

# ANNUAL REPORT 2022



Fondation  
**taraocéan**  
explore and share





The Tara Ocean Foundation - first public interest foundation in France dedicated to the Ocean - has two main missions : exploring the Ocean to better understand it and sharing scientific knowledge about the Ocean to raise public awareness.

For 20 years, the foundation has been supporting innovative Ocean science, in partnership with world-leading research centers to study marine biodiversity, as well as observe and anticipate the impacts of climate change and pollution.

Faced with the urgent need to make the protection of the Ocean a common responsibility, the foundation raises public awareness of the challenges facing the Ocean, educates young generations, facilitates international cooperation and mobilizes policymakers.

Thanks to its Special Observer Status at the United Nations, the foundation actively participates in crucial decisions in favor of the Ocean.

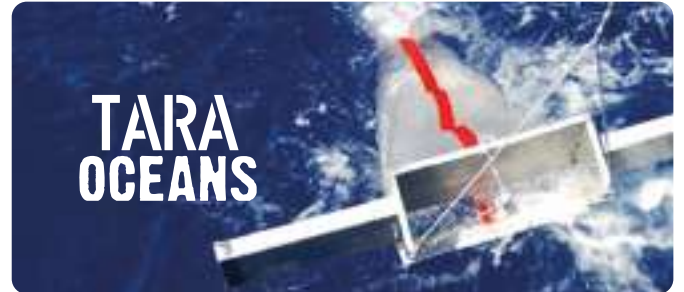
Studying and protecting the Ocean means taking care of the global health of our planet and our future.

## Expéditions majeures



**2006 - 2008**

First Arctic drift after Peter Nansen in 1893



**2009 - 2013**

First global study of the planktonic ecosystem



**2014**

Study of the impact of plastic on the marine ecosystem in the Mediterranean



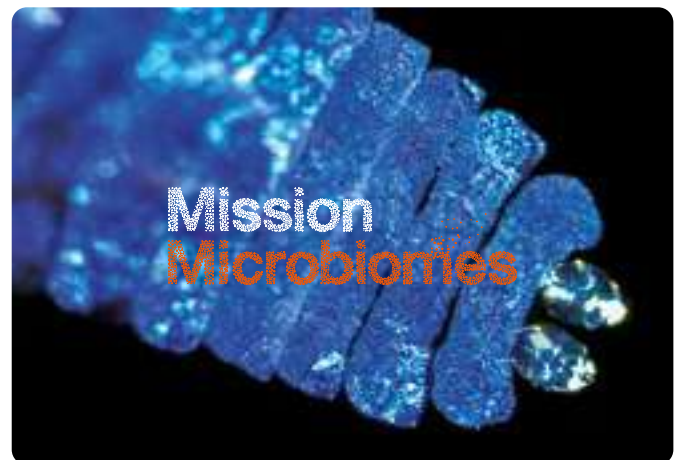
**2016 - 2018**

Study of the adaptive capacity of coral reefs to climate change



**2019**

First study of river sources of microplastics on a European scale



**2020 - 2022**

Understanding the invisible ocean microcosm to preserve our future

## Chiffres clés

**1** SPECIAL  
OBSERVER SEAT  
AT THE UN



**36** EMPLOYEES  
ON LAND AND AT SEA

**4** MILLIONS €  
ANNUAL BUDGET



**12** SCIENTIFIC  
EXPEDITIONS

**540,340** KM KM  
COVERED ON ALL OCEANS

### EXPLORE

nearly **1,100**  
scientific publications based  
on Tara expeditions

including **30**  
in the scientific journals  
Nature, Science and Cell



+ than **150** millions  
genes discovered  
from the marine world

**100,000**  
microalgae species discovered



nearly **200,000**  
viruses characterize

### SHARE

+ than **25,000**  
people informed  
each year



+ than **60,000**  
children visited Tara  
in France and around the world



**120,000**  
children briefed  
in schools in 2022



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# L'éditorial



Although the Tara Ocean foundation never really slowed down its activities and expeditions during the Covid crisis in 2021, the year 2022 was still experienced as a rather surprising convalescence. The desire to live again and make up for lost time has driven our teams. Despite the administrative complexity imposed by the pandemic in countries still infected, we have rediscovered the pleasure of human relationships and sharing. We will probably never work as we did before, but a new form of hybrid interactions emerged, requiring frequent adjustments...

The *Mission Microbiome (2020-2022)* - Atlant'ECO expedition led the schooner from the confines of the Weddell Sea in Antarctica, a crucial polar zone for global thermo-haline circulation, to Lorient in Brittany, spending nearly 6 months navigating along the African coast and visiting 7 west African countries. During long stopovers in South Africa and Senegal, 2 major regions for world fish production, outreach activities and encounters with local scientists and associations paved the way for future collaborations.

On land, whether it was during United Nations or national political encounters; for the general public with the great success of *Tara's* return from expedition and the first Ocean Festival organized at the *Académie du Climat* in Paris; or in school programs in almost all French regions, Tara team members have shown their determination, passion and day-to-day work. We are both particularly proud and grateful of their commitment.

The foundation is growing, entering its twentieth year in 2023, and getting structured to have more impact than ever in the upcoming years. Time is running out...

The *Tara* crew participated live from Antarctica to the One Ocean Summit held in Brest, in presence of the French President, heads of state and government officials, and the inclusion of the foundation in the French Strategy for the Poles, a few months later, showed the strong recognition from the public authorities given to our work with our partners and associate laboratories. The financial support of the French government for our polar program and the construction of the future innovative research station, the Tara Polar Station, dedicated to the exploration of the unique Arctic Ocean of our planet, is an honor as well as a great responsibility. The challenge is great, exciting, but the unique experience of our team has everything to complete it.

Lastly, the Tara Ocean Foundation was able to count on the loyalty of our many private and public supporters during this unique post-pandemic year, without whom we would not have been able to accomplish our missions of general interest in France and internationally.

**Étienne Bourgois, President**  
**Romain Troublé, Executive Director**

02



# Highlights of 2022

## Tara, in Antarctica, participates in the One Ocean Summit

February 11, 2022

The One Ocean Summit, organized in Brest from February 9 to 11 by President Emmanuel Macron, brought together 20 heads of state. The schooner *Tara* participated in the meeting, live from the Wedell Sea. Alessandro Tagliabue, scientific director of the Antarctica leg of the *Microbiomes Mission (2020-2022)* reminded decision-makers of the urgent need to engage in conservation of the Southern Ocean.

The unique biodiversity of the Wedell Sea is of key importance for the physico-chemical balances of the Ocean. Its ecosystemic functions are currently threatened by climate change, ocean acidification and the exploitation of marine resources. Like its wildlife, the composition and functioning of this region's microbiome are endemic and remain largely unknown. Research from the Tara Ocean Foundation will support efforts to classify this region as a Marine Protected Area (MPA) as part of the Convention on the Conservation of Antarctic Marine Living Resources (CCAMLR).



## Launch of Tara Polar Station

June 21, 2022

The year 2022 was marked by the press launch of one of the most ambitious projects ever initiated by the Tara Ocean Foundation. After more than 5 years of research and development, *Tara Polar Station* was unveiled to the media and the general public in June. Via this drifting polar base, the foundation will return to the North Pole and provide France with a presence in the heart of the Arctic Ocean as part of the new French Polar Strategy. A truly public-private program, the construction of this polar station will be co-financed by the government (as part of « France 2030 ») and by numerous sponsors. Construction will be completed in 2024, to begin a series of tests at sea and in extreme cold, before deployment in the ice in the heart of the Arctic Ocean at the earliest in the fall of 2025.

5

years of research

20

years of future Arctic drift

34

journalists present  
at the press conference

43

media references



## Ocean Culture Festival

June 4, 2022

The first Ocean Culture Festival took place in Paris on June 4, 2022, aimed at bringing the Ocean's voice to as many people as possible and especially to young audiences. Through meetings with scientists, artists, influencers, as well as exhibitions and 9 workshops, the festival provided a new view of the Ocean. Our goal was to share knowledge and high level ocean science, while appealing to the emotions and sensibilities of everyone. The Tara Ocean Foundation mobilized scientific and citizen support to organize this festival: 16 speakers took part in 4 hours of conferences, and 28 volunteers helped out during work- shops.

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**600**  
participants

**10**  
digital publications

**62,038**  
people reached  
via digital publications

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## Tara's return to Lorient

October 15, 2022

After 2 years of expedition in the Pacific and Atlantic Ocean, the schooner *Tara* returned to Lorient, her home port, during a festive weekend around the theme "The Ocean, a world to explore".

As part of the national *Fête de la Science*, the Tara Ocean Foundation, the association *Le Bruit du Vent* and *La Maison de la Mer* organized a unique event bringing together maritime, scientific and cultural worlds. The public discovered the Ocean through 3 thematic villages - the adventurers village, science village and artists' village.

Nearly 1,000 students took part in workshops, and more than 6,000 visitors were able to meet scientists, sailors and artists by taking part in conferences and activities in one village or another. Screenings, exhibitions and above all the arrival of the schooner, accompanied in its wake by 60 pleasure boats, made the experience very immersive.

Tara's return also made it possible to create new synergies with media and influencers in order to extend the visibility and notoriety of the Tara Ocean Foundation to new audiences. The schooner welcomed the team from "*La Terre au Carré*" to produce a live broadcast. More specialized media also responded to the call, such as "*Epsilon*", a scientific news magazine, and "*On est Prêt*", an online environmentalist program. Influencers Melvak and *Balade Mentale* were also able to discover the world of *Tara* and board the schooner for an afternoon.

**1,000**  
students

**6,000**  
visitors

**110**  
posts,  
including 70 tweets

**82**  
stories

**435,000**  
total impressions



03



# Explore to understand

The Ocean is at the heart of the major planetary balances. Many pressures weighing on marine biodiversity (global warming, overfishing, multiple pollution, etc.) are altering the ability of the Ocean to provide the ecosystem services essential to all life on Earth (carbon capture, temperature regulation, etc.). It is therefore essential to know how these phenomena evolve in order to understand and anticipate them, and thus preserve the Ocean.

The foundation's mission is to explore the Ocean - the largest area of biodiversity on the planet, and to disseminate the scientific knowledge resulting from our numerous expeditions to the widest possible audience.

## The current expedition - *Microbiome Mission, 2022*

**10**

months of navigation

**97**

stations (n°071 to n°168)

**19,000**

samples collected

**16**

stopovers

**9**

countries visited

**14**

crew rotations

**47**

scientists  
welcomed on board

**4**

artists-in-residence

**1**

stopover and 1 river sampling cancelled

Matadi on the Congo River, as well as all sampling of this river, due to lack of feedback from local authorities concerning the research permit.

**1**

change of sampling location

The entrance to the Senegal River estuary was too shallow for *Tara* to enter. Sampling on the Senegal River was replaced by a mission in the Casamance River.

8

articles for the general public were published on the Tara Ocean Foundation website during the expedition in 2022

5,000

visits to the website page dedicated to the Tara expedition

### What are the articles on the Website about?

The Tara Ocean Foundation regularly publishes articles on its website to make our actions known to a wide audience. We write about specific aspects of the foundation's activities, explain the contents of scientific publications linked to *Tara's* expeditions, detail the progress of international negotiations in which we participate, highlight the works of the artists on board, etc.



### Testimonials



**Emma Rocke, chief scientist**  
between Cape Town (South Africa) and Walvis Bay (Namibia)

“This *Tara* expedition along the African coasts was unique, mainly due to the exceptional collaboration between the crew and scientists. Most of the scientific team members had never worked with *Tara* or used her equipment before. Despite this, the crew's dedication, curiosity and enthusiasm created an atmosphere that facilitated effective collaboration and enabled us to achieve our research goals.

Our main objective was to explore the functions of microbial organisms in the highly productive Benguela upwelling region for the *AtlantECO* project.\* Benguela is rich in biodiversity, and the link between the microbiome - the essential base of the food chain - and the way it influences this biodiversity, is crucial. Ironically, this same productivity can also produce bacteria that cause very low oxygen levels at certain depths, displacing or



killing the very fauna it feeds. It is essential to understand this phenomenon so that it can be taken into account in future models of climate change. Thanks to our extensive sampling efforts on *Tara*, we were able to gain a comprehensive understanding of this ecosystem that was previously impossible.

*AtlantECO* was committed to involving local experts in the expedition. We were delighted to give South African scientists the opportunity to learn new protocols, which allowed us to incorporate several *Tara* protocols on our local research vessels. In addition, our expedition helped us establish a pan-African network of marine scientists. We are committed to continuing to strengthen this network in the future.”



**Carole Pire, cook /sailor**  
between Itajaí (Brazil) and Punta Arenas (Chile),  
then between Walvis Bay (Namibia) and Dakar (Senegal)

“2022, a year full of contrasts! In Ushuaïa, on January 1, *Tara* cast off for the Antarctic Peninsula. After passing through the legendary winds of Drake Passage, majestic but fragile landscapes surrounded us. We sampled through the Weddell Sea, amidst icebergs sometimes the size of buildings. Before the austral summer ended, *Tara* headed for Patagonia to stock up on supplies: 55 days at sea separated her from South Africa.

Another continent, another atmosphere. Going up the coast, as the stopovers progress, the schooner warms up. Cape Town, Walvis Bay, Luanda, Pointe-Noire, Banjul, the Gambia River, Dakar and Casamance - *Tara* collects a mass of scientific data on the upwellings and plumes of West African rivers, a region sometimes dotted with oil rigs. The crew gets a taste of local bureaucratic issues: we have to present multiple papers, negotiate and know how to be patient!

Then it's time for visits, receptions on board, invitations to French embassies and preparation for the next departure. The calm of Antarctica seems far away. A spicy job for the cook: shopping at street markets where bargaining is a must. Perplexed by the choice of certain products, I am warmly advised in the kitchen by local scientists. Congolese wild broth, Senegalese *thiéboudiène*, Angolan funge, and preparation of baobab juice give rise to wonderful intercultural exchanges, as rich and varied as the marine microbiome!”



70 000 km  
à parcourir



DÉPART • ARRIVÉE

Lorient, Bretagne  
octobre 2020 • octobre 2022

Lisbonne  
octobre 2022

Dakar  
septembre 2022  
Banjul  
août 2022

Pointe Noire  
juillet 2022

Luanda  
juin 2022

Walvis Bay  
juin 2022

Le Cap  
mars 2022

Le Marin  
juin-juillet 2021

Belem  
septembre 2021

Salvador de Bahia  
octobre 2021

Rio de Janeiro  
novembre 2021

Itajaí  
novembre 2021

Iquique  
mars 2021

Valparaíso  
avril 2021

Concepción  
juin 2021

Puerto Montt  
mars 2021

Buenos Aires  
décembre 2021

Punta Arenas  
novembre 2021 / janvier 2022

Ushuaia  
janvier 2022

OCEAN  
PACIFIQUE

OCEAN  
ATLANTIQUE

Mer du Sud

Year 1 • 2021

Year 2 • 2022



Nutrient-rich  
upwelling areas

The Microbiome Mission is part of the European project *AtlantECO*, funded by the European Commission, which brings together more than 36 scientific institutions in Europe, Brazil and South Africa. This international scientific collaboration aims to develop a detailed understanding of the issues related to the South Atlantic Ocean. AtlantECO will crisscross the South Atlantic Ocean via 6 main expeditions over 5 years, with the goal of producing an unprecedented database on this still little known region. The *Microbiome Mission (2020-2022)* was the first *AtlantECO* expedition to set off in 2020, making several stops in Brazil and Africa. The protocols developed aboard the schooner *Tara* will be replicated on other expeditions, in a major effort to transfer technology to Brazilian and South African research teams and vessels.

