

Scientists Unveil “Honolulu Declaration” to Address Ocean Acidification

Renowned Scientists Present Key Findings and Recommendations to Tackle Ocean’s Greatest Threat
<http://www.nature.org/wherewework/northamerica/states/hawaii/press/press3661.html>

HONOLULU, HI — August 27, 2008 —The increase in global carbon dioxide emissions is not just damaging the Earth’s climate, but also threatening the very fabric of our oceans. Today, The Nature Conservancy, along with a dozen of the world’s top marine scientists, introduced key findings and recommendations to tackle ocean acidification as part of the “Honolulu Declaration on Ocean Acidification and Reef Management” revealed at the U.S. Coral Reef Task Force meeting in Kona, Hawai’i.

“The reefs of the world are at risk, and Hawaii’s isolated reefs are especially vulnerable to stresses of any kind, particularly to the rapidly emerging stress brought on by climate change” said Rod Salm, director of tropical marine conservation for the Conservancy’s Asia-Pacific program and presenter of the Honolulu Declaration at today’s U.S. Coral Reef Task Force meeting.

Ocean acidification is the change in ocean chemistry driven by the absorption of carbon dioxide (CO₂) and other chemical compounds released into the atmosphere. The ocean absorbs approximately one-third of the CO₂ in the atmosphere, which then combines with seawater to form carbonic acid that lowers the pH of the oceans and disrupts marine ecosystems and species.



Reef rubble. Dying reefs covered with bacterial slime, Papua New Guinea (left).
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In July 2008, scientists at the International Coral Reef Symposium in Florida declared acidification as the largest and most significant threat that oceans face today. Current estimates show that we could lose all coral reefs by the end of the century – or, in the worst-case scenario, possibly decades sooner.

“Coral reefs are the lifeblood of our oceans and we depend on them for survival. Without urgent action to limit carbon dioxide emissions and improve management of marine protected areas, even vast treasured reefs like the Great Barrier Reef and Northwestern Hawaiian Islands will become wastelands of dead coral,” said Suzanne Case, executive director of The Nature Conservancy of Hawai’i. “The Honolulu Declaration offers tangible and practical steps we can take now to prevent further ocean acidification and ensure the survival of our vitally important – and irreplaceable – ‘rainforests of the sea.’”

Many scientists believe that coral reefs will be unable to survive the projected increases in ocean acidification, leading to potentially massive coral loss that would cause severe declines in the abundance and diversity of fish and other marine species and damage the global economies dependent on ocean health and productivity.

It is thought that Hawai’i reefs will succumb faster to the impacts of ocean acidification because they exist in isolation and at a higher latitude in cooler waters. Research shows that CO₂ is absorbed more readily in cooler than warmer ocean waters. Hawaii’s reefs are also so far removed from other coral reef systems, at the very edge of the region where reefs can possibly grow – which means that any change in water temperature or chemistry results in greater stress and consequence.

“Recognizing the potential irreversibility of ocean acidification impacts, it has never been more imperative to improve the management of coral reef ecosystems and to be both proactive and adaptive,” Salm said. Responding to this challenge, the Conservancy convened a group of leading climate and marine scientists and coral reef managers from around the globe earlier this month for a workshop in Honolulu to chart a course of action to address ocean acidification.

Salm noted that this landmark “meeting of minds” created a solid foundation for a new era of coral reef conservation, and that action steps proposed by the group, if enacted, will help to save coral reefs from escalating destruction. Two major strategies emerged as the backbone of the Declaration resulting from the workshop:

- Limit fossil fuel emissions - stabilization of atmospheric CO₂ is the most logical step to address ocean acidification impacts; and
- Build the resilience of tropical marine ecosystems and communities to maximize their ability to resist and recover from climate change impacts, including ocean acidification.
- The Honolulu Declaration outlines tangible steps that can be taken to increase Stabilize CO₂ emissions and reduce marine pollution from all sources, land, sea and sky;
- Mandate the inclusion of climate change actions into marine protected area management plans;
- Increase appropriations to improve the science and actions addressing ocean acidification impacts on coral reefs;
- Reduce all stresses on coral reefs as much as possible to enhance their health and resilience;
- Protect reefs that are less vulnerable to the impacts of ocean acidification by creating new marine protected areas and through zoning plans in existing ones;
- Develop, test and implement innovative interventions to reduce damage to weakened reefs and replenish species loss caused by ocean acidification; and
- Develop a collaborative international program on ocean acidification that includes a coordinated network of monitoring stations.



According to coral historian Charlie Veron: "Coral communities that have been completely destroyed, such as this one (right) on the Great Barrier Reef can recover in as little as a decade if environmental conditions are good, if larvae are available, if fish are abundant and there is no further destruction. An acidified environment would slow or prevent such recovery." Photo courtesy of Charlie Veron.

After today’s unveiling in Hawai‘i, the group plans to present the Declaration to the United Nations and other global, regional and national forums to obtain high-level government commitments to address the acidification challenge, and to marine managers and practitioners to begin more effectively managing our oceans for the threat of acidification. The Conservancy will also approach its local and regional partners to find support and seek ways to collaboratively implement policy and management activities recommended by the group.

The signees of the Honolulu Declaration are:

- Ken Anthony, Senior Research Fellow at the Centre for Marine Studies, University of Queensland
- Billy Causey, Southeast Regional Director for the Office of National Marine Sanctuaries of the National Oceanic and Atmospheric Administration (NOAA)
- Richard Feely, Senior Scientist and Supervisory Chemical Oceanographer at the Pacific Marine Environmental Laboratory of NOAA
- John Guinotte, marine Biogeographer at the Marine Conservation Biology Institute
- Gretchen Hoffman, an associate professor of ecological physiology of marine organisms at the University of California, Santa Barbara
- Jennie Hoffman, Senior Climate Adaptation Scientist, EcoAdapt
- Paul Jokiel, Researcher at the University of Hawai‘i, Hawai‘i Institute of Marine Biology
- Joan Kleypas, Scientist, Institute for the Study of Society and Environment at the National Center for Atmospheric Research
- Paul Marshall, Climate Change Program manager of Australia’s Great Barrier Reef.
- Rod Salm, Director of Tropical Marine Conservation for The Nature Conservancy, Asia-Pacific Region (along with Elizabeth McLeod, Climate Adaptation Scientist for The Nature Conservancy, Asia-Pacific Region; Eric Conklin, Marine Science Advisor for the Hawai‘i Marine Program, The Nature Conservancy; and Annick Cros, Program Coordinator for The Nature Conservancy’s Asia-Pacific Region)
- J. Charlie Veron, Chief Scientist of the Australian Institute of Marine Science and the world’s foremost expert on coral reefs