

Conservation of Coral Reefs in a Changing World: A multiple NGO perspective





Major Themes of NGO Efforts

Outreach and Communications

Stakeholder Involvement

Biodiversity Conservation

Building Partnerships (Academia,
Governments and Communities)

Global Action

Integrating Science and Management



Climate Change & Wildlife Program

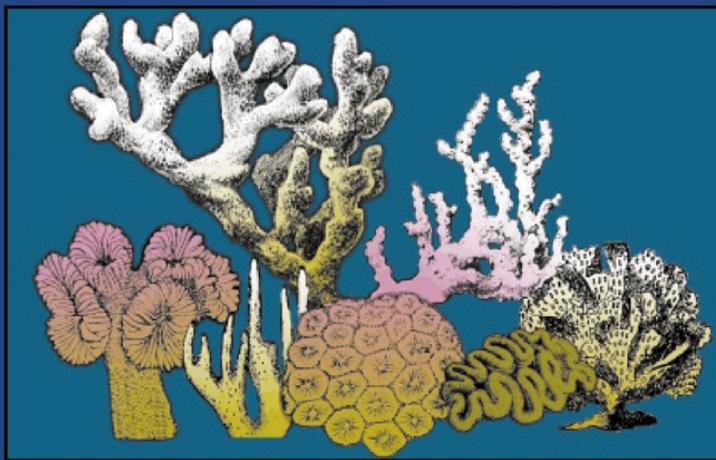
Working to "Create an Informed Public"



Photo: NOAA

- Reports and brochures
- Workshops
- "Coral Reef Adventure" IMAX
- DVD project
- Collaboration with other NGOs (ReefCheck)

CORAL BLEACHING AND MARINE PROTECTED AREAS



Proceedings of the Workshop on
Mitigating Coral Bleaching Impact Through MPA Design
Bishop Museum, Honolulu, HI May 29-31 2001

SEPTEMBER 2001

Identified potential environmental factors for resistance & resilience

- Reduce thermal stress
- Enhance water movement
- Decrease light stress

Monitoring criteria

- Initial Assessment
- Monitoring Phase
 - Biological
 - Physical

Global Action Program

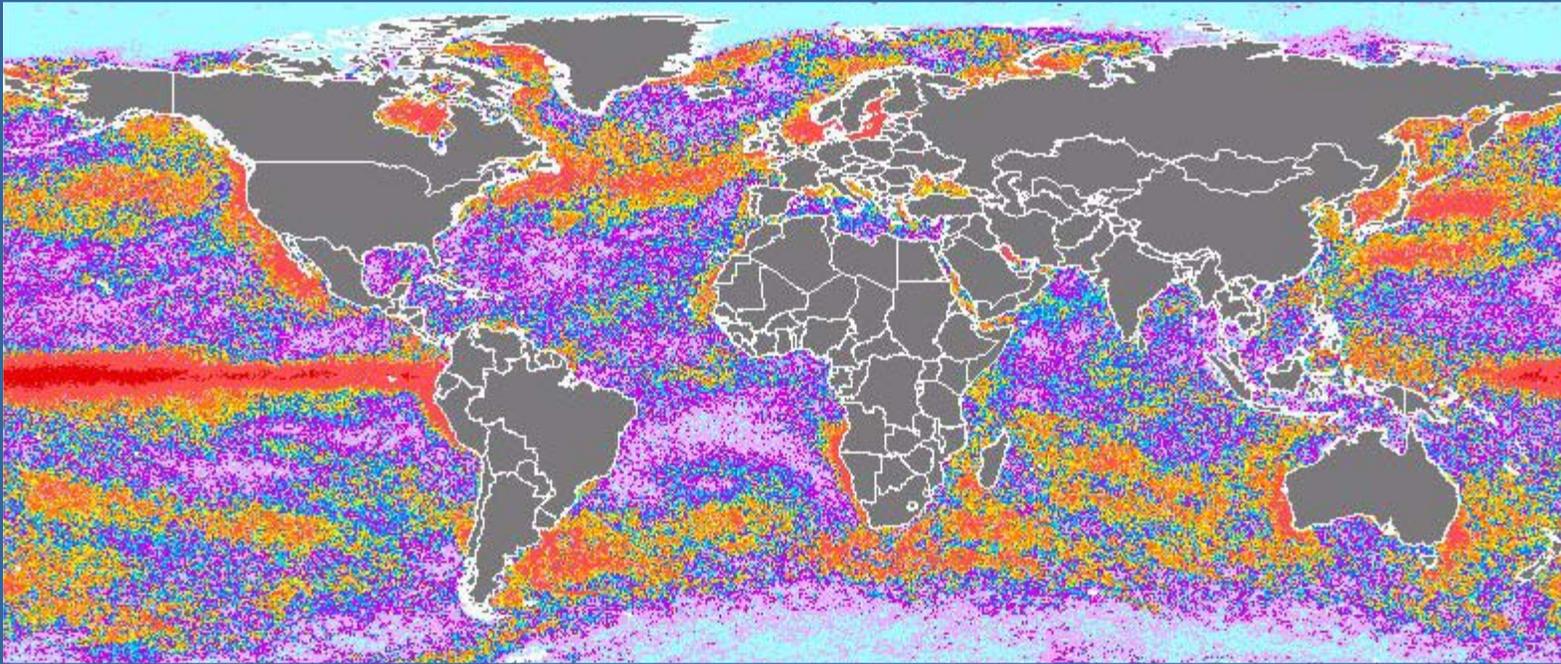
- Vulnerability Assessment
- Research & Monitoring Program



