



OceanoScientific Expeditions 2023-2030

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In the country where the sun never sets...

France is present in the tropical band of the three oceans: Pacific, Indian and Atlantic. Not to mention the Mediterranean and the Caribbean Seas. Thus, it is fair to say that the sun never sets on our country. It has the second largest maritime area in the world (Exclusive Economic Zone - EEZ) with 11,035,000 km², not far behind the United States (11,351,000 km²) and well ahead of Australia (8,505,348 km²). Above all, France has the world's largest submarine domain (11,614,000 km²), a heritage that is both undervalued and priceless. Particularly, it is an unexploited heritage! Or, at the very least, its biological resources are being exploited by foreign industrialists. Find out more below...



This map of France and its overseas departments and regions as well as its overseas collectivities - DROM-COM previously known as DOM-TOM - shows that the sun always shines somewhere on its territory. It is therefore fair to say that "France is the country where the sun never sets".

Superbenjamin map from BlankMap World

According to the French Ministry for Ecological Transition and Territorial Cohesion in 2021: "France has 58,000 km² of coral reefs and their lagoons, or nearly 10% of the world's reefs, behind Australia, Indonesia and the Philippines".

Of these four countries, it is probably France that has the greatest scientific research power in the study of coral reefs and their biodiversity in all its forms. This leadership has been achieved thanks to the Centre National de la Recherche Scientifique (CNRS), the Muséum National d'Histoire Naturelle (MNHN), the Institut Français de Recherche pour le Développement (IRD) and the Institut Français de Recherche pour l'Exploitation de la Mer (Ifremer), just to mention the four emblematic institutes that are the pride of our country. Added to these are the numerous Joint Research Units (UMR) attached to faculties staffed by professors with an international reputation for the quality of their work.

That is why the French publish so many valuable scientific studies. Treasures that fall into the public domain as soon as they are published. Or how to squander France's reef heritage for the benefit of major foreign industrial centers. A study by the University of Stockholm highlighted this in June 2018, based on the work of five researchers, including the Frenchman Jean-Baptiste Jouffray: *Corporate control and global governance of marine genetic resources* - 06 June 2018 - Robert Blasiak, Jean-Baptiste Jouffray, Colette C. C. Wabnitz, Emma Sundstrom, Henrik Österblom.

According to this study, the Big Six chemical companies: BASF, Bayer, Dow Chemical, DuPont, Monsanto and Syngenta held a total of 84% of patents relating to genetic resources derived from marine organisms at the end of 2017. The German-based company BASF, the world's leading chemical company, alone held 47%, many of which related to coral organisms. However, Germany has no tropical coral reef. Unless we have missed it... But Germany, like most nations, also benefits from the sacrosanct free sharing of data between scientific institutes. Including, of course, the results of France's highly successful fundamental research on organisms taken from our coral reef heritage!

As a result, foreign manufacturers have access to France's fantastic reef resources without having to untie their purse strings, without contributing to French school and university education, without encouraging the development of biotech start-ups, and without financing French healthtech. Their manufactured products derived from France's reef resources can therefore threaten our industrial sovereignty in high value-added sectors, without breaking any laws or risking a single penalty. Admittedly, they would be wrong to deprive themselves, let's not blame them.

No international or even French regulations currently exist to effectively protect the genetic resources (digital data) of living organisms, terrestrial or marine.



Take a close look at these superb marine organisms photographed on the coral reefs of the Guadeloupe National Park (France). As well as their exceptional colours, they probably contain molecules of interest for Health purposes. Photo Claude Lefebvre with kind permission of Guadeloupe National Park

Some, and there are many, will argue that the *Nagoya Protocol* - adopted in 2010 and which came into force in France on 12 October 2014 - protects living organisms and provides for the "sharing of benefits" potentially acquired. This was probably the wishful thinking of its creators. It has not turned out to be the case.

It has to be said that this text, which is administratively restrictive, does not protect genetic data (digital data derived from living organisms) for a number of reasons. It is almost exclusively researchers from state institutes who collect living matter for fundamental scientific studies. But it is private companies with no connection to them that make commercial use of it several years or decades later, thanks to scientific publications that have fallen into the public domain. Yet, the researchers are not linked in any way to the industrialists at the end of the chain. This is because there is no traceability between the sample taken from the (French) coral reef and the molecule of interest derived from it for commercial use.

Indeed, authorizations to collect samples of living organisms do not impose a formal commitment to return part of the benefits acquired until the commercial use has been precisely identified. In the best-case scenario, this commercial use can sometimes only be confirmed ten to fifteen years after the collection of the living then three years of efforts to bring the product to market. Thus, we are used to comparing the *Nagoya*

Protocol to a tennis racket without strings. It is not ideal for playing on equal terms with our industrial counterparts...

The patents filed do not concern the genetic data itself, because living matter is inalienable. It belongs indefinitely to Nature. Only its use is patentable. However, all it takes for an industrialist, like the chemical giants, is to have a pool of lawyers specialized in the protection of industrial property, to patent a simple function of the molecule in question, with the aim of preventing anyone else from studying its other properties. It's a clever way of "locking up" the molecule for his own benefit, without breaking any laws. Deterrent!

Until now, research into molecules of interest derived from marine organisms, including an in-depth study of their safety and ability to treat a given disease, has been long and tedious. And extremely costly! Now, the contribution of Artificial Intelligence (AI) is opening up horizons that seemed unattainable just two or three years ago. **As a result, France's extraordinary, fantastic and priceless reef heritage is proving to be an unsuspected source of wealth, a vector for the development of emerging professions in the *Blue Economy*.** Provided we don't fall asleep under the soporific illusion of applying the *Nagoya Protocol*, which is a bulwark for young people and the French economy as "effective" as the 108 publications and 750 kilometers of the *Maginot Line* were in the spring of 1940.

Fortunately, **we have an effective solution to propose to ensure that France makes virtuous use of its innumerable coral reef resources**, by ensuring that each territory of origin of the samples of marine organisms studied is contractually guaranteed to effectively benefit from the advantages acquired, even long after the samples have been collected. Not just the pipe dreams of the *Nagoya Protocol*! To achieve this, we are implementing an inviolable protection of the knowledge accumulated for the benefit of France and young French women and men, because it is their Future that is at stake. **This is the Ressources FRAnçaises CORalliennes Project - REFRACOR 2030.** Find out more on Wednesday 17 April in the weekly newsletter titled: **Sponges at the service of humanity...**



Fajou islet is a small uninhabited island in the heart of the Grand Cul-de-sac marin in the Guadeloupe National Park (France). Surrounded by coral reefs, it is almost entirely covered by mangrove swamps and only emerges a few meters from the sea. Photo by Céline Lesponne with kind permission of Guadeloupe National Park