

# AUSTRALIA'S KELP FORESTS UNDER THREAT, ROBOTS COULD BE ONLY HOPE

*The headline grabs your attention and tells you what the story is about.*

By Margot Kelly, 23 Nov 2016, ABC News (<http://www.abc.net.au/news/2016-11-23/kelp-forests-robot/8047698>)



*Photo: Kelp on the beach at Granville Harbour, blown by the 'roaring forties' out of some thriving kelp forests. (ABC Rural: Margot Kelly)*

## **Sea crawling robots designed to kill predatory sea urchins could be lifeline for critical kelp forests.**

*These two paragraphs represent the 'lead', they hook the reader and tell us the Who, Where, When, What and Why of the story.*

A new study into the health of kelp globally showed Australian waters are performing worse than the global trend for kelp forest populations due to predatory fish and sea urchins.

An international team of 37 scientists looked at how kelp forests have changed over the last 50 years.

Professor Craig Johnson with the Institute for Marine and Antarctic Studies (IMAS) said while some kelp populations are flourishing the prevalence of predatory sea urchins and fish have decimated populations off the coast of Australia.

"On a global perspective roughly one third of the areas has declined, one third of the area is about static and one third is showing increases in kelp," he said.

"However, in Australia what seems to be happening with a lot of the kelp is we are seeing declines."

*The 'body' of the article presents news in descending order from most to least important.*

Kelp is used to make a variety of products from cosmetics to nutrient rich fertilizers for agricultural industries.

## Robots could target sea urchins

Professor Johnson said there were a number of things that could be done to replenish the kelp forests including promoting a sea urchin industry to harvest the urchins for meat, and boosting the population of large rock lobsters which predate on the sea urchins.

But following successes in machine learning from mechanical weeding, Prof Johnson thinks one futuristic sounding solution may hold the key to managing urchins.

"We are having discussions about designing underwater robots that will recognise urchins and kill them," he said.

"You can just release these robots and they will crawl around on the bottom and when they find an urchin they'll poke a hole in it.

"I suspect that in the future smart robots will be the single most important factor in rehabilitating urchin barrens back to kelp beds."

## Mixed results for global kelp forests

In areas where sea urchins are not able to take over the kelp beds, the kelp forests are flourishing.

The east and west coasts of Tasmania show this stark contrast.

"When you get these extensive urchin barrens on the east coast of Tasmania for example they can extend for tens of hectares," Professor Johnson said.

But on the West Coast, where turbulent seas prevent the sea urchins from holding on to the kelp, the forests are increasing.

Chris Russell harvests kelp from the beach on the West Coast at Granville Harbour to process into stock feed and fertilizer for agricultural uses.

"At low tide you can see the bulk of the kelp bed itself and over the 10-12 years this business has been operating the appearance seems to have grown if anything," he said.

"There is no shortage of kelp from our perspective."

Kelp species comprise the largest marine harvest of any species, so with commercial and environmental reasons to bolster populations it might not be long before robots are trawling the ocean floor keeping the kelp safe from predatory urchins.

*The 'body' of the article presents news in descending order from most to least important.*

*The least important information is presented in the 'tail', at the end of the article.*