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6

scientific institutions in Europe,  
Brazil and South Africa

36

expeditions over 5 years in the Atlantic Ocean,  
including the Microbiome Mission

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## Expedition program, stopovers and events

### Focus on major moments

#### Leg 11 : Antarctica

Covered in ice, the Antarctic continent, which includes the South Pole, is bordered by the Southern Ocean and the Ross and Weddell Seas. More than 700 kilometers from the American continent, the Antarctic peninsula is an isolated area. Most of the world's ice is located here. Formation and disappearance of the ice make it accessible for only 2 to 3 months, during the Antarctic summer. Accordingly, *Tara* navigated through the Weddell Sea in January and February 2022.

First observations :

- *Tara* pushed her limits, taking scientific research as far south as possible into the deep waters of the Weddell Sea to document for the first time the impact of large-scale gradients of Antarctic conditions on the microbiome. A new collaboration with the German icebreaker *Polarstern* extended our sampling to larger spatial and temporal scales.
- *Tara* collected samples in the Weddell Sea when ice levels were at a record low. Resulting data should be useful in forecasting the future of the region.

At the entrance to the Drake Passage that separates Antarctica from South America, the Antarctic circumpolar current developed in the Southern Ocean around 20 to 40 million years ago. Gradually the microorganisms in Antarctica were isolated from other species present on the planet. Early in 2022, *Tara* sampled these waters to better understand the Antarctic microbiome and its link with the carbon pump.



Part of the program was dedicated to the study of an iceberg called “Tasmania”, measuring 22 m high and 0.6 km<sup>2</sup> in area. A unique analysis of this 1km-long iceberg was conducted during a 30-nautical mile drift (about 55 km), in order to understand its impact on the microbiome. Scientists aboard *Tara* collected samples at depths between 10 and 1,000 meters, to explore and understand changes over time, thanks to the interpretation of sediment cores collected by geologists in the area.

A sanctuary for scientific research, Antarctica has long been the greatest success story of international cooperation regarding conservation of the marine environment. However, for more than 5 years, the diplomatic situation has been complex. Global warming, pressure from fishing boats, and the development of tourism in the region greatly threaten the stability of the Antarctic ecosystem. Added to these current challenges is the prospect of lifting the ban on exploitation of mining

resources by 2048. This threatens to change Antarctica from a scientific sanctuary to a land of potential exploitation. The importance of these ecosystems for the global regulation of climate and life on Earth demands that governments relaunch the collective momentum of cooperation at the origin of the Antarctic Treaty and the Madrid Protocol.

We are only starting to understand how the Antarctic microbiome functions, but *Tara's* research during the

*Microbiome Mission (2020-2022)* will contribute to the international effort to conserve the Southern Ocean, and can be used to analyze the way in which endemic Antarctic species have evolved to adapt to this extreme environment. Since Antarctica reflects phenomena affecting the global Ocean, observation and data collection allow scientists to propose models of climate change and warn of future changes. The *Microbiome Mission* was the 5th expedition to Antarctica led by the Tara Ocean Foundation.

Scannez moi



Why is research essential in Antarctica ?

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More than **1,000**  
visits to the Tara Ocean Foundation  
website article, "Why is research  
essential in Antarctica ?"

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### Leg 13 : The Benguela Current

The Benguela Current flows from South Africa to the coasts of Namibia and Angola. To the south, the waters of the Atlantic mix with those of the Indian Ocean, causing multiple whirlpools that reach as far as Brazil. Tara's ascent of the Benguela Current took place between April and June 2022.

First observations :

- Overall, the first observations of the Benguela upwelling confirmed its reputation as being one of the world's most productive areas for the microbiome.
- Oxygen-deficient areas extend beyond the edge of the continental shelf into Namibian waters. This phenomenon has occurred in the past, but it signals a possible change in oxygen dynamics in this region.
- Microscope observations on board revealed markedly different plankton communities as samples were taken further north in Namibia. Extremely large diatom cells (nearly 1 mm in diameter) were observed, confirming enormous productivity, and therefore high carbon sequestration, in these areas.
- In addition to the *Tara* protocols, we measured primary production and nutrient uptake rates at coastal stations off Namibia. This will help quantify the Ocean's fertility there, i.e. how much carbon in the form of phytoplankton it can produce at any one time.

Along the coasts of West Africa, from South Africa to Angola, some upwellings bring nutrients to the surface. Extremely rich in nutrients, the Benguela Current is very



productive in fish, and has an abundant and varied ecosystem with considerable influence over the South Atlantic Ocean. Previous studies suggest that the availability of certain nutrients in the Ocean can directly influence the microbiome. Such differences can translate into changes in the ecosystem services provided by the microorganisms. These waters notably feed the proliferation of phytoplankton which provides oxygen to the atmosphere, absorbs CO<sub>2</sub> and produces organic matter essential to the food chain.

In fact, scientists don't have a full understanding of the interactions between the microbiome and its environment. We don't even know the composition and diversity of the microbiome in the Atlantic Ocean and along the west coast of Africa. Tara's samplings will be used to better understand the bio-geography of the marine microbiome, as well as its evolution according to different environmental variables, in order to shed light on the co-limitation of nutrients in the South Atlantic.

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“We need to understand the role microbes play in these systems in order to build models that can predict how things will evolve under climate change scenarios. These systems also contain areas of low oxygen which produce potent greenhouse gases. We need to better understand the causes of this phenomenon in order to take measures to slow it down.”

**Emma Rocke, chief scientist aboard *Tara***

“

The data compiled from this expedition will be compared with data collected in 2020 in Chile, a country located at the same latitudes which also experiences upwelling phenomena.



## Leg 16 et 18 : The Gambia River and the Casamance River (Senegal)

Going up the coast of west Africa, the *Tara* team studied the effects of the rivers discharging into the Atlantic Ocean. Researchers analyzed the plumes of the Orange and Congo Rivers, and traveled up the Gambia and Casamance Rivers to measure the presence of plastics in these waters, but also to assess the impacts on microbial communities. Samples were also taken in an upwelling zone off the coast of Senegal.

### First observations :

- First observations from sampling in rivers showed very localized and dense pollution near villages bordering the river.
- Sampling in rivers revealed high presence of macroplastic, but fairly low presence of microplastic.
- Sampling off the Senegal coast revealed high productivity and high planktonic biomass (excluding the upwelling phenomenon), but also the presence of minimum oxygen levels at a depth of around 90 meters.

Are the rivers of Africa more polluted by plastic waste than the rivers of Europe? What is the influence of the tide, salinity, human activities on the distribution of macro, meso, and microplastics in the river? How do microorganisms adapt to the omnipresence of microplastics in their ecosystem? In August and September 2022, going up the rivers to fresh water, samples were collected aboard the schooner *Tara*, but also from light boats, and even from land bridges when passages by boat were not possible.

In landscapes of mangroves and rice fields, the first observations showed very localized and very dense pollution near villages bordering the river, with waste quite different from the single-use plastics generally found in Europe.



Here, fishing nets, textile products and flexible packaging used for food and drink were found. In rivers, water samples contained fewer microplastics than in Europe, except around large cities near estuaries. A very fine characterization of the chemical composition of the plastics will be carried out from dozens of samples taken from the river banks and waters. Analysis of life on these plastics will allow us to identify any pathogenic microorganisms transported from river to sea by these plastic rafts, which then disperse into the Atlantic Ocean. This new research continues the work of our former expeditions dedicated to studying the «plastic cycle» in rivers and the Ocean: *Tara Méditerranée (2014)*, and *Microplastic Mission (2019)*, and is linked to the Tara Ocean Foundation's participatory science program "Plastic under the magnifying glass".

### The Gambia River

The objectives of *Tara's* passage in the Gambia River were to observe the relationships between plastic pollution, the evolution of environmental parameters (salinity, nutrients, biogeochemistry, etc.) and microbial life in the river-sea continuum. Near the town of Tendaba, the samples contained so much plastic that we stopped sorting the debris - about 15 kg! - after only a 10-meter transect, instead of the usual 100-meter transect for the protocol OSPÄR. The debris consisted mainly of clothing, ropes and fishing nets. Rapid observation showed little macroplastic pollution in the mangrove which mostly covered the banks of the sampling area (from Banjul to Kaur). Interestingly, we found relatively few microplastics when sampling in the river with a manta net. Additional analyses by our *Microbiome Mission (2020-2022)* partners will be necessary to assess to what extent plastic pollution is linked to the transport of invasive or pathogenic species in the Gambia River and into the Atlantic Ocean.

### The Casamance River

Originally the Senegal River was targeted for this study, but following the silting up of the river's entrance, the schooner was unable to access. Instead, *Tara* entered the Casamance River.



The objectives of passage in the Casamance River were, again, to observe changes in microbial life in the river-sea continuum and to assess plastic pollution.

Since the Ziguinchor Bridge on the Casamance River did not allow the schooner *Tara* to go further into the river, the scientists used 2 zodiacs to reach the sampling stations. As in the Gambia River, such a large amount of debris was found at the Nikine beach sampling site and on the bank of the Karabane River, that we stopped sorting the debris (about 20 kg) after only 25 meters. High pollution by macroplastic debris was observed, localized near cities with little extension to the river, and relatively low microplastic pollution in river waters.

#### Upwelling zone off the Senegal coast

During the leg between Banjul and Dakar, scientists sampled the upwelling zone off Senegal as part of a collaboration with the Research Institute for Development (IRD), which regularly studies this very productive zone supporting the local fishing economy. Several samples

were taken along transects from the coast to the open sea in July and August, in order to study the planktonic communities present before the upwelling season (in December and January). The IRD and Ifremer campaign supplemented the Tara samples, by collecting samples at the same stations at the time of upwelling, that is, in winter, by using the same protocols as the *Microbiome Mission (2020-2022)*.

Our sampling had 2 main objectives: to characterize the state of the marine microbiome in the “pre-upwelling” period, but also to characterize the OMZ (Oxygen Minimum Zone) encountered in this area, off the coast of Senegal. Several of these minimum oxygen zones were sampled by Tara during the mission off South Africa and Namibia and under the Guinea Dome. Our close collaboration with the IRD will allow a better understanding of the evolution of the planktonic communities supporting the fishing stocks in this region, before and during the upwelling periods, and will enable us to study their evolution under the expansion of the OMZs which can impact these communities.





## Towards another vision of the Ocean: collaborating with local stakeholders to share knowledge

The schooner's stopovers during expeditions are privileged moments of exchange with the general public, and collaboration with local people involved with the Ocean.

These meetings are an integral part of each expedition and embody the identity of the Tara Ocean Foundation: We convey a coherent message about protecting the Ocean. We promote scientific research in various ways, connecting the worlds of science, civil society and politics. Described below are the highlights of several educational programs aimed at the general public.

Two major stopovers marked the year 2022: Cape Town in April, and Dakar in September. A series of exhibitions, workshops and conferences provided the opportunity to dialogue with the general public, concerned citizens, and local politicians.

### "In Tara's wake"

The educational program "In Tara's Wake" offers teachers and students the opportunity to follow the schooner's crew members on the expedition and interact with them throughout the year.

In 2022, nearly 4,000 students followed the *Microbiome Mission (2020-2022)* and had exchanges with Tara's crew members, scientists and land team, in the form of Questions & Answers, and meetings via videoconference. Portraits of crew members (sailors, scientists, artists, journalists) allow students to discover the diversity of jobs and career paths of the people aboard Tara. In addition, a monthly logbook gives students the chance to follow highlights of the voyage, experienced month by month by the crew, on both scientific and human levels, while learning about the schooner's stopover locations.



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**4,000**  
students followed  
the *Microbiome Mission*

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### Meetings around Women and Science

In 2022, the Tara Ocean Foundation decided to focus on women scientists, to inspire young generations and show a more diverse face of scientific research. Through conferences during stopovers in Argentina and Senegal, and also through several articles published on our social networks, the foundation gave women scientists the opportunity to share their experiences, expertise and hopes, and transmit their ideas to as many people as possible.



### Committing to the Ocean (Cape Town + Tara's return to Lorient)

One of the Tara Ocean Foundation's main challenges is to encourage the widest possible commitment to preserving the Ocean. During stopovers and the return from the *Microbiome Mission (2020-2022)*, the foundation's teams initiated a dialogue with local associations and activists in order to share with the general public, but also with political decision-makers, the importance of protecting the Ocean. In Cape Town and in Lorient, activists, scientists and associations came to share their commitment to the Ocean and inspire the public to get involved and take action.



### Cape Town: Tara's first port of call on the African coast

#### An important stopover for the *AtlantECO* project

After Antarctica, and crossing the South Sea from Chile, Tara made a port of call in Cape Town, South Africa. For this week-long stopover, the schooner joined 30 scientists for the first General Assembly of the *AtlantECO* project. At dock in the center of the city, the schooner was visited by the general public, school groups, and researchers associated with the project, many of whom had not yet had the opportunity to come aboard.

Several members of the land team traveled to Cape Town during the week of activities, including Romain Troublé, executive director of the Tara Ocean Foundation, and Étienne Bourgois, President of the foundation. The team set up several events including, among other high points of the stopover, an activity concerning ocean culture, 2 days of meetings and discussions with local organizations, as well as a workshop on ocean governance.

In the context of *AtlantECO*, a summer school was organized. This consisted of 2 days of training at sea aboard *Tara* for 20 young researchers from several African countries.

The schooner also welcomed aboard many African students as part of the *AtlantECO* training course, to teach them the scientific protocols implemented on board. Two of these students then boarded *Tara* as part of the scientific team, between Namibia and the Republic of Congo.



### Participation in the OCEAN FORUM x FILM FESTIVAL

For our first port of call on the west African coast, the Tara Ocean Foundation joined forces with South African partners, members of *Atlant'ECO*, the University of Cape Town, University of Pretoria, and the Council for Scientific and Industrial Research (CSIR), to raise awareness of the need to preserve the Ocean via a major public event: the “OCEAN FORUM x FILM FESTIVAL: Join the wave to protect the Ocean”.

Cape Town is the home city of many ocean conservation initiatives. The Tara Ocean Foundation invited local associations - the Sentinel Ocean Alliance, Pristine collective and the Litter Boom project - to present their work and organize workshops. The foundation also partnered with local artists from the Handcontrol 360 Crew to express the importance of the Ocean. The artists of the “Youth Visions in a Changing Climate” project, whose main objective is to “strengthen the resilience of the city of Cape Town”, interacted with the general public to raise awareness of plastic pollution around a large mural painting on wooden panels displayed at the V&A Waterfront. The overall goal of “Youth Visions in a Changing Climate” is to better understand the possibilities of building socio-ecological resilience through participatory and artistic projects and the engagement of urban youth.



## Meeting with the NEWF

This stopover was also an opportunity for the Tara Ocean Foundation to partner with Nature, Environment & Wildlife Filmmakers (NEWF) which aims to influence, diversify and transform the industry by encouraging stories told from an African point of view, by authentic local voices. The NEWF project was initiated from the simple observation that “the world is nourished so much on Africa’s wildlife and natural history, but black African filmmakers are rarer than some of the species that conservationists seek to protect!”. Through numerous programs, NEWF inspires and accompanies young African storytellers who use digital media in the fields of science, nature, wildlife and conservation.