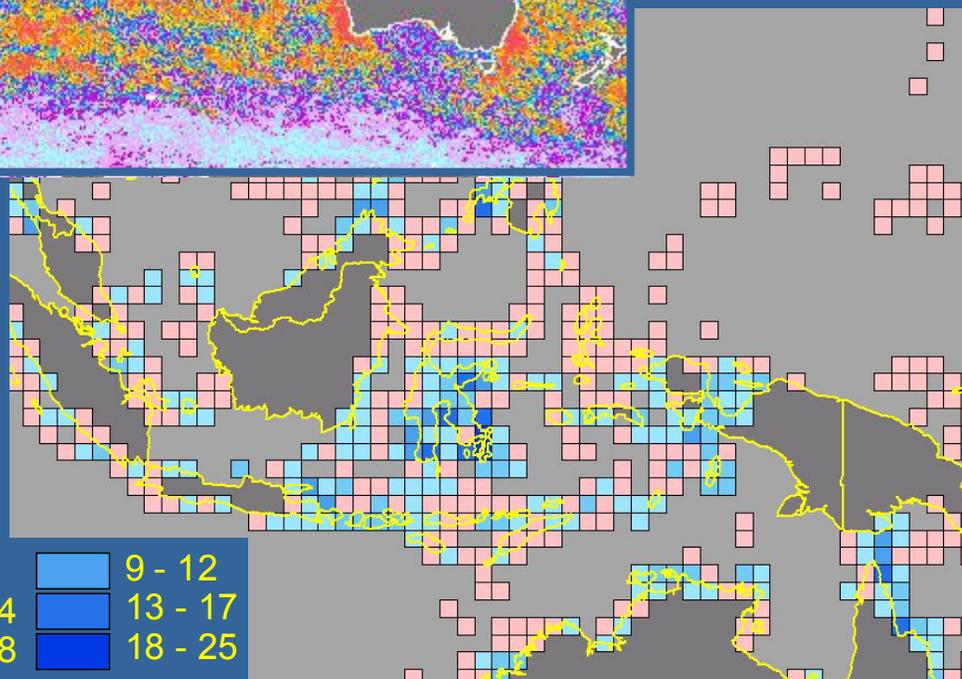
“The combined efforts of multiple organizations have great potential to expand conservation results and leverage on the ground.” -Lynne Hale

- *Marine Park Manager's Toolkit on coral bleaching and spawning aggregations*
- Partnerships with other NGOs and ICRAN members
For example, TNC and WWF are involved in projects together in various marine ecoregions, including:
 - Meso-American Reef
 - Flores and Banda Seas in Indonesia
 - Solomon/Bismarck Seas (CI as well)

Searching for areas resistant to bleaching



Frequency of warm-season thermal anomalies from MPMC (1985-2000)



Number of reef cells with zero warm season thermal anomalies

0	9 - 12
1 - 4	13 - 17
5 - 8	18 - 25



Searching for areas resistant to bleaching



Management implications

- Some areas are less prone to thermal anomalies
- The Coral Triangle region has the most areas free from past extreme thermal anomalies
- Resistant areas may be one facet of an MPA network strategy for spreading the risk of bleaching



