

Altered ocean currents disturb ecosystem off Northern California and Oregon coast

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In 2005, a delay in the arrival of a seasonal, nutrient-rich ocean current off the coast of Northern California and Oregon led to reduced influx of barnacle and mussel larvae to rocky shores, researchers report.

The coastal ecosystem off Northern California and Oregon owes its richness to southward winds that move warm ocean surface water offshore during the spring and summer. The warm water is replaced by cold, nutrient-rich water from the deep ocean. John Barth and colleagues report that in 2005 the southward winds were delayed, leading to a late arrival of the cold, nutrient-rich water.

The change in ocean currents had several ecological consequences: high ocean temperatures, low nutrient levels, and low abundance of phytoplankton. The researchers also observed that fewer barnacle and mussel larvae settled onto rocks during spring and early summer of 2005, likely due to the low availability of food. In late summer, stronger than usual nutrient-rich currents arrived at the coast, leading to a recovery of mussel, but not barnacle, recruitment.

Understanding the ecological consequences of changes in coastal ocean currents is important, the researchers say, because if global warming continues, climate models predict ocean current alterations like the one observed in 2005.

Source: Proceedings of the National Academy of Sciences

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