The Global Action Plan for Coral Reefs:

Policy Proposals for Legislators

December 6th 2010
UNFCCC COP16

What GLOBE does

- Put legislators with a genuine interest in environmental issues together with experts in environmental science and related fields
- Discussions are informal and free
- Global Forum on Oceans, Coasts, and Islands have been working with GLOBE/ZSL to promote engagement of ocean-concerned parliamentarians
  - Ocean Parliamentarians Roundtable at the 5th Global Oceans Conference, May 2010

Knowledge exchange

- It is critical that legislators understand the science behind the issues to have a full grasp of their significance.
- Legislators learn from the experiences of other legislators as well as the scientists; share best practices.
- Scientists gain insight into how government policy works, especially what barriers there may be to developing solutions to problems
- Scientists also move from the focused perspective to a broader holistic approach to environmental issues at the global scale

Marine ecosystems recovery plan

- Marine fisheries

- Tropical coral reefs

- Coastal shelf marine ecosystems

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Marine ecosystems recovery plan

- Marine fisheries

- **Tropical coral reefs**

- Coastal shelf marine ecosystems

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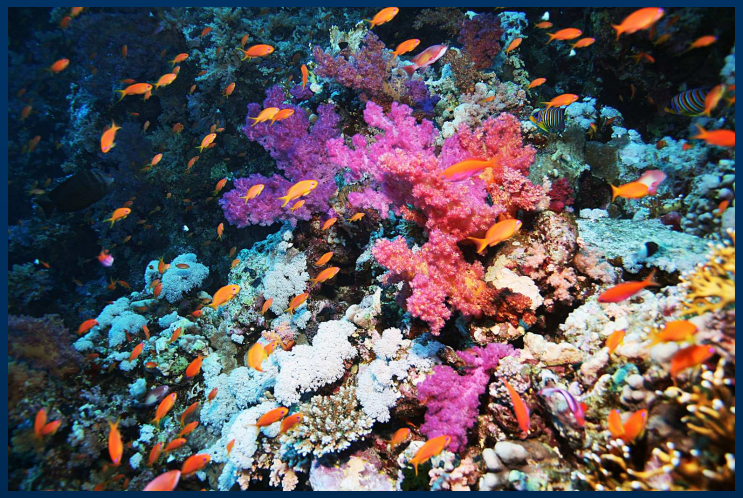
Coral Reefs - The most diverse marine ecosystems on Earth

- Coral reefs - structurally complex and ancient ecosystems.
- Cover 0.2% of the oceans surface but about a third of all marine species (some estimates ~ 9 million spp.)
- Includes quarter of all marine fish species
- 500 million people depend on reefs to some degree
- Economic value: $172-375 billion p.a.



Value of goods and services from reefs

Mean Value US$ Ha / yr

Food	470
Raw materials	400
Ornamental res.	264
Climate regulation	648
Moderation of extreme events	25,200
Waste treatment	42
Biological control	4
Aesthetic information	7,425
Tourism	79,099
Cognitive development	2,154

(TEEB Climate Issues Update, 2009)

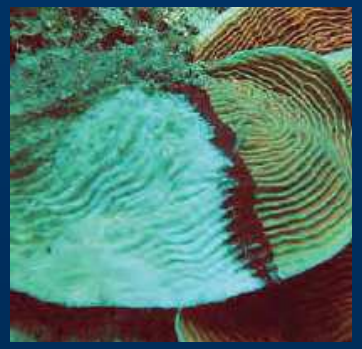
Stresses leading to high vulnerability and low resilience to climate change impacts

- Diseases, plagues and invasive species
- Over fishing & destructive fishing practices
- Sedimentation
- Eutrophication and chemical pollution
- Coastal development
- Poorly managed tourism

= Coral stress

Contributory factors:

- Increasing population, rising poverty
- Poor capacity for management and lack of resources
- Poor political will and governance



