The Great Barrier Reef: Australia's Natural Wonder [C1]

La Grande barriera corallina, che risale a novemila anni fa, si estende a est della costa australiana ed è una delle strutture naturali più belle del mondo. Parliamo con la fondazione di scienziati che lavorano per la sua sopravvivenza.

Australia's Great Barrier Reef stands as one of the world's seven natural wonders and enjoys protection as a UNESCO World Heritage site. Made up of over three thousand individual coral reefs, the Great Barrier Reef was formed over nine thousand years ago due to a rapid rise in sea levels. Spanning an area roughly equivalent to Italy, it is the largest coral reef on Earth.

ENIGMATIC CREATURES

When we picture the Great Barrier Reef, we might think only of corals, but it is actually home to many different habitats, communities and species. Corals themselves are enigmatic creatures; they look like plants or algae but they are actually invertebrate animals, part of the same group as jellyfish and sea anemones. The Great Barrier Reef is one of the most complex ecosystems on Earth, equivalent to an underwater rainforest. It is home to 1,600 different fish species, ranging from pygmy seahorses to majestic humpback whales, over thirty different dolphin and whale species, and of course, sea turtles. These, however, only scratch the surface of the biodiversity teeming in the reef.

THREATS TO THE REEF

However, looming threats cast a shadow over this natural wonder. Climate change, toxic runoff and other human-induced perils jeopardise the delicate balance of its ecosystem. One of the devastating effects of these threats is coral bleaching, a consequence of rising sea temperatures. For deeper insights into the richness of the Great Barrier Reef and the ongoing conservation efforts in place to safeguard it, Speak Up spoke with Clarissa Elakis, Senior Programme Manager of the Reef Islands Initiative at the Great Barrier Reef Foundation. **Clarissa Eliakis (Australian accent):** Coral reefs are both animals and plants, and so is [are] corals themselves. So corals is [are] made up of many small animals which build the hard skeleton to make the vibrant skeletons, which we recognise. And they have a symbiotic relationship with this algae called zooxanthellae, which actually provides food for the coral, oxygen, and also provides the coral with its colour. Now, in terms of bleaching, when sea temperatures increase, those coral

structures and those small animals become stressed and they expel this zooxanthellae algae from its structure. So this results in a loss of colour. And this symbiotic relationship between the coral structure and the algae is all about food and oxygen. So once they're expelled, that coral structure is naked and starving. Once they lose their colour and bleach, once they're expelled, it doesn't mean that they're dead. Bleached coral does have the capacity to recover, and it can recover when those stresses subside and the algae can return back into that coral structure and recommence their symbiotic relationship. Unfortunately, if the stresses do continue, that will lead to coral mortality.

CONSERVATION OF THE REEF

The Great Barrier Reef Foundation is one of the many entities that is actively involved in reviving and protecting the Reef. The foundation was established in 1998 as a response to one of the major mass coral bleaching events of the 21st century. The foundation is committed to promoting innovative ideas and projects to save the Reef by bringing together networks of investors, tourism operators, community and scientists to be able to enact real-world solutions to the problem. Elakis described a few of these projects to us in detail, and explained how vital coral reefs are for humans all over the world. **Clarissa Eliakis:** We have various projects that are on the ground, specifically looking at how to build coral restoration and adaptation for coral reefs. For example, to see what can be done to mitigate that heat stress. So we look at things like shading the corals, trying to move the coral nurseries to deeper waters, etcetera. So we have three active island sites. We have Lady Elliott Island. Basically, there we're working with an ecotourism resort to upscale revegetation on the island. So basically, this island has a history of being to mined for guano, for fertiliser, because it's a critical seabird nesting site. A few hundred years ago it was mined to the point that it was devoid of all vegetation, right? [It] looks like a bit of a moonscape. And then over time there's been some build-up in vegetation as people went to live on the island to maintain a lighthouse. And then in 2018, we came on board to help upscale efforts to restore the critical seabird nesting habitat and to remove all of the invasives that have taken over. What's exciting about that is, Lady Elliot Island is a biodiversity hotspot.

THE WHITSUNDAYS

The Whitsunday Islands are one of the most popular and iconic destinations for tourists planning on going to the Great Barrier Reef. These islands serve as vital nurseries for seagrass. Seagrass not only offers crucial feeding grounds for numerous species but also generates nutrients essential for oxygenating the water. Seagrass has also been shown to remove harmful elements like microplastics from the ocean environment. Clarissa elaborated on what the

project in the Whitsundays is specifically focused on. **Clarissa Eliakis:** In the Whitsundays, it's a completely different flavour. The Whitsundays experienced some environmental degradation due to Cyclone Debbie. It impacted the local coral reefs as well as some of the seagrass meadows. And so what we're doing is working predominantly with our local tourism operators and researchers to look at different coral restoration techniques. So one of them is coral gardening, or the coral nurture programme, which is about establishing coral nurseries in situ and then growing these coral colonies in the nurseries and then planting them onto reefs that need some additional assistance with restoration. The other coral restoration technique that we're doing is under a programme called Boats4Corals. The corals in the Great Barrier Reef typically spawn simultaneously at one mass event each year, and the coral programme is all about harnessing this natural phenomenon so we can capture some of the spawn slick that's released and then cultivate that into coral larvae and then disperse that onto coral reefs, that once again need a little bit of assistance.