NEWF is one of the only platforms in Africa tackling the challenges facing the natural world and delivering solutions through creative and powerful scientific communication, to diversify and transform the industry by encouraging stories told from an African perspective by authentic local voices. This partnership gave rise to 2 festivals that screened short films produced by the NEWF, followed by a meeting with the film directors in Cape Town and then in Swakopmund (Namibia). In addition, NEWF videographer/diver Kimerudi Motswai had a residency aboard *Tara* between Cape Town and Walvis Bay.



Scan me



**800**

students visited the schooner

**450**

visitors

**10**

meetings with associations

**43**

media reports

## Dakar: A stopover dedicated to scientific cooperation and knowledge sharing

### A day of workshops on scientific mediation with local NGOs

Sharing information is an essential mission of the Tara Ocean Foundation. For this purpose and thanks to the involvement of several organizations (Réseau des clubs scientifiques du Sénégal, Nebeday and Oceanium), the foundation invited about 100 mediators for a day during Tara’s stopover in Dakar. These stakeholders involved in the dissemination of knowledge were brought together with the shared objective of promoting scientific culture among young people, taking into account their personal context.

This day allowed numerous concrete exchanges on awareness-raising tools and mediation techniques while addressing global ecocitizen issues. Mediators benefited from many multidisciplinary resources meeting the needs of their programs. A lasting relationship is now in place and will continue to benefit from our shared knowledge.



**Conference on the challenges related to knowledge about plankton ecosystems for sustainable management of fishery resources**

In partnership with the Research Institute for Development (IRD, France) and the Dakar-Thiaroye Oceanographic Research Center (CRODT, Senegal), the foundation organized a round table on the challenges stemming from knowledge about plankton ecosystems for sustainable management of fish resources in a context of climate change. During this event, the attending researchers discussed the importance and need of environmental data in Africa to assess and understand the productivity and health status of ecosystems, as well as establish baselines to monitor their evolution. This round table was organized as a continuation of the cooperation activities that have been carried out by the foundation since 2016 for the purpose of training researchers in developing countries and building new scientific collaborations.



**Art exhibition at the French Institute in Dakar: “TARA OCEAN - Corps noir, absorption et rayonnement” (black body, absorption and radiation)**

From September 1, 2022, to February 28, 2023, the Tara Ocean Foundation produced an exhibition on the walls of the French Institute in Dakar, in collaboration with the latter and thanks to the work of Ken Aicha Sy, the invited guest curator. “Corps noir, absorption et rayonnement” told stories collected in the ocean depths using various modes of artistic expression : photographs by Nicolas Floc’h, Ellie Ga and Samuel Bollendorff; drawings and multimedia art by Emmanuel Régent; acoustic works by Antoine Bertin, and videographic paintings by Yoann Lelong. This exhibition thus presented the testimonies of a dozen artists, chosen for the beauty of their works, but also the emotion and understanding of the Ocean they express.

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**600**  
visitors

**140**  
students

**50**  
mediators

**350**

attended meetings with Senegalese science clubs

students met the crew

---

**100**

mediators participated  
in the workshops

**3**

conferences  
attended by 280 people

**40**

local organizations  
participated

**10**

artists exhibited

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## Science : Our various research programs

### Presentation of our consortia

A scientific consortium is an agreement formed between several laboratories (French and/or international) to cooperate in implementing a joint project. Conditions are governed by conventions, that define the relationships between consortium members and establish common rules. Regarding *Tara's* expeditions, it was agreed that the results produced are the common property of all consortium members participating in the mission.

The term "consortium" in French law does not refer to a particular legal status (it is not governed by any legislative or regulatory text). Consortium contracts thus serve only as frameworks to structure and formalize collaboration between the relevant members. Each party to the consortium contract remains legally independent.

### Previous expeditions of the Tara Ocean Foundation

Following each expedition of the schooner, all sampling data collected on board are the subject of in-depth analyses by partner laboratories. Afterwards, often several months to years later, scientific papers are published to present the associated results, thus increasing our knowledge of the Ocean.

”

“Promoting high-quality scientific research is one of the main pillars of the Tara Ocean Foundation’s activities. Hundreds of articles have been published in recent years, notably in 2022, thanks to Tara’s expeditions. Every year dozens of scientific publications are directly based on the analysis of data derived from samples collected during the schooner’s missions. The Tara Ocean Foundation also encourages the collaborating scientists to release their data into public databases so that other researchers can benefit. For instance, data from the *Tara Oceans expedition (2009-2013)* have become the fundamental reference resource for all microbial oceanography studies.”

**Chris Bowler, CNRS research director and scientific co-coordinator of the *Tara Oceans (2009-2013)* and *Tara Microbiome (2020-2022)* expeditions**

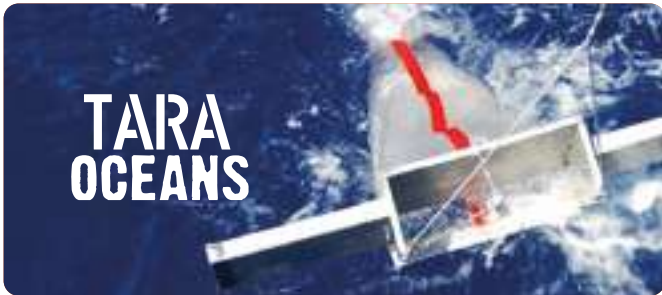
“



## Tara Arctic · 2006 à 2008

### Scientific director:

Dr Jean-Claude Gascard, CNRS research director  
(France)



## Tara Océans · 2009 à 2013

### Scientific director:

Chris Bowler (replaced Eric Karsenti in 2020), CNRS  
research director at the Ecole normale supérieure  
(France)

### Consortium news :

A *Memorandum of Understanding* (MoU) was signed on January 1<sup>st</sup>, 2021, between the EMBL and the Tara Ocean Foundation with tacit renewal after 5 years.

### Publications in 2022:

#### Trawling the ocean virome.

Marx, V. *Nat Methods* 19, 928–931. 2022.

<https://doi.org/10.1038/s41592-022-01568-2>

#### Why the ocean virome matters.

Marx, V. *Nat Methods* 19, 924–927. 2022.

<https://doi.org/10.1038/s41592-022-01567-3>

#### Patterns of mesozooplankton community composition and vertical fluxes in the global ocean.

Soviadan, Y. D., Benedetti, F., Brandao, M. C., Ayata, S., Irsson, J., Jamet, J. L., Kiko, R., Lombard, F., Gnanadi, K., & Stemmann, L. *Progress in Oceanography*, 200: 102717. 2022.

<https://doi.org/10.1016/j.pocean.2021.102717>

#### Patterns of eukaryotic diversity from the surface to the deep-ocean sediment.

Cordier, T., Angeles, I. B., Henry, N., Lejzerowicz, F., Berney, C., Morard, R., Brandt, A., Cambon-Bonavita, M. A., Guidi, L., Lombard, F., Arbizu, P. M., Massana, R., Orejas, C., Poulain, J., Smith, C. R., Wincker, P., Arnaud-Haond, S., Gooday, A. J., de Vargas, C., & Pawlowski, J. *Sci Adv*, 8(5): eabj9309. 2022.

<https://doi.org/10.1126/sciadv.abj9309>

#### Giant Viruses Encode Actin-Related Proteins.

Da Cunha, V., Gaia, M., Ogata, H., Jaillon, O., Delmont, T. O., & Forterre, P. *Mol Biol Evol*, 39(2). 2022.

<https://doi.org/10.1093/molbev/msac022>

#### A robust approach to estimate relative phytoplankton cell abundances from metagenomes.

Pierella Karlusich, J. J., Pelletier, E., Zinger, L., Lombard, F., Zingone, A., Colin, S., Gasol, J. M., Dorrell, R. G., Henry, N., Scalco, E., Acinas, S. G., Wincker, P., de Vargas, C., & Bowler, C. *Mol Ecol Resour*. 2022.

<https://doi.org/10.1111/1755-0998.13592>

#### Restructuring of plankton genomic biogeography in the surface ocean under climate change.

Fremont, P., Gehlen, M., Vrac, M., Leconte, J., Delmont, T. O., Wincker, P., Iudicone, D., & Jaillon, O. *Nature Climate Change*, 12(4): 393–+. 2022.

<https://doi.org/10.1038/s41558-022-01314-8>

### **Cryptic and abundant marine viruses at the evolutionary origins of Earth's RNA virome.**

Zayed, A. A., Wainaina, J. M., Dominguez-Huerta, G., Pelletier, E., Guo, J., Mohssen, M., Tian, F., Pratama, A. A., Bolduc, B., Zablocki, O., Cronin, D., Solden, L., Delage, E., Alberti, A., Aury, J. M., Carradec, Q., da Silva, C., Labadie, K., Poulain, J., Ruscheweyh, H. J., Salazar, G., Shatoff, E., Tara Oceans Coordinatorsdouble, d., Bundschuh, R., Fredrick, K., Kubatko, L. S., Chaffron, S., Culley, A. I., Sunagawa, S., Kuhn, J. H., Wincker, P., Sullivan, M. B., Acinas, S. G., Babin, M., Bork, P., Boss, E., Bowler, C., Cochrane, G., de Vargas, C., Gorsky, G., Guidi, L., Grimsley, N., Hingamp, P., Iudicone, D., Jaillon, O., Kandels, S., Karp-Boss, L., Karsenti, E., Not, F., Ogata, H., Poulton, N., Pesant, S., Sardet, C., Speich, S., Stemann, L., Sullivan, M. B., Sunagawa, S., & Wincker, P. *Science*, 376(6589): 156-162. 2022.

<https://doi.org/10.1126/science.abo5590>

### **Biosynthetic potential of the global ocean microbiome.**

Paoli, L., Ruscheweyh, H. J., Forneris, C. C., Hubrich, F., Kautsar, S., Bhushan, A., Lotti, A., Clayssen, Q., Salazar, G., Milanese, A., Carlstrom, C. I., Papadopoulou, C., Gehrig, D., Karasikov, M., Mustafa, H., Larralde, M., Carroll, L. M., Sanchez, P., Zayed, A. A., Cronin, D. R., Acinas, S. G., Bork, P., Bowler, C., Delmont, T. O., Gasol, J. M., Gossert, A. D., Kahles, A., Sullivan, M. B., Wincker, P., Zeller, G., Robinson, S. L., Piel, J., & Sunagawa, S. *Nature*, 607(7917): 111-118. 2022.

<https://doi.org/10.1038/s41586-022-04862-3>

### **Priorities for ocean microbiome research.**

Tara Ocean, F., Tara, O., European Molecular Biology, L., & European Marine Biological Resource Centre - European Research Infrastructure, C. *Nat Microbiol*, 7(7): 937-947. 2022.

<https://doi.org/10.1038/s41564-022-01145-5>

### **Functional repertoire convergence of distantly related eukaryotic plankton lineages abundant in the sunlit ocean.**

Delmont, T., Gaia, M., Hingsinger, D., Fremont, P., Vanni, C., Fernandez Guerra, A., Eren, A., Kourlaiev, A., d'Agata, L., Clayssen, Q., Villar, E., Labadie, K., Cruaud, C., Poulain, J., Da Silva, C., Wessner, M., Noel, B., Aury, J., Coordinators, T. O., de Vargas, C., Bowler, C., Karsenti, E., Pelletier, E., Wincker, P., & Jaillon, O. *Cell Genomics*, 2: 100123. 2022.

<https://doi.org/10.1016/j.xgen.2022.100123>

### **Diversity and ecological footprint of Global Ocean RNA viruses.**

Dominguez-Huerta, G., Zayed, A. A., Wainaina, J. M., Guo, J., Tian, F., Pratama, A. A., Bolduc, B., Mohssen, M., Zablocki, O., Pelletier, E., Delage, E., Alberti, A., Aury, J. M., Carradec, Q., da Silva, C., Labadie, K., Poulain, J., Tara Oceans Coordinators section, s., Bowler, C., Eveillard, D., Guidi, L., Karsenti, E., Kuhn, J. H., Ogata, H., Wincker, P., Culley, A., Chaffron, S., & Sullivan, M. B. *Science*, 376(6598): 1202-1208. 2022.

<https://doi.org/10.1126/science.abn6358>

### **The Ocean Gene Atlas v2.0: online exploration of the biogeography and phylogeny of plankton genes.**

Vernette, C., Lecubin, J., Sanchez, P., Tara Oceans, C., Sunagawa, S., Delmont, T. O., Acinas, S. G., Pelletier, E., Hingamp, P., & Lescot, M. *Nucleic Acids Res*. 2022.

<https://doi.org/10.1093/nar/gkac420>

### **Coupling Imaging and Omics in Plankton Surveys: State-of-the-Art, Challenges, and Future Directions.**

Pierella Karlusich, J. J., Lombard, F., Irisson, J., Bowler, C., & Foster, R. A. *Frontiers in Marine Science*, 9: 878803. 2022.

<https://doi.org/10.3389/fmars.2022.878803>

### **Genomic evidence for global ocean plankton biogeography shaped by large-scale current systems.**

Richter, D. J., Watteaux, R., Vannier, T., Leconte, J., Fremont, P., Reygondeau, G., Maillet, N., Henry, N., Benoit, G., Da Silva, O., Delmont, T. O., Fernandez-Guerra, A., Suweis, S., Narci, R., Berney, C., Eveillard, D., Gavory, F., Guidi, L., Labadie, K., Mahieu, E., Poulain, J., Romac, S., Roux, S., Dimier, C., Kandels, S., Picheral, M., Searson, S., Tara Oceans, C., Pesant, S., Aury, J. M., Brum, J. R., Lemaitre, C., Pelletier, E., Bork, P., Sunagawa, S., Lombard, F., Karp-Boss, L., Bowler, C., Sullivan, M. B., Karsenti, E., Mariadassou, M., Probert, I., Peterlongo, P., Wincker, P., de Vargas, C., Ribera d'Alcala, M., Iudicone, D., & Jaillon, O. *Elife*, 11. 2022.

<https://doi.org/10.7554/eLife.78129>

### **Genomic and meta-genomic insights into the functions, diversity and global distribution of haptophyte algae.**

Penot, M., Dacks, J., Read, B., & Dorrell, R. *Applied Phycology*, 3(1): 340-359. 2022.

<https://doi.org/10.1080/26388081.2022.2103732>



### **Genomic adaptation of the picoeukaryote *Pelagomonas calceolata* to iron-poor oceans revealed by a chromosome-scale genome sequence.**

Guerin, N., Ciccarella, M., Flamant, E., Fremont, P., Mangenot, S., Istace, B., Noel, B., Belser, C., Bertrand, L., Labadie, K., Cruaud, C., Romac, S., Bachy, C., Gachenot, M., Pelletier, E., Alberti, A., Jaillon, O., Wincker, P., Aury, J. M., & Carradec, Q. *Commun Biol*, 5(1): 983. 2022.

<https://doi.org/10.1038/s42003-022-03939-z>

### **Priorities for ocean microbiome research.**

Tara Ocean Foundation., Tara Oceans., European Molecular Biology Laboratory (EMBL). et al. *Nat Microbiol*, 7, 937–947. 2022.

<https://doi.org/10.1038/s41564-022-01145-5>



## **Tara Méditerranée · 2014**

### **Scientific director:**

Dr Maria-Luiza Pedrotti, CNRS research director  
(France)

### **Publications in 2022:**

#### **Microplastic fouling: A gap in knowledge and a research imperative to improve their study by infrared characterization spectroscopy.**

September 2022, Fabri-Ruiz et al. *Science of The Total Environment* 856(140317):159011. 2022.

