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World's Large Marine Ecosystems Heating Up, Altering Fisheries Catches
NOAA Scientists Contribute to U.N. Report

A new United Nations report, with key contributions from NOAA, found that 61 of the world's 64 large marine ecosystems – large coastal ocean waters adjacent to continents -- show a significant increase in sea surface temperatures in the last 25 years, contributing to decreasing fisheries catches in some areas and increasing catches in others.

Harvests in several northern Atlantic LMEs, including the Norwegian Sea, the Faroe Plateau and the Iceland Shelf, are increasing due to the increase in zooplankton, a vital fish food, brought about by the warming waters.

However, catches are declining in several European LMEs, including the North Sea, the Celtic Biscay Shelf and the Iberian Coastal LMEs, according to the United Nations Environment Programme report, *The UNEP Large Marine Ecosystem Report: a Perspective on Changing Conditions in LMEs of the World's Regional Seas*.

"The large majority of these ecosystems are shared by two or more countries, underscoring the need for regional cooperation to advance sustainable management," said Dr. Kenneth Sherman, director of the NOAA Large Marine Ecosystem program. "The added stress of increasing sea surface temperatures makes it that much more important that nations cooperate to sustainably manage large marine ecosystems, the areas where most marine fisheries are produced and caught."

According to the report, 70 percent of global fish stocks within LMEs are overexploited, reducing the availability of fish for food, which is especially critical in LMEs off the coasts of Africa, Asia and Latin America, where fish is a major protein source. This contrasts starkly with the trend in the U.S. where only approximately 23 percent of domestically managed stocks are overfished, according to the most recent status of domestic stocks report. The U.S. federal law requiring the elimination of overfishing on all domestic stocks by 2010 is helping the U.S. rebuild depleted stocks to sustainable levels.

The U.N. report also said that an unprecedented volume of nitrogen effluent running into coastal waters is causing a greater frequency and extent of harmful algal blooms, oxygen depletion events and dead zones. During the algal blooms, small plankton consume excessive amounts of available dissolved oxygen, sink to the bottom and deprive fish and shellfish of the oxygen they need to survive.

"The effort to reverse the degraded status of LMEs will take time, well-focused and creative policies, and funding," said Achim Steiner, U.N. under-secretary general and executive director of UNEP, the agency that released the report.

The report documents the most rapid sea surface temperature increase in the northeast Atlantic and Mediterranean (Baltic Sea, North Sea and Black Sea LMEs), in the northwest Pacific off east Asia (East China Sea, and Sea of Japan/East Sea LMEs), and in the northwest Atlantic (Newfoundland Labrador Shelf LME).

The notable exceptions to the warming are in the California Current LME and Humboldt Current LME (off the coasts of Chile and Peru). Both are in large and persistent upwelling areas

of nutrient-rich cool water in the eastern Pacific Ocean. The Arctic Ocean LME was not included in this analysis because it is almost always covered by ice.

The report is available online at <http://www.lme.noaa.gov>

To read about specific large marine ecosystems in the report go to http://www.lme.noaa.gov/index.php?option=com_content&view=category&id=41&Itemid=72

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