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Acid seas will accelerate Great Barrier Reef bleaching

The Great Barrier Reef will start losing coral and fish species within twenty years according to results published today in Proceedings of the National Academy of Sciences.

World first research, conducted by scientists at The University of Queensland's (UQ) Centre for Marine Studies, has found that the threat of climate change to the Great Barrier Reef is more urgent than first thought.

While coral bleaching events caused by warmer water temperatures have been well documented in recent years, the threat posed by ocean acidification is now believed to pose a greater cumulative threat than that anticipated by international marine scientists.

Director of UQ's Centre for Marine Studies, Professor Ove Hoegh-Guldberg said that increasing levels of carbon dioxide in the Earth's atmosphere are being absorbed by oceans in a process known as ocean acidification.

"Reefs are created by a delicate balance of reef builders and reef eroders. This research shows that increasing levels of carbon dioxide in our oceans upsets this balance," he said.

"The water effectively soaks up carbon dioxide like a sponge. While this is a natural process, the increasing amounts of carbon dioxide being absorbed more rapidly affects the ability of some corals to replenish and grow.

"Our research shows that coral also bleaches more in acidic water. Previously we thought bleaching was only caused by warmer waters but our research shows that the combination of warmer water and increased acidity means we can expect to see more bleaching occurring at lower temperatures," Prof Hoegh-Guldberg said.

Dr Ken Anthony, Senior Research Fellow at UQ, said "Ocean acidification effectively lowers the coral's threshold for bleaching. This means that the models we now use for predicting coral bleaching worldwide based on global warming will severely underestimate the amount of coral bleaching we will see in the future".

The research project is supported by an innovative, four-year industry science partnership between the Great Barrier Reef Foundation (GBRF) and Rio Tinto Alcan.

Judy Stewart, GBRF Managing Director, said the innovative partnership allowed industry to support critical climate change research both financially and practically.

“While coral bleaching events caused by warmer seas have been well documented in recent years, this research highlights the urgent need for Australia to focus its attention on protecting and preserving one of our country’s greatest natural assets,” Mrs Stewart said

Professor Hoegh-Guldberg said the good news was that the research was also looking at solutions to help the Great Barrier Reef adapt to the impacts of climate change.

“It is probably too late to stop damage completely but this research will give reefs like the Great Barrier Reef a better prognosis by allowing us a better understanding of the factors that can be manipulated to give reefs the best possible chance of surviving with minimal loss of species,” said Prof Hoegh-Guldberg.

Dr Anthony said, “Our research is also identifying which specific areas of the Great Barrier Reef are most at risk and providing reef managers, such as the Great Barrier Reef Marine Park Authority, with information on how best to minimise damage.

“This project is not just about the sustainability of the Great Barrier Reef. We are using our results to develop new models that the global marine science community can use to give better understand climate-change threats on reef all over the world”.

To coincide with the release of these important new results, the Future Reef website has been launched: www.futurereef.org.

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For further information, please contact:

UQ - Dr Ken Anthony: (07) 3365 9154, 0427 177 290, k.anthony@uq.edu.au

GBRF - Mrs Judy Stewart: (07) 3252 7555, 0418 781 787, judith.stewart@barrierreef.org

Rio Tinto Alcan - Ms Diane Collier: 0408 378 749, diane.collier@riotinto.com

Further information about the partners can be found at their websites:

GBRF: www.barrierreef.org

RTA: www.riotinto.com/riotintoalcan/

UQ Centre for Marine Studies: www.marine.uq.edu.au