<https://doi.org/10.1016/j.scitotenv.2022.159011>

#### **Low-density plastic debris dispersion beneath the Mediterranean Sea surface.**

Baudena, Alberto; Kiko, Rainer; Jalon-Rojas, Isabel; Pedrotti, Maria Luiza. *Environmental Science & Technology* (under review).

#### **An integrative assessment of the plastic debris load in the Mediterranean Sea.**

Pedrotti et al. *Science of The Total Environment* 838 (Pt 1):155958. 2022. Pedrotti, M. L., Lombard, F., Baudena, A., Galgani, F., Elineau, A., Petit, S., ... & Gorsky, G. (2022).

<https://doi.org/10.1016/j.scitotenv.2022.155958>

#### **An Integrative Assessment of the Plastic Debris Load in the Mediterranean Sea. Science of The Total Environment**

Pedrotti, M. L.; Lombard, F.; Baudena, A.; Galgani, F.; Elineau, A.; Petit, S.; Henry, M.; Troublé, R.; Reverdin, G.; Ser-Giacomi, E.; Kedzierski, M.; Boss, E.; Gorsky, G. 838, 155958. 2022.

<https://doi.org/10.1016/j.scitotenv.2022.155958>

#### **Chemical composition of microplastics floating on the surface of the Mediterranean Sea.**

Kedzierski, M., Palazot, M., Socalingame, L., Falcou-Préfol, M., Gorsky, G., Galgani, F., Bruzaud, S. & Pedrotti, M. L. *Marine Pollution Bulletin* 113284. 2022.

<https://doi.org/10.1016/j.marpolbul.2021.113284>

#### **The streaming of plastic in the Mediterranean Sea.**

Baudena, A., Ser-Giacomi, E., Jalón-Rojas, I., Galgani, F., Pedrotti, M. L. *Nature Communications* 13(1):2981. 2022.

<http://dx.doi.org/10.1038/s41467-022-30572-5>



## Tara Pacific · 2016 à 2018

### Scientific directors:

Dr Serge Planes, CNRS research director (France)  
and Dr Denis Allemand, scientific director  
at the Centre scientifique de Monaco (CSM)

### Consortium news:

Près d'une dizaine de publications ont été finalisés avec l'objectif d'être soumis et publiés en mai 2023.

### Publications in 2022:

#### Terrestrial and marine influence on atmospheric bacterial diversity over the north Atlantic and Pacific Oceans.

Lang-Yona N, Flores JM, Haviv R, Alberti A, Poulain J, Belser C, Trainic M, Gat D, Ruscheweyh H-J, Wincker P, Sunagawa S, Rudich Y, Koren I, Vardi A - Communications Earth & Environment 3:121. 2022.

<https://doi.org/10.1038/s43247-022-00441-6>

#### Antifungal mono- and dimeric nitrogenous bisabolene derivatives from a sponge in the order Bubarida from Futuna Islands.

Miguel-Gordo, M., M. M. Reddy, P. Sánchez, and others. Organic & Biomolecular Chemistry 20: 1031–1040. 2022.

<https://doi.org/10.1039/D1OB02297K>

#### Oxygen concentration in the seawater measured with an optode (Aanderaa optode 4835) during the Tara Pacific Expedition (2016-2018).

Lin, Yajuan; Cassar, Nicolas; Bourdin, Guillaume; Lombard, F; Gorsky, G; Moulin, Clémentine; Iwankow, Guillaume; Boissin, Emilie; Poulain, Julie; Romac, Sarah; Agostini, Sylvain; Banaigs, Bernard; Boss, Emmanuel; Bowler, Chris; De Vargas, Colombar; Douville, Eric; Flores, J Michel; Forcioli, Didier; Furla, Paola; Galand, Pierre E; Gilson, Eric; Pesant, Stephane; Reynaud, Stéphanie; Sullivan, Matthew B; Sunagawa, Shinichi; Thomas, Olivier; Troublé, Romain; Vega Thurber, Rebecca; Voolstra, Christian R; Wincker, Patrick; Zoccola, Didier; Allemand, Denis; Planes, Serge; PANGAEA. 2022.

<https://doi.org/10.1594/PANGAEA.943790>



## Mission Microplastiques · 2019

### Scientific directors:

Dr Jean-François Ghiglione, CNRS  
research director (France)

### Consortium news:

The consortium meets 3 times a year with the aim of publishing a first series of publications by the end of 2023.

### The scientific consortium of the Tara Microbiome expedition (2020-2022)

In 2022, the schooner's last expedition, *Tara Microbiome (2020-2022)*, came to an end. This long research campaign was part of an ambitious scientific program that brought together many research institutions of various nationalities. In the coming years, the analysis of the data collected on board *Tara* will lead to a better understanding of the phenomena at work in the marine microbiome.



## Mission Microbiomes · 2020 à 2022

### Scientific directors:

Dr Daniele Ludicone, research director at the Anton Dohrn Zoological Station (Italy), Dr Colombaro de Vargas, CNRS research director (France) and Dr Chris Bowler, CNRS research director at the École normale supérieure (France)

### Scientific consortium of the Tara Microbiome mission:

National Marine Fisheries Research Institute (NMFRI)  
 Institut National de Recherche en Sciences Exactes et Naturelles (IRSEN)  
 University of Namibia (UofN)  
 Laboratory of Oceanography, Environmental and Climate Sciences at the University of Ziguinchor (ASU)  
 Centre de Recherches Océanographiques de Dakar Thiaroye (CRODT)  
 Centre for Proteomic & Genomic Research (CPGR)  
 South African Ecosystem Observation Network (SAEON)  
 University of Cape Town (UCT)  
 University of Pretoria (UP)  
 Ocean Frontier Institute (OFI)  
 National Oceanic and Atmospheric Administration (NOAA)  
 Ohio State University (OSU)  
 School of Marine Sciences, University of Maine (UMAINE)  
 University of Southern California (USC)  
 Woods Hole Oceanographic Institute (WHOI)  
 Massachusetts Institute of Technology (MIT)  
 Universidade Federal do Pará (UFPA)  
 Universidade Federal de Pernambuco (UFPE)  
 Universidade Federal Rural da Amazônia (UFRA)  
 Universidade Federal do Rio Grande (FURG)  
 Universidade Federal do Sul da Bahia (UFSB)  
 Universidade Federal de Santa Catarina (UFSC)  
 Universidade de São Paulo/Universidade Federal de São Carlos (UFSCar)  
 Universidade de São Paulo (USP)  
 Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET)  
 Universidad de Buenos Aires (UBA)  
 Instituto Nacional de Investigación y Desarrollo Pesquero (INIDEP)  
 Institut de Recherche pour le Développement (IRD)  
 Institut Français de Recherche et d'Exploitation de la Mer (Ifremer)  
 Friedrich-Schiller-Universität Jena (FSU)  
 Helmholtz-Zentrum Hereon (HEREON)

University of Bremen, Center for Marine Environmental Sciences (MARUM)  
 Max Planck Institute for Marine Microbiology (MPI-MM)  
 Weizmann Institute of Science (Weizmann)  
 Ciencia y tecnología marina y alimentaria (AZTI)  
 British Antarctic Survey (BAS)  
 École Normale Supérieure (ENS)  
 Centre de l'Énergie Atomique (CEA)  
 Centre National de la Recherche Scientifique (CNRS)  
 Fondation Tara Ocean (FTO)  
 Sorbonne Université (SU)  
 Alfred Wegener Institute (AWI)  
 European Molecular Biology Laboratory (EMBL)  
 Consiglio Nazionale delle Ricerche (CNR)  
 Stazione Zoologica Anton Dohrn (SZN)  
 Royal Netherlands Institute for Sea Research (NIOZ)  
 University of Utrecht (UU)  
 Consejo Superior de Investigaciones Científicas (CSIC)  
 National Oceanographic Centre (NOC)  
 University of Liverpool (UNILIV)

### Chilean scientific consortium "CEODOS" (Chile):

Centro de Modelamiento Matemático,  
 Universidad de Chile (CMM)  
 The International Associated Laboratory - Multiscale Adaptive Strategies (LIA MAST)  
 Fondap Center CR2 Universidad de Chile (CR2)  
 Fondap Center IDEAL, Facultad de Ciencias  
 Universidad Austral Campus Isla Teja (IDEAL)  
 Centro de Investigación en Ecosistemas de la Patagonia (CIEP)  
 PFB PIA CENTERS COPAS SUR AUSTRAL  
 Universidad de Concepción Barrio Universitario S/N Concepción (COPAS COASTAL)  
 Fondap Center INCAR - Universidad de Concepción Barrio Universitario S/N Concepción (INCAR)  
 Institut National de Recherche en Sciences et Technologies du Numérique - INRIA Chili (INRIA)



### Focus on two scientific publications

The article “Science-to-Policy” deals with priorities for ocean microbiome research

#### Priorities for ocean microbiome research.

Tara Ocean Foundation., Tara Oceans., European Molecular Biology Laboratory (EMBL). et al. Nat Microbiol 7, 937–947. 2022.

<https://doi.org/10.1038/s41564-022-01145-5>

Scan me



Giving a voice to the invisible majority of the Ocean:  
the marine microbiome

The year 2022 marked a significant step in the development of *Tara's* advocacy, with the publication of our first “science to policy” article in a major peer-reviewed journal, *Nature Microbiology*. This article was written by the Tara Ocean Foundation in collaboration with researchers from several scientific organizations, as part of the *Tara Microbiome mission (2020-2022)*. It describes how microbiome research is expected to develop in the coming years in connection with ongoing ocean governance processes and the *UN Decade of Ocean Science for Sustainable Development (2021-2030)*.

Originally intended to explain the science produced during the *Tara Microbiome mission (2020-2022)*, the article eventually adopted a more significant advocacy position to provide concrete recommendations. The interest shown by *Nature* in taking marine microbiome knowledge into account in governance processes highlights how important the challenge is. The publication - with André Abreu, director of international policy at the Tara Ocean Foundation, Romain Troublé, executive director of the foundation, and Étienne Bourgois, president of the foundation as first authors, and cosigned with prominent researchers - also reinforces our ambitions to structure the still incomplete interface between microbiome science and international policies related to the Ocean.

nearly **9,000**

readers of the academic article  
“Science to Policy” on the *Nature Microbiology's* website

more than **250**

references on social  
networks (mainly Twitter)

more than **600**

readers of the article “Giving a voice to the invisible majority of the Ocean: The marine microbiome” on the Tara Ocean foundation's website

**Cryptic and abundant marine viruses at the evolutionary origins of Earth's RNA virome.**

Zayed AA, Wainaina JM, et al., Science, 8;376(6589):156-162. Epub 2022 Apr 7. PMID: 35389782. 2022.

<https://doi.org/10.1126/science.abm5847>

Scan me



5,500 new species of RNA viruses were identified in the Ocean thanks to the water samples collected during the *Tara Oceans expedition (2009-2013)*. Analysis of these RNA viruses marks a new chapter in understanding their diversity, evolution, and ecology.

This new study was initiated by the Tara Ocean Foundation and the *Tara Oceans (2009-2013)* scientific consortium. It was based on advances in sequencing technologies led by the National Sequencing Centre (Genoscope, France) and the Alternative Energies and Atomic Energy Commission (CEA, France). Combined with viral reference catalogues, these advancements provided a platform to take snapshots of RNA virus populations across the Atlantic, Pacific, Arctic, Southern, and Indian Oceans.

This work helps better understand the nature and diversity of RNA viruses, where they live in the global ocean, their surprising roles in carbon sequestration and oxygen production, and their influence on the evolution of all life forms.

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**5,500**

new species of RNA viruses discovered thanks to the Tara Ocean Foundation

more than **300**

visits of the article entitled "The Tara Oceans mission led to the identification of 5,500 species of marine RNA viruses" on the foundation's website

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04



# Sharing to change

The term “sharing” embodies one of the two essential missions of the Tara Ocean Foundation: disseminating the keys to understanding in order to take a new look at the Ocean and awaken consciousness about this complex world, while explaining the stages of scientific research leading to the production of knowledge.

## Building together a new story about the Ocean

Stories have always been the best vectors of knowledge. This is particularly true for the Ocean: from the discovery of new territories and the first commercial shipping routes in the 16th century to major scientific expeditions such as Darwin's, the stories of navigation and human adventures have served the diffusion of knowledge.

The Tara Ocean Foundation's ambition is to disseminate knowledge about the Ocean as widely as possible to create a new common culture, integrating socio-ecosystem issues of the largest living space on Earth.

For the past 20 years, scientific expeditions led by the Tara Ocean Foundation have been highlighting the importance of the Ocean for the future of humanity. Since the balance of this ecosystem depends on everyone, our priority is to inform all audiences, from young citizens to politicians, on the essential role played by this vast expanse in maintaining our planet's good health.

## Towards mediation 4.0: Scientific culture about the Ocean “made in Tara”

Developing awareness-raising tools by collaborating directly with scientists opens a new dialogue between science and citizens. Every cultural action is an encounter facilitating relationships and giving collective meaning to the actions of all participants. Through workshops, conferences, creation of slams (oral poetry), as well as exchanges between citizens and researchers, philosophers, public figures and writers, we imagine new forms of access to knowledge in order to involve as many people as possible, in particular by appealing to emotions.



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**20,858**

During all events in France  
(including in St-Malo with a low  
estimate of 3,000 people)

**5,366**

During all stopovers abroad

**26,224**

Total (France + international)

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## Writing a new story: The Ocean culture section

### Knowledge sharing events

#### Civil Society and Research Forum for EU Missions • March 21, 2022

In the framework of the French Presidency of the Council of the European Union, the Ministry for Higher Education, Research and Innovation organized a high-level conference on citizen engagement in European missions.

As a key player in Ocean knowledge, the Tara Ocean Foundation participated in the round table on “EU missions and foundations: advocacy and philanthropy. What actions to promote citizen engagement in research?” Romain Troublé, executive director of the Tara Ocean Foundation, spoke alongside Delphine Moralis, chief executive officer of the Philanthropy Europe Association (Philea, a network designed to link foundations on a European scale) and Virginie Troit, executive director of the French Red Cross Foundation. During the forum, the Tara Ocean Foundation also implemented its awareness tools on plastic pollution.

#### Ocean Festival at the Palais de la Porte Dorée and its tropical aquarium • June 11-12, 2022

The Ocean Festival is organized every year at the Palais de la Porte Dorée, with the objective of celebrating the Ocean through cultural and scientific mediation events intended for the general public. The theme, “An Ocean of Solutions”, highlighted the many initiatives (in progress or being planned) that rely on Ocean resilience to preserve marine biodiversity, reduce the impacts of anthropogenic activities on marine and coastal ecosystems, mitigate climate change and adapt to its consequences.

The Tara Ocean Foundation organized the workshop “La Face cachée de l’Océan” (Hidden Face of the Ocean) in collaboration with Plankton Planet. By involving participants through awareness-raising tools such as the Curiosity Microscope, the objective was to make citizens actors in scientific research.

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**1,200**  
participants

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## Rendez-vous de l'histoire de Blois • October 5-9, 2022

At the intersection between social science and culture, the “Rendez-vous de l'histoire de Blois” shed a light upon the present by studying the past. Every year in Blois, around 600 free events and conferences, including a book fair and a film festival, bring together about 45,000 people.

