

The Oregonian

'Dead zones' off coast tell no tales

Oceans - An OSU team finds no record of earlier sealife-killing conditions and fears more may come
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The eerie "dead zones" that suffocated marine life off the Oregon coast in recent summers are unlike anything recorded over the past 50 years and could be driven by stronger winds that might reflect global warming trends.

That's the new conclusion published in the national journal *Science* today by an Oregon State University team that has tracked conditions as summer oxygen levels in the coastal ocean plummeted -- falling to zero in 2006.

Undersea video cameras that summer revealed marine graveyards full of dead crabs, starfish and other life. Some species still have not returned to those areas, said Francis Chan, a marine ecologist at OSU and the lead author of the new research.

The OSU team said the waters off the Oregon coast, long known for their wealth of marine life, may be coming to resemble other areas of ocean off South Africa and Chile -- where low-oxygen, or "hypoxic," conditions are more common and may themselves be worsening.

"I'll be surprised if it didn't happen again next year," said Jack Barth, an OSU professor of oceanography and co-author of the research.

Chan searched log books and other records from research cruises and monitoring over the past 50 years to learn whether scientists had documented similar conditions before -- and found that the dead zones of the past few years are unprecedented.

He found little evidence before 2000 of such severe low-oxygen conditions along the undersea shelf that traces the central Oregon coast, and no evidence of the conditions pressing so close to shore. The scientists said it highlights the sensitivity of marine systems to environmental shifts.

"It really tells us how big and how fast changes can happen in the ocean ecologically," he said.

But Terry Thompson, a Lincoln County commissioner and fisherman, said he remains skeptical that the dead zones OSU has documented are all that different from what fishermen have noticed along the coast for years.

"There's no question that two years ago it was very severe, but I want to see more data," he said. "Fishermen have known for years that you don't fish in that area in the summer. We just didn't go there." The OSU scientists said it's still unclear how the dead zones may affect marine life such as salmon and crab, both essential to the coastal economy. Fish leave the low-oxygen areas where they would otherwise suffocate. The most severe effects scientists observed were on crabs, starfish and other organisms that cannot move as quickly.

Crabs in 2006 crowded coastal bays, probably to escape the low-oxygen waters, Barth said. Coastal waters turned low in oxygen again last summer, but not as severely as the year before.

Low-oxygen water, an essential ingredient in Oregon's rich marine environment, wells up from the deep each summer, bringing essential nutrients with it. That upwelling, driven by winds, has always left some waters short of oxygen, even as it helped nourish salmon and other valuable fish. But especially strong and steady upwelling feeds booms of tiny marine organisms that then sink and die, their decay drawing even more oxygen out of the water, scientists say. That can quickly turn flourishing waters lifeless.

Global warming is expected to heat the air over land more than over the ocean, creating the potential for the increased differences in temperatures to drive more winds, Barth said. That might fuel more upwelling, although it remains difficult to blame any single phenomenon on global warming.

"We don't have proof of the climate change signal, but the physics is consistent," Chan said.

The records Chan examined covered several cycles of El Nino and La Nina, large-scale shifts in ocean conditions that influence the climate of the Pacific Northwest. But those shifts did not appear to have any connection to the spread of low-oxygen conditions off Oregon, the researchers said.

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