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## **World's oceans at risk of becoming soupy swill; Rising temperatures, runoff toxins creating 'dead zones'**

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VANCOUVER - Sally Cole came home from a sailing trip in August looking forward to a hot shower. But when she turned on her tap, all she got was slime.

"I turned on the tap and it just flooped. Just a bit of viscous gloop came out. It was really horrible," said the resident of B.C.'s Saltspring Island between the mainland and Vancouver Island.

The culprit was an algae bloom on the nearby lake that had choked the water pipes of hundreds of the area's residents. It took three days to clear.

The incident is one example of how seas and lakes are suffocating in slime.

That toxic slime -- algae feasting on pollutants and fertilizers, and starving the ocean of oxygen -- is killing off sea life at an alarming rate.

A new study published in August reveals the world's "dead zones" have doubled in size every decade since 1960.

Coastal waters with once rich marine life -- Chesapeake Bay, the Baltic Sea, the Black Sea and off Peru, Chile and Namibia -- are rapidly losing species. According to the report by two U.S. scientists, there are 405 asphyxiating dead zones in our oceans.

The cause, predictably, is pollution. The culprits are fertilizer runoff in estuaries, sewage, global warming, overfishing and industrial waste.

Millions of tonnes of "nutrient pollution" -- chemical fertilizer that adds phosphates and nitrogen to the water -- feed algae blooms.

Some zones are vast -- the Baltic Sea's 70,000-square-kilometre aquatic graveyard is the largest. The Gulf of Mexico harbours North America's giant dead zone: A 22,000-square-km sea morgue, or something roughly the size of New Jersey.

Other dead zones have been discovered off California, in Lake Erie, around the Florida Keys, in North and South

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Carolina creeks and in Washington's Puget Sound. Together, they have turned 246,048 square kilometres of the seas -- an area the equivalent of all five of the Great Lakes -- into marine wastelands.

Robert Diaz, a Virginia Institute of Marine Science professor and co-author of the study, says the problem is already evident in Canadian waters. In B.C., a dead zone was first spotted in the Saanich Inlet in 1960. Dead zones have been recorded in P.E.I. fish-farming bays since 2000.

If fish swim into a dead zone, they often become unconscious and cannot escape. Shellfish and bottom-dwellers move too slowly, so a stew of rotting marine life is left behind. Even when fish survive in low-oxygen water, research shows their reproduction suffers, which could jeopardize wild fish stocks.

Diaz says this could be catastrophic for our local marine life and aquaculture. He says zones are likely to intensify as their contributing factors of algal blooms and intensive fish-farming are "problems that will continue into the future."

Already, the impact of ocean deterioration is being felt all along the Pacific coast. Fishermen are bringing up cages of dead Dungeness crabs and salmon researchers have found low oxygen from the Columbia River on Oregon border's to northern Washington. As fish stocks fall, seabird populations are dying of starvation.

Deadly algae are also becoming common on the Pacific West Coast.

They have been blamed for the erratic behaviour and mass die-offs of sea mammals since some algae act as neurotoxins and impair brain function. Some 14,000 seals, sea lions and dolphins have washed up sick or dead in California in the last 10 years, and 650 grey whales have beached.

Deadly algae have been a problem in the region since the 1980s, but scientists say they're increasingly frequent and intense.

Algae is also storming international seas and claiming human victims.

Near Sweden, cyanobacteria blooms at times turn the Baltic Sea into a brown slush that makes residents' eyes burn. On Florida's Gulf Coast, toxic tides have killed hundreds of manatees and caused breathing problems for area residents.

Algae has smothered 80 per cent of coral reefs in the Caribbean and ruined 75 per cent of California's fish-rich kelp forests. Poison day-glo-green caulerpa algae is killing fish off the coasts of 11 countries.

What will become of our oceans? One U.S. oceanographer has a succinct answer: slime.

Jeremy Jackson, a Scripps Institution of Oceanography professor, released a report in August warning of "mass extinction" in oceans due to dead zones, global warming, overfishing, pollution, ocean acidification, ecosystem destruction and invasive species.

"Coastal ecosystems are endangered to critically endangered on a global scale," he said, adding that "unrestrained runoff of nutrients and toxins, coupled with rising temperatures, will increase the size and abundance of dead zones and toxic blooms that may merge along all continents."

What will remain, he contends, will be seas emptied of fish and filled with soupy swill -- algae, bacteria and jellyfish and their ilk.

Already, clouds of jellyfish are moving in: Their numbers are up tenfold in the Bering Sea alone since 1990, stinging fish schools to death and clogging machines.

In a worst-case scenario, Jackson believes, "even farmed seafood will be increasingly toxic ... outbreaks of disease will increase ... microbes will reign supreme."

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University of B.C. Fisheries director **Daniel Pauly** believes that a fish and seafood crisis has begun.

He says we've accepted a decline in the quality of fish we consume as the cod, tuna and salmon stocks collapse.

We're eating bait and thinking it's normal. Case in point? Squid were never considered food until Mediterranean cuisines adapted to overfishing. Artificial crab meat isn't even real pollock but "surimi" -- waste fibres washed off bones and made into paste.

The good news is dead zones are reversible. Cleanups have been successful in New York's Hudson and East rivers, England's Thames and San Francisco Bay. When chemical fertilizers became too expensive for farmers after the Soviet Union collapse, the dead zone in the Black Sea, once 40,000 square kilometres, shrank dramatically.

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