For its 25<sup>th</sup> anniversary, the festival chose the sea as its theme. The Tara Ocean Foundation was necessarily at the heart of this event. On this occasion, we organized a conference led by Manon Lanjouère, artist-in-residence aboard *Tara*. Beyond her artistic work, the discussion involving local associations also addressed major issues related to the Ocean's health, such as plastic pollution. Finally, the documentary *Oceans, the Mystery of the Missing Plastic* (2016) was screened.

## Cité de la Mer in Cherbourg • November 7-13, 2022

From November 7 to 13, 2022, Tara made a stopover in Cherbourg as part of the #GénérationOcéan program. 11 conferences were held with Tara's crew members and scientists and attended by more than 3,700 schoolchildren. In addition, more than 300 students visited the schooner and observed the invisible world of plankton using Plankton Planet's Curiosity Microscope. These events were made possible thanks to our partnership with the Cité de la Mer.

Among all these convivial meetings, the evening's gala event attracted a significant number of spectators to hear talks by Romain Troublé, executive director of the foundation, Dr Eric Pelletier, senior researcher at the Genoscope and Sophie Bin, sailor and cook aboard *Tara*.

In addition, the Cité de la Mer now hosts, in a new permanent exhibition, The Ocean of the Future, a space dedicated to the Tara Ocean Foundation's scientific expeditions. This partnership resulted in the signing of an agreement on the occasion of this stopover.

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**11**

conferences

**3,700**

students participated

**300**

students visited  
the schooner

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## Exhibitions

### Biennale Photoclimat, La Seyne-sur-Mer and Ajaccio

In 2021, the Tara Ocean Foundation partnered with Photoclimat, a social and environmental photography biennial, the first edition of which took place in Paris from September to October 2021. The purpose of this biennial is to create original installations in public spaces so that all passers-by can attend the exhibitions.

The foundation chose to make the invisible visible, by displaying the works of artists Christian Sardet and Pete West, realized following their residencies aboard the schooner *Tara*. In 2022, the exhibition continued its route as part of Photoclimat Méditerranée, first in La Seyne-sur-Mer for 4 months from the end of 2021 to the beginning of 2022, then in Ajaccio from May to August 2022.



### “Tara, grand angle sur l’Océan... Un nouveau regard sur un monde à explorer” (Tara, wide angle on the Ocean... A new look at a world to explore), Lorient • July-November 2022

An exhibition on the forecourt of the Cité de la Voile in Lorient showcased the route traveled around the world by the schooner to study the Ocean. Photographs taken aboard *Tara* during her various missions represented the largest ecosystem on our planet, from the infinitely large to the infinitely small. This exhibition was also intended for young people who had the opportunity, thanks to a questionnaire and illustrated characters, to put themselves in explorers’ shoes.



### International festival of photojournalism “Un visa pour l’image”

The Tara Ocean Foundation attended the festival “Un visa pour l’image” held in Perpignan from August 27 to September 11, 2022. Maéva Bardy, the foundation’s on-board correspondent, was nominated for the best photojournalistic subjects from around the world. During the festival, she did guided tours with schoolchildren. The exhibition then traveled to several train stations in France and was finally displayed for 2 months in the hall of the Maison de la Radio et de la Musique in Paris.



### Publications of the Tara Ocean Foundation

Tara Ocean, le mag n°3, “L’Océan, un monde à explorer” (the Ocean, a world to be explored)

For centuries the Ocean has been the largest space for exploration, but the word “explore” has not always had the same meaning.

The work of the Tara Ocean Foundation and scientists is essential for our future: from space to the depths, we still have much to discover about the Ocean, the key to life on Earth. In this edition of the Mag, young readers discover many stories, characters and myths that are part of the Ocean culture. These stories put readers in the shoes of apprentice explorers through a game and a test that lead them to identify with various characters. Adventurers and scientists: young audiences can play several roles in order to awaken their curiosity and desire to take action.

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<b>200,000</b>	<b>100,000</b>	<b>75,000</b>
copies of le mag n°3 were distributed	in beach clubs	to subscribers of the Mickey Journal publication dated June 2022

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## Artists-in-residence aboard Tara: Art and Science

Residencies aboard the schooner during the *Tara Microbiome mission (2020-2022)*, “Art of Ocean” ended with these artists :



### GIULIA GROSSMANN

Between 15 August 2022 à Banjul (Republic of Gambia) and 4 September 2022 à Dakar (Senegal)

#### *Zero to infinity*

By combining the approaches of ethnography and cinema, her films question the way we inhabit the Earth, connecting humans and their environment.



### IRENE KOPELMAN

Between 11 July 2022 à Point Noire (Congo) and 16 August 2022 à Banjul (Republic of Gambia)

#### *Une question d'échelle*

This project uses images generated by Flow Cam, a scientific instrument that captures 2D pictures of seawater samples using a computer. This interdisciplinary practice involves long-term collaboration with several research institutes.



### LARA TABEL

Between 11 September 2022 à Saint-Louis (Senegal) and 4 October 2022 à Lisbon (Portugal)

#### *Regnum Marine : atlas des espèces marines invisibles*

A physician specialized in pathology, Lara Tabet is also a visual artist whose work is at the crossroads of art, environmental and medical sciences. Using photography, biology and her surrounding environment, Lara's works are rooted in research and experimentation.

## MANON LANJOUÈRE

Exhibition staged at La Fab (agnès b. Foundation) - “Particles: the Human Tale of Dying Water”

Immersed in intimate, physical and metaphysical spaces, Manon's multidisciplinary work questions our imaginations and reveals a seductive blend of science and poetry. This exhibition gives new form to tomorrow's world by reinventing its structure : plastic materials become the new representation of microscopic underwater life.



### WILFRIED N'SONDÉ

*Heliosphera, Daughter of the Abyss*

Heliosphéra, fille des abysses, presented upon *Tara's* return from the expedition, is a story born of the author's own experience aboard the schooner. Rhythmed by the movement of sailing, and fueled by knowledge from *Tara's* scientists, this novel describes tiny heroes who dare extravagant symbiotic fusions, thus embodying the idea that even the most different beings can get along.

## Launch of the 2nd season of the podcast “Un hublot sur l’Ocean”

After a first season of 6 episodes produced entirely at sea aboard *Tara*, recounting the scientific and human adventure of the schooner’s expeditions, the second season of the Tara Ocean Foundation podcast “Un hublot sur l’Ocean” immerses even more deeply into Tara’s universe and story. This new season is divided into 2 parts.

The first gives the floor to artists-in-residence aboard *Tara*. Equipped with an audio recording system, the artists - similar to on-board correspondents who often accompany marine expeditions - captured sound events and shared their emotions during their journey. The stories were the subject of five 30-minute podcasts, each telling the experience of the onboard team, and broadcast on various platforms.

The second part, dedicated to the onshore team, started in 2022 and will continue to be produced throughout 2023. Through the singular voices of those who make the Ocean the core of their profession and commitment, these episodes reveal how the Tara Ocean Foundation has been dedicated to the Ocean for more than 20 years, constantly putting this world at the center of our actions.



## The Tara Ocean Foundation in the media

In 2022, the foundation had a strong media presence, marked by high quality publications and partnerships.

### Collaborations

The schooner *Tara* welcomed aboard Vincent Jolly, an international correspondent for *Le Figaro*. Following Vincent’s time’s aboard, the French newspaper published an 8-page brief and dedicated its cover to the schooner.

Conferences organized in Lorient after the return of the expedition were carried out by the Foundation’s teams in collaboration with “Epsilon”, a scientific news magazine, and “On est prêt”, a citizen mobilization movement, with the purpose of sharing our commitment to Ocean science.



8

page article  
in *Le Figaro* newspaper

### Collaboration with Lumni: the educational series “Tout sur ta Mer” (all about your sea)

In December, the foundation participated in launching the educational series “Tout sur ta Mer” in partnership with Lumni, the digital learning platform of the French state-owned audiovisual sector allowing students from kindergarten through high schools to consolidate the notions covered in school curricula. In partnership with the foundation, through twenty 5-minute-episodes, Lumni proposes a new educational documentary series to understand the essential role of the Ocean in maintaining life on Earth.

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**20**

5-minute episodes

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### The Tara Ocean Foundation alongside with other actors

#### “Take over” of the Jeu de Paume Instagram account

From July 4 to 10, the foundation “took over” the Instagram account of the Jeu de Paume, Paris art center displaying modern and postmodern photography and media. The principle is to give the floor directly to a guest. For a few days, the foundation was able to express itself directly on the art center’s Instagram account to educate and raise awareness on Ocean preservation, thus reaching a new audience.

#### The boarding of activist Hugo Viel

Between Banjul (Republic of Gambia) and Dakar (Senegal), from August 17 to September 2, the young activist Hugo Viel, who participated in Climate Walks, boarded the schooner to discover the foundation’s scientific work and learn more about the ocean ecosystem and the issues related to its preservation. He participated in a round table on the return of the *Tara Microbiome mission (2020-2022)* to share his experience and inspire the general public.

#### Invitation of influencers Théo Drieux (Balade mentale) and Simon Rondeau (Melvak)

When the schooner returned to Lorient in October 2022, the foundation invited two influencers to participate in the activities to raise their awareness on Ocean preservation and introduce them to the scientists involved in the expedition. Théo Drieux, known as “Balade mentale” and Simon, aka “Melvak”, partook in the armada aboard *Tara* and enjoyed a unique moment with the scientific and marine crew.





## The Tara Ocean Foundation on digital channels

### Social media

This year, the foundation developed new formats on our social networks to share scientific discoveries with the largest audience possible. The video series “Découverte scientifique” (Scientific Discovery), launched at the beginning of the year, explains in images a scientific concept linked to a publication and to our expeditions.

### The foundation’s website

With a new modern and ergonomic website launched at the end of 2021, the foundation developed an editorial strategy to increase its visibility and make its varied expertise known. More than 20 articles were published on the foundation’s website in 2022 on various themes: the marine microbiome, the *Tara Microbiome mission (2020-2022)*, the challenges of plastic pollution, as well as major events related to the Ocean, such as the COP15, logbooks of artists-in-residence, reports of educational actions, etc.



## Putting the Ocean on school curricula: The Education platform

### The Tara Ocean Foundation's educational platform: teaching sustainable development and Ocean Science in schools

*Tara's* educational platform diffuses in classrooms throughout France (and also in French high schools abroad) pedagogical material for teaching sustainable development and Ocean Science. We train and accompany teachers using innovative educational resources on issues related to science-society-ocean nexus. The sources of inspiration and tools offered to teachers are free, multiple and multifaceted: experiments to be carried out in class, educational files, scientific documentaries on *Tara's* key themes (biodiversity, climate, plastic pollution), live videoconferences with researchers, etc. Educational operations, in particular, can be used as a real common thread throughout the year. The Tara Ocean Foundation highlights the importance of multi-disciplinarity (often absent from textbooks), adding complexity to education, while offering solid content for teaching specific subjects. Using the foundation's resources in the classroom, teachers can contextualize scientific and environmental issues, and develop a stimulating approach for young people in support of the scientific and human adventure aboard *Tara* and in the research laboratories.

The foundation's resources are co-designed with l'Education Nationale (The French Education Ministry) to be consistent with official programs. They offer resources to primary school teachers (starting with cycle 3), up through the end of high school. The entire educational project has been supported for 15 years by the Inspection générale (the French national institution monitoring teachers' work), and enriched by close work with Regional Pedagogical Inspectors and academic coordinators in almost all academies. The relevance of operations and resources is based on this singular long-term collaboration: upstream advice, validation of concepts, co-production, distribution to mobilize teachers on the educational offer and evaluation. An advisory committee for the Education division provides expert support. It notably includes inspectors, experts from the ADEME (French Agency for Ecological Transition), the Foundation La Main à la Pâte, etc.

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over **120,000**  
students worked with resources  
from the foundation

**+ 20%**  
increase compared to 2021

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The dissemination and impact of the foundation's educational tools are constantly increasing. This is due to several factors:

- The renewed confidence of our partners and especially of the steering committees in the Academies which relay these educational operations and co-accompany groups of teachers
- Expanding of quotas for operations based on enrollment and development in French establishments abroad (AEFE)
- Dissemination of educational resources (word-of-mouth, official ministerial communication) and the growing reputation of the Tara Ocean Foundation.

### Tara Ocean Foundation educational programs

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more than **97,000**  
students (in France and around the world)  
enrolled in educational programs

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### *“Seeds of Scientific Reporters”*

Designed in partnership with the Liaison Center for Education and Information Media (CLEMI), this program aims to offer middle and high school students the opportunity to be scientific mediators for other young people on a major subject involving Science and Society: The Influence of Humans on the Ocean. By positioning themselves as transmitters of knowledge, the students have been creating productions, in the form of videos or podcasts since this year, which are permanently promoted on a dedicated website. This “project approach” is particularly favorable to the transversality at the heart of media and information literacy, and education for sustainable development. “Seeds of Scientific Reporters” is enjoying growing success, particularly within the network of French schools abroad (AEFE).

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**8,000**

students (in France and around the world)  
in nearly 300 classes took part in the  
“Seeds of Scientific Reporters” program

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**“Plastics under the magnifying glass”: participatory science operation on microplastics**

Intended for middle school and high school students, the participatory science program “Plastic Under the Magnifying Glass” aims to create an unprecedented database on plastics (macro-, meso- and micro-) found on beaches and shores in France and overseas territories. This data aids scientific research and contributes to decision-making at the European level, within the context of the Marine Strategy Framework Directive (MSFD). Le Cedre (French and International group with expertise on water pollution) and the CNRS laboratory in Banyuls-sur-Mer are the scientific partners of the operation. The objective is twofold: first, to help researchers answer scientific questions; second, to be a lever for eco-citizenship, development of critical thinking and commitment of young people.

A specific methodology, thought out by the scientists, is proposed to the students: collecting samples in the field, recording in a database, then dispatching to partner laboratories for chemical analysis. The results obtained allow scientists to identify the origin of microplastics in order to reflect with the students on the actions to be taken to reduce this pollution on a global scale. Exchanges between scientists and students are offered throughout the year to discuss the results obtained and possible solutions.

Scientific rigor, as well as working in cooperation with researchers, are of concrete educational interest and a very powerful lever for teachers. They can extend their project through educational activities related to plastic pollution, moving from learning to involvement in creating lessons, but also with eco-delegates, or as part of school projects.

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<p><b>23</b> academic districts in metropolitan France</p>	<p><b>6</b> academic districts overseas</p>
<p>more than <b>15,000</b> students</p>	<p>more than <b>1,000</b> teachers</p>
<p>nearly <b>350</b> schools have contributed to this participatory science program</p>	

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### *“Echos from Stopovers: Virtual Expeditions”*

This program is in line with the objectives of education for sustainable development and is resolutely transdisciplinary. Through the schooner *Tara*'s stopovers around the world, teachers and students are offered the opportunity to discover local sustainable development issues that reflect global eco-citizen issues. They can choose their itinerary and the number of stopovers visited according to a theme, a region of the world, or a specific Sustainable Development Goal (SDG).

This flexible and attractive format for class activities was acclaimed again this year by teachers, as evidenced by the participation of 28,000 students in France and around the world! The program is expanding in French schools abroad, where we've noticed genuine enthusiasm for the proposed themes, and also the capacity to follow the schooner's adventures including exchanges several times a year with the crew.

Three congresses to promote virtual class expeditions, bringing together 660 students from metropolitan France and Guadeloupe, were organized remotely and led by the foundation's team. The students “loved it”, especially “the great involvement of everyone” and found the discussions “brilliant, interesting, rewarding, fun, original, instructive and captivating”.

