

Super-rare 'elkhorn' coral found in Pacific

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An Australian scientist has discovered what could be the world's rarest coral in the remote North Pacific Ocean.

The unique Pacific elkhorn coral was found while conducting underwater surveys of Arno atoll in the Marshall Islands, by coral researcher Dr Zoe Richards of the ARC Centre of Excellence for Coral Reef Studies (CoECRS).

The coral bears a close physical resemblance to the critically endangered and fast-vanishing elkhorn coral (*Acropora palmata*) of the Atlantic Ocean, but genetic analysis has shown it to be a different species.

"When I first saw it, I was absolutely stunned. The huge colonies - five metres across and nearly two metres high with branches like an elk's antlers - were like nothing I'd seen before in the Pacific Ocean," Zoe recounts.

"So far I have only found this new population of coral to occur along a small stretch of reef at a single atoll in the Marshalls group," Zoe explains. "It grows in relatively shallow water along the exposed reef front and, so far, fewer than 200 colonies are known from that small area."

"The Pacific elkhorn coral has regular divergent blade-like branches that radiate out from single or multiple large central stalks. Its colonies are by far the largest of all the *Acropora* colonies observed at Arno Atoll, indicating that these are relatively old," she adds.

Whether the Pacific elkhorn is an entirely new species or not is subject to scientific debate, because Zoe has uncovered that over a century ago, in 1898, a scientist called Gardiner described a coral from the island of Rotuma, near Fiji in the South Pacific whose description fits that of the Pacific elkhorn. "Unfortunately at this stage, we do not have any [genetic material](#) of *A. rotumana* to confirm whether or not it is the same species as the Pacific Elkhorn."

This finding is of a population of elkhorn coral in the Pacific is of particular scientific interest because it represents one morphological extreme in *Acropora*, the dominant genus of reef-building corals, the researchers say.

[Genetic analysis](#) of the new coral found that its closest relative is *Acropora abrotanoides*. Zoe considers it possible that *A. abrotanoides*, the 19th century Fijian coral and the new Pacific elkhorn could turn out to be variants of the same species - but says there aren't enough data to confirm this, at this point.

The uncertainty surrounding the taxonomic status of the Pacific elkhorn poses a conservation dilemma. To be given threatened species status by the International Union for Conservation of Nature (IUCN), more needs to be known about the coral, its population size and its relationships to other coral species.

"Currently the Pacific elkhorn would be rated as 'data deficient', meaning there isn't enough information to determine whether it is threatened, vulnerable or critically endangered," she explains. This means that the Pacific elkhorn would join 141 other coral species on the IUCN list whose status is uncertain.

However the status of its Atlantic relative, *A. palmata* is much more certain: regarded by most marine researchers as the outstanding symbol

of the plight of Caribbean corals, it is rated as critically endangered after vanishing from most of its Caribbean reef habitat in recent decades.

Zoe says that the current IUCN definitions are unhelpful in terms of the conservation of many rare and newly described corals such as the Pacific elkhorn, adding it is likely that many of the corals classified as 'data deficient' are actually at risk of extinction.

"When Zoe showed me pictures of the Pacific elkhorn, I was shocked," says leading [coral](#) geneticist Professor David Miller of CoE CRS and James Cook University.

"The colonies look just like the critically endangered Caribbean species *A. palmata*, one of the most distinctive of all corals. The fact that these colonies might represent a species that has not been seen for over a hundred years (*A. rotumana*) says something about how much we know about the remote reefs of North Pacific.

"And the fact that it and many other corals don't qualify as at risk under IUCN criteria is very disappointing. The IUCN seems to be too demanding in terms of the criteria for listing, and we urge they should err on the side of caution in cases like this."

More information: Zoe's discovery is reported in the article Archetypal 'elkhorn' coral discovered in the Pacific Ocean by Zoe Richards, Carden Wallace and David Miller which appears in the latest edition of the journal *Systematics and Biodiversity* (2010), 8(2): 281.

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