FIRST NATIONS PEOPLES

The Marine Park Authority is the main entity that takes charge of managing the Reef. They officially recognise the Aboriginal and Torres Strait Islander Peoples as the Traditional Owners of the Reef. These cultures are the oldest continuous civilisation on Earth, their presence in the territory dates back sixty-five thousand years. These peoples already had an intimate knowledge of the diverse ecosystems of the reef, and it continued to be a central part of many stories and traditions. Since the early establishment of First Nations laws and traditions, the Reef was regarded as a part of their lands that needed to be protected and cared for. **Clarissa Eliakis:** There's actually about seventy different Traditional Owner groups. It basically means that they've got recognised land and sea country within that Great Barrier World Heritage area. These people, they have a really deep significance and a deep connection to the Reef… So, its land, the water, the plants and the animals, both culturally as well as spiritually. And these Traditional Owner groups, they're the original custodians and stewards of the Great Barrier Reef. So we know that they're the longest living culture because they've been around approximately, like, sixty thousand years that we're aware of, and the Reef has been here for like nine thousand. So they're definitely those traditional stewards. It's also part of their cultural stories and their traditional law. It's not uncommon to hear Aboriginal and Torres Strait Islanders, when they speak about the Reef, to say "The Reef is sick, I am sick." So healing country, healing the Reef, is also healing people. So there's that very strong connection between people and country. And in this case, country being Reef.

SUSTAINABLE TOURISM

Globally, reefs support almost one billion people by serving as coastal protection, a source of food and creating jobs related to marine industries and tourism. According to the Foundation, the Great Barrier Reef contributes some $6.5 billion in value added and over sixty-five thousand jobs to the Australian economy, most of it through the high numbers of visitors it attracts every year. Tourists come to enjoy scuba diving and snorkelling experiences and to explore the variety of marine life that is only found here. However, tourism also brings in revenue which is used to fund innovative projects to save the Reef. Only about 7 per cent of the Reef is visited by tourists and their presence is controlled by the Marine Park Authority, charities like the Great Barrier Reef Foundation, local communities and tourism operators, and together they work to promote sustainable tourism. As Elakis explains, tourism may even benefit the Reef because it raises awareness about these natural wonders and creates a desire to support and encourage conservation. **Clarissa Eliakis:** I love diving myself and it's not uncommon to be able to go on certain dive trips and going [go] to remote places where I'm the only dive boat there. So even though it is quite popular, not all of the Reef is touched by tourism and there's still the opportunities to have that feeling of remoteness. And then also whenever someone purchases a tourism experience, a portion of that money does go towards managing the Reef and towards supporting conservation. Having that first-hand experience for tourists to be able to come to the Reef , that's usually that beautiful motivator and driver for them to support stewardship and support conservation activities themselves.

WHAT IS CORAL?

Corals are fascinating marine animals that belong to the class Anthozoa within the phylum Cnidaria, alongside jellyfish and sea anemones. While they may appear plant-like, they are indeed animals that live and grow in colonies, depending on each other for survival. Each coral is composed of polyps, small, cylindrical organisms with a central mouth surrounded by tentacles. These tentacles capture small prey, such as plankton, for the polyps to consume. Corals thrive in diverse marine environments, from shallow tropical waters to deep-sea habitats. They are particularly abundant in warm, clear and nutrient-rich waters, where sunlight penetrates to support photosynthesis by symbiotic algae known as zooxanthellae. These algae reside within the tissues of coral polyps, providing them with essential nutrients and contributing to the vibrant colours of corals, from reds and purples to greens and browns. Corals form reefs by secreting calcium carbonate, akin to the material found in limestone, to form intricate skeletons that accumulate over time. These reefs serve as vital habitat for a diverse arrayof marine life, making them among the most biologically-diverse ecosystems on the planet. However, coral reefs face numerous threats, including

climate change, ocean acidification, pollution and overfishing. Rising sea temperatures can lead to coral bleaching, a phenomenon where corals expel their zooxanthellae and turn white, leaving them vulnerable to starvation and disease. www.barrierreef.com

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Glossary

- **regarded** = considerare
- **raises awareness** = sensibilizzare
- **purchases** = comprare
- **rise** = innalzamento
- **upscale** = migliorare
- **devoid** = privare
- **harmful** = nocivi
- **harnessing** = sfruttare
- **jeopardise** = mettere a rischio
- **to enact** = realizzare
- **revenue** = fatturato
- **seagrass** = posidonia
- **spawn** = deporre uova
- **stewards** = amministratori
- **Spanning** = estendersi
- **roughly** = approssimativamente
- **cast a shadow** = proiettare un'ombra
- **starving** = patire la fame
- **moonscape** = paesaggio lunare
- **released** = rilasciare
- **jellyfish** = medusa
- **teeming** = essere pieno di
- **nesting site** = luogo di nidificazione
- **lighthouse** = faro
- **nurture** = allevamento
- **scuba diving** = immersione
- **shallow** = poco profondo
- **akin to** = assomigliare
- **picture** = immaginare
- **whales** = megattere
- **looming threats** = minacce incombenti
- **insights** = idee, visioni
- **shading** = proteggere dal sole
- **World Heritage site** = patrimonio dell'umanità
- **scratch** = graffiare
- **bleaching** = sbiancamento
- **slick** = macchia
- **support** = sostenere
- **to fund** = finanziare
- **runoff** = fughe

• **subside** = diminuire
• **nurseries** = vivai
• **to mined** = estrarre
• **seagrass meadows** = praterie di fanerogame marine
• **alongside** = insieme a
• **thrive** = crescere
• **Great Barrier Reef** = Grande barriera corallina
• **pygmy seahorses** = cavallucci marini pigmeo
• **hotspot** = punto centrale
• **healing** = curare
• **driver** = incentivo, motore