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# LIFE & TIMES

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## Red tide

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A White Tip Shark swimming among the corals. ALL PICS BY ALVIN CHEAH



If the amount of algae becomes uncontrollable, it can smother the corals.

# Code red for corals

Toxic algae bloom or 'red tide' is a threat to marine life and also humans, who are part of the food chain. **Aneeta Sundararaj** learns more from Reef Check Malaysia

**T**HE romantic beachside dinner you planned is going smoothly: the sound of waves, the soft music... you're sure the specially prepared shellfish, mussels, clams, cockles and oysters you've ordered will do the trick and make your date fall for you. Suddenly, she says her tongue and lips are becoming numb. Then, she can't feel her fingers. She struggles to breathe. In no time, instead of sharing a kiss, you're giving her mouth-to-mouth to save her life.

This scenario is no laughing matter, says Julian Hyde, general manager of Reef Check Malaysia, a non-profit organisation which aims to raise awareness of the importance of, and threats to, coral reefs.

"There is something called 'red tide'. It's a phenomenon that has recently caused three deaths in Sabah. This confirms the results of our survey that in the last five years,

pollution has greatly increased in Malaysian waters and is affecting our coral reefs."

To understand what "red tide" is and its effect on humans, it's first necessary to understand how reefs work, says Hyde.

A reef is a marine ecosystem and algae (plant-like organisms which include phytoplankton) are a natural component of coral reefs. Of the 5,000 or so identified species of phytoplankton, about 300 can cause the surface of the sea to discolour. "As you can see," says Hyde, "the term 'red tide' has little to do with the tide, but more to do with these algae blooming."

The manner in which these algae bloom depends on how they get their nutrients. One way is a process called, upwelling. "Upwelling occurs when winds blow across the surface of the ocean and push the water away,"

explains Hyde. "Deep, cold water then rises to the surface to replace the lost water. This cold water is rich in nutrients and supports the growth of seaweed and plankton. The plankton then provides food for fish and other marine life."

Another reason for these algae bloom, says Alvin Chelliah, Programme Manager at Reef Check Malaysia, is that sometimes there is an over-supply of nutrients to a coral reef ecosystem. Certain pollutants such as phosphates and nitrates, which are nutrients for algae, can cause the algae to bloom and, hence, the red tide phenomenon. According to this marine biologist, this situation is reversible — if this stops, the corals will correct themselves and the water will become clear again. In a worst-case scenario, if the amount of algae becomes uncontrolled and it takes over the reef, it can smother and kill the corals.

"If this happens," says Hyde, "it can take a whole generation — up to 25 years — for the situation to stabilise and the coral reefs to recover their biodiversity and productivity."

## TOXICALGAE

The main problem, explains Hyde, is the kind of algae that blooms. There are 40-odd species of toxic algae that are harmful to humans. These are called harmful algal blooms. The danger to humans occurs when they eat shellfish and small fish that have fed off these algal blooms — humans are ingesting the toxins when they eat the seafood. This, of course, increases the chances of humans suffering from paralytic shellfish poisoning.

Since the blooms were first noted on the west coast of Sabah last November, says Alvin, the levels of



toxins remain high. In fact, Sabah Fisheries Department has advised against the consumption of shellfish from affected areas.

What bothers Hyde and Alvin is why this red tide is happening at all. This is especially so since the situation is not exclusive to the waters off Sabah's coast, but includes the east coast of the peninsula, especially Perhentian Island.

Hyde says humans are not causing, but probably contributing to the phenomenon in Malaysia. "Industrial waste, sewage effluent, agriculture and rivers cause this problem."

Hyde adds: "People don't understand how this can affect them because, unlike conservation work in a jungle, they can't see the reef." He wants something to be done now to prevent red tides from happening again, or it may be too late.

The problem is compounded by the fact that there is no way to measure the exact damage that has already been done to the coral reefs. A good estimate, however, says Hyde, is to measure the revenue from the tourism and fisheries industry, estimated to be worth RM145 billion per year.