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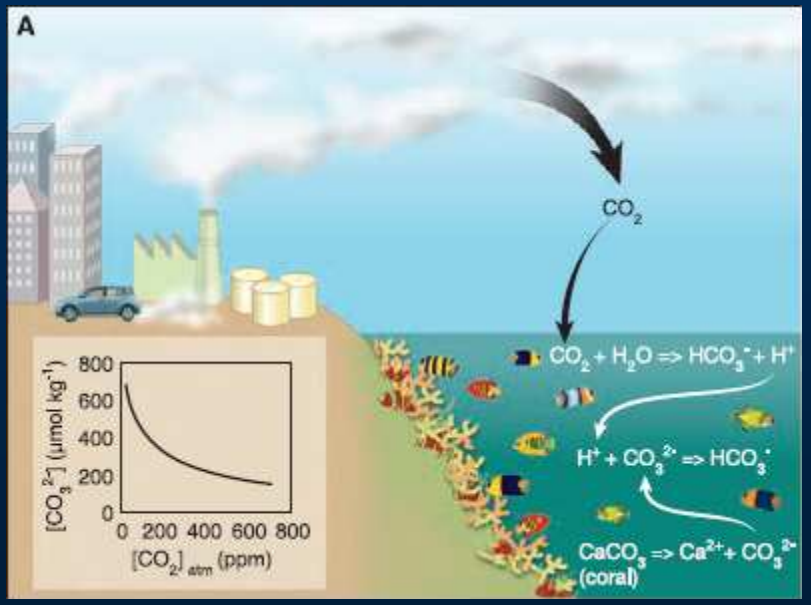
Climate Change Effects on Coral Reefs

CO_2 Emissions = Rising SSTs & lowering of ocean pH



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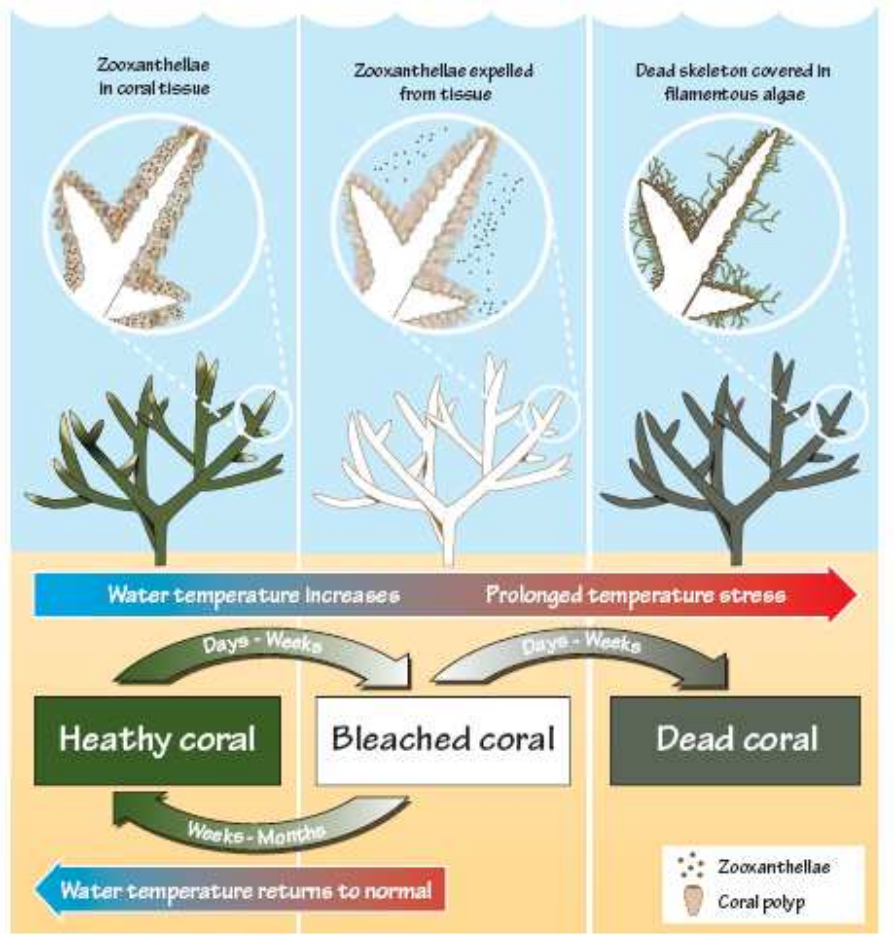
Coral Bleaching

Zooxanthellae (dinoflagellate algae) can provide all the corals energy requirements. These may be expelled when coral is under stress. Localised bleaching was caused by storms, disease, cyanide fishing, herbicides, changes in salinity and temperature……until the late 1970s.



