

Depths and Mysteries: Saving marine biodiversity eight tentacles at a time.

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The Sea has always been a depository of mysteries for me, as a child, and it continues to spark in me the sensation that we can only be guests under its waves, never the home's owners. I remember a lot of tales about the Sea, from Sinbad to the Black Corsair, passing through the Captain Nemo and landing on the never too much mentioned Ismael and his tattooed friend Queequeg. Reading Melville's masterpiece, among the others abovementioned, I don't remember the number of times that the author enlightened the reader with details and descriptions of the Sea. All the book is set in a vessel, the Pequod, in the middle of the waters, and besides the description of characters, of their habits, of the thrilling hunt to the withe monster, all you can read is about the Sea. I would like to summon a brief quote dedicated to the Kraken, the elusive and monstrous animal that lurks in the depths waiting to sneak the unaware sailors. No one knows the precise form of this animal, but Melville gave us this hint:

"...A vast pulpy mass, furlongs in length and breadth, of a glancing cream-color, lay floating on the water, innumerable long arms radiating from its centre, and curling and twisting like a nest of anacondas, as if blindly to clutch at any hapless object within reach. No perceptible face or front did it have; no conceivable token of either sensation or instinct; but undulated there on the billows, an unearthly, formless, chance-like apparition of life. As with a low sucking sound it slowly disappeared again, Starbuck still gazing at the agitated waters where it had sunk, with a wild voice exclaimed – 'Almost rather had I seen Moby Dick and fought him, than to have seen thee, thou white ghost!' 'What was it, Sir?' said Flask. 'The great live Squid, which they say, few whale-ships ever beheld, and returned to their ports to tell of it.'... There seems some ground to imagine that the great Kraken of Bishop Pontoppidan may ultimately resolve itself into Squid..."

The abovementioned Bishop Pontoppidan, a Danish Lutheran of the Church of Norway, was a respected author of his time, having published the two-volume work, *Forsøk til Norges naturlige historie* (The Natural History of Norway) in 1752 and 1753. Some others follow his path in research and development of naturalistic culture, like Pierre Denys de Montfort. We must thank him for its fantastic illustrations and his research: he was a French naturalist, particularly a malacologist, remembered today for his pioneering inquiries to the existence of gigantic octopuses. He was inspired by a



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description from 1783 of an eight-meter-long tentacle found in the mouth of a sperm whale. Like I read, there are plenty of examples about the guest in the depths of our Sea, but this must not hamper our judgement about their role.

Why is it so important to divide the fiction that we read in our books from the real role of these animals? Melville talked about giant Squids and Bishop Pontoppidan about a mysterious monster, all tentacles and fury, without knowing for good the etymology, otherwise Monsieur de Monfort painted about ravenous octopuses from the depths. The reality is not always so theatrical, we can for sure do not know about all the animals hosted beneath the surface, but we can accept what we know and what we must do to maintain the marine dominion untouched by human intervention. Surprisingly, the bigger menace doesn't have tentacles: humans are the greatest threat to marine biodiversity. Overfishing, pollution, climate change, and habitat destruction are just a few of the ways our actions harm ocean ecosystems. Overfishing depletes fish populations and disrupts food chains. Pollution, both from land-based sources and marine activities, contaminates water and harms marine life. Climate change is causing ocean acidification and warming, affecting coral reefs and other sensitive species. Habitat destruction, such as coastal development and destructive fishing practices, destroys essential marine ecosystems. To protect marine biodiversity, we must reduce our impact on the oceans through sustainable practices, pollution control, and climate action. The main reason to intervene in this vicious cycle of resource depletion and waste of resources is to defend the original inhabitants of the Sea. Which criteria can lead our judgement in this choice? I vote for the Octopus choice. Do you want to know why starting with the protection of Octopuses might be a smart move? Those enigmatic creatures of the deep play a vital role in maintaining the delicate balance of marine ecosystems. Their unique characteristics and behaviors contribute significantly to biodiversity, ensuring the health and vitality of our oceans:

- **Predators and Prey:** As apex predators, octopuses help regulate populations of various marine species, preventing overgrazing and maintaining ecosystem balance. Their hunting prowess, combined with their ability to adapt to different prey, ensures that marine ecosystems remain healthy and resilient. They are also a valuable food source for larger marine animals, such as sharks, dolphins, and seabirds. By serving as prey, they contribute to the overall food web and ensure the survival of these higher-level predators.



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- **Habitat Modification:** Octopuses are known for their ability to modify their habitats. They often create burrows or dens, which can provide shelter for other marine organisms. These burrows can also contribute to nutrient cycling and sediment turnover, improving the overall health of the seabed. Additionally, they may inadvertently create new habitats by disturbing the seabed or introducing foreign materials. This can lead to the colonization of new species and the creation of unique ecological niches.
- **Intelligence and Adaptability:** Octopuses are highly intelligent creatures with remarkable problem-solving abilities. This intelligence allows them to adapt to changing environmental conditions and exploit new food sources. Their ability to learn and modify their behavior is essential for their survival in diverse marine habitats. For example, they have been observed using tools, such as rocks or coconut shells, to protect themselves from predators or to access food. This intelligence and adaptability contribute to the resilience of marine ecosystems and help to ensure their long-term sustainability.
- **Role in Nutrient Cycling:** Octopuses play a crucial role in nutrient cycling within marine ecosystems. As predators, they consume prey and release nutrients back into the water through their waste products used as nutrients by other marine organisms, such as phytoplankton, which form the base of the marine food chain. Furthermore, they may also contribute to nutrient cycling through their activities, such as digging burrows or disturbing the seabed. This can release nutrients trapped in sediments, making them available for uptake by other organisms.

