

• RESPONSIBLE BY NATURE •

bordier | 1844

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partner
of



• COMMITTED BY CONVICTION •



**WE'RE PROUD TO BE AN OFFICIAL PARTNER
OF UNDER THE POLE**

By supporting Under The Pole, a pioneering underwater research expedition, we are contributing to a more sustainable world. Our support helps advance our understanding of the oceans and preserves our planet for future generations.

*"We protect what we love, and
we love what we know."*

Jacques-Yves Cousteau

CALENDAR

SUMMER 2018 TO SUMMER 2019

DEEPHOPE programme visiting various French Polynesian archipelagos

SUMMER TO AUTUMN 2019

CAPSULE programme

WINTER 2019 TO SPRING 2020

Emmanuelle Périé-Bardout and Ghislain Bardout return to France to promote the 18-month expedition to French Polynesia

AUTUMN 2020

Sailing from French Polynesia, via Easter Island, to Ushuaia in Patagonia, then on to the Antarctic Peninsula

WINTER 2021

Scientific diving programme in Antarctica

SPRING 2021

Sailing north back up the Atlantic

SUMMER 2021

Back home to Concarneau

SUMMER-AUTUMN 2021

Promoting the expedition in France and Europe-wide: media, festivals, sponsorship campaigns, films, books, etc.

“With Under The Pole, we are working to protect and pass on assets that belong to everyone : our Planet.”

Michel Juvet,
Partner, Bordier & Cie

CORALS

An underwater photograph of a coral reef. In the foreground, a diver is seen from the side, swimming towards the right. The reef is covered in various types of coral, and many small fish are visible swimming around. The water is a deep blue color, and the lighting is somewhat dim, typical of an underwater environment.

Coral reefs have evolved over tens of thousands of years. Today, they will probably be the first casualties of the increased pace of environmental change, causing them to die out on both local and regional scales. Around one-quarter of the world's reefs have already suffered irreversible damage. And two-thirds are seriously under threat.

WHY DO WE NEED TO PROTECT CORALS?

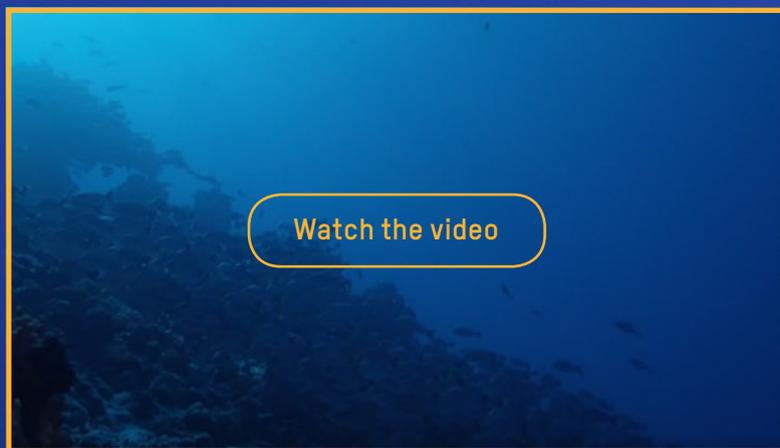
In order to survive, corals need water of good quality and phytoplankton. To let the corals die is to accept the disappearance of numerous species of fish and seaweed and the severance of the chain that links us to marine biodiversity. The death of corals punishes millions of people who live from fishing and will ultimately condemn humanity as a whole, for 70% of the oxygen we breathe is produced by phytoplankton that in turn require healthy water.

Coral reefs play a vital role in the equilibrium of ocean and planetary ecosystems

- They cover less than one percent of the Earth, but form the most diverse ecosystems, homes to over 25% of marine life
- More than a third of marine species need to spend time on coral reefs for their healthy development
- Those species provide food for over 500 million people
- Two million different species depend on coral reefs, including a quarter of all marine fish
- Reefs prevent coastal erosion by absorbing violent energy from waves and tidal surges during devastating storms and cyclones
- Their impressive marine biodiversity constitutes a real underwater pharmacy offering much promise for medical research

THE DEEPHOPE PROGRAMME

A ONE-YEAR EXPEDITION TO FRENCH POLYNESIA TO GAIN A BETTER UNDERSTANDING OF MESOPHOTIC CORALS AT DEPTHS OF 30 TO 150 METRES



DEEPHOPE seeks to corroborate this refuge theory and answer two vital scientific questions relating to future management and protection of coral reefs:

- Are mesophotic ecosystems a haven for shallow corals?
- How are the corals able to live in these deep zones?

