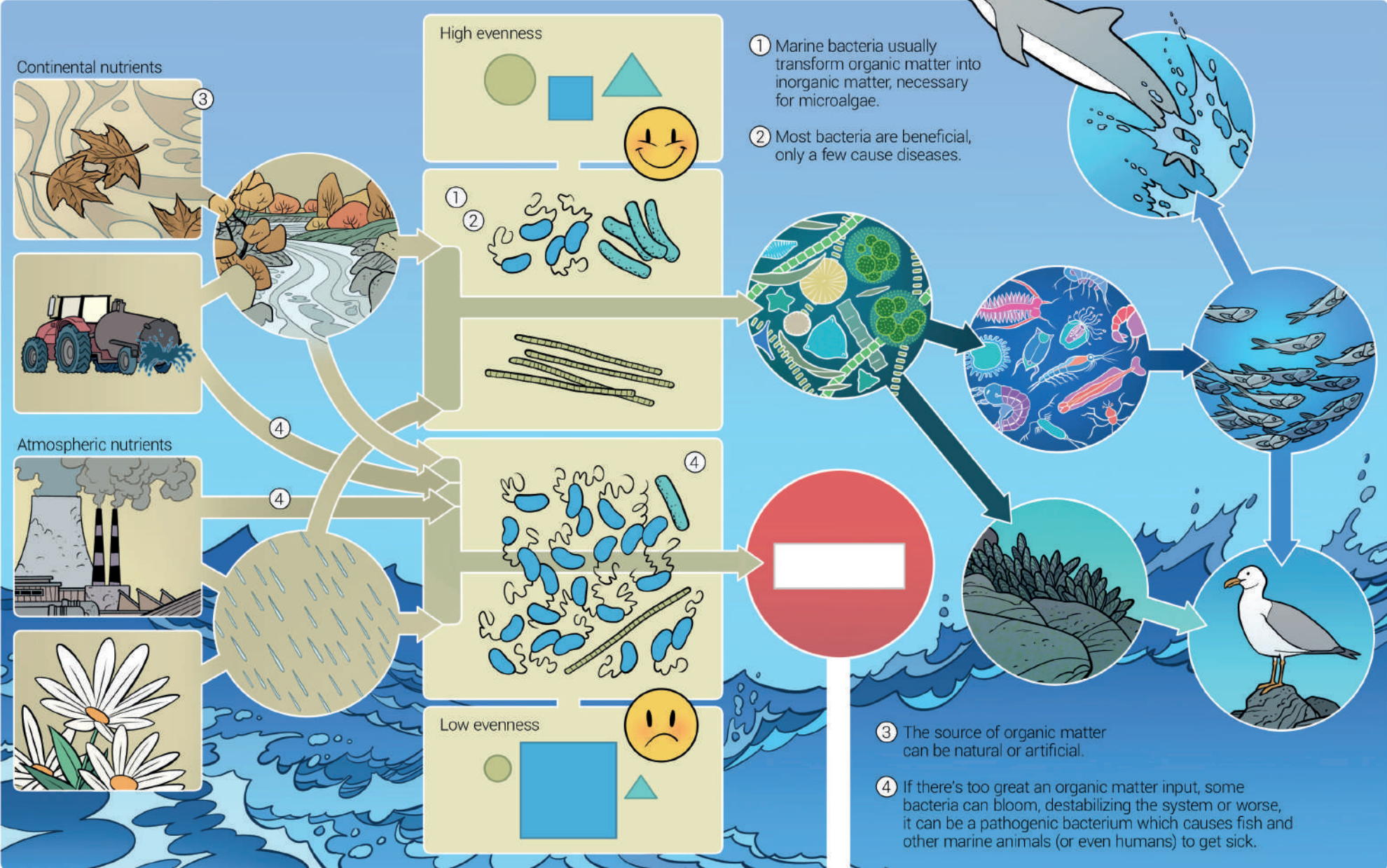
Researcher



Fran Bueno

He began by illustrating numerous school textbooks, children's books with writers as Agustín Paz or Marilar Aleixandre. He participated in mythic comic fanzines *Golfiño* and *Galimatías*, and he has published comics in France and United States. He was teaching in comic school *O Garaxe Hermético* for nine years, and nowadays, he participates in the magazine *A viñeta de Schrödinger*. He is working on a book written by Diego Ameixeiras, and he receives international delivery represented by Astound Agency.

Illustrator





# March

# 2022

Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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21	22 <i>World Water Day</i>	23	24	25	26	27
28	29	30	31			



# What does genetics contribute to hake's traceability?



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**María Fernández Míguez**

She has a degree in Biology at USC, where she began her research in the taxonomy of marine gastropods. She is currently part of ReXenMar Group (CIM-Uvigo), where she works on the final stage of her doctoral research on the application of molecular tools in aquaculture and the improvement of fishing. She complements this work with teaching at the University and scientific outreach.