WWF/WorldFish/GBRMPA Monitoring Protocol for Coral Bleaching



Objectives

- **provide guidance and supporting material** for agencies wishing to document coral bleaching, monitor its progress and test management related hypotheses
- Promote the collection of **standardised data** of known (and improved) quality for storage in local databases and uploading to ReefBase

Approach

- Provide a **toolkit of methods and designs** which can be used under various circumstances
- Highlight the **importance of identifying the question first**, then the monitoring protocol
- Provide worked out **scenarios for different questions**, and logistical constraints (funding, skill levels, timing etc.)

Timing:

- draft protocol for Bali Barat completed
- draft **Global Protocol to be finished by end of July**



Typical Questions/Objectives

- What is the extent and severity of the bleaching event?
- What is the relationship to GCC?
- What are the impacts on the ecology and biodiversity of the area?
- What are the management implications? (Can we identify resistant or resilient sites? Should management change during a bleaching event?)

Variables vs Objectives

X= essential; o = desirable	Questions						
Variables/observations	Global Extent and Severity	Relationship to GCC	Biodiversity Impacts	management implications			
Site Location (name, lat, long)	X	X	X	X			
Date(s)	X	X	X	X			
Estimated Bleaching Severity (overall)	X	X	X	X			
History of Bleaching at the site	o	X	o	X			
Subsequent Mortality	X		X	X			
Area affected	X	o	X	X			
% HCC Bleached			X	X			
Reef Community Composition			X	o			
History of Bleaching for individual colonies			X	X			
Seawater Temperatures at site		X		o			
Regional Temperature anomalies		X		o			
Protection Status				X			



Field Tests for Resilience

- Test strategies to increase coral reef resilience to bleaching events
 - MPAs, watershed condition & local population variability
- Implement monitoring strategy for coral bleaching & water quality
- Respond to stakeholder needs & build local capacity for future work



Key Question:

Climate Change \Rightarrow Bleaching

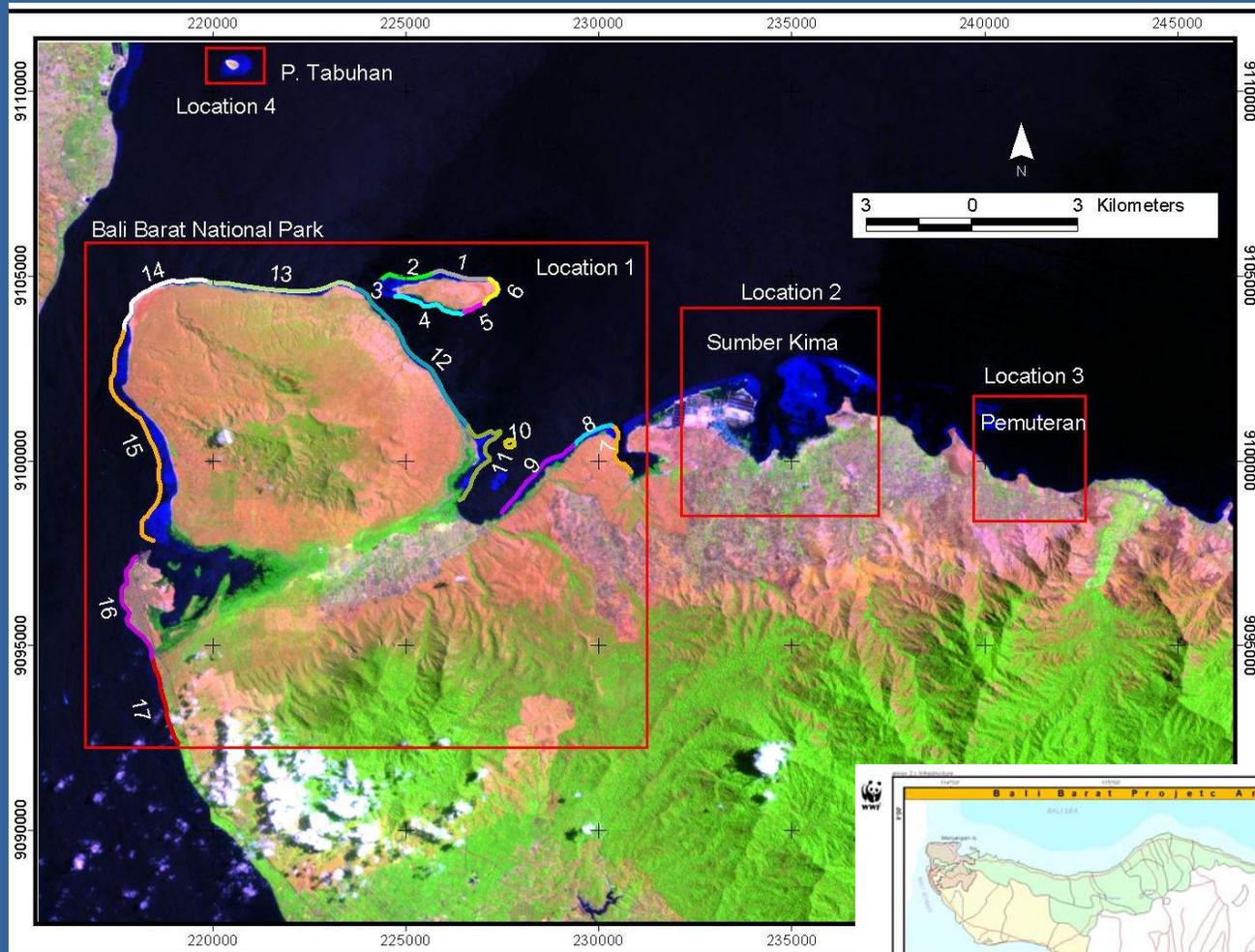
Climate Change + Water
Quality + MPA + Local Popⁿ
Variability \Rightarrow Less Bleaching?