THE REFUGE THEORY

DEEPHOPE is a scientific programme studying corals in the mesophotic zone. Its aim is to test the theory of whether surface corals – those currently threatened by global warming and human activity – might have sought refuge in the mesophotic zone to reproduce – hence the name of “refuge theory”.



WHAT HAS THE PROGRAMME DISCOVERED IN FRENCH POLYNESIA SO FAR?

NINE FAMILIES AND 27 GENERA OF CORAL, INCLUDING TWO NEW GENERA AND ONE NEW SPECIES FOUND IN FRENCH POLYNESIA

4,000 CORAL SAMPLES TAKEN, MOST OF THEM UNIQUE AND NEVER GATHERED BEFORE, FORMING THE WORLD'S MOST IMPORTANT COLLECTION

"I've been waiting for discoveries like these for forty years. These results will form a robust and essential foundation for testing hypotheses about the ability of the mesophotic zone to serve as a refuge for coral."

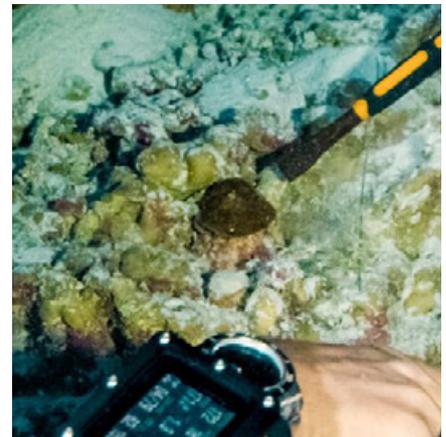
Michel Pichon,
Marine Biologist specialising in coral reefs

"These discoveries help to support the hypothesis that the ocean depths are acting as a refuge for surface corals, and they give us hope of restoring them."

Ghislain Bardout,
Founder and Director, Under The Pole expeditions



On 4 April 2019, Under The Pole's divers found the world's deepest known mesophotic coral, *Leptoseris hawaiiensis*, 172 metres below the surface in the Gambier Islands in French Polynesia.



WHAT HAPPENS NEXT?

In July 2020, the main results of the DEEPHOPE programme will be presented to the 14th International Coral Reef Symposium in Bremen (Germany). They will shed fresh light on the diversity and biogeography of the corals of the Central and Eastern Pacific.

In August 2019, Under The Pole will take on a new challenge: saturation diving from the CAPSULE underwater observatory. This will enable expedition divers to stay underwater for several days at a time.

The Under The Pole team will continue its studies of coral, including one key moment in the coral's life: sexual reproduction. A few nights each year, corals release spawn into the water, and this is fertilised to create larvae. The process is vital for renewing coral populations and bringing new individuals to the reef. The exact dates and times when this life-changing moment happens are known for only a handful of species in French Polynesia, and it has never been observed at close quarters.

"As we face the prospect of an environmental emergency, we must do our utmost to acquire the knowledge we need to protect the oceans and manage their resources sustainably. We hope these results will inspire other research and lead to the creation of new protected marine areas."

Emmanuelle Périé-Bardout,
Founder and Director, Under The Pole expeditions

THE CAPSULE PROGRAMME

“Yesterday’s challenge was to dive deep into the oceans. Today, the aim of underwater exploration is to stay underwater for longer, to discover and understand the oceans and the creatures living in them.”