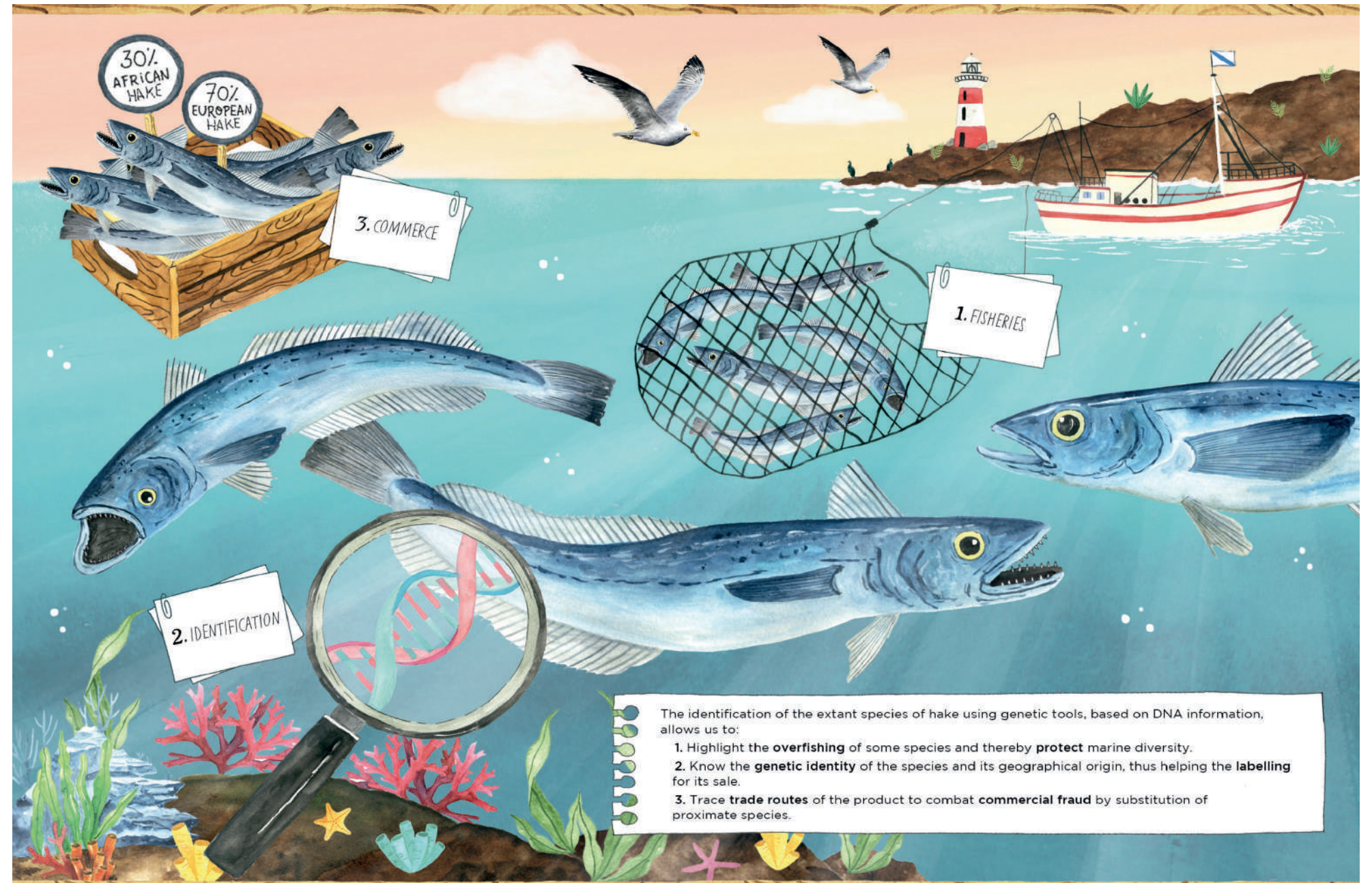
Researcher



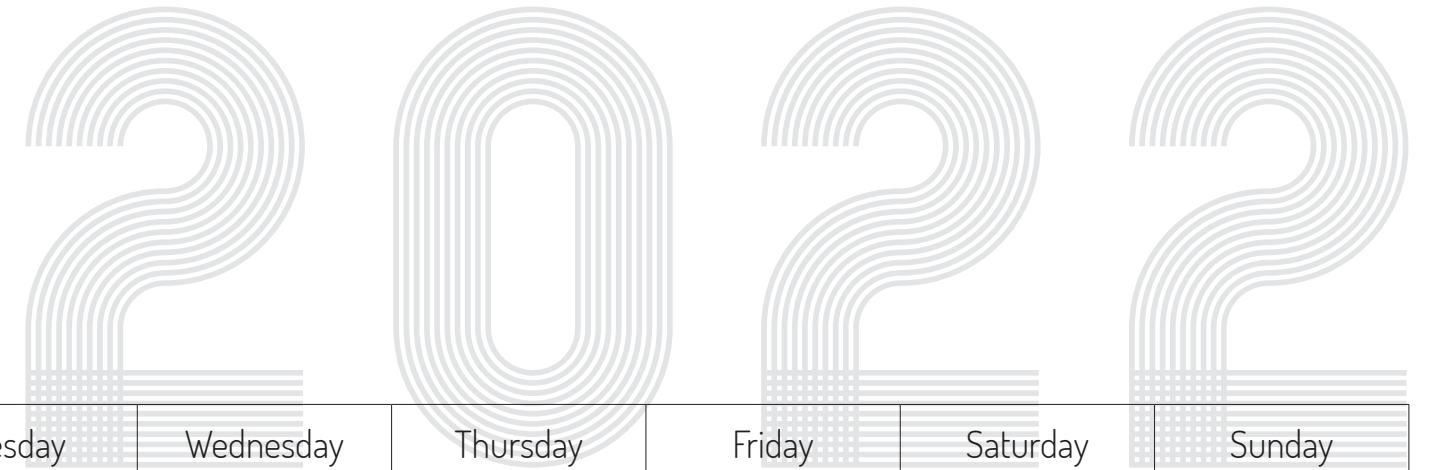
**Rena Ortega**

She is an Illustrator, a worldwide explorer and an activist of passion, colour, beauty and the natural world. Her illustrations intend to raise awareness about the beauty of this world and promote nature conservation by inspiring the lives of the people through projects related to the publishing world, travels and scientific outreach focused on flora and fauna.

Illustrator



April



Monday	Tuesday	Wednesday	Thursday	Friday	Saturday	Sunday
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11	12	13	14	15 World Art Day	16	17
18	19	20	21 World Creativity and Innovation Day	22	23	24
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# Color and sex in mussels, a matter of taste



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Ángel Pérez Diz

