Growing organisms to build healthier reef

NUS researchers use Lego blocks to culture hard corals in bid to boost yield sustainably

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They are both colourful and fun, but Lego blocks and hard coral bits were made for very different environments - the former for children’s favourite toy, the latter for the reef ecosystem.

Researchers at the National University of Singapore (NUS) are looking at a new method of growing hard corals in laboratories, to maximise the space they can be used more efficiently to grow a greater number of these fragments to larger sizes.

The project even inspired New Mei Lin, from the NUS Tropical Marine Science Institute, to do some more extensive research, describing the findings as “very beautiful”.

Growing hard corals in nurseries is a relatively new phenomenon. This is usually done by placing coral fragments or substrate such as rocks on the bottom of a shallow tank. This allows the corals to still take up the sun, letting the algae live in their photosynthesis to nourish the corals.

However, there are downsides to this method. The corals have to be protected and kept safe, and the corals have to be grown in an area that is not too crowded.

New Mei Lin said she is interested in understanding how coral can be cultivated in a more productive manner. She also wants to make use of not just the base of the reef, but the entire water column, where bits of hard coral are placed on Lego blocks along the length of the reef.

If successful, she could increase the yield by many times.

Dr Neo said: “The usual way of culturing corals is done in two-dimensional space, but now we are testing whether we can make full use of the vertical water column...

“We also want to see if the corals can grow even while suspended in the water. We hope that by using the Lego blocks on the Reef Tank, the corals can still make full use of the space.”

The corals could also be grown in areas where they are not usually found in nature.

By combining her expertise with that of Dr Jani Tan and Dr Huang Xianming - NUS marine biologist who specialises in coral ecology and genomics respectively - Dr Neo could expand the project to include all other animals that are threatened with extinction. The three are often pitched against each other to find new technologies.

The three-year project is funded by Temasek Foundation, and is carried with hard coral propagation team. “We are very grateful to have the support of the Temasek Foundation,” said Dr Neo.

The project will also aim to develop a method of scaling up production, so producers can use it to protect other areas or species that are threatened with extinction.

In a three-year project funded by Temasek Foundation, the researchers are studying three areas that are often harvested from the wild for the aquarium trade: hard corals, giant clams, and corals. They are to:

1. Determine the ideal conditions needed for these creatures to thrive in tanks.
2. Study ways to help each generation produce more offspring.
3. Explore ways of tracing whether such marine products come from sustainable sources, through the use of genetic barcoding, dyes or other chemical means.

Guardians of the reef and sea

Hobbyists often enjoy decorating their tanks with elements of the sea. To feed the demand, creatures like giant clams, cowries and hard corals are often taken from the wild, depleting their numbers. NUS National University of Singapore NUS National University of Singapore, has been working on a research project that could save them from overharvesting.

To mark World Ocean Day tomorrow, AUDREY TAN, LEE PREP HONG, LEE YU HUH and BILLY KER dive into how these sea guardians are saving the creatures of the reef.