

# Explosion in jellyfish numbers may lead to ecological disaster, warn scientists

A dramatic global increase in jellyfish swarms could damage the marine food chain

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Global warming has long been blamed for the huge rise in the world's jellyfish population. But new research suggests that they, in turn, may be worsening the problem by producing more carbon than the oceans can cope with.

Research led by Rob Condon of the Virginia Institute of Marine Science in the US focuses on the effect that the increasing numbers of jellyfish are having on marine bacteria, which play an important role by recycling nutrients created by decaying organisms back into the food web. The study, published in the journal *Proceedings of the National Academy of Sciences*, finds that while bacteria are capable of absorbing the constituent carbon, nitrogen, phosphorus and other chemicals given off by most fish when they die, they cannot do the same with jellyfish. The invertebrates, populating the seas in ever-increasing numbers, break down into biomass with especially high levels of carbon, which the bacteria cannot absorb well. Instead of using it to grow, the bacteria breathe it out as carbon dioxide. This means more of the gas is released into the atmosphere.

Dr Carol Turley, a scientist at Plymouth University's Marine Laboratory, said the research highlighted the growing problem of ocean acidification, the so-called "evil twin" of global warming. "Oceans have been taking up 25% of the carbon dioxide that man has produced over the last 200 years, so it's been acting as a buffer for climate change. When you add more carbon dioxide to sea water it becomes more acidic. And already that is happening at a rate that hasn't occurred in 600 million years."

The acidification of the oceans is already predicted to have such a corrosive effect that unprotected shellfish will dissolve by the middle of the century."

Condon's research also found that the spike in jellyfish numbers is also turning the marine food cycle on its head. The creatures devour huge quantities of plankton, thus depriving small fish of the food they need. "This restricts the transfer of energy up the food chain because jellyfish are not readily consumed by other predators," said Condon.

The increase in the jellyfish population has been attributed to factors including climate change, over-fishing and the runoff of agricultural fertilisers. The rise in sea temperature and the elimination of predators such as sharks and tuna has made conditions ideal, and "blooms" – when populations explode in great swarms, sparking regular panics on beaches around the world– are being reported in ever-increasing size and frequency. Last year scientists at the University of British Columbia found that global warming was causing 2,000 different jellyfish species to appear earlier each year and expanding their number.

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The proliferation of jellyfish has caused problems for seaside power and desalination plants in Japan, the Middle East and Africa. The blooms are also perilous to swimmers; the effects of a jellyfish sting range across the species from painless to tingling to agony and death.

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