Associate Professor in the area of Genetics at Universidade de Vigo interested in different aspects of Evolutionary and Reproductive Biology, e.g. know functional consequences of genetic changes, the molecular mechanisms underlying adaptation and speciation, basics on reproduction and reproductive isolating mechanisms in marine organisms using genomic analysis, transcriptomes and proteomics.

Researcher



José Arcas

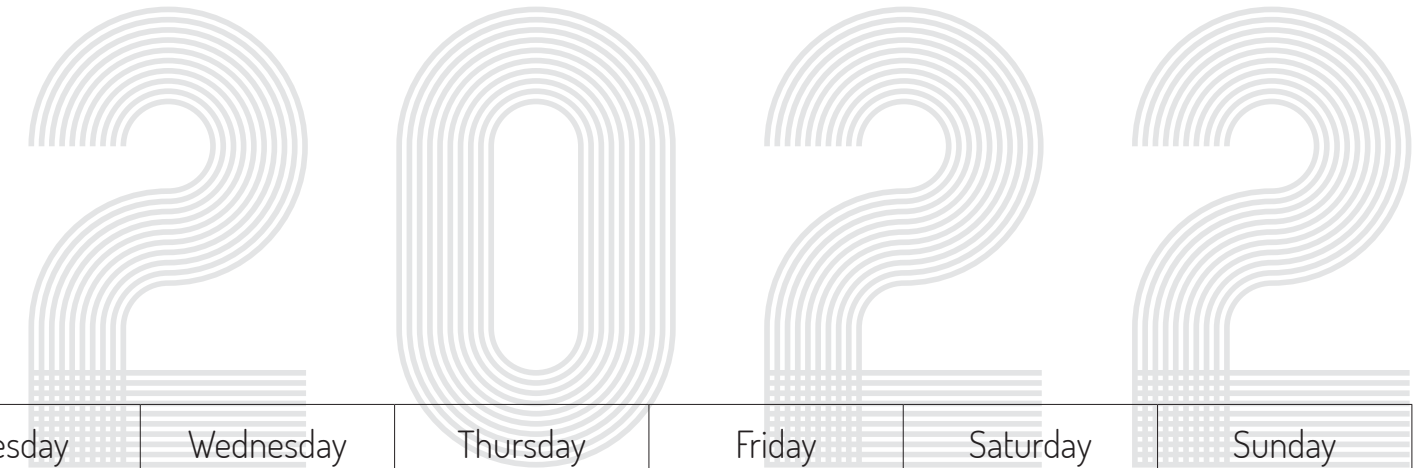
Doctor in Biology and nature self-taught artist. Although I am interested in nature as a whole, I focus my work as an artist on birds and in watercolour. However, I'm fascinated as well by other animal groups such as mammals and other painting techniques such as oil paint. Within the large world of birds, I have a special predilection for coastal birds, because my academic background was focused on life at those ecosystems.

