SHARED KNOWLEDGE

Managing milky waters

The waters off the Peruvian coast are highly productive, but they are experiencing extreme phenomena that pose a direct threat not only to fishing, but also to aquaculture, particularly scallop farming, which employs some 200,000 people in the country.

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Peruvian scallops in Paracas Bay, Peru.

Some turquoise waters are paradise in photographs only. This is the case for waters that turn "milky" and smell of sulphur, a phenomenon that sometimes occurs in Peruvian coastal areas at the end of summer. This happens because this region, one of the most productive in the world, generates large quantities of organic matter, which is constantly being broken down by bacteria. This bacterial activity is so intense that, over time, it can consume all the oxygen in the water. When this happens, the bacteria change their metabolism and start to produce hydrogen sulphide, giving the water a milky, turquoise appearance that is toxic to the organisms living in it. In some years, this can lead to the almost total loss of production in scallop farms, which are an important part of the local economy.

These areas are also subject to harmful algal blooms that pose real risks to human health, with impacts on local consumption and exports. Marine heatwaves can also occur, generating quite abnormal and significant increases in water temperature. Heavy rainfall can cause a layer of warm freshwater to settle on the surface, preventing oxygen transfer to the underlying layers and creating anoxic conditions. These phenomena cause multiple stresses to the ecosystem, often in combination, and therefore pose very significant risks to the local economy. Especially given that their frequency and intensity are set to increase with climate change.

Scientists are working to develop a low-cost early warning system that will alert fish farmers to the occurrence of any of these episodes. In response, fish farmers will be able to adapt their operations, for example by bringing their farms closer to the surface to escape the oxygen-deprived water layer. A better understanding of the seasonal nature of these events will also facilitate recommendations for adapting fish farming cycles.

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••• Understanding certain extreme ocean events could help reduce losses for Peruvian fish farmers •••

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Milky waters of Paracas Bay, Peru.

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