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**28,000**  
students

**1,100**  
classrooms took part  
in “Echos from Stopovers:  
Virtual Expeditions”

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### *“Laboratory Behind the Scenes”*

This program allows teachers to introduce their students, aged 8 to 15, to the world of scientific research. Using the digital platform *“Coulisses de Laboratories”* (*Laboratory Behind the Scenes*) and enjoyable activities in the “Lab Notebooks”, young people discover scientific instruments, their historical evolution and usefulness in the research carried out aboard *Tara*. The program takes us behind the scenes of the great maritime expeditions via various educational files, the latest of which retraces the history of the Vikings.



### *“From Boat to Lab”*

A contextualized approach to science-in-action for middle and high school classes, *“From Boat to Lab”* allows students to discover current environmental issues and research professions. Students become actors in the experimental process by manipulating real scientific data collected on board *Tara*. *“From Boat to Lab”* provides data kits in the form of spreadsheets, accompanied by an educational proposal for the teacher on how to use the data in class, as well as video clips in which the scientists tell their story and present the importance of the data collected. Two surveys (monthly or bimonthly) offer teachers scientific, educational and societal news on plastics and the polar regions.



## The annual cycle of online meetings with scientists

The strength of our educational platform also comes from the direct connection with the world of research. In the fall, the Tara Ocean Foundation launched the 5th annual cycle of online meetings with passionate researchers. 16 scientists from national and international laboratories, intervened by videoconference to raise the awareness of nearly 15,000 students aged 7 to 18 about 12 Ocean issues, and answer their questions live. On the program: the melting of the Arctic, plastic pollution, environmental migrations, the water cycle, the links between the Ocean and the climate, etc. These meetings are always well received and fulfill their objective: to raise questions among students on crucial environmental topics and introduce them to the world of research. Teachers provide the knowledge expected in official programs, while giving their students a taste for science and making them aware of research careers. These videoconferences then become sustainable resources, accessible at any time from a digital inventory.

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nearly **15,000**  
students

in **638**  
classes

from **25**  
different countries

took part in the 2022 cycle of online meetings with scientists, via 32 meetings with researchers

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## Teacher training, at the heart of the Tara Ocean Foundation's educational policy

For 15 years, close collaboration with the educational community aims to have a lasting impact on younger generations. Face-to-face meetings and videoconferencing are essential for teacher training because they increase the impact of educational operations. They are also consistent with official skills and programs, since the training courses are co-constructed with the Inspection générale at the Ministry of National Education. Face-to-face training was carried out as part of the academic training plans of the Éducation nationale. Teachers' skills developed during the workshops find stimulating pedagogical embodiment in the foundation's programs: project management, development of critical thinking and scientific investigation.

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**1,000**  
new teachers trained

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## Getting involved in national debates and international negotiations: the Advocacy and International Cooperation activities

### Protecting biodiversity: understanding ecosystems for effective protection measures

Supported by nearly 20 years of research on the Ocean's little-known microscopic biodiversity, the Tara Ocean Foundation's Advocacy and International Cooperation team continues its action of bringing together the scientific and political worlds, with the aim of integrating the marine microbiome into ocean governance.

#### UNOC: The United Nations Ocean Conference

The year 2022 was marked by many important events for the Ocean. In June, Lisbon hosted the second United Nations Ocean Conference (UNOC), bringing together heads of state, government representatives and NGOs from around the world. The foundation organized an event at the UNOC during which our partner scientists presented a new understanding of the marine ecosystem and the future monitoring/management tools this knowledge could generate. The foundation is the only organization to emphasize the challenges of recent discoveries that take into account planktonic biodiversity, a key to life on Earth. This essential work will continue in the years to come.

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more than **200**  
visits to the article on the foundation's website  
"What progress following the United Nations  
Conference in Lisbon?"

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#### The High Seas Biodiversity Treaty (BBNJ)

The foundation promotes our expertise in research, particularly concerning the high seas, as well as a quantitative approach to molecular biology, within the framework of negotiations on the Treaty for the Conservation of Biodiversity in the High Seas (known as BBNJ). Here again, the foundation takes on the key role of bringing negotiators into dialogue with researchers. During a two-day workshop co-organized with Harvard University, negotiators and scientific experts discussed the text in detail, focusing on the issues of regulating research campaigns in the high seas, access to marine genetic resources and the sharing of benefits with developing countries. André Abreu (Head of International policy of the Tara Ocean Foundation) in charge of monitoring the negotiation, brought these collaborative analyses to the UN headquarters in New York for the fifth negotiation session held in August. A success for the Tara Ocean Foundation, because this expertise was largely included in the text's content at the end of the session.

## Conclusion of the “Ocean plankton, climate and development” project

The issue of cooperation and sharing scientific skills with developing countries, strongly supported by the foundation during the BBNJ negotiations, was also at the center of an innovative scientific cooperation project. Entitled “Ocean Plankton, Climate and Development” and funded by the French Global Environment Facility (FFEM), this project, initiated in 2016 and completed in 2022, has supported the integration of young researchers from Africa and South America to the scientific community of the *Tara Oceans (2009-2013)* expedition. The scientific advances resulting from their research work were presented during a restitution conference organized at the end of June by the Advocacy and International Cooperation unit at the headquarters of the French Development Agency (AFD) in Paris. This event also addressed the challenges of capacity enhancement and technology transfer in west African laboratories, as well as the production of science-based decision support tools for sustainable ocean governance. The foundation supports the production of high-level science by local actors, a necessary condition for the implementation of effective conservation measures adapted to regional contexts.

## The Ocean-Climate-Biodiversity nexus at COP 27 for the climate

Understanding this “unknown majority” - the marine microbiome - whose diversity and importance have gradually been revealed over the course of our missions, is an essential prerequisite for effectively protecting the Ocean. Translating science into effective measures to protect ecosystems and their functions is therefore one of the foundation’s main lines of advocacy.

The key role played by this biodiversity in climate regulation is now well documented and requires ambitious and rapid conservation measures. The foundation’s insistence on including the Ocean and its biodiversity in climate negotiations was embodied in our participation in the 27th COP (Conference of Parties) for the climate via the Ocean and Climate Platform in November 2022. This commitment is bearing fruit: 6 years have passed since COP21 in Paris and the Ocean is now recognized as a major ally in the fight against climate change.

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more than **200**  
visits to the Tara website article  
“[COP 27] United Nations Conference on Climate Change:  
the 3 expectations of the Tara Ocean Foundation”

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## The Convention on Biological Diversity (CBD)

A healthy Ocean is vital in providing ecosystem services essential to life on Earth. This is why the Advocacy and International Cooperation team followed in December 2022 the 15th COP of the Convention on Biological Diversity (CBD), resulting in the adoption of a Global Framework for Biodiversity - a new victory for the Ocean: determining a target of 30% coverage by Marine Protected Areas (MPA). In the continuity of this ocean conservation effort, the foundation also supported France’s request for a position against deep seabed mining, which President Emmanuel Macron finally announced in Lisbon in June. In November 2022, on the occasion of the COP 27 for the climate, he recalled again that the French government would oppose exploitation of the seabed.

A better understanding of biodiversity and the threats affecting it is essential to implement effective conservation measures. Like climate change, the different types of pollution have a strong impact on marine ecosystems, their biodiversity and the functions they support. Plastic pollution in particular is at the heart of the research conducted by the foundation, which works to effectively reduce the exposure of biodiversity to these contaminants.

## Reducing plastic pollution: rethinking our uses and implementing a circular economy

Plastics are omnipresent, both in our daily activities and in advanced technological uses. Plastics' performances, sometimes irreplaceable by other materials, as well as their certain qualities - durability, lightness, impermeability -, make illusory the prospect of their complete elimination in the short and medium term. The perspective of plastic's sustainability therefore requires rethinking its uses and setting the objective of achieving "zero plastic in nature" advocated by the Tara Ocean Foundation.

### For a circular economy

To achieve this, the foundation's actions are based on the concept of "circular economy". The ambition of this system is to imitate the functioning of nature, in particular, an economy of means and absence of waste harmful to living organisms. This translates into the "3R" strategy: Reduce, Reuse, Recycle. These 3 principles have a hierarchical, but also complementary value. Recycling is definitely not enough: to move towards our goal of circularity, we must remove every plastic object that does not fulfill an essential societal use (over-packaging, samples, gadgets, etc.) and rethink those objects that have an irreplaceable utility, extend their lifespan, and make them easily repairable, collectable and recyclable at the end of their life. This forward-looking vision of the circular economy was defended by the foundation in 2022, and will continue to guide our future actions.

### Reduce and eliminate the most problematic plastics

Constant growth in the volume of plastics put on the market, the absence of a collection system guaranteeing the recovery of 100% of the waste, the properties of the polymers themselves making it impossible to envisage qualitative recycling beyond a few cycles - all these factors point to the need to reduce the volume of plastic produced and used. This requires eliminating not only single-use plastics, but also the most problematic plastics.

Styrenic plastics (ABS, polystyrene, expanded polystyrene, etc.), due to their toxicity and low potential for recycling, must be subject to rapid measures. Although they represent only 16% of current uses, styrenic plastics figure in more than a third of the samples taken at sea during Tara's expeditions. Replacing them would therefore be a clear environmental gain. After the failed attempt to ban them under the Climate and Resilience law (enacted in 2021), the Tara Ocean Foundation continued in 2022 to inform political and economic decision-makers (eg, the National Packaging Pact). The foundation thus supported the parliamentary initiative bill aimed at banning these plastics in food packaging. Our participation was also an opportunity to discuss the uses of another family of very problematic plastics, those containing per- and polyfluoroalkyl substances (PFAS), dubbed "forever chemicals".

### The international treaty to end plastic pollution

On the international level, the year 2022 was very successful for the challenges of reducing plastic pollution. Representatives of 175 nations approved on March 2, 2022 in Nairobi during the UNEA-5 (United Nations Environment Assembly) a historic resolution aimed at putting an end to plastic pollution and developing a legally binding international agreement by 2024. The resolution addresses the entire life cycle of plastic, including its production, design and disposal. This hopeful commitment was long awaited by the foundation, whose special Observer status at the UN implies strong mobilization in these debates. Starting in June 2022, on the occasion of the Stockholm +50 Conference celebrating the 50<sup>th</sup> anniversary of the first UN environmental conference, we thus contacted the UNEP teams, shared elements of reflection on the challenges of such a treaty, and we discussed with other NGOs involved. The first official negotiation session (INC1) was held in Punta del Este from November 28 to December 2, 2022. A first policy brief from the foundation, entitled "International Treaty on Plastic Pollution, for a systemic approach to match the challenge", provided a summary of knowledge on the state of pollution, polymer production, growth prospects, as well as the challenges of collection and recycling. Our expectations to guarantee the success of the treaty were detailed:

- Establish official definitions of key terms such as "plastics", "recyclable", "recycled";
- Ask participating nations to write follow-up reports on the marketing of plastic materials;
- Quantify a common reduction target and establish an operational schedule to achieve it;
- Promote combined eco-design and regulatory approaches to increase service life, promote reuse, guarantee repairability;
- Integrate an assessment of the environmental benefits and risks of recycling and promote environmentally virtuous approaches, based on technologies and existing industrial projects;



- Explore the idea of a globalized model for extended producer responsibility (REP);
- Articulate the future treaty with existing international texts and commercial treaties.

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**2**  
texts on plastic issues written

more than **600**  
visits to the article  
“Plastic Pollution, the Solutions are Circular”  
on the foundation’s website

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## Activities from Tara in Japan

Tara Ocean Japan is a sister association of the Tara Ocean Foundation. **Yumiko Patouillet** is the Secretary General. Founded in 2018 following the schooner's multiple stopovers in Japan during the *Tara Pacific (2016-2018)* expedition, the association now consists of several institutional, academic and media partners.

### Continuation of the Tara-Jambio microplastics mission

With its partner Jambio (Japanese Association for Marine Biology) bringing together more than 20 marine stations around the coasts of Japan, as well as the support of agnès b. and Véolia Japan, Tara Ocean Japan continued in 2022 the study of microplastic pollution of Japanese coastal waters, under the scientific direction of Sylvain Agostini (University of Tsukuba) and following a scientific protocol similar to the European *Tara Microplastics mission in 2019*. The Tara-Jambio Microplastics Mission has 2 objectives. The first is scientific: to assess plastic pollution along the Japanese coasts, on the surface and in sediments. The second ambition is educational: to raise public awareness of microplastic pollution and its impact on biodiversity and the marine ecosystem, by actively involving local populations, schools, artists, and the media.





Data on microplastics in Japanese coastal waters are still sparse. The Tara-Jambio Microplastics Mission is currently the largest simultaneous study of microplastics in surface waters, seabed sediments, and beaches in coastal waters of Japan. To date, more than 200 samples have been collected and all have confirmed the presence and high density of microplastics.

#### **Tara Ocean Japan at “Kyotographie 2022”**

The association actively participated in the 2022 edition of the Kyotographie international photography festival, with, among other things, the exhibition “The Mermaid’s Tears” by Samuel Bollendorff, resident-artist on board *Tara*. On April 10, a conference was held in the presence of Katsuhiko Hibino, Dean of the Faculty of Arts at the University of Tokyo.

#### **Tara Ocean Japan at the Setouchi Triennale, Mitoyo-Awashima**

The association was also invited to join the 2022 edition of the Setouchi Triennale, taking place every 3 years, during an entire semester. Launched in the spring, this edition was an opportunity for Tara Ocean Japan to participate in 2 ways: by presenting *Tara* and the history of the Tara Ocean Foundation, and by exhibiting works of art in collaboration with the city of Mitoyo on Awashima Island, southern Japan.



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# Our thanks to you

The Tara Ocean Foundation is financially independent and acts mainly thanks to the private support of partner companies and individual donors. In 2022, the foundation was able to count on the support of our co-founder Agnès Troublé aka agnès b. through the agnès b. Fund (La Fab), but also the loyalty of corporate sponsors such as BIC, L'Oréal and Biotherm, the Veolia Foundation, the Compagnie Nationale du Rhône and the EDF Foundation. We were joined by new partners such as Setec Energie Environnement, Bell & Ross, and other private foundations.

In addition, public subsidies at European, national and regional levels, (for example, the Brittany Region, and the Lorient Agglomeration) came along, testifying the institutional recognition acquired over the years through our joint scientific research and mediation projects.

This balance between private companies, foundations and individuals, along with public resources is valuable in guaranteeing the Tara Ocean Foundation's independence.

Finally, 2022 saw the first significant direct financial support for the investment into the building of the new Tara Polar Station vessel, made official in June. In addition to the significant government support for its construction as part of the France Relance 2030 plan, funded by the European Union Next Generation EU, Tara Polar Station benefits from the support of private partners such as Capgemini Engineering, BNP Paribas, the Prince Albert Foundation II of Monaco and Monaco Explorations, the Veolia Foundation, Bureau Veritas, as well as other active sponsors still in discussion.

The Tara Ocean Foundation warmly thanks all of our private and public partners who have renewed their confidence in us. Without you, our missions could not be accomplished!



## Our partners testify

**3 questions for Carole Domergue,  
International Director of Communication at Biotherm**

### 1. What does the partnership with the Tara Ocean Foundation bring you ?

The 3 words that I think best sum up our partnership are: dialogue, commitment and innovation. This partnership is natural for Biotherm since we also come from water. The history of the brand is linked to the work of a biologist who discovered in 1952 the regenerating properties of plankton. With the Tara Ocean Foundation, we share a common base - plankton diversity. Beyond this same original identity, we are convinced that to begin to understand is to begin to commit and to propose the right solutions. There is nothing better than the Tara Ocean Foundation for carrying out ambitious research projects and sharing knowledge.