Illustrator



*The intensity of orange colouring on the edible part of marine mussels determines their level of acceptance by different cooking traditions of the world. Females present a deep orange colouring. Genetics allows selecting females for unisex mass production, giving females or only males, making it easier to sell them in different countries.*

May



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# A summer night at Ría de Vigo



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## Francisco Rodríguez Hernández

He is a researcher at the Vigo Oceanographic Centre (IEO) since 2008. He belongs to the group of Toxic phytoplankton and red tides, wherein are ongoing studies on species of harmful microalgae, mainly dinoflagellates, responsible in the rias for closures on shellfish extraction.

Researcher



## Xulia Pisón

She is a Comic book artist. Since 2015 she has participated in various comics collective publications such as *Licor Café* (Demo Editorial), *Altar Mutante* (Altar Mutant). She carries out works as a posters illustrator and editorial, *Unha Mente que Voa* (A mind flying) by Xurxo Mariño, Editorial Xerais. Recently, she published *Microalgas. O Mundo oculto* (Microalgae. The hidden world) and *Microalgas. O mar de Ardora* (Microalgae. Ardora's sea).

Illustrator



June



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# Operational oceanography: oceanographic information in real time



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**José González**

He has a Degree in Ocean Sciences and a doctorate in Oceanography. During the past 20 years, his area has been multidisciplinary, combining experience in Marine Ecology, especially in mesocosms studies and Physical Oceanography, specifically in the domain of Operational Oceanography and Environmental Monitoring. Since 2016, he is responsible for Oceanography Unit at Toralla Marine Science Station that belongs to the Marine Research Centre of Universidade de Vigo.

Researcher



**Laura Tova**

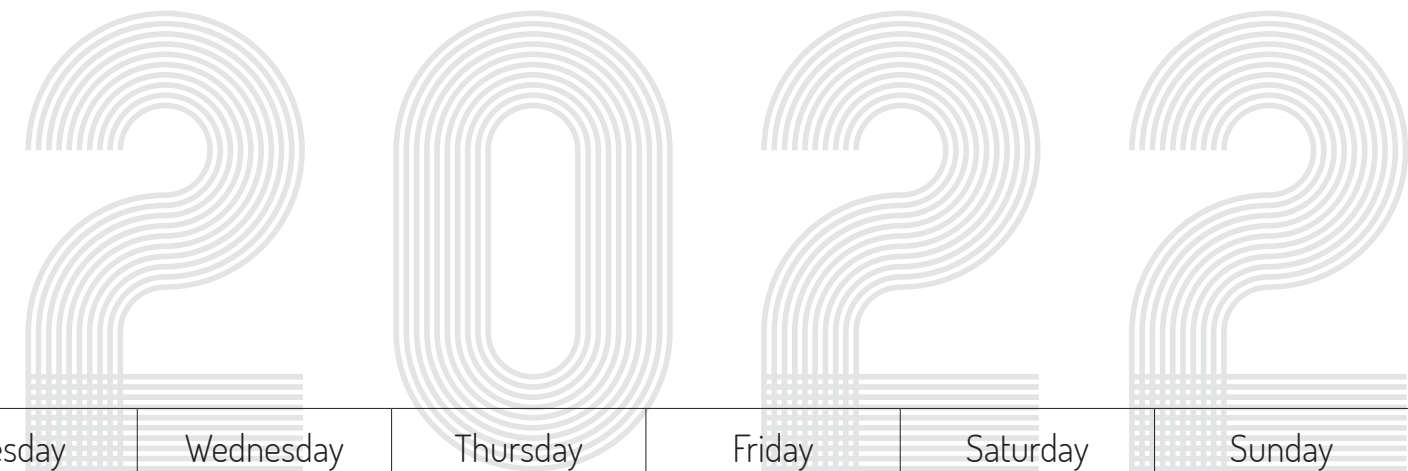
Trained in Illustration at EASD Pablo Picasso of A Coruña. Since 2014, she works in Illustration, first in product design and after that, she gets involved in the world of Advertising and Editorial Illustration, working for editorials like Xerais and OQO Editora. Furthermore, she organises workshops for senior. Also she participated in muralism projects like Derrubando muros con pintura (Tearing down walls with paintings) and Mulleres en Acción (Women in action) promoted by Deputación de Pontevedra.

Illustrator



Oceanographers use multiple instruments for time variation monitoring of the environmental conditions at the sea (temperature, salinity, currents velocity) and at the atmosphere (temperature, pressure, humidity, wind speed). Data are received, stored and processed at research centers, where they are transformed in useful, real-time available, information both for other scientist and for the whole society. These data are used in meteorological forecasts, in climate change studies and to organize rescue operations at the sea. They are used by professionals, as fishermen or in maritime transport activities, but also by sportspeople, as surfers, sailors or open-water swimmers.

