Australia’s Other Great (and Threatened) Coral Reefs

By Livia Albeck-Ripka

Oct. 8, 2018

MELBOURNE, Australia — The United Nations issued a dire alert on Monday, warning that many of the world’s coral reefs could die as soon as 2040 as a result of climate change.

Already, warming waters have bleached more than two-thirds of the coral in the Great Barrier Reef, the world’s largest coral reef ecosystem, which covers more than 130,000 square miles and is visible from space.

But the Great Barrier Reef, despite its status, is not the only unique or threatened marine ecosystem in Australia.

Here are some other Australian ecosystems to keep in mind:

The Great Southern Reef

By some estimates, the Great Southern Reef contributes more revenue to Australia’s economy than the better-known Great Barrier Reef. Joan Costa
Stretching 27,000 square miles along Australia’s southern coast, this life-sustaining seaweed forest could be decimated by the end of the century, according to a recent study. The researchers found that warming waters could kill up to 100 percent of the reef’s kelp species, which provide a habitat for sponges, crustaceans and fish. The reef also supports two of Australia’s most valuable commercial fishing products: abalone and rock lobster.

Together with tourism at the Great Southern Reef, these fisheries contribute roughly 10 billion Australian dollars, or about $7 billion, to the Australian economy per year. (By some estimates, this is more than the revenue generated annually by the Great Barrier Reef.) And though about 70 percent of Australians live within about 30 miles of the southern reef, many have never heard of it.

“The southern coastline is one of the most species-rich, temperate ecosystems in the world,” said Thomas Wernberg, a senior lecturer in marine science at the University of Western Australia in Perth, and the lead author of the recent paper. “It’s important to not forget these other ecosystems.”

Shark Bay

A die-off of sea grasses in Shark Bay resulted in the release of millions of tons of carbon dioxide. Gary Kendrick

Shark Bay, on Australia’s west coast, is the largest and most diverse sea grass ecosystem in the world. These seagrasses provide habitat for fish, endangered green turtles and
dugongs, the only vegetarian marine mammal, which rely on the sea grass for food. Shark Bay is also one of only two places in the world with living ancient deposits of algae, called stromatolites.

But in the summer of 2011, a huge ocean heat wave killed off roughly a quarter of Shark Bay’s seagrasses. Aside from the loss of a valuable ocean habitat, this die-off also meant the release of up to nine million tons of carbon dioxide, according to a paper published earlier this year. It was an “unprecedented event,” said Oscar Serrano, a postdoctoral research fellow in marine ecosystems at Edith Cowan University in Western Australia, and one of the study’s lead authors.

“It’s a big loss, but the oceans are dynamic and sea grass meadows have the capacity to adapt,” he added. “What worries me the most is these heat waves are predicted to increase both in magnitude and length. If there is another big heat wave, this may have a more severe impact.”

Ningaloo Reef

Ningaloo Reef has so far escaped the kinds of bleaching events that have devastated the Great Barrier Reef.  Morane Le Nohai`c

Every year, hundreds of whale sharks congregate at Ningaloo Reef, off the country’s west coast. Unlike the Great Barrier Reef, Ningaloo is a near-shore reef: “You can just snorkel off the beach and see coral in a few minutes,” said Verena Schoepf, a research fellow in marine science at the University of Western Australia.
So far, Ningaloo has escaped the kinds of bleaching events that have devastated the Great Barrier Reef and left the coral there weak and susceptible to attack by crown of thorns starfish. But global warming puts Ningaloo at risk of a die-off, according to the United Nations report, and rising sea levels may also reduce the reef’s capacity to protect coastal communities from waves and erosion.

Gulf of Carpentaria

![Image of Gulf of Carpentaria]

Climate change has put the mangrove forests in Gulf of Carpentaria at risk.
David Maurice Smith for The New York Times

The Gulf of Carpentaria, in Australia’s Far North, is a remote and sensitive ecosystem of mangroves, coral, sea grass beds, mud crabs, fish and shrimp. The mangrove trees — which grow in salty water — provide a nursery habitat for fish and wildlife and help prevent shoreline erosion.

But in the summer of 2016 — the same summer that the Great Barrier Reef experienced one of the worst bleaching events in history — extreme heat, drought and low sea levels led to an unprecedented die-off of mangroves in the Gulf of Carpentaria, in which about 6 percent of the forest was lost. Like seagrasses, mangroves also sequester carbon, and during the die-off, millions of tons of carbon were released into the atmosphere.

“The view has been that mangroves are tough and resilient and survive most things and indeed they can, but there are limits,” said Norman Duke, a professor and mangrove ecologist at James Cook University in Queensland. “It’s a wake-up call,” he said.
Corrections:

October 8, 2018

Because of an editing error, an earlier version of this article misstated the value of 10 billion Australian dollars in American dollars. It is about $7 billion, not $706 billion.

October 9, 2018

An earlier version of this article misidentified the state in which Edith Cowan University is located. It is in Western Australia, not Queensland.

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A version of this article appears in print on Oct. 9, 2018, on Page A6 of the New York edition with the headline: Australia’s Other Threatened Coral Reefs