"Look at places like Tioman and Perhentian," says Hyde. "Today, many divers and snorkellers come to see the coral reefs and tourism is considered central to the islands. Together with this comes an increase



"We need to view the coral reefs in Malaysia as a strategic asset."

Julian Hyde

in facilities and services for tourists."

The impact on the coral reefs range from physical (divers and snorkellers damaging reefs) to biological (nutrient pollution from poorly treated sewage) damage.

Hyde puts it bluntly: "If there are no coral reefs to look at, no one's going to come. With no corals, the fish also have nothing to feed on and fishermen will catch them before these fish are old enough to breed."

Listening to this passionate conservationist confess to being glad he has "no children to bequeath a world so devoid of natural resources," one can become convinced when he adds: "One scientist has predicted that by 2049, there will be no commercial fish left."

**BOMBS FOR FISH**

An advocacy report by Reef Check Malaysia, *The Economic Value Of Malaysia's Coral Reefs*, touches on "fish bombing", a common fishing method in Sabah. These homemade bombs, which contain fertiliser and diesel, are used to stun and kill fish. It is a cheap, quick and easy method to catch fish.

The problem is that fish bombing is practised in shallow coastal waters, which invariably destroys the coral reef. Worse, the estimated cost of destruction from a single bomb is RM700. This exceeds the total value of a few kilogrammes of fish collected from a single fish-bombing exercise.

What Hyde would like to see is both the government and individuals doing more to create awareness of red tide. "People need to ask themselves what caused this," says Hyde. "Individuals should talk about this on their Facebook pages. Send an email to your MPs as they always need issues to work with and this is a worthwhile cause. Conscientious MPs will take up the cause. Take personal responsibility to minimise and recycle your waste."

Hyde reiterates the plea made in the advocacy report: "... there needs to be a revised approach to coral reefs by everyone. We need to view the coral reefs in Malaysia as a strategic asset that underpin fisheries, tourism jobs and other intangible values such as coastal protection."

To sum up, Alvin says: "Because people don't see the damage to the reefs, they don't bother about it. The thing is this — the reefs are beautiful. A jungle is green; the desert is brown. With the reefs, you can see every colour of the rainbow."

What happens if we lose it all?



Alvin Chelliah says over supply of nutrients is one problem.

**PARALYTIC SHELLFISH POISONING**

If you are suffering from any of the following symptoms after eating shellfish, clams, oysters, scallops or mussel, you may need immediate medical attention as you could be suffering from the condition.

- Numbness or tingling of the lips and tongue.
- Numbness in fingers and toes.
- A sensation of lightness (floating in the air).
- Salivation.

• Intense thirst and temporary blindness.

The above symptoms may be followed by a loss of muscular coordination, paralysis and an inability to breathe. Worse, it can progress to respiratory arrest and death.

There is no known antidote for paralytic shellfish poisoning and any treatment is supportive. Prompt evacuation of stomach contents may help by removing the remaining toxins in the system.

**AVOID PARALYTIC SHELLFISH POISONING**

- Do not harvest shellfish when a red tide alert has been announced. Often those suffering are those who deliberately ignore warnings and advice from the authorities.
- Observe all media announcements concerning paralytic shellfish poisoning alerts.
- Avoid all 'do-it-yourself' methods of trying to determine whether the shellfish is poisonous. Since poisonous shellfish do not look, taste or smell any different, these are not reliable methods. Remember, each individual reacts differently to the poisoning.

- Touching shellfish meat to the lips and waiting for a numbing sensation is also an unreliable method to determine if the meat is contaminated.
- Measuring shellfish toxicity by using a field or home testing kit is unreliable.
- Consuming alcoholic beverages may speed up absorption of the toxin.
- Usual cooking methods (steaming, baking, boiling, pan-frying) or freezing do not reduce toxicity in contaminated shellfish.

Reference: Department of Fisheries in Sabah