July



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# Zooming on the effects of plastics in the marine environment



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**Alexandre M. Schönemann**

Alexandre M. Schönemann is a Predoctoral Investigator at Universidade de Vigo. He studied Marine Sciences and a master on Oceanography at Universidad de Cádiz. He has worked on different subjects related to Ecology, from the study of the meadows of marine phanerogams to research the life cycle of several jellyfish species. Now he is developing his doctoral thesis on the adverse effects of plastic additives in sea fishes, using molecular tools as proteomics.

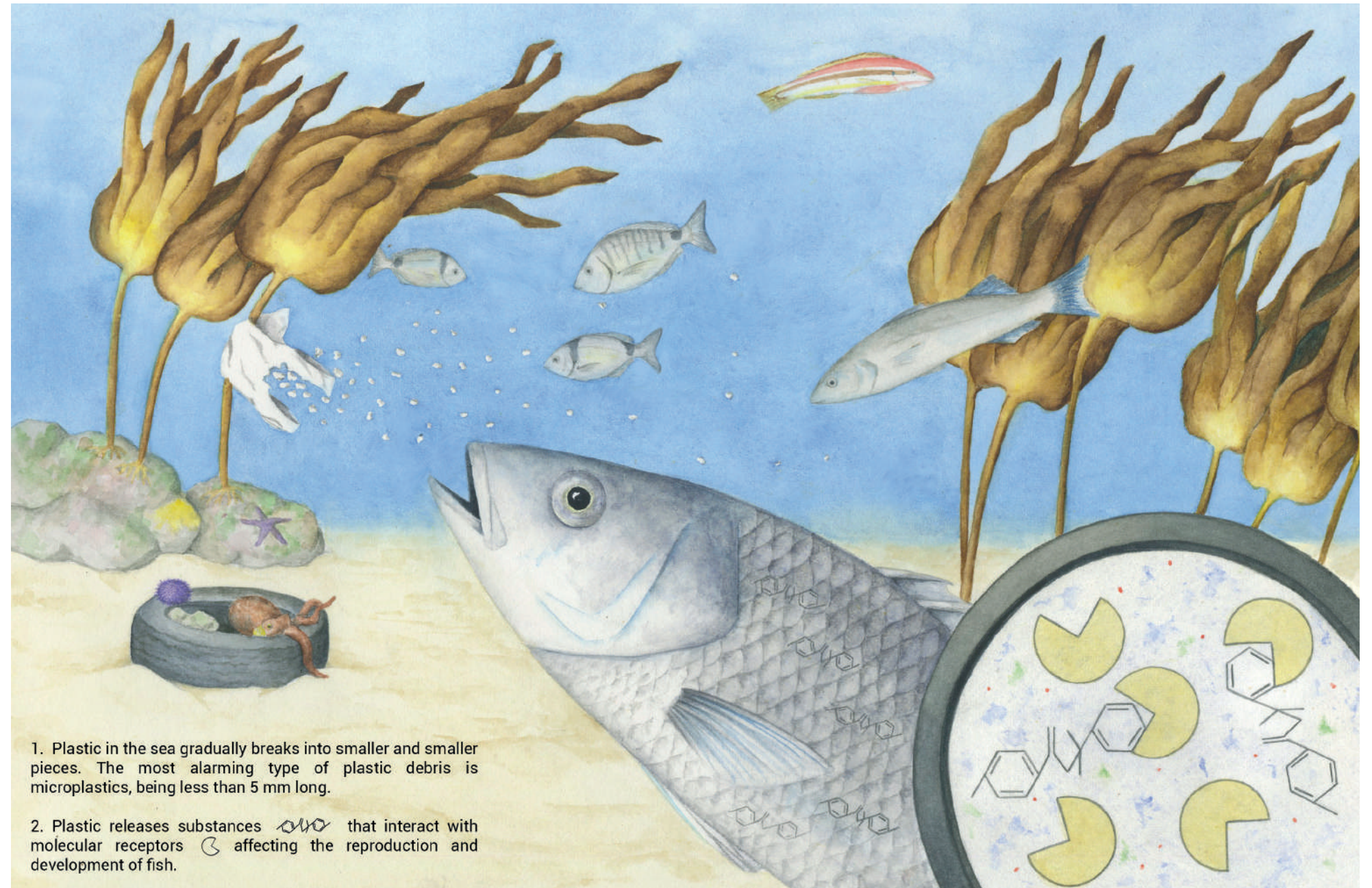
Researcher



**13 GRADOS**

13 GRADOS are a non-profit Galician cooperative. We aim to translate marine knowledge and what happens below the ocean waters to accessible visual contents through drawings, audiovisuals, books or activities that connect people to the sea from a perspective of conservationism and sustainability.