### 2. How do you share this partnership with your various stakeholders and why is this subject of interest to them ?

Succeeding in combining the seriousness of the scientific approach with the pedagogy of transmitting knowledge as you do, is unique. Our stakeholders are always very interested in your concrete actions, and always eager to learn more from your scientists. This is one of the reasons that we associate the Tara Ocean Foundation with our speeches, events and awareness campaigns in favor of the protection of the Ocean.

### 3. A strong moment with the Tara Ocean Foundation ?

It's all the time, and especially having the FlowCytobot aboard the IMOCA Biotherm in The Ocean Race, and then in the Vendée Globe. This sensor makes it possible to collect data on biodiversity, in particular phytoplankton. Contributing actively to research, as part of such a strong human adventure - there's is no finer project!

## Appeal to the generosity of the public

Every donation counts. All support, big and small, that our donors bring us, makes it possible to finance the foundation's missions. In 2022, we continued our appeals for generosity from the public, in particular with a new digital appeal for donations at the end of the year.

The Tara Ocean Foundation also benefited from the agnès b. Endowment Fund's expertise to organize an auction of Tara hulls (1/30th scale replicas, personalized by more than 35 illustrator/artists) at Artcurial in December 2022. Finally, the traditional "Gala for the Ocean" evening organized at the beginning of December brought together donors, companies and individuals for a friendly and warm exchange, in the presence of artists Oxmo Puccino, Gaëlle Pietri, Kim Chapiron, as well as the very generous performance of Thomas Dutronc and his musicians.

To all our donors and partners who supported us in 2022, we would like to say a big "Thank you!"

**To support the Tara Ocean Foundation :**

<https://fondationtaraocean.org/en/support-us/>



Fondation  
**taraocéan**  
 explore and share

MAJOR PARTNER

*agnès b.*

PREMIUM PARTNERS



MISSION PARTNERS



MAJOR SCIENTIFIC PARTNERS



INSTITUTIONAL SUPPORTS



[fondationtaraocean.org](http://fondationtaraocean.org)



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# Our governance

## Aims of the foundation

The purpose of the Tara Ocean Foundation is to finance, alone or in partnership, French scientific research relating to the impact of global warming and global changes (pollution, demography, human actions in general, etc.) on ecosystems, to make the general public aware of environmental issues and to disseminate the data and results of this scientific research for educational purposes.

### Means of action of the Tara Ocean Foundation are :

- Organization of scientific expeditions, in particular aboard the schooner *Tara*
- Co-production of films and organization of cultural and educational events about the expeditions organized by the foundation and their results, and the challenges raised by these expeditions
- Organization of exhibitions, conferences, events, television broadcasts and diffusion via internet, as well as the publication, reproduction and edition in all forms and by all methods known (or to yet be discovered) on the expeditions organized by the foundation and their results and/or the issues raised by these expeditions
- Organization of educational programs
- Funding of scholarships and financial aid to scientists and research teams on the impact of global warming and global changes on ecosystems, and more generally, any action contributing to the development of the foundation's goals.

## Administration and operation

The Tara Ocean Foundation is administered by a 9-member board of directors, made up of 3 colleges :

### Composition of the Board of Directors

#### College of founding members

**Étienne Bourgois**, Managing Director of agnès b., President of the Tara Ocean Foundation

**Agnès Troublé aka agnès b.**, Designer

**Nathalie Kistler**, General Secretary, mandated by the Endowment Fund "Agnès Troublé, aka agnès b." and Treasurer of the Tara Ocean Foundation

#### College of Qualified Persons

**Éric Karsenti**, Emeritus Research Director at the CNRS and former Associate Research Director at the EMBL

**Gérard Bonhoute**, Honorary Inspector General of l'Education nationale

**Françoise Gaill**, Research Director at the CNRS  
**Fabien Vatinel**, Expert in patrimony management

#### College of Friends of the foundation

**Sylvie Duboué**, President of the Friends of Tara Association and member of the Board of the Tara Ocean Foundation  
**Christian de Marliave**, Publisher, Program specialist

#### Government Commissioner

**Thierry Boisseaux**, Representative of the Ministry of Ecological Transition and Territorial Cohesion

#### Executive Manager of the foundation

**Romain Troublé**, Executive Manager of the Tara Ocean Foundation, directs the foundation's services and ensures its operation. He has the powers necessary for the exercise of his mission by delegation of the President and the Treasurer. He attends (with legal right) in an advisory capacity, the meetings of the Board of Directors and its officers.

## Powers of the Board of Directors

Through its deliberations, the Board of Directors regulates the affairs of the foundation.

Notably, it:

- decides on the foundation's program of action
- adopts the Annual Report presented by the office concerning the foundation's moral and financial situation
- votes on the budget and modifications (proposed by the office), as well as forecasts regarding human resources
- receives, discusses and approves the accounts for the ending financial year, presented by the Treasurer with supporting documents
- adopts the rules of procedure (proposed by the office)
- accepts donations and legacies, allocates the proceeds and authorizes (apart from day-to-day management) the acquisition and disposal of movable and immovable property, markets, leases and rental contracts, the constitution of mortgages and loans, as well as sureties and guarantees granted in the name of the foundation
- appoints one or more auditors chosen from the list mentioned in article L. 822-1 of the Commercial Code
- sets the conditions for recruiting and remunerating staff
- Keeps informed by the Board of Director's President of any draft agreement binding the foundation, and deliberates on agreements falling within the scope of Article L. 612-5 of the Commercial Code; in this case, the Board decides without the presence of the person concerned.





The Tara Ocean Foundation relies on 2 committees: a scientific committee and an educational advisory committee.

#### **The scientific committee**

**Chris Bowler**, CNRS Research Director and Director since 2010 of the Environmental and Evolutionary Genomics Section at the Institute of Biology of the École Normale Supérieure (IBENS, CNRS/ENS)

**Éric Karsenti**, Emeritus Research Director at CNRS and former Associate Research Director at EMBL

**Françoise Gaill**, Research Director at the CNRS

**Gaby Gorsky**, Oceanographer

**Patrick Wincker**, Director of Genoscope - National Sequencing Center

**Colomban de Vargas**, CNRS Research Director at the Station Biologique de Roscoff

**Serge Planes**, Scientific Director of the Tara Pacific expedition, and CNRS research director at the Center for Island Research and Environmental Observatory (CNRS/EPHE/UPVD)

#### **The educational advisory committee**

**Gérard Bonhoute**, Honorary Inspector General, l'Éducation nationale

**Florence Clement**, ADEME

**Mathilde Jay**, ADEME

**Sabine Lavorel**, French Institute of Education

**Françoise Ribola**, Academy of Versailles

**Gabrielle Zimmermann**, Main à la Pâte Foundation

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# Financial report

## Balance sheet

ASSETS	Financial year on 12/31/2022			Financial year on 12/31/2021
	Gross amount	Depreciation	Montant net	Montant net
<b>Fixed assets</b>				
<b>Intangible fixed assets</b>				
Set-up costs				
Research and development costs				
Temporary donations of usufruct				
Concessions, patent, licenses, trademarks, processes	283 428	183 149	100 278	122 174
Software, rights and similar values				
Other intangible assets				
Intangible assets in progress				
<b>TOTAL</b>	<b>283 428</b>	<b>183 149</b>	<b>100 278</b>	<b>122 174</b>
<b>Tangible assets</b>				
Lands				
Buildings				
Technical installations, equipment and industrial tools	3 330 544	1 031 712	2 298 832	2 448 444
Other tangible assets				
Encumbered assets				
Tangible assets under construction	77 609		77 609	
Property received in the form of legacies or donations held for sale				
<b>TOTAL</b>	<b>3 408 153</b>	<b>1 031 712</b>	<b>2 376 441</b>	<b>2 448 444</b>
<b>Financial assets</b>				
Contributions				
Receivables attached to contributions				
Other securities				
Loans				
Other financial assets	24 500		24 500	24 500
<b>TOTAL</b>	<b>24 500</b>		<b>24 500</b>	<b>24 500</b>
<b>TOTAL (I)</b>	<b>3 716 081</b>	<b>1 214 861</b>	<b>2 501 220</b>	<b>2 595 119</b>
<b>Current assets</b>				
<b>Stocks in process</b>				
Raw materials, supplies Goods				
Inventories				
Work in progress	73 605		73 605	114 074
<b>TOTAL</b>	<b>73 605</b>	<b>0</b>	<b>73 605</b>	<b>114 074</b>
<b>Receivables</b>				
Advances and prepayments on orders				
Accounts receivable and related accounts	107 565		107 565	16 834
Receivables in the form of legacies or donations				
Other receivables	1 722 804		1 722 804	1 349 912
• Suppliers debtors				
• Staff				

<b>ASSETS</b>	<b>Financial year on 12/31/2022</b>			<b>Financial year on 12/31/2021</b>
	<b>Gross amount</b>	<b>Depreciation</b>	<b>Net amount</b>	<b>Net amount</b>
<b>Fixed assets</b>				
• Social organizations				
• State, turnover taxes				
• Others				
<b>TOTAL</b>	<b>1 830 369</b>	<b>0</b>	<b>1 830 369</b>	<b>1 366 746</b>
<b>Miscellaneous</b>				
Marketable securities	300 000		300 000	1 125 000
Cash instruments				
Liquid assets	1 388 899		1 388 899	491 643
Prepaid expenses	30 970		30 970	39 923
<b>TOTAL (II)</b>	<b>3 623 844</b>	<b>0</b>	<b>3 623 844</b>	<b>3 137 387</b>
Loan issuance expenses (III)				
Bond redemption premiums (IV)				
Conversion differences - Assets (V)				
<b>TOTAL DE L'ACTIF (I+II)</b>	<b>7 339 926</b>	<b>1 214 861</b>	<b>6 125 064</b>	<b>5 732 506</b>
<b>Commitments given</b>				
Net legacies to be fulfilled				
Accepted by competent statutory bodies				
Authorized by supervisory body				

## Balance sheet analysis

The Foundation has total net assets of €6,125,064. Key lines are as follows:

- **Intangible assets**, €100,278 net, including the new website and Tara brand.
- **Tangible assets** for a net amount of €2,376,441, including the schooner Tara, annual maintenance and repair work of the vessel and scientific equipment for an amount of €2,258,293.
- **Tangible assets in progress**  
The amount of €77,609 of fixed assets in progress mainly corresponds to costs linked to the development of Tara Polar Station project for €60,779. The amount of expenses from previous years for Tara Polar Station project (recognized as expenses) amounts to €900,000, including €750,000 allocated to the construction. These expenses have not been included in fixed assets for 2022 financial year.
- **Other financial assets**, a deposit of €24,500 was paid for the premises located rue de Prague.
- **Inventory**, for a net amount of €73,605, corresponding to the schooner's spare parts, fuel and stock of products intended for sale.
- **Other receivables** for an amount of €1,722,803 mainly represent the funds balance to be paid in the coming years by our partners and are the subject of an agreement.
- **Other investment securities**, €300,000 revolving term accounts.
- **Available funds**, €1,388,899, including bank account balances and cash.

<b>LIABILITIES</b>	<b>Financial year</b>	<b>Previous financial year</b>
<b>Fonds Propres</b>		
<b>Without repossession rights</b>		
Statutory equity	1 750 000	1 750 000
Complementary equity	241 246	241 246
Association funds without repossession rights (legacies, donations, investment grants, renewable assets)		
<b>With repossession rights</b>		
Other association funds		
Equity with repossession rights		
Statutory equity		
Complementary equity contributions		
Legacies and donations		
Income under control of third-party funders		
Revaluation differences		
<b>Reserves</b>		
Statutory or contractual reserves		
Reserves for entity's project		
Reserves		
Others		
Carry forward	987 740	738 897
Surplus or deficit for the financial year	-330 255	248 843
<b>NET FINANCIAL POSITION</b>	<b>2 648 731</b>	<b>2 978 986</b>
<b>Other funds</b>		
Consumable equity		
Investment grants	592 621	389 269
Owners' rights (commodate)		
<b>TOTAL (I)</b>	<b>3 241 352</b>	<b>3 368 255</b>
<b>Dedicated funds carried forward</b>		
Carry forward related to legacies or donations		
Dedicated funds	1 464 861	358 632
Dedicated funds from other resources		
<b>TOTAL DEDICATED FUNDS CARRIED FORWARD (II)</b>	<b>1 464 861</b>	<b>358 632</b>
Carry forward related to legacies or donations		
Dedicated funds		
Funds dedicated to other resources		
<b>TOTAL PROVISIONS (III)</b>	<b>0</b>	<b>0</b>
Loans and debts with credit institutions (2)		
Accounts payable and related accounts	109 352	170 540
Debts related to legacies or donations		
Tax and social debts	261 600	294 703
Payables on fixed assets and related accounts		
Other payables		
Cash instruments		
Income received in advance	1 047 900	1 540 375
<b>TOTAL (IV)</b>	<b>1 418 851</b>	<b>2 005 618</b>
<b>CONVERSION GAINS OR LOSSES (V)</b>		
<b>TOTAL LIABILITIES (I+II+III+IV+V)</b>	<b>6 125 064</b>	<b>5 732 506</b>

## Liability analysis

- **Equity without repossession rights** (€1,991,246) includes the donation of the schooner Tara' for €1,750,000 and devolution of the *Tara* Fund for an amount of €241,256.
- **Carry forward** (€987,740) includes the 2022 income appropriation validated by the Board of Directors on June 22, 2022.
- **Result for the financial year** is a loss of €330,255.
- **Investment grants** (€592,621) correspond to the share of fixed assets purchased from 2016 to 2022 in the framework of investment agreements signed with the Brittany region and Lorient Agglomeration, minus all accumulated depreciation representing €440,478.
- **Dedicated funds** of €1,464,861 include amounts financed by third parties, to be allocated to projects carried out by the Foundation as part of its corporate purpose and not yet used.
- **Account payables and other payables** amount to €109,352.
- **Tax and social debts** amount to €261,600.
- **Income received in advance** (€1,047,900) corresponds mainly to the funding to be received from multi-annual agreements.