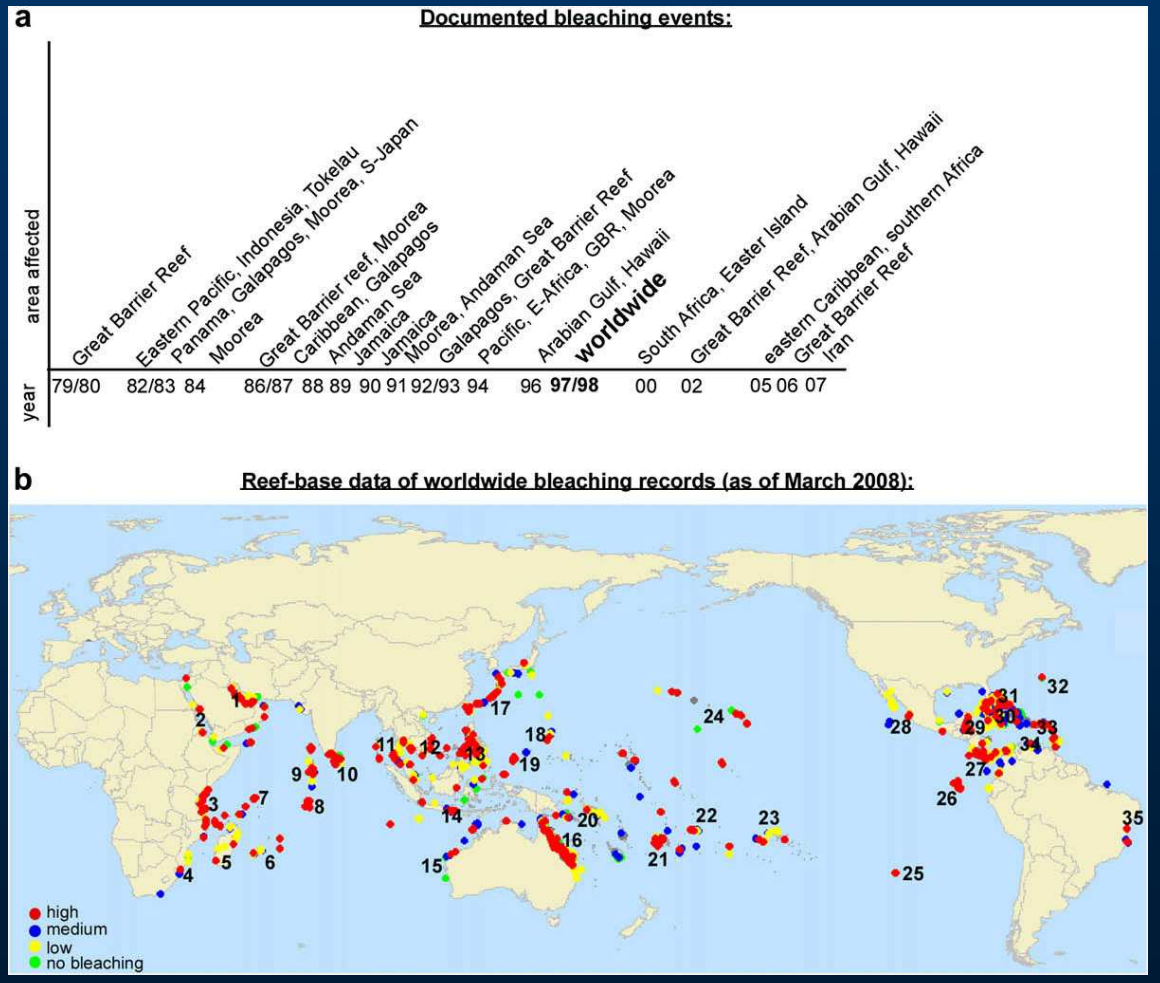
Mass Coral Bleaching Events

- Coral bleaching events 1970s – 2008.