Illustrator



# August

# 2022

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# Coastal upwelling

In some areas of the Earth, Wind and Coriolis work together to move surface water to the open sea in such a way that bottom water can reach the surface. This water carries nutrients with which organisms feed. These areas have a lot of biodiversity and, a long time ago, people discovered that abundant fish live in them. The coast of Galicia is one of these areas and that is why there are many people who work in the sea.



Marisela Des Villanueva

She is an Environmental Sciences graduate with a Master in Oceanography. She got a PhD in Marine sciences, technology and management from Universidade de Vigo. She is specialized in numerical modelling of hydrodynamic at coastal and estuarial zones. Her main line of research is the analysis of the impacts of climate change on the Atlantic coast of the Iberian Peninsula.

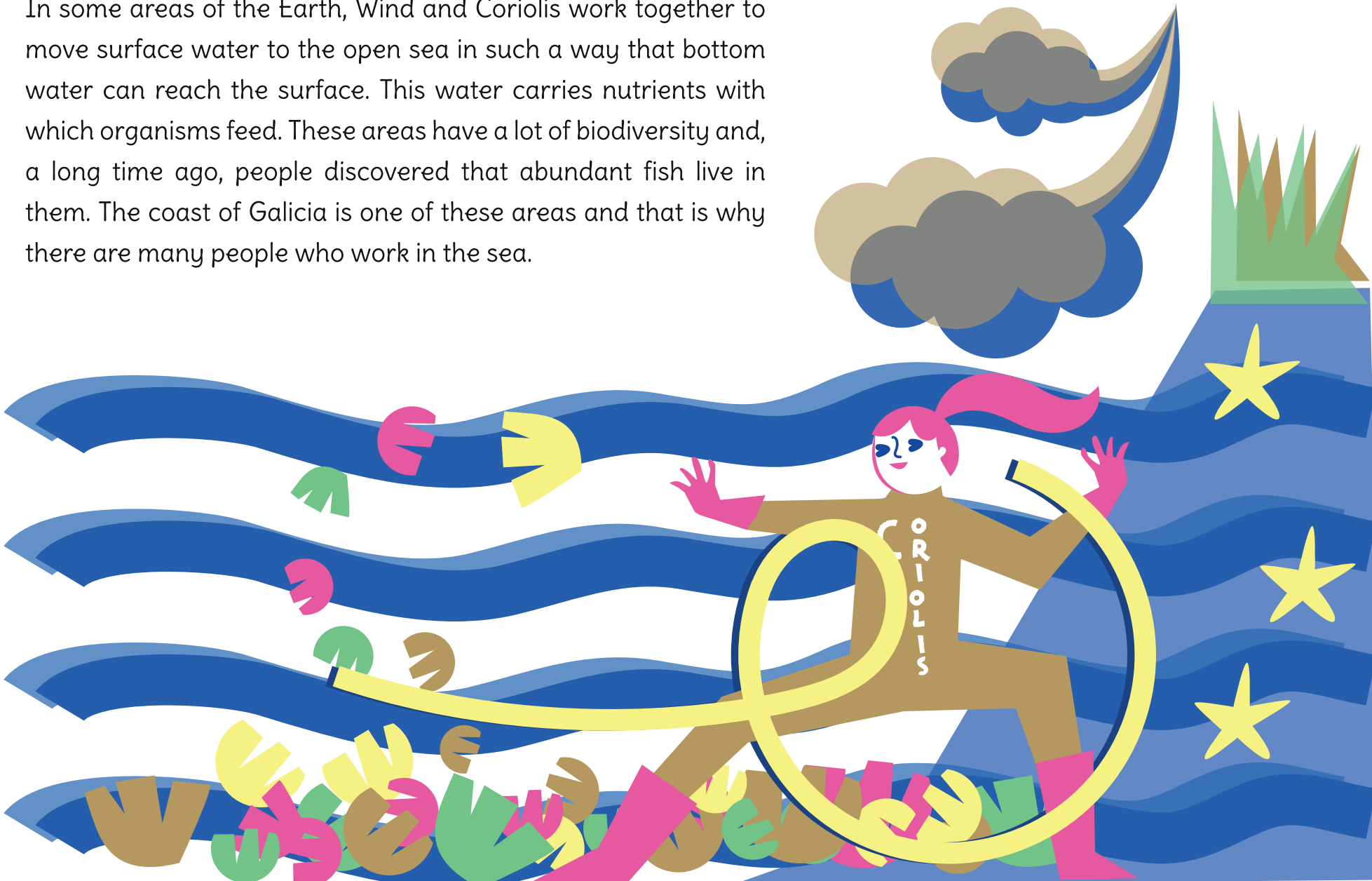
🔍 Researcher



Elga Fernández Lamas

Designer-illustrator from Ferrol (Galicia). For years, I was devoted to Performing arts, but today I do what I consider the most beautiful work in the world: I'm an illustrator! I cry proud, and from this claim emerges my style: powerful colours, concepts that strengthen the protest from the feminine, from the industrial, from the fight.

