

Responding to Climate Change in the Red Sea

The Red Sea hosts one of the world's richest coral reef systems, an intricate one that exists near the threshold of the physiological temperature limits of corals. Elevated salinity levels and high seasonal temperature fluctuations mean that the Red Sea's reefs have evolved under extreme conditions.

Mass coral bleaching has increased dramatically in its frequency and distribution over the past two decades as a result of climate change and other human impacts; almost every reef system in the world has been affected. Some climate change models have predicted up to 95% of the world's coral reefs may be lost by the end of this century. This threatened global reef system sustains the livelihood of not only the tourism and fishing industries, but all coastal communities that depend on it for sustenance and extreme weather protection.

Coral bleaching occurs when the density of the photosynthetic algae in the coral (called zooxanthellae and endow the host coral with its vivid color) declines leaving the coral's white calcium carbonate exoskeleton visible through the transparent flesh. The decline in zooxanthellae concentrations is caused by stress from any of several factors, including: temperature changes, increased exposure to solar radiation, changes in the chemical or biological composition of the water, sedimentation, or subaerial exposure. The coral may recover in a matter of a few weeks depending on the duration and intensity of the stress factor or die leaving behind the stone-like skeleton.

The International Union for Conservation of Nature (IUCN) and the Hurghada Environmental Protection and Conservation Association (HEPCA) organized two workshops to help address the potential impact of coral bleaching, sponsored by Kuoni's corporate social responsibility (CSR) program. The first scoping workshop focused on the tourism industry of the Egyptian Red Sea coast and was aimed at understanding vulnerabilities of the Tourism sector to climate change impacts and how best to adapt to potential future changes in the coral reef. The second training workshop was focused on Coral Reef Managers and assisting them to responding to climate change impacts on the coral reefs they manage. It was delivered to national park rangers from the Northern Red Sea Islands Protected Area, the Wadi El Gemal Protected Area, and the Elba Protected Area in addition to several members of the tourism and the diving industry.

The workshop was delivered by a team of experts that have conducted pioneering research and management on the impact of climate change on coral reefs and included Dr. Paul Marshall, Director of the Climate Change Program of the Great Barrier Reef Marine Park Authority; Dr. Ameer Abdulla, Senior Specialist and Group Leader with the IUCN's Global Marine Program; and Dr. Tony Roupael, a marine specialist with the IUCN Global Marine Program and who has conducted research along Egypt's Red Sea coast for over 10 years..Dr. Nadine Marshall, a social scientist with the Commonwealth Scientific and Industrial Research Organization, who specializes in enhancing community resilience to environmental and policy change and uncertainty.

The interdisciplinary workshop tackled climate change, a global but often theoretical concept to many people, with an applied and hands-on approach.. The workshop addressed the causes of coral bleaching and the political implications of and social vulnerabilities to climate change impacts and constraints to adaptation. It also provided an overview of management techniques and response plans. The workshop focused on practical measures that can be implemented to

make both the reef and local communities more resilient to climate change. The workshop program included a field trip to assess the resilience of two reefs, an exercise presenting a methodology to train members of the tourism community and park managers to collect valuable data on a large scale, which would improve understanding of the resilience of Egyptian Red Sea reefs and enhance national and regional management strategies.

A valuable outcome of the event was a promising plan for collaboration between park rangers and members of the tourism industry in developing a response plan to mass coral bleaching events. Both parties recognized that synergizing efforts is vital for mitigating and managing the socio-ecological impacts of coral bleaching on both the reef and dependant communities. HEPCA, IUCN, and Kuoni look forward to implementing more activities to enhance reef stewardship with all stakeholders associated with Egyptian Reefs.