

U.S. Commission on Ocean Policy
Coral Reef Panel, May 14, 2002
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Importance of Coral Reefs

- produce limestone upon which many tropical islands are built
- ecological services including protection against wave damage and coastal erosion
- provide fisheries resources of subsistence, cultural and economic value
- centers of cultural and recreational activities
- support island economies through tourism: reefs as museums
- sources of natural products of biomedical importance (“drugs from the sea”)
- centers of global biodiversity
- incredible natural beauty

3 Priority Issues

1) *Degraded coastal quality - both water and bottom characteristics*

Specific problems

- a) sedimentation and runoff (land-based development)
- b) pollution (point and non-point source; golf courses to sewer outfalls)
- c) eutrophication



Runoff and Sedimentation



Eutrophication

Results

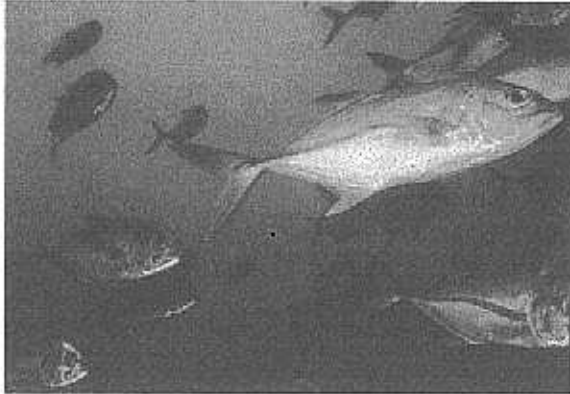
- a) outright mortality: reduced abundance and diversity of ecologically essential species
- b) sublethal stress: reduced levels of successful reproduction and recruitment
- c) shifts occur in community composition from corals to fleshy algae

Synergisms

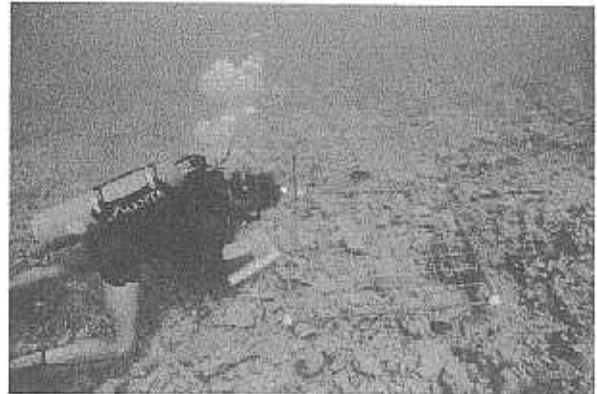
- a) stress reduces growth, survival and reproductive output in many organism
- b) overfishing leads to reduced herbivory, resulting in domination by fleshy algae
- c) increased fleshy algal cover means reduced space for coral recruits
- d) reduced abundance leads to reduced reproductive output, genetic diversity, resilience

2) *Exploitation of resources*

- a) overfishing (local, commercial and foreign fishing boats)
- b) destructive fishing practices, live fish trade, targeting spawning aggregations
- c) harvest for aquarium and curios trade (special concerns for rare and prized species)
- d) quarrying, dredging, filling
- e) tourism impacts
- f) ineffective and inappropriate legislation and management initiatives



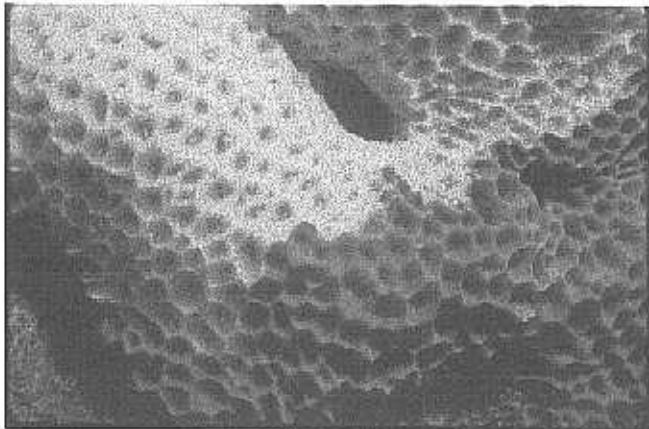
Depletion of Fisheries



Ship Groundings

3) *Global Climate Change* (including El Niño and La Niña events)

- a) Massive bleaching events
 - a) regional magnitude of effect
 - b) often leads to alternate stable state
- b) Sea level changes, coastal erosion, changes in weather patterns



Coral Bleaching

Dead Reef



Present Activities and Solutions

1) Partnerships

- a) among managers, researchers (natural and social scientists, economists), policy makers, stakeholders and educators; MAREPAC model
- b) between local and federal regulatory agencies with respect and support for local initiatives and expertise

2) Integration of traditional knowledge in development of activities and initiatives

3) Stakeholder involvement in planning, data gathering and implementation

4) Integrated watershed management practices

5) Establishment and enforcement of marine protected areas

6) Targeted education and capacity-building with appropriate materials

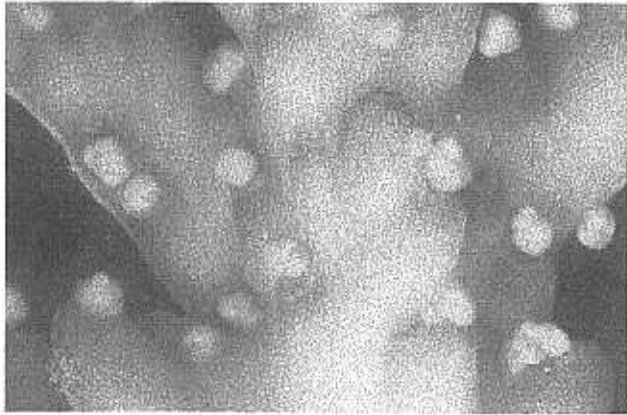
7) Regional approaches and cooperation: recognize biological as well as political boundaries

8) Cultivation of aquarium species versus exploitation of wild stock

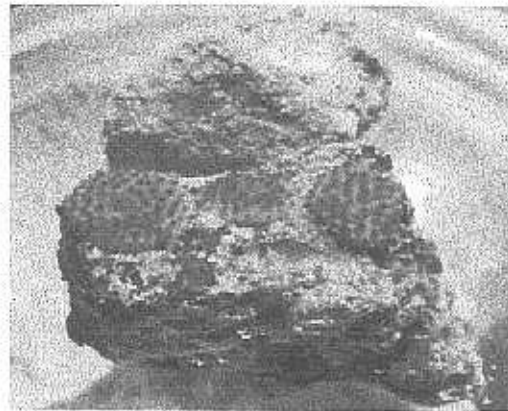
9) Recognition that reefs are affected by consumptive activities centered elsewhere

10) Development and application of appropriate technologies for hypothesis-based assessment and monitoring programs

11) Development of a coherent federal policy and associated legislation for the proper management of human activities affecting coral reef ecosystems



Coral Spawning



Cultivated Corals

Prepared under the auspices of the All Islands Group of the U.S. Coral Reef Task Force.

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