✍️ Illustrator



# September

# 2022

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26	27	28	29 World Maritime Day	30		



# Laurentia

## and the invasion of the giant icebergs



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Maider Plaza Morlote

She is a Postdoctoral researcher at Universidade de Vigo. Her research focuses on the quantitative analysis of interactions between the ocean and the climate in the past (Paleoceanography/Paleoclimatology).

🔍 Researcher



Eva Agra. Cooperativa 7H

She studied Photography at EASD Mestre Mateo and Illustration at EASD Antonio Failde. Since 2015, she works at **7H Cooperativa Cultural**, a non-profit organisation devoted to the management and creation of a cultural projects that is committed to community participation in arts education. Among her illustrator works it stands out the collection of books *Mulleres Bravas da Nosa Historia* (Brave Women of our History), by Urco Editora.

✍️ Illustrator

### Laurentia and the invasion of the giant icebergs

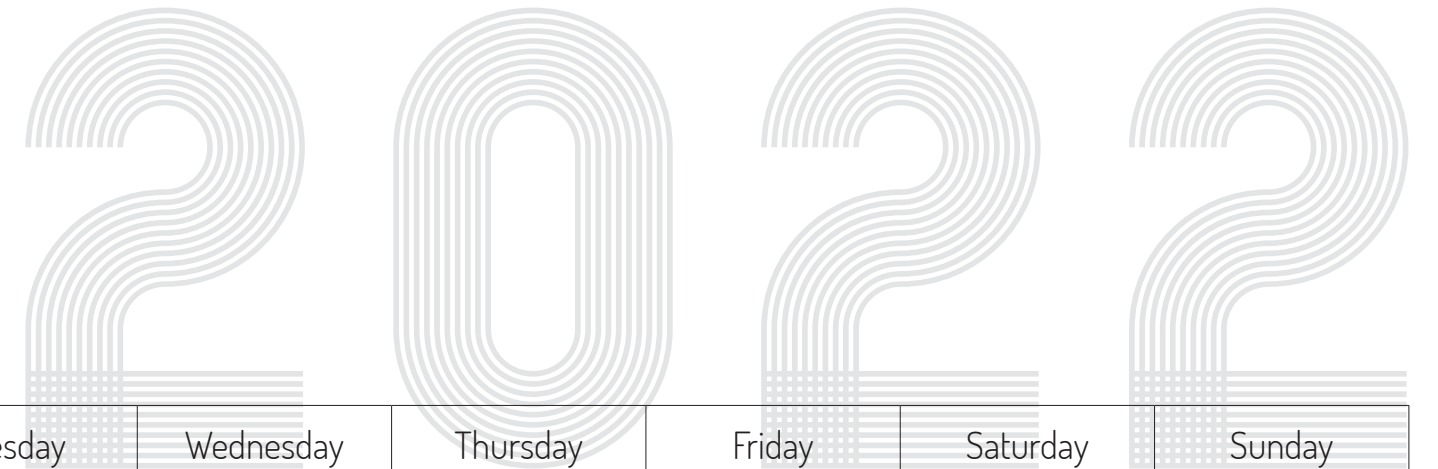
The prevailing climatic instability during the Last Glacial Period caused the massive expansion of icebergs through the North Atlantic that also reached the coast of Galicia.

There was not a single time. Sedimentary records allow the identification of up to six episodes during the last 70,000 years. They are the so-called Heinrich Events.



Understanding these processes in the past can help us predict the impact of melting ice caused by current global warming.

# October



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24	25 International Day of Artists	26	27	28	29	30
31						



# Zostera meadows



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Marisa Gomes

Marisa Gomes is a predoctoral researcher of the Doctoral Program DoMar, in the Universidade do Minho and Universidade de Vigo. The aim of her project is to understand the role of habitats and fishing effort in the distribution of benthic and demersal marine animals. Zostera meadows, in the Ria of Vigo, are one of the habitats she is currently studying.

