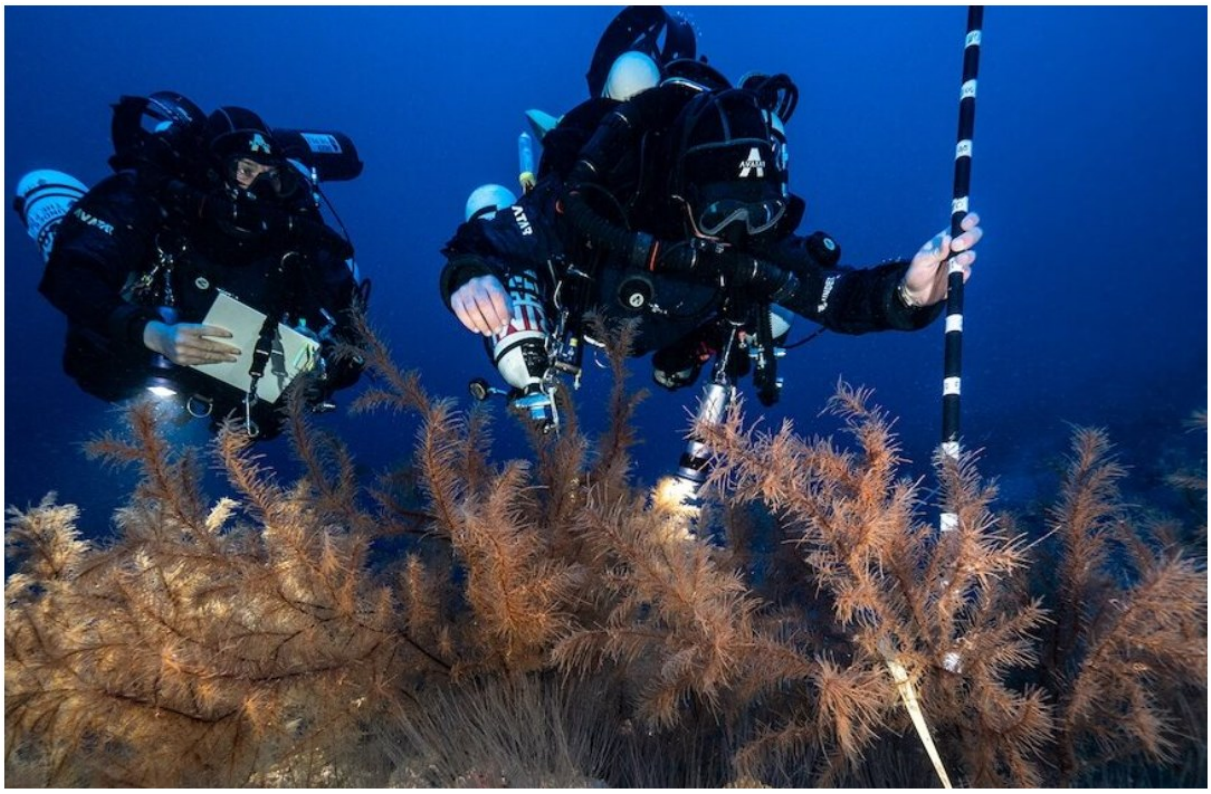
Translation of the article: https://www.wedemain.fr/articlesponso/balade-en-forets-animales-marines-a-la-decouverte-de-leur-pouvoir-climatique/

A deep dive to discover "marine animal forests" and their power to combat climate change

Coral expert Lorenzo Bramanti travels the world's seas to better understand the biodiversity found between the surface and the depths and find ways to protect it. As the oceans warm, this middle zone could serve as a refuge for many species.



How much of life in the oceans are we aware of? Less than 10%, according to scientists' estimates. One underwater world about which our knowledge is particularly scant is the mesophotic zone. Located between 30 and 200 metres under the surface, midway between the shallows and the darkest depths of the ocean, it takes its name (Greek for "middle light") from the faint light that penetrates the dark mass of water.

This zone is cooler, which could make it a refuge for certain species facing a rise in ocean temperatures. It is this mesophotic zone that the scientific researcher Lorenzo Bramanti explores – more specifically, the ocean floor located between 50 and 150 metres from the surface.