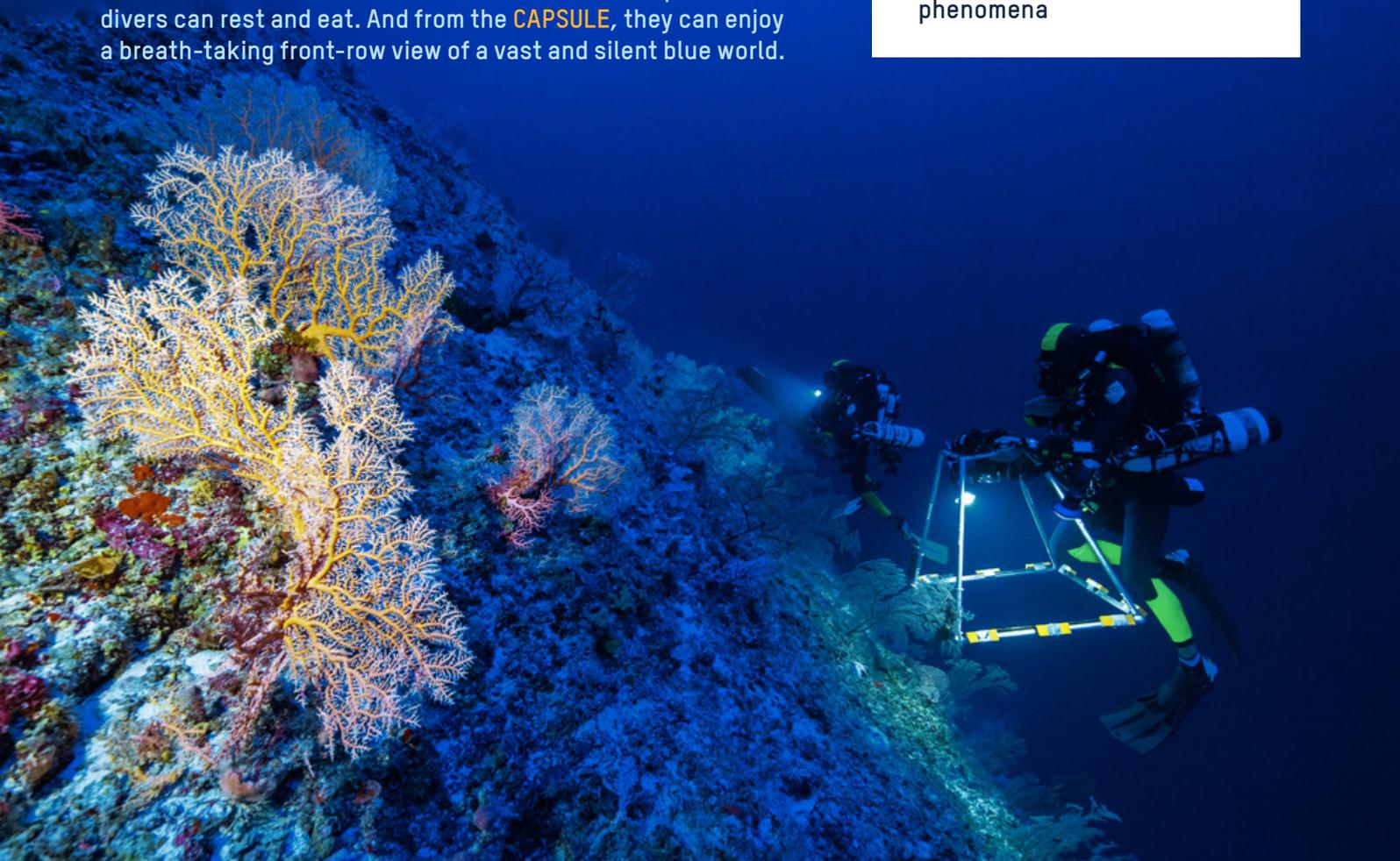
Ghislain Bardout,
Founder and Director, Under The Pole expeditions

From September to November 2019, the **CAPSULE**, a lightweight underwater habitat, will serve as a refuge for divers. It will enable them to engage in total immersion research, in which they remain underwater for several days.

The **CAPSULE** will be stationed at a depth of twenty metres, enabling divers to rest and eat while observing the fauna. Using this underwater habitat means divers can avoid a prolonged staged ascent to the surface lasting three to six hours – and all for just twenty minutes of observation 120 metres down. This saves a great deal of time by allowing divers to stay underwater for longer and undertake more research. The **CAPSULE** acts as a second base camp where divers can rest and eat. And from the **CAPSULE**, they can enjoy a breath-taking front-row view of a vast and silent blue world.

Aims

- Revolutionising mankind’s ability to observe the underwater environment
- Testing a new approach to autonomous saturation diving for scientific and documentary purposes
- Exploring its limits in preparation for the next stage in submarine exploration
- Conducting a thorough study of a coral ecosystem at depths of up to 120 metres, with particular focus on long-term animal behaviour and natural phenomena



