

el Periòdic News

Lorenzo Bramanti

UNDERWATER SCIENTIST

Born to the Deep: a Journey Into the Ocean's Heart to Change the Way We See Corals



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Some 20 years ago, only a very few brave and courageous divers dared to dive to depths of more than 100 metres. With the advent of closed-circuit breathing apparatuses, these depths have become more accessible. Today, while there are slightly more deep-sea scientists, they are still a small minority. We continue our conversation with one such scientist, Lorenzo Bramanti, about the secrets of the underwater world.

Lorenzo Bramanti, one of the world's most respected scientists, an expert on corals, co-director of the DEEPLIFE project with Under the Pole (a project supported by the Decade of Ocean Sustainability, 2021-2030 programme of the United Nations), scientific leader of a project in cooperation with UNESCO and the Ocean 1 Foundation, about the secrets of the underwater world.

—What is a specific feature of the Mediterranean Sea compared to other seas and oceans?

—I consider the Mediterranean Sea my home. It is here that I learned to swim, to sail, to dive...

Despite its small size and strong human presence, the Mediterranean Sea has an

amazingly high biodiversity. It makes up only 1% of the world's ocean surface but is home to about 18% of known marine species. With more than 17,000 identified species - and given its relatively small size - the biodiversity of the Mediterranean Sea is truly remarkable.

—You are studying corals and gorgonians at depths of more than 100 metres. What would it mean for the ecosystem if they disappeared?

—The death of gorgonians would be a catastrophic occurrence. In addition to the loss of beautiful animals that are a spectacular sight for divers, the mass mortality of these species would have a profound impact on the marine ecosystem.

When a population of gorgonians is wiped out, it is like wiping out an entire forest with all the species living in it. However, it is not necessary to wipe out all gorgonians to destroy a forest. If mortality is not complete, and a few gorgonians remain, their density will not be sufficient to form a forest, and we will, therefore, lose all the species that live in these forests. So we must realise that the risk is not the loss of the species itself, but the loss of the function that the species performs in the ecosystem.

The effects of the latest heat wave, particularly in the



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Mediterranean, have led to a dramatic loss of red gorgonian populations. In some places, populations have been reduced by 90% and almost completely wiped out. These findings have alarmed both the scientific community and the general public.

However, all the data on gorgonian mortality comes from monitoring, which is mainly done by recreational divers, called «citizen scientists,» and they represent an inexhaustible and fundamental source of data to aid our research. But recreational divers, like most scientists, rarely go below 40 metres in depth, whereas red gorgonians have a wide bathymetric range, meaning they can be found at depths from 15 to 100 metres deep.

So, when, in collaboration with the Ocean 1 Foundation and UNESCO, I decided to

study what happens at depths below 40 metres, I found that populations of red gorgonians, between 40 and 90 metres below the surface, are virtually immune to extinction. We have found a kind of climatic refuge, a zone where changes in water temperature are not yet intense enough to cause the gorgonians to die...but for how long?

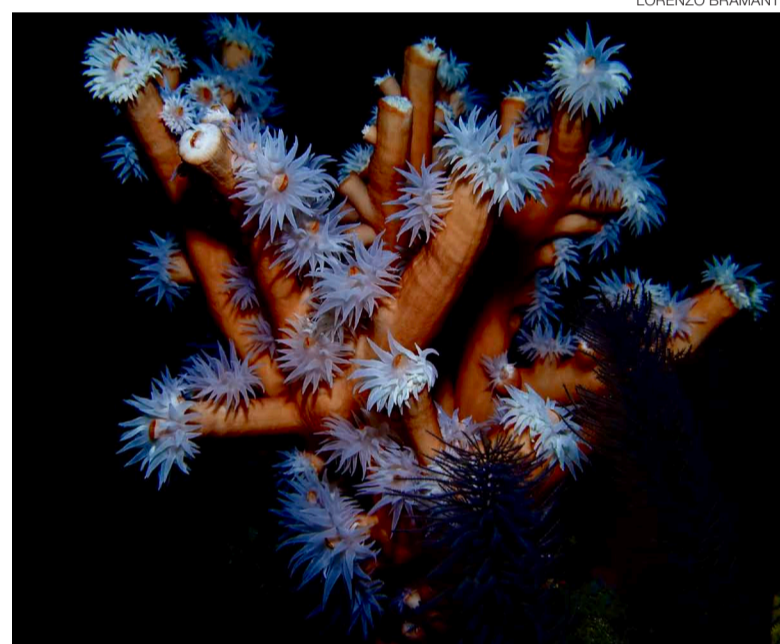
The interest of this discovery is not really to reassure us, but to ponder how much time we still have before climate change reaches deeper refuges.

Yes, the good news is that red gorgonians in the Mediterranean have not yet completely disappeared. But it is also a warning to those who must decide on CO2 policy, urging them to act before the deep seas are destroyed.

—You say that nature is dynamic. How do you adapt to climate



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change?

—The climate changes we are experiencing in the so-called Anthropocene are characterised by unprecedented speed. Temperatures are rising at a rate that has nothing to do with evolutionary processes. It is, therefore, very important not to misuse the correct scientific concepts: species can only adapt to climate changes if they are slow so that evolutionary processes can function... and

this is not the case in the current situation.

We will lose many of the species we know today that will not be replaced by other species due to evolutionary timescales that are too long, and so the Earth will become poorer. So, what is left of the concept of adaptation is behavioural adaptation; that is, changing habits to accommodate other conditions.

Behavioural adaptation has limited room for manoeuvre,

because physiology does not change. Furthermore, adaptation implies a reduction in quality of life and sacrifice. For example, we can adapt to not being able to grow olive trees because the conditions for their growth are impossible... and what kind of life would it be without extra virgin olive oil?

But jokes aside...it would be great if it were just a matter of producing extra virgin olive oil. The resulting social injustice

that would result would be enormous: a lucky few would be able to use technology to counter the effects of climate change, and the majority of humanity would be forced to live in unacceptable conditions.

This is not the future I would like for our planet.

—How do you see the future of the planet and humanity?

—I don't believe I have enough knowledge to predict the future of this planet. There are days when my self-confidence is at its lowest - when there seems to be no progress towards realisation. And, on such days, it seems that the planet has no lasting future. That's when books come along that offer hope, such as a recent book by Spanish writer Cristina Romer Castillo. In her book, *Anthropoceano*, Dr Castillo, a CSIC scientist, gives many examples where the trend of negative human impact has been reversed, showing that it is, sometimes, possible to correct mistakes and reverse processes that seemed irreversible.

—How do you see your immediate future?

—In an endeavour to contribute to the advancement of knowledge and awareness, I will continue my research. And I will continue to enjoy what I do.

My father once said: «Do what you love, and you will never have to work a single hour in your life».

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