In trips to sites from the Caribbean to Polynesia to California, over the years this professional diver from Italy has been exploring this mesophotic world to decrypt its

secrets. Working at the French National Centre for Scientific Research and based at the Oceanological Observatory of Banyuls-sur-Mer in the south of France, Lorenzo Bramanti is the scientific co-director of DEEPLIFE, a project supported by the BNP Paribas Foundation's Climate & Biodiversity Initiative. DEEPLIFE is a 10-year project (2021–2030) bringing together research institutes from 12 countries (including France, Spain, Italy, Norway, Taiwan, and others) and is the fourth mission in the UN's "Under the Pole" underwater exploration programme.

Advances in diving technology

Why has this underwater world been so little known for so long? "Because of technical limitations," explains Lorenzo Bramanti. "Until the 1980s–1990s, recreational divers could only go down to around 40 metres, while very expensive robotic systems made it possible to descend to the deep sea." Halfway between lies the mesophotic zone, "which we can now explore thanks to new tools".

Bringing researchers down to depths between 50 and 150 metres is "expensive, challenging and dangerous", notes Lorenzo Bramanti. To spend 20 minutes at a depth of 120 metres represents three hours of diving. "This requires a very high level of training and the use of equipment that is almost as heavy as the divers themselves": underwater thrusters, closed-circuit rebreather diving suits (to avoid disturbing fauna with air bubbles), large cameras that can withstand high pressure, and containers that can stay underwater for several days.

Marine animal forests

Equipped with this advanced technology, divers in the DEEPLIFE project are exploring the mesophotic zones in all latitudes around the globe: polar, temperate and tropical. The first expeditions have taken place in Svalbard in the Arctic, Guadeloupe in the Caribbean, and the Canary Islands in the Atlantic. The scientists have observed that at every latitude, these middle depths are home to a rich array of marine animals. They have discovered previously unknown invertebrate species and gathered information on more well-known species such as sponges, gorgonians (sea fans) and corals. While these organisms look like plants, they are actually animals and form the basis of complex ecosystems.

In shallow waters, these ecosystems are at risk from warming ocean temperatures. But could mesophotic zones provide a refuge for their biodiversity in a context of climate change? To explore this, researchers on DEEPLIFE expeditions are photographing and collecting samples of the unique species that reside at these depths. Back on land, they analyse the data with genetics, density, and age-class studies to better understand these mesophotic habitats.

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In scientific language, animals living on the seabed such as corals, sponges and sea fans are known as "benthic organisms" whose habitat takes "a three-dimensional shape". But Lorenzo Bramanti has a more vivid description for them: "marine animal forests". Admittedly, unlike the trees in forests on land, these ecosystems are formed by marine animals, but they have similarities: both create habitats for diverse and interdependent species.

An innovative study

Although this new concept of "marine animal forests" requires further study in the coming years, it should "enable us to take a fresh look at the oceans," explains the researcher. "We haven't found these forests before because we've never looked for them! But the more we look for them, the more we find them. And each region has different species."

What do we know today about the role of marine animal forests? Unlike forests on land, they do not store carbon. "They are animals, so they produce CO2 rather than storing it." However, their habitat encourages ocean sedimentation, which traps carbon. And they are home to a reservoir of biodiversity that plays an essential role in Earth's systems.

"This highly innovative project will help us to find out more," says the researcher. His aim is to understand the part these marine forests play in the overall functioning of the oceans, which absorb around 30% of atmospheric CO2 and feed some three billion people.

A conservation priority

While marine animal forests have remained largely unknown to humans until now, they nonetheless bear the scars of human activities. "In our dives, we were surprised to find so much plastic, rubbish and traces of trawling," laments Lorenzo Bramanti: a reminder that "few places are spared from our pollution, even thousands of metres below the ocean surface."

Although the International Union for Conservation of Nature (IUCN) recently recognised these ecosystems as "vulnerable marine habitats", the researcher believes that they "are not sufficiently taken into account in conservation policy". In his view, this needs to be changed before attempting to restore them.

In addition to the urgent need to reduce the sources of pollution, Lorenzo Bramanti argues for the importance of marine protected areas such as Cerbères-Banyuls, where his laboratory is based. "We need to increase the surface area of these conservation areas and, most importantly, set up fully protected zones. This is essential for healthy ecosystems."

This will require a change of focus on the oceans: for example, by applying the conservation methods tried and tested in forests on land to marine animal forests. A more holistic view is key, emphasises Lorenzo Bramanti: "At sea, we tend to try to conserve certain species, without necessarily considering their function in the ecosystem." Yet these functions are just as vital.

You can follow Lorenzo Bramanti on X (formerly Twitter) on @philebo73 or the BNP Paribas Foundation on @FondationBNPP / You can find out more about the DEEPLIFE project at: http://lecob.obs-banyuls.fr and https://underthepole.org

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