

# CLIMATE CHANGE CAUSING SEA SNAIL SHELLS TO DISSOLVE: STUDY

Relevant for: World & Indian Geography | Topic: Islands & Coral Reefs, changes therein and in Flora & Fauna and the Effects of such changes

Dissolved shell(top) and a normal shell | Photo Credit: [University of Plymouth](#)

Shelled marine creatures living in increasingly acidified oceans face a fight for survival as the impacts of climate change spread, a study suggests.

Researchers from the University of Plymouth in the UK and the University of Tsukuba, Japan assessed the impact of rising carbon dioxide levels on the large predatory “triton shell” gastropod. They found those living in regions with predicted future levels of CO<sub>2</sub> were on average around a third smaller than counterparts living in conditions seen throughout the world’s oceans today. However there was also a noticeable negative impact on the thickness, density, and structure of their shells, causing visible deterioration to the shell surface, researchers said.

The study, published in the journal *Frontiers in Marine Science*, found that the effects are down to the increased stresses placed on the species in waters where the pH is lower, which reduce their ability to control the calcification process. The researchers have warned other shellfish are likely to be impacted in the same way, threatening their survival and that of other species that rely on them for food.

“Ocean acidification is a clear threat to marine life, acting as a stressor for many marine animals,” said Ben Harvey, an assistant professor at the University of Tsukuba. “Here we found that the ability of the triton shells to produce and maintain their shells was hindered by ocean acidification, with the corrosive seawater making them smoother, thinner, and less dense.”

“The extensive dissolution of their shells has profound consequences for calcified animals into the future as it is not something they can biologically control, suggesting that some calcified species might be unable to adapt to the acidified seawater if carbon dioxide emissions continue to rise unchecked,” he said. The research was conducted at a marine volcanic seep off the coast of Shikine-jima in Japan where carbon dioxide bubbling up through the seabed lowers seawater pH from present-day levels to future predicted levels.

Using computed tomography (CT) scanning, the scientists measured the thickness, density and structure of the shells, with shell thickness halved in areas with raised CO<sub>2</sub> while average shell length was reduced from 178mm in sites with present day levels to 112mm.

In some cases, these negative effects left body tissue exposed and the shell casing dissolved, with the corrosive effects of acidification far more pronounced around the oldest parts of the shell.

“Our study clearly shows that increasing carbon dioxide levels cause seawater to become corrosive to shellfish,” said Jason Hall-Spencer, a professor at the University of Plymouth. “As these calcified animals are a fundamental component of coastal marine communities, ocean acidification is expected to impact shellfish fisheries.”

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