Helping these species to thrive might be the shortest route toward biodiversity enhancement and consequently limiting the direct human intervention. Octopuses are intended as rangers of the Seas, due to their adaptability, the ability to modify the environment and to represent a wild card to trigger the domino effect that they have on the coral reefs and seabed. Octopuses, as fascinating creatures with their incredible intelligence and adaptability, can be indirect indicators of a healthy marine environment. They typically inhabit areas with clean, oxygenated water and abundant food sources, suggesting that the water quality in those areas is suitable for supporting a diverse range of marine life. However, it's important to note that the presence of octopuses alone isn't a definitive indicator of good water quality. Other factors, such as temperature, salinity, and the availability of suitable habitats, also play a significant role in their distribution. If we observe a decline in

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octopuses' populations or their absence from previously occupied areas, it could be a sign of deteriorating water quality. Pollution, habitat destruction, or other environmental stressors can negatively impact octopuses and their ecosystems. Considering the octopus as an ally to restore and maintain the environment opens a lot of new possibilities to those organizations happy to make the first step. Worldwide it is impossible to miss the presence of organizations like:

Save the Octopus.org: a non-profit organization committed to raising awareness about the challenges faced by octopuses in various environments. It was founded by Isla Abrams, a dedicated high school student from North Allegheny High School in Pennsylvania. The mission of this organization is to spread the need to act toward this incredible intelligent and emotionally sensible creature and educate the public about the plight of these remarkable creatures.

Blue Marine Foundation: The well-known foundation fights the methods adopted by octopus factory farming, establishing the World Octopus Day (8th of October, save the date!). A coalition of 37 NGOs, including themselves, has urged the European Commission to ban the import of farmed octopuses' products, citing significant animal welfare and environmental concerns. Their call follows Nueva Pescanova's plan to launch the world's first commercial octopus farm in Las Palmas de Gran Canaria, which has generated widespread criticism. A report by Compassion in World Farming highlights the high intelligence and solitary nature of octopuses, which would suffer in factory farm conditions, experiencing stress and aggression. Additionally, octopus farming is environmentally damaging, requiring large amounts of marine life as feed, exacerbating over-fishing. The NGOs advocate for a ban on octopus farming in alignment with the EU's sustainability goals. The EU holds various legislative acts that protect farm animals. Council Directive 98/58/EC, Council Regulation (EC) No 1099/2009 and Council Regulation (EC) No 1/2005 protect farm animals at the time of farming, transport and killing, respectively. However, they exclude invertebrates from their scope. Therefore, there is currently no European legislation that would protect octopuses if they were produced commercially for human consumption.



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Other national and local associations: There are some local and national association like the Italian Cetri Tires, the European centre for the third industrial revolution; the Ambiente Comunità Sostenibili, a magazine dedicated to the environment with the aim to nurture new important collaboration with the European Commission; and finally, the Blue Circle Vivere Sostenibile, the notorious social community focused on sustainable lifestyle. The contribution of these associations and organizations is not a small thing, they contribute to creating a culture for the sustainability of biodiversity, and they enhance the effort to move toward a more sustainable future.

While individual organizations, even large ones, can make a significant impact on biodiversity protection, coordinated action and clear legal frameworks are essential to address the global challenge of animals' defense. Institutions are increasingly prioritizing biodiversity and marine resource protection, in fact, the EU, through EFRAG and ESRS, is actively supporting international and national initiatives. ESRS 3 and 4, now European law, focuses on environmental standards, especially biodiversity and marine resources. GRI's new standard, GRI304, offers another significant contribution mandating comprehensive reporting on biodiversity impacts, even at early procurement stages. This standard ensures detailed, location-specific reporting, enabling stakeholders to assess how companies mitigate and reduce biodiversity impacts throughout their operations and supply chains. Understanding and managing significant biodiversity impacts is crucial for organizations to identify dependencies and risks. The updated GRI biodiversity standard has been widely welcomed for its urgency and clarity, it provides companies with clear guidance for assessing and reporting biodiversity impacts, empowering them to take effective measures for ecosystem restoration. It is clear why it is important to start to take care of our Oceans. They donate to us life and are the engine to maintain it prosperously on the mainland. And it will be easy to start voting for the octopuses due to their similarities between these animals and humans. Our little tentacled friends modify the environment and bend it to their needs, with the only difference that their instinct pushes them to preserve the biodiversity and balance of the environment where they live, something that man should learn as soon as possible. Octopuses are essential components of marine ecosystems, playing a vital role in maintaining biodiversity and ensuring the health of our



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oceans. Their unique characteristics, including their predatory role, habitat modification abilities, intelligence, and adaptability, make them invaluable contributors to the marine environment. By understanding and protecting these fascinating creatures, we can help to preserve the delicate balance of our oceans for generations to come. So, leave the stories of the monsters and sea serpents in our books on the shelves, pick up the scientific reports and the environmental association registration forms and start to dive deep into the realm of the noble Octopus!



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