

CAN CORAL REEFS BE RESTORED?

IMPORTANCE OF CORAL REEFS

1. **Coral reefs support marine life** - they provide food and shelter for many species meaning that they are one of the most biodiverse ecosystems!
2. **These ecosystems can also benefit humans** - many local communities rely on them for food and income, typically through fishing.
3. **Coral reefs protect shorelines** - they reduce the wave energy reaching the coast by up to 97% by acting as a physical barrier. this is especially useful in areas that experience tropical storms, like Southeast Asia.

REEF RESTORATION

Due to the many challenges degrading our coral reefs scientists are working to restore these habitats. One study conducted in Indonesia, restored reefs by **transplanting corals** on frames (see image on the right) to encourage growth.



Restored reefs vs naturally healthy reefs:

- Grew **30% faster!**
- Their **carbonate budget was 3x higher** - indicating that the reef was growing faster than it was eroding. Thriving reefs have higher carbonate budgets.
- But restored reefs were **less diverse** - they were dominated by fast-growing coral and likely cannot support as many species. This shows how future restoration should consider how to prioritise diversity as well as growth rate.



Overall, this study is mostly good news showing promise for the restoration of these valuable habitats!

THREATS TO CORAL REEFS

1. RISING SEA TEMPERATURES



Driven by climate change, this causes mass coral bleaching. Marine heatwaves are also becoming more frequent, which is just as damaging.

2. HARMFUL FISHING PRACTICES

Destructive fishing methods such as blast fishing damage the reef habitat, threatening all the species that rely on it. Overfishing also causes ecosystem-wide damage by devastating fish populations.



3. OCEAN ACIDIFICATION



Increasing ocean acidity caused by high carbon dioxide levels makes it more difficult for coral to build their skeletons.

HOW CAN WE HELP?

While it is difficult for us to directly help to restore coral reefs. We can help counter the cause of coral degradation!

1. Reducing our carbon footprint - e.g. walking or cycling more.
2. Advocate for reef-safe fishing practices and climate policy action.



DID YOU KNOW...?

Corals are actually animals! they are a type of invertebrate and are closer related to jellyfish than plants.

GLOSSARY

Carbonate budget → A measure of how much calcium carbonate (the material corals use to build their skeletons) is being added to the reef compared to how much is being lost. A positive carbonate budget means the reef is growing faster than it's eroding, which is essential for the reef to thrive and keep up with rising sea levels.

Coral bleaching → The whitening of coral due to the loss of their symbiotic algae or the degradation of their algae's photosynthetic pigments. Sea temperatures increased by climate change are the main cause of this. Some corals may survive this process but it increases their risk of death by increasing their vulnerability to disease and starvation.

Marine heatwaves → Periods of abnormally high sea surface temperatures in comparison to typical past temperatures for the season and region. This can be damaging to temperature-sensitive habitats such as coral reefs.

Blast fishing → A destructive fishing practice that uses explosives to stun or kill schools of fish for easy collection. It is illegal in many parts of the world because it destroys the underlying habitat. However, it is still practiced in areas such as Southeast Asia.

Ocean acidification → When the ocean's acidity increases due to the absorption of excess carbon dioxide from the atmosphere. This makes it harder for corals to form their skeletons (which are made of calcium carbonate).

Carbon footprint → A calculated value of the emissions caused by a person, activity, group or product.

