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The age of extinction

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Sat 4 Apr 2020 10.30 BST



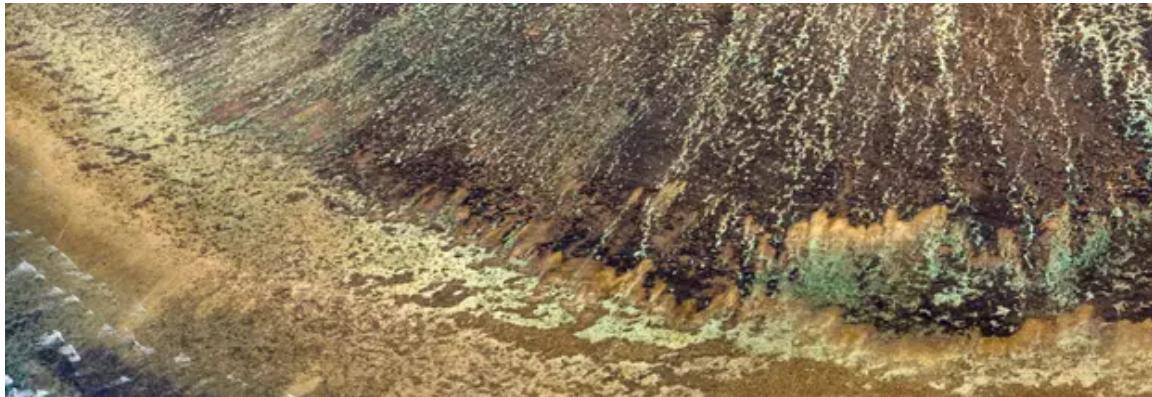
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ne of the dive instructors points out two blacktip reef sharks circling a docile green turtle busy grazing on algae. Stingrays of various sizes, colours and shapes pass beneath us. Suddenly, a pod of dolphins appears, swimming over the hard corals.

The dive takes place on what appears to be healthy and pristine coral reef surrounding Lady Elliot Island, at the very southern end of Australia's [Great Barrier Reef](#) off Queensland.

There are no visible signs of the bleaching that has plagued other parts of the reef for some years, but the government agency responsible for the reef, the Great Barrier Reef Marine Park Authority, has confirmed that the natural landmark has suffered [a third mass coral bleaching](#) episode in five years, describing the damage as "very widespread". Mass bleaching events in 2016 and 2017 hit vast areas of the reef.



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As the rate at which bleaching events hit the world's biggest reef system increases, scientists, farmers and volunteers across Queensland are trying to do their bit to lessen the impact.

Gary Spotswood is a third-generation farmer at Mt Alma Organics, an organic farm a couple of hours drive from Townsville, a city on the north-eastern coast of Queensland. Spotswood has installed pumps to accumulate the run-off on his 430 acres, which then filters through aquatic plants growing in the adjacent wetlands. The project is partly funded by a grant from the Great Barrier Reef Foundation, which was awarded [a controversial A\\$444m \(£217m\) from the Australian government](#) to sponsor projects on the reef.



"I try to keep as much water on the land as possible," says Spotswood, who leads courses in land use for other farmers and graziers. "Changes take time. But in five years people have changed their habits in how they use the land," he says.

At Townsville's tropical marine research centre, scientists from the [Australian](#)

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restoration at Aims.



The method is called “assisted gene flow”, and although at an early stage, shows encouraging results in the sea simulator, as well as on the reef - where cross-fertilised corals have been transplanted. The hybrids have one parent from the northern parts and one parent from the central reefs, and the results show that corals with at least one parent from the more heat-resistant northern reefs survive when placed in cooler environments. The research has also confirmed that the offspring inherit heat tolerance from their northern parents, and these genes may ultimately be passed on to make reefs more heat resistant.

Aims also conducts research on how to decrease the numbers of crown-of-thorns starfish (cots), which prey upon corals. There are currently more than five million cots on the reefs between Cairns and Cooktown, and the invasion spreads south as the heavily spined species (which normally range from 25-35cm across, and can have up to 23 arms) devours corals and leaves nothing but traces of fine calcium carbonate.