THE CAPSULE PROGRAMME

SCIENTIFIC EXPLORATION



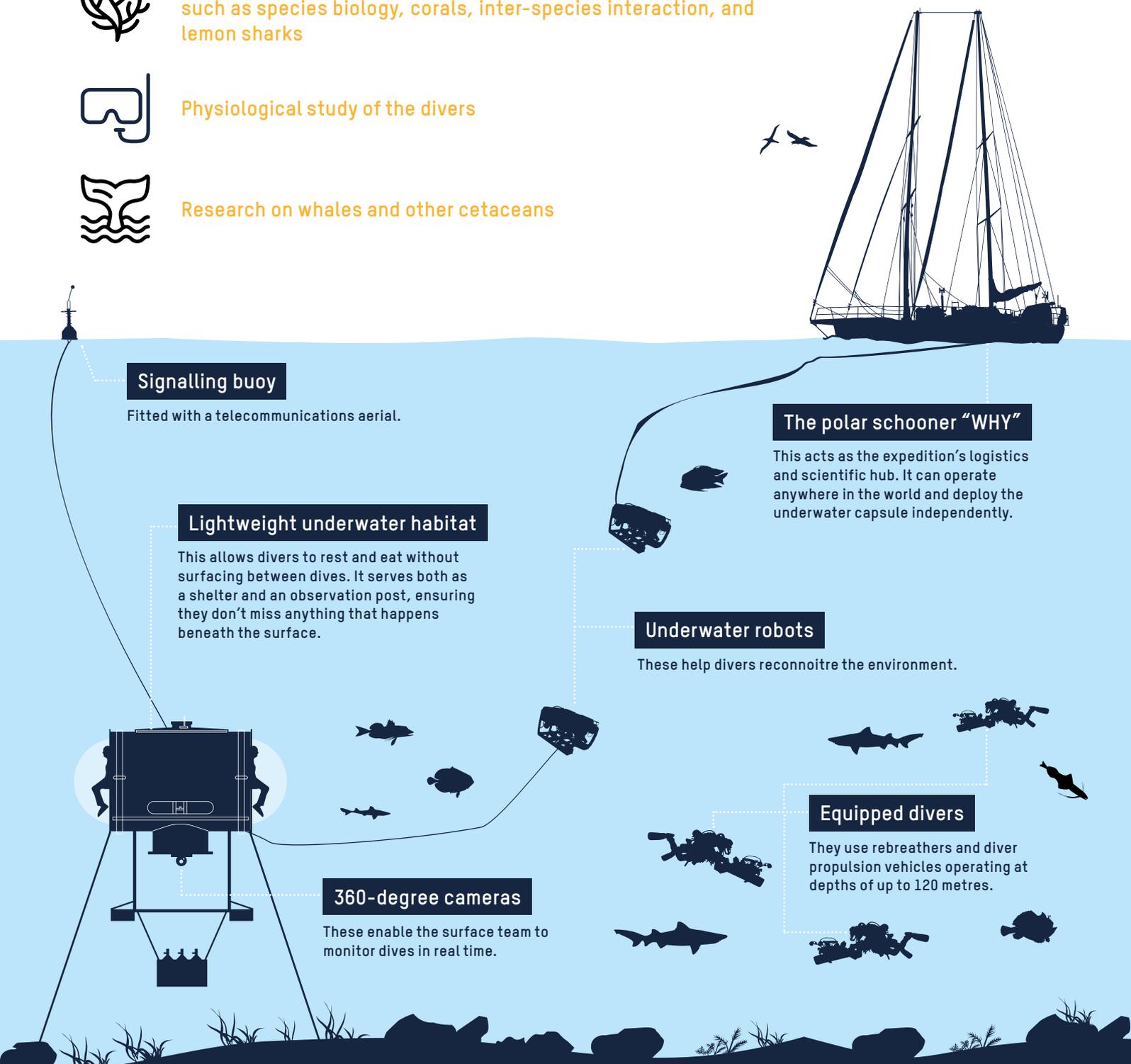
Studying a reef at depths of up to 150 metres, including aspects such as species biology, corals, inter-species interaction, and lemon sharks



Physiological study of the divers



Research on whales and other cetaceans



Signalling buoy

Fitted with a telecommunications aerial.

Lightweight underwater habitat

This allows divers to rest and eat without surfacing between dives. It serves both as a shelter and an observation post, ensuring they don't miss anything that happens beneath the surface.

360-degree cameras

These enable the surface team to monitor dives in real time.

The polar schooner "WHY"

This acts as the expedition's logistics and scientific hub. It can operate anywhere in the world and deploy the underwater capsule independently.

Underwater robots

These help divers reconnoitre the environment.

Equipped divers

They use rebreathers and diver propulsion vehicles operating at depths of up to 120 metres.

MEDIA

PHOTOGRAPHS



VIDEOS



1. The Wrap-Up
[Watch the video](#)



2. Exploration in the Gambier Islands
[Watch the video](#)



3. The Marquesas Islands:
Te Fenua 'Enata
[Watch the video](#)



4. Polynesia highlights
[Watch the video](#)



5. Tiputa Swing
[Watch the video](#)



6. Tikehau atoll
[Watch the video](#)



7. Makatea, island of mystery
[Watch the video](#)



8. Raivavae: diving in the southern oceans
[Watch the video](#)



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