



UNIVERSITY OF GOTHENBURG
FACULTY OF EDUCATION

Focus on ocean acidification at COP15

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Increased carbon dioxide emissions have made the world's seas 30 percent more acidic in only 250 years. Acidification poses a serious threat to shellfish and corals since it interferes with calcification. In fact, it may in the end disrupt entire marine ecosystems as we know them and have dramatic economic consequences worldwide.

As part of an international network, University of Gothenburg researchers are in Copenhagen to demand that measures be taken to deal with this serious environmental threat.

Coral reefs threatened

The EU-financed research project EPOCA (European Project on Ocean Acidification) involves 100 researchers from 29 European research organisations, and has in recent years published several startling findings related to the accelerating acidification of the oceans:

- The current pace of ocean acidification is the fastest in 55 million years
- The oceans have become 30 percent more acidic since the start of the Industrial Revolution some 250 years ago
- The oyster industry in northwest USA has declined drastically just in the last five years. US researchers have found that oyster larvae are unable to survive in the acidified waters
- Experiments show that very marginal acidification is enough to cause mass death of some species of starfish
- Researchers conclude in an article published in Science that one of the world's largest coral reefs, the Great Barrier Reef off of Australia, already shows signs of degradation
- In an article published in the renowned journal PNAS, researchers describe how a more acidic marine environment interferes with the chemical signals that fish rely on to navigate, and how this may cause some species to stray from their natural habitats.

Noisier water

Another, maybe more unexpected, effect of acidification is that it reduces the ability of water to absorb sound waves. This leads to a noisier environment, which may adversely affect for example whales and dolphins.

Different reactions

Michael Thorndyke serves as a visiting professor in experimental marine biology at the Department of Marine Ecology, University of Gothenburg, and as a director at the Royal Swedish Academy of

Sciences. Thorndyke and a number of colleagues from the University of Gothenburg are involved in the EPOCAS research network.

-Our studies of the Swedish waters indicate that marine species react to acidification in different ways. While some species actually seem to benefit in terms of for example stimulated growth, others simply die. We therefore cannot predict the exact consequences of ocean acidification. However, we can be certain of one thing: The global marine ecosystem, which includes Swedish waters, will change fundamentally. This calls for an immediate and dramatic reduction of carbon dioxide emissions, says Thorndyke.

EPOCA representatives will speak to decision makers at the Copenhagen conference on 10 December.

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Sound absorption: <http://www.agu.org/pubs/crossref/2008/2008GL034913.shtml>

Fish navigation: <http://www.pnas.org/content/106/6/1848.abstract>

Corals: <http://www.sciencemag.org/cgi/content/abstract/323/5910/116>

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