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Sea surface too warm for comfort

Prolonged heatwave affects marine life too, hurting fishermen's livelihood

TS/MS 13

By LO TERN CHERN
andylo@thestar.com.my

GEORGE TOWN: Even the sea cannot escape the heatwave – and when the water surface exceeds 30°C for a long period, the biological chain reaction ultimately affects humans.

Information on heatwaves affecting land is well known, but marine heatwaves go largely unreported.

Yet, the extremely hot spell in the country is causing sea temperatures to spike, which will lead to a devastating impact on marine life, weather patterns and land temperatures.

Marine biologist Dr Abe Woo Sau Pinn said when heatwaves cause the surface temperature of the sea to rise beyond 30°C, it can create an ideal condition for harmful algae to bloom, turning the water into shades of brown, red or even pink.

He said studies have shown the instances of marine heatwaves have increased by almost 50% over the past 10 years.

"When such events occur, the seawater's chemistry changes, lowering its capabilities to hold dissolved oxygen.

"This situation may create deoxygenation zones, commonly known as dead zones, that could choke marine animals especially benthic (sea floor) species like clams and shellfish," he said.

When oxygen levels in that area of the sea dropped, a new problem is created because the level of dissolved carbon dioxide inevitably rises.

It leads to ocean acidification, which dissolves the calcium-based shells of all molluscs and even corals.

Fresh from the sea: A seller arranging shellfish at Cecil Street Market in Penang. The hot weather conditions there haven't affected the catch of the day so far. – CHAN BOON KAI/The Star

"The impact of ocean acidification is not immediate.

"The scale to raise the acidity requires more drivers than just an increase of temperature and drop in oxygen in the short term.

"So we cannot have a direct link, but in the long term, if our marine heatwaves persist, it will lead to increased acidity in the seas around Malaysia," Woo said.

He said according to studies, marine heatwave has a profound negative impact on all bivalves (filter feeders) such as clams, mussels, cockles and oysters because they are less mobile than fish, shrimp and crabs.

He said since harvested bivalves are important components of seafood sources, it can potentially impact food security, fishermen's livelihood and ecosystem services provided by coastal areas to humans.

Earlier this month, the Fisheries Department sent out multiple public alerts warning residents of Port Dickson and Melaka to abstain from eating molluscs until further notice.

Department deputy director-general (management) Wan Muhammad Aznan Abdullah said water samples and mussels in the areas' waters were found to be contaminated with biotoxins as well as harmful Prorocentrum, Alexandrium and Pseudonitzschia algae species.

The intense growth of these algae species was precipitated by the hot weather coupled with specific organic nutrients flowing out of rivers and into coastal water to the point that their concentrations led to bivalves or filter feeders to absorb biotoxins produced by the algae to levels that are harmful to humans.

Eight food poisoning cases related to the consumption of mussels were reported in Port Dickson and Melaka this month, with two victims warded in intensive care.

Woo, a senior lecturer in Universiti Sains Malaysia's Centre for Marine and Coastal Studies, said concrete scientific evidence showed that the longer heatwaves persisted, the lower fish catch will be.

"Not only a reduction in total catches, but warmer waters in coastal areas will also increase the metabolic demands of fish, which limit their energy to grow and reproduce.

"So fish catches are going to be smaller, younger and less abundant. This spells more trouble to the coastal fishing communities," he said.

Woo said marine heatwaves are likely to worsen as the oceans contained more heat and steps are needed to protect the environment.

"Reduction of carbon emission, expansion of marine protected areas and investment into nature-based solutions need to be taken immediately to mitigate and adapt to climate change, apart from creating more awareness among the people.

"We should prepare, design and implement measures for our coastal cities, fishing and aquaculture industries to be resilient to marine heatwaves.

"There are no short-term measures because it is a natural phenomenon affecting the world.

"Apart from long-term measures to reduce their severity, we are at the mercy of the weather," he said.