## Profit and loss account

	Financial year	Previous financial year
<b>Operating revenues</b>		
Contributions		
<b>Sales of goods and services</b>		
Sales of goods <i>including sales of in-kind donations</i>	20 748	17 397
Sales of services <i>including sponsorships</i>	230 041	214 841
Sales of goods Production sold Services	22 733	16 917
<b>Net operating revenues</b>		
<b>Income from third party funders</b>		
Operating grants		
Public contributions and operating grants	911 833	152 500
Payments from founders or uses of consumable endowment		
<b>Resources related to public generosity</b>		
Manual donations	481 625	311 710
Sponsorships	1 868 125	1 053 729
Legacies, donations and life insurances		
Financial contributions	1 090 800	1 512 487
Write-back of depreciation, amortization, provisions and cost transfers	112 361	199 820
Use of dedicated funds	450 453	632 797
Carry forward of unused resources from previous financial years		
Other revenues	61 701	8 037
<b>TOTAL OPERATING REVENUES (I)</b>	<b>5 227 687</b>	<b>4 103 318</b>
<b>Operating expenses</b>		
Purchase of goods	9 069	8 417
Inventory change	6 303	4 006
Purchases of raw materials and other supplies	84 700	115 329
Change in stocks of raw material and other supplies	34 166	-33 181
Other purchases and external expenses	1 798 345	2 011 207
Purchases of non-inventory items		
External services		
Other external services		
Financial contributions		
Taxes, duties and other levies	160 921	131 867
Salaries and wages	1 491 675	1 306 784
Social costs	464 348	359 222
Depreciation and impairment charges	237 023	239 005
Depreciation charges on fixed assets	2 100	
Allocation to provisions		
Depreciation of current assets		
Grants paid by the organization		
Dedicated funds carried forward	1 556 683	
Other charges	4 323	9 923
<b>TOTAL OPERATING EXPENSES (II)</b>	<b>5 849 656</b>	<b>4 152 579</b>
<b>OPERATING INCOME (I-II)</b>	<b>-621 970</b>	<b>-49 262</b>

	Financial year	Previous financial year
<b>Financial products</b>		
Financial products from contributions	226 076	226 180
Financial products from other marketable securities and fixed asset receivables		
Other interest receivables and similar income		
Reversals of provisions, cost transfers		
Positive exchange differences		
Net income from sales of marketable securities	1 651	411
<b>TOTAL FINANCIAL PRODUCTS (III)</b>	<b>227 727</b>	<b>226 591</b>
<b>Financial expenses</b>		
Depreciation, depreciation and provision charges		
Interest payable and similar charges		
Negative exchange differences	2 248	1 230
Net charges on sales of marketable securities		
<b>TOTAL FINANCIAL EXPENSES (IV)</b>	<b>2 248</b>	<b>1 230</b>
<b>FINANCIAL INCOME (III-IV)</b>	<b>225 479</b>	<b>225 361</b>
<b>CURRENT PRE-TAX INCOME (I-II+III-IV)</b>	<b>-396 491</b>	<b>176 099</b>
<b>Extraordinary revenue</b>		
Extraordinary revenue on management transactions		
Extraordinary income from capital transactions	106 648	120 745
Reversals of provisions, depreciation and cost transfers		
<b>TOTAL EXTRAORDINARY REVENUE (V)</b>	<b>106 648</b>	<b>120 745</b>
<b>Extraordinary expenses</b>		
Extraordinary revenue on management transactions		67
Extraordinary income from capital transactions		
Reversals of provisions, depreciation and cost transfers		11 023
<b>TOTAL EXTRAORDINARY EXPENSES (VI)</b>	<b>0</b>	<b>11 090</b>
<b>EXTRAORDINARY INCOME (V+VI)</b>	<b>106 648</b>	<b>109 655</b>
Employee profit sharing (VII)		
Income tax (VIII)	40 415	36 910
Corporate tax		
<b>TOTAL REVENUES (I+III+V)</b>	<b>5 562 063</b>	<b>4 450 653</b>
<b>TOTAL EXPENSES (II+IV+VI)</b>	<b>5 892 318</b>	<b>4 201 810</b>
<b>SURPLUS OR DEFICIT</b>	<b>-330 255</b>	<b>248 843</b>
<b>Revenues</b>		
Volunteering	25 062	22 831
Benefits in kind	312 364	389 716
In-kind donations	1 121	5 699
<b>Expenses</b>		
Assistance in kind	25 062	22 831
Provision of goods and services	1 121	5 699
Benefits in kind	312 364	389 716
Volunteer staff		

## Detailed analysis of profit and loss account

### Operating revenues

**Sales of goods** (€20,080) are linked to online sales this year and sales made during stopovers.

**Sales of services** (€230,041) mainly correspond to sponsorship.

**Operating grants** (€155,150) include grants from Lorient Agglomération, the OFB, MTE, ADEME, City of Paris and Morbihan region.

### Resources related to public generosity

**Manual donations** amount to €481,625.

**Sponsorship donations** amount to €1,068,125.

**Financial contributions** amount to €1,090,800.

**Uses of the dedicated funds** (€450,453), mainly correspond to the expenses made in 2022 in the framework of projects funded by third parties: FFEM, Atlanteco and the Tara Polar Station.

### Operating expenses

Part of the operating expenses, such as supplies, fuel, port fees, expenses during stopovers, trips and missions, Thalys phone, etc. are directly related to the schooner. In total, these expenses account for €436,475. The other main operating expenses are listed below:

**Fees** for €663,660 include fees of the Foundation's recurring and long-lasting service providers for €458,053; those related to the TPS project (construction and communication) for an amount of €86,723, and website management for €34,920.

**Personnel expenses** amount to €2,116,944 including €160,921 of payroll tax.

### Financial products

Financial products amount to €226,076 and are mainly linked to dividends received for the temporary donation of usufruct from which the Foundation benefits.

### Extraordinary income

Exceptional income (€106,648) corresponds to the share of investment grants necessary to cover depreciation charges related to equipment acquisitions.

### Tax-advantaged sector

In 2022, the profit of the Foundation's taxed-advantaged sector amounts to €178,660 and triggers an income tax of €40,415.

## Significant events, both during the financial year and post-closing

The French government signed an agreement with the Tara Ocean Foundation to co-finance our new vessel, the Tara Polar Station (TPS). The Tara Polar Station aims to strengthen French and international research on the Arctic.

## Accounting principles and methods

### General principles

Regulation ANC 2018-06 applies to accounts relating to financial years beginning on or after January 1<sup>st</sup>, 2020. It can be applied in advance for the current financial year on its publication date (12/31/2018).

Our entity's annual accounts for this financial year were drawn up in accordance with the provisions of the French Commercial Code, the specific applicable provisions of regulation ANC 2018-06 and, in the absence of other specific provisions, those of regulation ANC 2014-03 relating to the general accounting plan.

### Intangible and tangible assets

Tangible assets are valued at their acquisition or production cost, including all costs necessary to make these assets operational, after deducting trade and cash discounts as well as rebates. Depreciation is calculated using the straight-line or declining balance basis, depending on the expected useful life of the assets :

- **Website**: 3 years on a straight-line basis
- **Audiovisual co-productions**: 3 years on a straight-line basis
- **Floating equipment**: 3-10 years on a straight-line basis
- **Scientific floating equipment**: 3-5 years on a straight-line basis
- **Installations and fittings**: 10 years on a straight-line basis
- **Transport equipment**: 3 years on a straight-line basis
- **Office equipment and hardware**: 3 years on a straight-line basis
- **Video and photo material**: 3 years on a straight-line basis
- **Furniture**: 3-7 years on a straight-line basis

For information, following an expert report, the schooner *Tara* was amortized over 100 years, and the rigging over 30 years. Following the devolution of fixed assets of *Tara*'s endowment fund to the Tara Ocean Foundation, intangible and tangible assets were depreciated over their remaining useful life.

### Financial assets and investment securities

The gross value is composed of the assets' acquisition cost, excluding incidental expenses. When inventory value is lower than gross value, depreciation is recorded of the amount of the difference.

### Inventories

Inventories are valued using the "first in, first out" method. Gross value of goods and supplies includes the purchase price and incidental expenses. Manufactured products are valued at their production cost, including consumption, direct and indirect production expenses, and depreciation of assets contributing to the production. The cost of sub-activity is excluded from the stock value. Interest is always excluded from stock valuation. Where appropriate, inventories are depreciated to reflect their net realizable value at the reporting date.

### Receivables and payables

Receivables and payables are measured at their nominal value. Depreciation is recorded when the inventory value is lower than the book value.

## Annual statement of the uses of funds collected from the general public (CER)

<b>USES OF FUNDS BY DESTINATION</b>	<b>Financial year N</b>	<b>Financial year N-1</b>
Uses of funds of the financial year		
<b>1. Social missions</b>		
Carried out in France		
Actions carried out by the Foundation	2 100 808	1 230 895
Payment to other organizations		
Carried out abroad		
Actions carried out by the Foundation		
Payment to other organizations		
<b>2. Fundraising expenses</b>		
Expenses for appealing to public generosity	157 762	
Expenses for seeking other resources		
<b>3. Operating expenses</b>	231 232	157 114
<b>TOTAL USES OF FUNDS</b>	<b>2 447 802</b>	<b>1 388 009</b>
Depreciation and amortization charges	800 000	
Financial year's dedicated funds carried forward		
<b>FINANCIAL YEAR'S SURPLUS REVENUE FROM PUBLIC GENEROSITY</b>		<b>203 134</b>
<b>TOTAL</b>	<b>3 247 802</b>	<b>1 591 143</b>
<b>VOLUNTARY CONTRIBUTIONS IN KIND</b>		
Uses of funds of the financial year		
<b>1. Voluntary contributions to social missions</b>		
Carried out in France	338 547	365 396
Carried out abroad		
<b>2. Voluntary contributions to fundraising</b>		
<b>3. Voluntary contributions to functioning</b>		52 850
<b>TOTAL</b>	<b>338 547</b>	<b>418 246</b>

<b>RESOURCES BY ORIGIN</b>	<b>Financial year N</b>	<b>Financial year N-1</b>
Resources of the financial year		
<b>1. Resources related to public generosity</b>		
Contribution without counterpart		
Donations, legacies and sponsorships		
• Manual donations	481 625	311 710
• Legacies, donations and life insurance		
• Sponsorships	1 868 125	1 053 729
Other resources resulting from public generosity	225 704	225 704
<b>TOTAL RESOURCES</b>	<b>2 575 454</b>	<b>1 591 143</b>
Reversal of provisions and depreciation		
Uses of dedicated funds from previous financial years	156 070	
<b>FINANCIAL YEAR'S DEFICIT RELATED TO PUBLIC GENEROSITY</b>	<b>516 278</b>	
<b>TOTAL</b>	<b>3 091 731</b>	<b>1 591 143</b>
<b>RESOURCES RELATED TO PUBLIC GENEROSITY CARRIED FORWARD AT THE BEGINNING OF THE FINANCIAL YEAR</b>	<b>624 147</b>	<b>421 013</b>
Surplus or deficit from public generosity		
Net investments or disinvestments related to public generosity	516 278	203 134
<b>RESOURCES RELATED TO PUBLIC GENEROSITY CARRIED FORWARD AT THE END OF THE FINANCIAL YEAR</b>	<b>107 869</b>	<b>624 147</b>
<b>RESOURCES BY ORIGIN</b>		
Resources of the financial year		
<b>1. Voluntary contributions related to public generosity</b>		
Volunteering	25 062	22 831
Benefits in kind	312 364	389 716
In-kind donations	1 121	5 699
<b>TOTAL</b>	<b>338 547</b>	<b>418 246</b>
<b>DEDICATED FUNDS RELATED TO PUBLIC GENEROSITY</b>		
<b>DEDICATED FUNDS RELATED TO PUBLIC GENEROSITY AT THE BEGINNING OF THE FINANCIAL YEAR</b>	<b>0</b>	
Use	156 070	
Carry forward	800 000	
<b>DEDICATED FUNDS RELATED TO PUBLIC GENEROSITY AT THE BEGINNING OF THE FINANCIAL YEAR</b>	<b>643 930</b>	

## Analysis of the CER

With the exception of material specifying carried forward non-dedicated, unused resources related to public generosity, the information contained in the annual statement of the uses of funds collected from the general public (CER) in accordance with Act no. 91-772 of August 7, 1991, corresponds strictly to the information relating to public generosity listed in the profit and loss account by origin and destination.

Carried forward resources related to public generosity, excluding dedicated funds, specify the corresponding amounts at the beginning and at the end of the financial year.

The amount of carried forward resources related to public generosity, excluding dedicated funds, at the beginning of the financial year is equal to the balance of available equity collected from the general public, minus net carrying amount of fixed assets or fractions of fixed assets funded from these resources over previous financial years.

Carried forward resources related to public generosity excluding dedicated funds at the end of the financial year take into account the surplus or deficit related to public generosity for the year and the net investments and disinvestments financed by public generosity for the year, which are specified.

The section “Net investments and disinvestments related to public generosity” is deducted from the carried forward resources related to public generosity and includes:

- the amount of fixed assets or shares of gross fixed assets acquired during the financial year using resources collected from public generosity
- minus depreciation charges on fixed assets or shares of fixed assets acquired through resources collected from public generosity and recorded during the financial year
- minus the sale price of fixed assets or shares of fixed assets acquired through resources collected from public generosity.

Resources by origin include the only resources related to public generosity, composed of:

- contributions without counterpart
- manual donations including income received from sales of donations in kind, as well as legacies, donations, life insurances and donations made within the framework of the sponsorship scheme;
- other resources related to public generosity, including the shares received from other organizations and income generated by assets derived from appeals to public generosity in addition to the profit/loss on disposal of assets, except those derived from legacies or donations before the date of acceptance of the legacies by the authorized body or before the commencement date whichever is later, or before the date of signature of the authentic act of donation.

To this total of resources for the year must be added the share of reversals of provisions and depreciation related to public generosity, and the use of dedicated funds from prior financial years.

The principles that underpin cost assignments are:

- Unallocated resources related to public generosity are assigned as a priority to cover social missions, after deducting operating expenses representing 15%.
- In the event that a remaining amount exists, it is allocated to fund fixed assets allocated to social missions, then operating costs and lastly, fundraising expenses.

The new balance of resources collected from the general public and unused at the beginning of the 2022 financial year was calculated by applying the same rules as those mentioned above. The result is an opening balance of €624,147 on January 1, 2022.

In 2022, resources related to public generosity amounting to €2,575,454 funded the Foundation’s social missions (€2,100,808), the costs of appealing for public generosity (€115,762) and operating costs (€231,232).

The funding deficit of €516,278 reduces the balance from previous years, bringing it to €107,869.

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# 2023 outlook

On the geopolitical level, 2022 was full of surprises and progress. The improbable happened and the war on the European continent abruptly turned the page on post-Covid convalescence. On other international governance issues, following the One Ocean Summit in Brest, we witnessed the emergence of positive advances such as the end of public subsidies for fishing overcapacity at the WTO in Geneva, the objective of protecting 30% of land and sea surface area by 2030 at the 15<sup>th</sup> Conference of the Convention on Biological Diversity in Montreal, the beginning of the negotiation of the new plastics treaty by UNEP in Nairobi, and finally the perspective of an agreement on the governance of the high seas that we hope to see concluded in 2023, as we enter the fortieth year of the Convention on the Law of the Sea. The foundation's advocacy teams will be working 100% on these final negotiations on the High Seas and the future Treaty on plastics and the circular economy.

The other major challenge for 2023 will be to implement the commitment made by the French government in its ambitious Polar Strategy, and particularly the construction of a new French drifting polar station in the Arctic: the Tara Polar Station and its national and international research programs. The trust placed in us by the French government and our many private and public partners commits the entire foundation team to doing its very best in all the fields we are involved in.

Tara will set sail again. For two years now, alongside the *Microbiome expedition* in the South Atlantic Ocean, part of the team has been preparing the next European expedition with researchers and teams from the EMBL (European Molecular Biology Laboratory). This expedition will be devoted to studying the impact of human activity, especially diffuse chemical pollution, on coastal ecosystems and in particular the invisible biodiversity that *Tara* and its associated laboratories have been studying for nearly 15 years.

Finally, we will celebrate the 20<sup>st</sup> anniversary of the *Tara* project launched in 2003, which has since become the Tara Ocean Foundation. It will be an opportunity to highlight the major discoveries, the teams involved, the partners of this adventure and the impacts of the activities carried out since 2003, but above all to draw up our roadmap for the next 10 years.

Étienne Bourgois, President  
Romain Troublé, Executive Director











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