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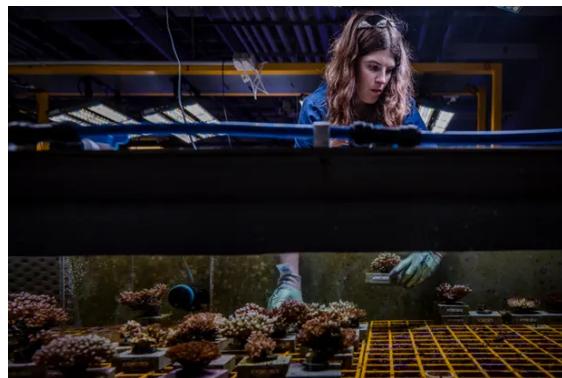
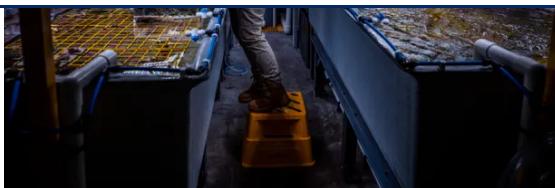
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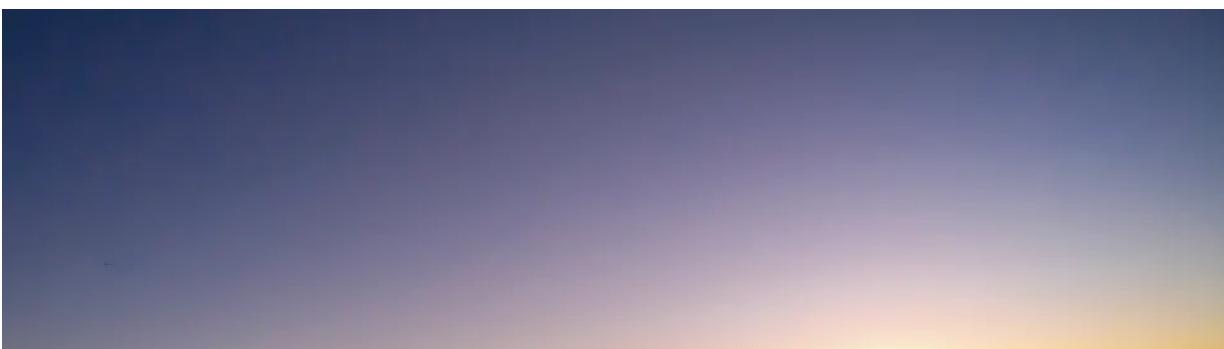
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Scientists at Aims are attempting to wield another - more natural weapon - to combat the mass outbreak. They breed the rare giant triton, a large marine snail that feeds on corals. The scientists aim to reintroduce the snails on reefs - from where they have disappeared.

The climate crisis and evidence of another mass bleaching, however, continue to overshadow any sign of progress.

Quigley says hundreds of studies point in the same direction. “They are showing that climate change is the biggest threat against the reef,” she says. “We don’t know what the future reefs look like. But we need to mitigate the effects that climate change has on the corals.”



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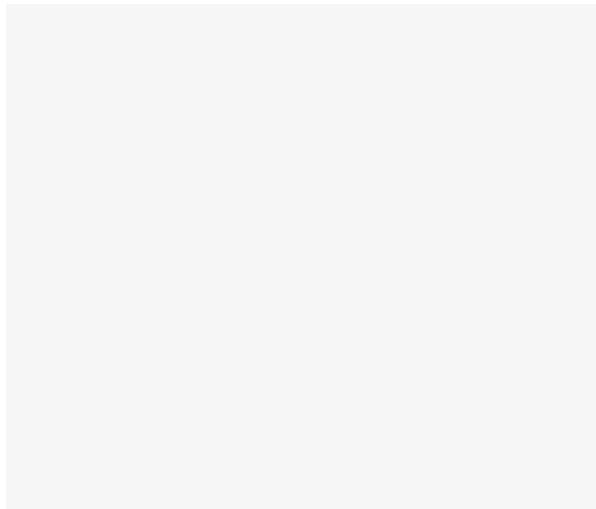
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