International Concern Growing Over Coral Bleaching On The Great Barrier Reef

March 6, 2006 -- Coral reefs of the Great Barrier Reef in Australia are bleaching at an alarming rate, raising the concern of scientists around the world.

Scientists from the University of Queensland recently visited the inshore reefs surrounding the Keppel Islands, a popular Great Barrier Reef retreat, where a wave of bleaching has passed over corals since January.

University of Queensland Professor Ove Hoegh-Guldberg, who chairs the Bleaching Working Group for the Coral Reef Targeted Research & Capacity Building for Management Program (CRTR) – a program funded by the World Bank, the Global Environment Facility, and the University of Queensland– said he was amazed by what he had seen.

"Corals at the Keppels are completely bleached," said Hoegh-Guldberg, "and we are only halfway through January. This is far worse than we saw in 1998 and 2002, when more than 60 percent of coral reefs in this region were affected. How this will develop across the Great Barrier Reef is the number one question right now."

The CRTR Program aims to expand the understanding of ecosystem drivers that determine how coral reefs respond to certain kinds of stresses, including climate change, and how likely they will be to recover. The Program supports an international network of coral reef scientists that is unique in the coral reef community both in its size and its coordinated focus on key unknowns related to the sustainability of coral reef ecosystems.

"Coral reefs are vital for the economy of both developing and developed countries," said Marea Hatziolos, World Bank Senior Coastal and Marine Specialist. "Unfortunately, many are in decline. In fact, up to 30 percent are considered degraded beyond recovery."

Hatziolos explains that while many management interventions are obvious in principle – for example, stop the practice of over-fishing, prevent destructive fishing, control pollution, regulate tourism growth, control fossil fuel emissions – putting these interventions into practice is far more difficult. Understanding how the coral reef ecosystem responds to these types of stressors and their effects on the production of ecosystem goods and services not only helps make the case to decision makers about why these pressures must be controlled, it also allows scientists and managers to build on natural resilience of systems in designing cost-effective management responses, and potentially lowering vulnerability of reef ecosystems to future stress. "Targeting these critical information gaps, and building capacity for science-based management and decision-making is a major goal of this program," Hatziolos emphasized.

Corals are animals that live with tiny plant-like organisms called dinoflagellates, which capture the energy of the sun and pass it to the coral. Together, these tiny organisms build the huge limestone structures known as coral reefs, which, in their iconic form as the Great Barrier Reef, are the only living structure visible from outer space.

However, coral reefs have recently been experiencing a global decline. A recent report launched by the Global Coral Reef Monitoring Network on the status of coral reefs, lists them as severely threatened, with over a third heavily degraded beyond recovery and another third under stress from humans. Natural disturbance and climate change can push corals already vulnerable from human pressures, over the brink.

Hoegh-Guldberg said declining water quality, destructive fishing, and now global climate change were all contributing to this decline. "Climate Change is perhaps the most worrying aspect of these problems. Projections from over 40 climate models suggest that our oceans will warm by as much as 3-4 degrees Celsius in the next 100 years. This will have a huge impact on the health of these important ecosystems."

US satellite agencies – NASA and NOAA – have both been providing critical assistance to scientists as they begin to unravel the reasons for the current bleaching event.

Water temperatures during the past four months have been well above the long-term averages. In early January, messages were sent from US oceanographers studying the imagery that bleaching was imminent on the southern end of the Great Barrier Reef.

"We were all very concerned when we saw the temperature readings for December and January," said Hoegh-Guldberg. "The temperature traces suggest we are tracking the temperature profile of 2001-2002, which led to the worst incidence of coral bleaching in the recorded measurements for the Great Barrier Reef. In that event, between 5 to 10 percent of reefs suffered serious damage."

The 2006 Great Barrier Reef event comes soon after the worst incidence of coral bleaching in the Caribbean in October 2005.

Professor Robert Van Woesik from Florida Institute of Technology, and a member of the World Bank-GEF program, recently visited sites along the Mexican Yucatan coast and was concerned by what he saw. "It was a fairly extensive bleaching event – time will tell whether there was large scale mortality or not. Large corals do have some ability to bounce back – on the other hand, this was an unusually warm event."

The CRTR Program is planning to develop a solid scientific basis from which to approach questions about the impact of global warming on coral reefs.

The Program's Executive Officer, Melanie King, said it was building scientific networks and capacity through joint activities and scholarships. "If we can get the best science available into the hands of reef managers and policy makers, we will take a huge step towards working out what we can do in response to these problems," King said.

The Program is currently working with the Great Barrier Marine Park Authority to help understand the patterns of bleaching throughout the entire Great Barrier Reef, and to link scientific research with management solutions.

Scientists throughout the World Bank-GEF network are now on high alert.