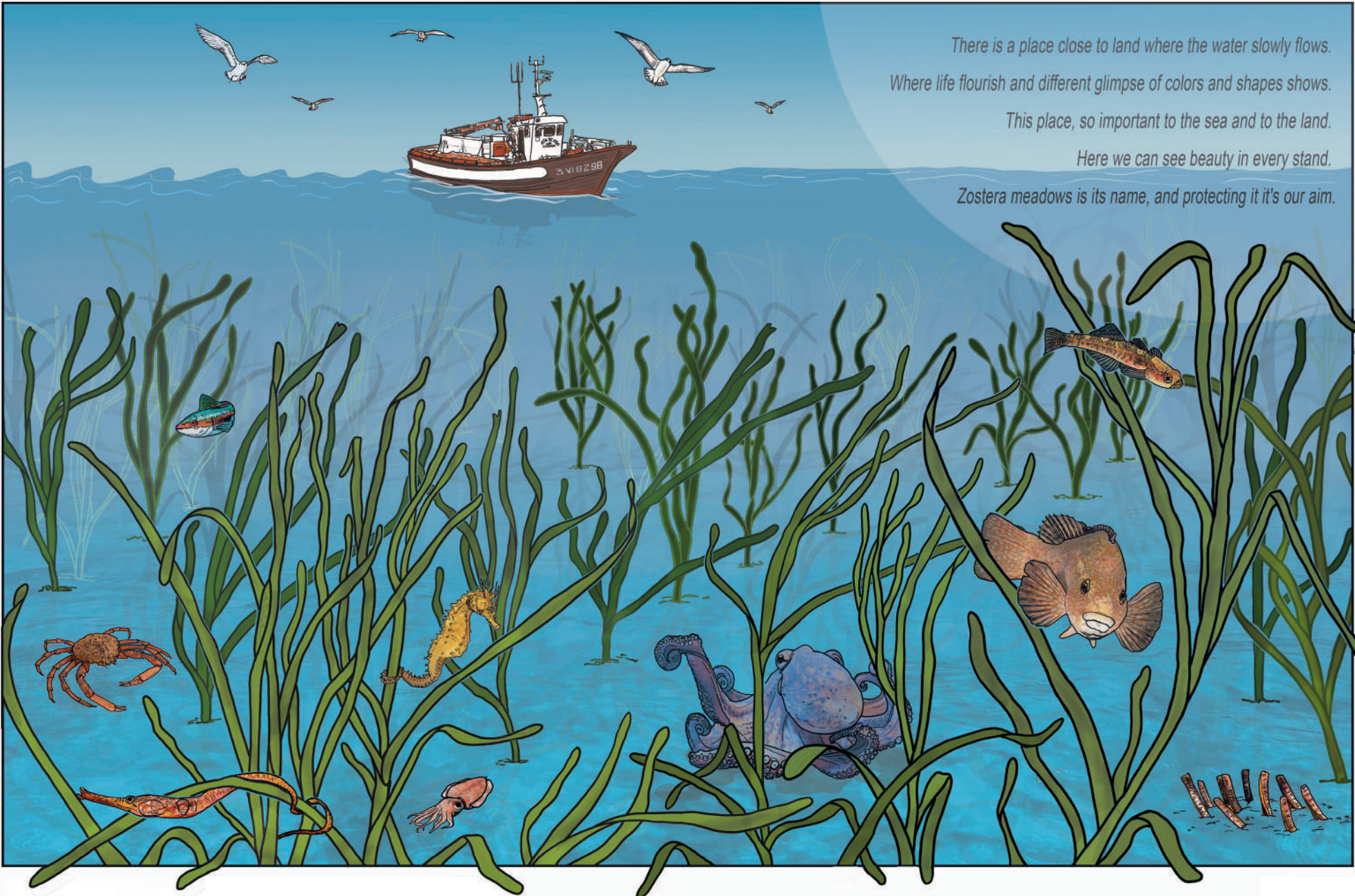
Researcher



Rita Cortês

She started his training in design in the field of archaeology. She graduated in History and concluded a master in *História dos Descobrimentos Portugueses*. She took up the design through the courses of *Scientific Design* with the professor Pedro Salgado at Museu de História Natural e da Ciência de Lisboa. She is currently working as a freelance illustrator.

Illustrator



There is a place close to land where the water slowly flows.  
Where life flourish and different glimpse of colors and shapes shows.  
This place, so important to the sea and to the land.  
Here we can see beauty in every stand.  
Zostera meadows is its name, and protecting it it's our aim.

# November



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# Cancer keystones buried in the sand



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Alicia L. Bruzos

Alicia L. Bruzos was born in Lugo. She studied Biology at Universidade de Santiago de Compostela (Spain) and Bioinformatics at Universitat Autònoma de Barcelona (Spain). Nowadays, she is a lecturer in Genetics at the USC Biology Faculty and a researcher specialized in cancer genomics at CiMUS (Center for Research in Molecular Medicine and Chronic Diseases) of the USC.

Researcher



Sofía Venzel

I am a author and illustrator based in Vigo (Galicia, Spain). My work has been selected in numerous international competitions, including the illustration competition of the Bologna Children's Book fair (2018), and has been exhibited in Russia, Spain, Portugal, South Korea, Arab Emirates, Italy, Japan, China and UK. In 2019 Thule Ediciones (Barcelona) published my first picture book *Al Sur (To the South)*.

Illustrator

All living beings are made up of cells and, sometimes, some cells become cancerous because they divide uncontrollably and can travel to other parts of the body. Cockles live buried in the sand and when they have cancer, those cancer cells can spread from one cockle to another. Studying the genetics of these contagious cancer cells help us to better understand cancer.



# December



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