  Baker et al (2008) Estuarine, Coastal and Shelf Science 80: 435-471.

- In 1998 a single mass coral bleaching event associated with severe El Niño killed 16% of the world's coral reefs

- 2010 bleaching worse than 1998 in some areas



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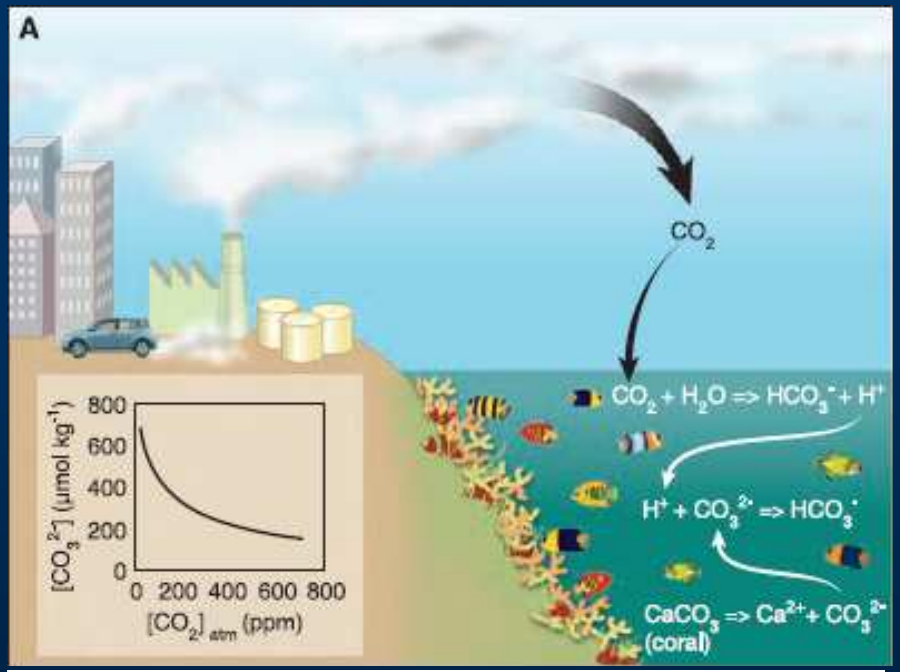
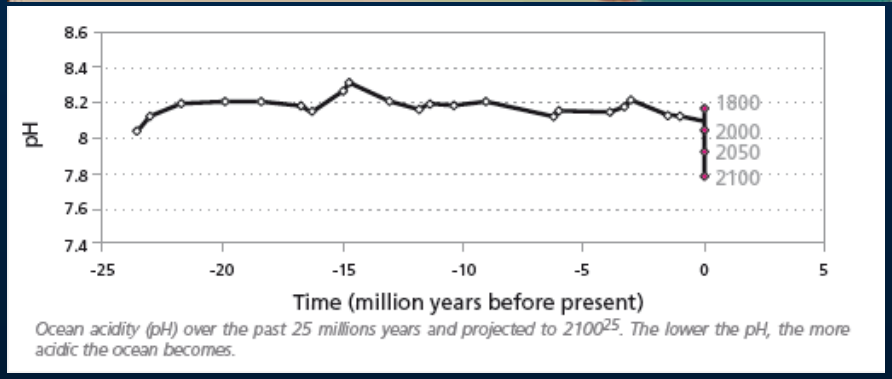
Ocean Acidification

- Result is a reduction in the availability of aragonite, the form of calcium carbonate that corals use to build their skeletons
- Change in pH not experienced for >20 million years
- Beyond 450ppm coral reef ecosystems will collapse





Ocean acidity (pH) over the past 25 millions years and projected to 2100[25]. The lower the pH, the more acidic the ocean becomes.