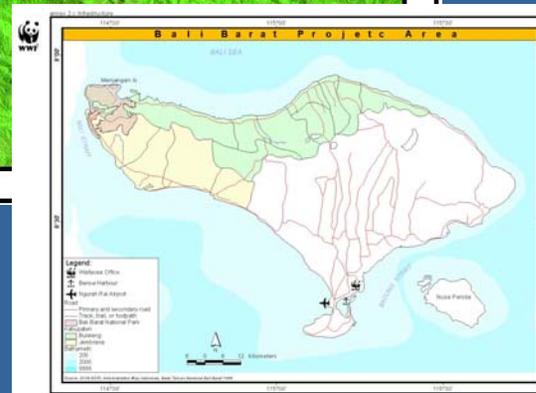
FRIENDS OF THE REEF ASIA PACIFIC

- Communications & Local Outreach
- Monitoring
- Resilience-building Research & Co-management Implementation

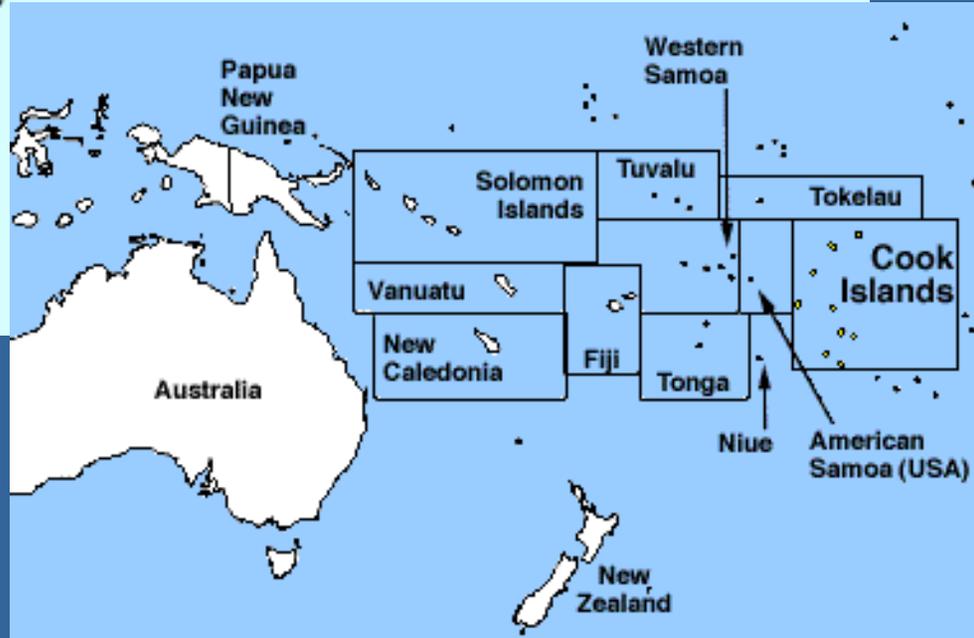
Bali Barat National Park



Factors:
MPAs
Destructive fishing
Development
Tourism



TUTUILA



*Reef
and
Watershed*

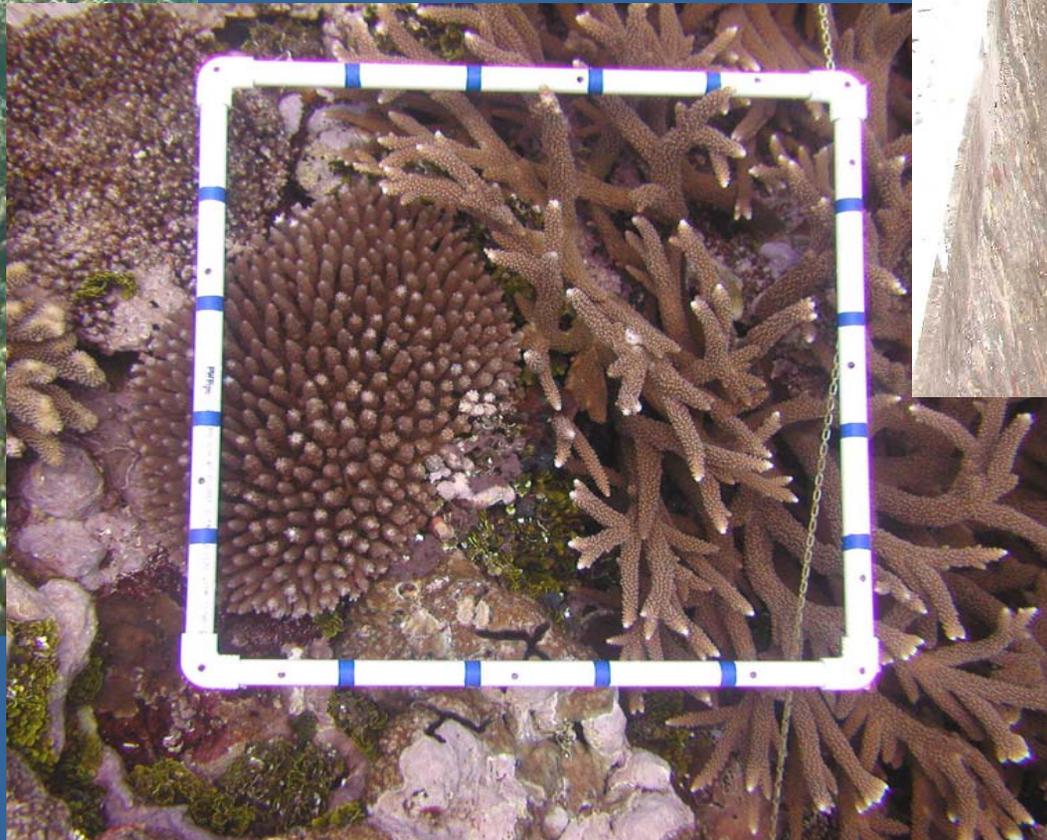
Factors

MPAs

Terrestrial Run-off
Endogenous Protection



Reef
Surveys



Stream
Surveys

March 2004: 5-30% bleaching at our 7 field sites
(project aims to identify the cause of the variability)



June 2004: Of the two sites surveyed to date, some coral still appear bleached, while others are covered by algae

American Samoa Partnerships

Funding

USEPA, NOAA, CRAG

Local Support

National Park of American Samoa

Fagatele Bay National Marine Sanctuary

Department of Marine and Wildlife Resources

Department of Commerce and ASEPA

Six villages associated with our study sites

Research Collaborators

USEPA (Zepp, Smith, Craven), Nikki Adams (MAAs),
University of Washington (trace nutrients lab)

Action to limit "global stressors"

- NGOs engage in field projects globally & policy debate issues
- Scientists and Managers can provide examples of effects seen in their ecosystems to inform the policy debate
- Successful long-term conservation will require action at the global level as well as the local level

