Reefs at Risk Revisited

WORLD RESOURCES INSTITUTE

Project Overview

The World Resources Institute (WRI) is leading a world-class collaboration to conduct a global, map-based analysis of threats to the world's coral reefs called *Reefs at Risk Revisited.* This update of our influential 1998 analysis, *Reefs at Risk – a Map-Based Indicator of Threats to the World's Coral Reefs,* will provide a detailed examination of human pressures on coral reefs, implications for reef condition, and projections of associated socioeconomic impacts in coastal communities.

Using the most recent high-resolution data, the analysis will be implemented at twenty times the level of detail of our 1998 analysis. It will include the same local and regional threats as previous *Reefs at Risk* analyses, but will also include two new and important components: an assessment of threats related to climate change (coral bleaching and ocean acidification), as well as an evaluation of the social and economic implications of reef degradation on the world's coastal populations.

The *Reefs at Risk Revisited* report will be concise and rich with maps and graphics. Many additional products will be available online, including maps, geographic information system (GIS) data sets, and a series of "reef stories" which will provide examples both of threatened reefs and signs of promise—where management interventions or natural conditions have promoted reef health.

Reefs at Risk Revisited will **raise awareness** about the location and severity of threats to coral reefs. It will **guide effective, targeted and informed action** by decision-makers to protect reefs and the broad range of benefits they provide to people. The project will educate policy-makers and the public at large on where to focus energy and resources to address critical threats.

Project Status

We launched the *Reefs at Risk Revisited* project at the International Coral Reef Symposium in Fort Lauderdale, FL in July 2008. Since the launch, we have:

- Developed a broad project partnership (see Page 4);
- Assembled over 50 global data sets in a consistent format within a geographic information system (GIS) for use in the modeling of threats to coral reefs;
- Refined our modeling approaches, finished modeling of local threats, and worked with partners to develop indicators of climate-related stress on coral reefs;
- Initiated an assessment of the vulnerability of reef-dependent communities and nations to the degradation and loss of coral reefs; and
- Developed a communication and influence strategy for the two-year period following report publication and launch.

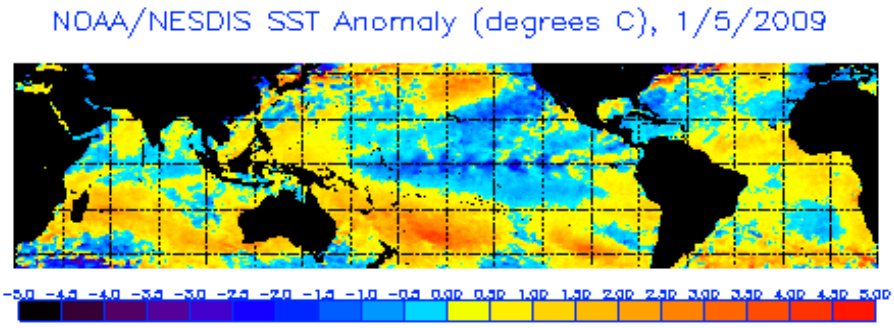
Between now and the summer of 2010, we will finalize the threat modeling and social vulnerability analysis, write the *Reefs at Risk Revisited* report, and develop accompanying products. The launch is planned for September 2010, with communication and influence activities to follow.

Climate-Related Threat Modeling

One of the most important new components of *Reefs at Risk Revisited*, which was not included in any prior *Reefs at Risk* publication, is an analysis of the effects of climate change on reefs. The inclusion of this component demonstrates the significant increase in the availability of scientific data and greater awareness among the community at large over the past 10 years of the threat that greenhouse gas emissions pose to marine ecosystems.

Because this is a new component, the development and implementation of the plan to include climate-related threats has relied heavily on input from partners and experts. The process involved developing a modeling approach, which was circulated widely among experts for review, and working with partners to acquire and refine the data sets outlined in the modeling approach.

The climate-related threats that are being investigated in *Reefs at Risk Revisited* include thermal stress from elevated sea surface temperatures, which can lead to coral bleaching and disease, and ocean acidification, which inhibits coral growth. The climate change analysis will cover past thermal stress on reefs as an indicator of current reef health and predictions of future thermal stress out to 2050. Present and future threat from ocean acidification is captured in models of aragonite saturation (a form of calcium carbonate found in seawater that corals need to build their skeletons) under various levels of atmospheric carbon dioxide.



Above left: Sea surface temperature anomalies mapped by NOAA Coral Reef Watch. Above right: bleached coral.

Social Vulnerability Analysis

WRI is working with the WorldFish Center to conduct a spatial "social vulnerability" analysis of reef degradation. The analysis will assess human dependence upon reefs and the potential of reef-dependent communities to cope with or respond to the impacts of reef loss. This analysis will reveal where the loss or degradation of reefs is likely to have the most severe social and economic consequences for coastal communities (e.g., villages that depend on reefs for food or protection from storm surges). This information is critical to help development agencies target effective initiatives for poverty alleviation and adaptation to climate change.

Communications Strategy

Working with our core partners, we have designed a communication and influence strategy to make sure that *Reefs at Risk Revisited* generates maximum impact. Target audiences include: conservation practitioners; development and lending organizations; national governments; regional organizations; marine protected area and coastal zone managers; the tourism, shipping and cruise sectors; and scientists, students, and the general public.

