

Killer Algae a Key Player in Mass Extinctions

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Boulder, CO USA – Supervolcanoes and cosmic impacts get all the terrible glory for causing mass extinctions, but a new theory suggests lowly algae may be the killer behind the world's great species annihilations.

Today, just about anywhere there is water, there can be toxic algae. The microscopic plants usually exist in small concentrations, but a sudden warming in the water or an injection of dust or sediment from land can trigger a bloom that kills thousands of fish, poisons shellfish, or even humans.

James Castle and John Rodgers of Clemson University think the same thing happened during the five largest mass extinctions in Earth's history. Each time a large die off occurred, they found a spike in the number of fossil algae mats called stromatolites strewn around the planet. Castle will be presenting the research on Monday, 19 October, at the annual meeting of the Geological Society of American in Portland, Oregon, USA.

"If you go through theories of mass extinctions, there are always some unanswered questions," Castle says. "For example, an impact — how does that cause species to go extinct? Is it climate change, dust in the atmosphere? It's probably not going to kill off all these species on its own."

But as the nutrient-rich fallout from the disaster lands in the water, it becomes food for algae. They explode in population, releasing chemicals that can act as anything from skin irritants to potent neurotoxins. Plants on land can pick up the compounds in their roots, and pass them on to herbivorous animals.

If the theory is right, it answers a lot of questions about how species died off in the ancient world. It also raises concerns for how today's algae may damage the ecosystem in a warmer world.

"Algae growth is favored by warmer temperatures," Castle says. "You get accelerated metabolism and reproduction of these organisms, and the effect appears to be enhanced for species of toxin-producing cyanobacteria."

Castle added that toxic algae in the United States appear to be migrating slowly northward through the country's ponds and lakes, and along the coast as temperatures creep upward. Their expanding range portends a host of problems for fish and wildlife, but also for humans, as algae increasingly invade reservoirs and other sources of drinking water.