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The Future of Coral Reefs

Present | 2030-2040 | Beyond 2050

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Consequences of ecosystem collapse

- **Loss of Biodiversity**
- **Loss of fisheries, income and food security**
- **Serious impacts on coral reef nations**

Bleak Future for Coral Reefs

- 19% of coral reefs have been lost globally with a further 35% under immediate threat (excluding climate change effects)

- Climate change impacts will move reefs into a state of collapse globally when CO_2 levels go beyond 450ppm. At a point between 2050 - 2070 the destruction of coral reefs will very likely be irreversible given the current lack of agreement on emissions

Barriers to Effective Management

- Lack of recognition within many levels of government of the social and economic importance of coral reef ecosystems
- Lack of political will
- Major capacity gaps in governance and enforcement
- Establishment of sustainable national level funding is hindered by the need for the introduction of strong legislation

Legislators can play an important role in removing these barriers and making coral reef ecosystem-based management a top political priority

Global Action Plan for Coral Reefs

- ***Objective:*** *To provide international legislators, policymakers and managers with a clear set of recommendations to build resilience in coral reef ecosystems and in the communities/stakeholders that rely on them.*

The Marine Ecosystems Recovery Plan II GLOBE Action Plan for Coral Reefs

- Address direct human pressures
  - Sustainable management of fisheries
  - Management of watersheds and water quality
  - Increase area and effectiveness of Marine Protected Areas

- Increase effective governance, management capacity and awareness
  - Increase levels of effective governance and management
  - Increase environmental education and awareness

- Financing and coordination of the GLOBE Action Plan for Coral Reefs
  - Examine current and future funding mechanisms
  - Coordination of action at national and international levels

Global Action Plan for Coral Reefs

Addressing Direct Human Pressures:

- Sustained coordinated action to significantly reduce all direct human pressures in order to:
  - manage fisheries sustainably;
  - improve the management of watersheds, water quality and reduce pollution;
  - increase marine protected area coverage and effectiveness.
    - **30% MPA coverage of the world's coral reefs by 2020.**

Global Action Plan for Coral Reefs

Increasing Governance, Management Capacity and Awareness:

- Increase levels of effective governance and management

  Effective management strategies for coral reef governance and enforcement are designed and implemented at national and regional levels.

- Increase environmental education and awareness

  Environmental education and awareness programmes are implemented within both national education systems and through outreach programmes for all coral reef nations.

Financing Coral Reef Action

1. Donor-based funding:
   - Climate-change related
     - (UNFCCC Adaptation fund; International Climate Initiative)
   - Watershed management and pollution related
     - (GEF International Waters Programme)
   - Biodiversity-related funding
     - (GEF – management & capacity building)
   - Development-related funding
     - (e.g. World Bank)

2. Market-based funding
   - (Payments for ecosystem services; polluter pays principle, trust funds, environmental bonds, trust funds, private sector partnerships, user fees)

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GLOBE Coral Reef Action Plan

- Action Plan buys time for adaptation of coral reef ecosystems.
- Only agreement to rapidly and dramatically cut emissions will save coral reef ecosystems.

Full action plan at: www.zsl.org/globe

Thanks to all those who helped to develop and refine the Action Plan for Coral Reefs including:

Boston University, Caribsave, ClientEarth, Conservation International, the Convention on Biological Diversity Secretariat, Coral Cay Conservation, Global Coral Reef Monitoring Network, International Coral Reef Initiative, International Coral Reef Action Network, International Union for the Conservation of Nature, James Cooke University, London School of Economics, Marine Conservation Society, SeaWeb, The Nature Conservancy, United Nations Environment Programme, UNEP World Conservation Monitoring Centre, University of Bedfordshire, University of Hong Kong, Global Change Institute - University of Queensland, Warwick University, Wildlife Conservation Society, The World Bank, The WorldFish Center and ZSL / GLOBE colleagues.

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