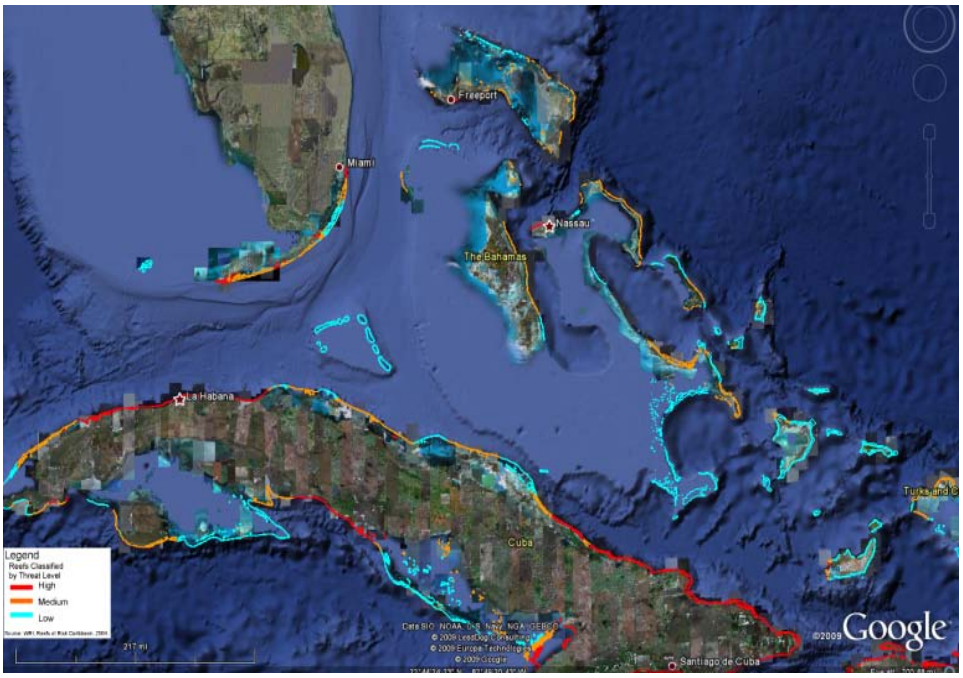
WRI's project partners (see attached list) not only will be key users of the project's results, but also will provide avenues for worldwide dissemination. We will work closely with our partners to reach the general public through partners' media engagement, newsletters, websites and events.

Planned outreach activities will include:

- A global series of launches and webinars beginning in September 2010;
- Stories about *Reefs at Risk Revisited*, its findings, and recommendations in print and online media;
- *Reefs at Risk Revisited* maps and downloadable data on websites; and
- Translations of the key findings into other languages (French, Spanish, Bahasa Indonesian).

Creative Communications

In order to reach the widest audience possible and take advantage of new technologies, we will continue using novel approaches to both collect data and communicate results to our audiences. Interactive maps and free, downloadable data that can be used for a variety of projects continue to make *Reefs at Risk* unique among comparable projects.



This example shows how results from *Reefs at Risk in the Caribbean* (Burke and Maidens, 2004) would look on a Google Earth platform (red: high threat, orange: medium threat, blue: low threat).

We have used **Google Earth** as a means to collect information on destructive fishing from experts around the world. We also plan to use Google Earth as a platform to disseminate *Reefs at Risk Revisited* results. We have prepared a short demonstration video using Google Earth: http://www.youtube.com/watch?v=veYBQAMBZT4.

Policy Influence Strategy

In order to influence national government policy-makers, we will:

- *Identify key coral-rich regions* where the strength of local partners and upcoming windows of opportunity create good opportunities for success. We will then develop region-specific policy briefs and supporting material that summarize the importance of coral reefs to the region's socio-economic well being, the threats reefs face, and policy recommendations – and use materials to engage policy-makers.
- *Engage bilateral and multilateral development institutions* to utilize their leverage with coral-rich, developing countries to encourage practices that lead to coral reef conservation or restoration. Target agencies include USAID, the Swedish International Development Agency (SIDA), the Dutch Ministry of Foreign Affairs, U.K. DFID, and the World Bank. The results of the social vulnerability analysis will be particularly helpful in influencing these agencies.
- *Engage international conventions* to increase national government commitments to taking steps to protect and conserve coral reefs. Target international agreements include the Convention on Biological Diversity and the U.N. Framework Convention on Climate Change (UNFCCC).

Reefs at Risk Revisited Project Partnership

WORLD RESOURCES INSTITUTE	ICRAN International Coral Reef Action Network	UNEP WCMC	The Nature Conservancy SAVING THE LAST GREAT PLACES ON EARTH
WorldFish CENTER	REEF CHECK	WWF	CONSERVATION INTERNATIONAL
NOAA National Oceanic and Atmospheric Administration U.S. Department of Commerce	U.S. Department of the Interior March 3, 1849	Department of State United States of America	GCRMN
ICRI	CRISP Coral Reef Initiatives for the Pacific Initiatives Corail pour le Pacifique	USP Faculty of Science, Technology and Environment	IRD Institut de recherche pour le développement
CORDIO	IUCN	Wildlife Conservation Society	NCEAS
International Society for Reef Studies	OCEANA	AGRRA	