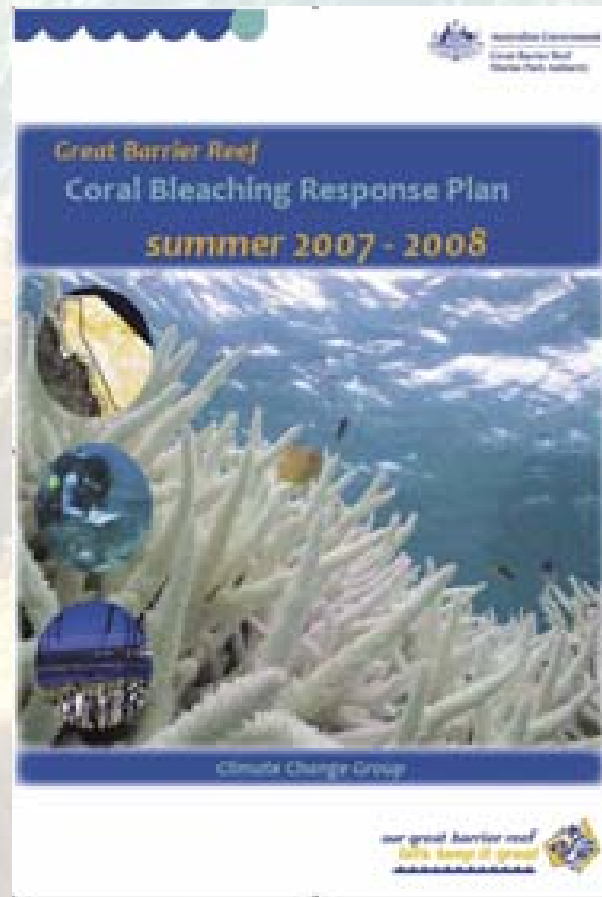


Developing a Bleaching or other Crisis Response Plan



The Nature Conservancy
Protecting nature. Preserving life.™



Developing a bleaching/crisis response plan: Elements

- Predicting - be prepared
- Setting thresholds - when to act
- Assess ecological impacts - how/who
- Assess socio-economic impacts - how/who
- Communicate - why/who
- Management interventions - options
- Funding - uh huh
- Capacity - resources
- Support - decision-makers/stakeholders



Developing a bleaching/crisis response plan: Why?

1. Advance planning that will allow for rapid response
2. Preparation at the start of the bleaching season
3. Routine tasks throughout the warm season
4. Responsive tasks if a bleaching event develops
5. Communication tasks at each of these stages

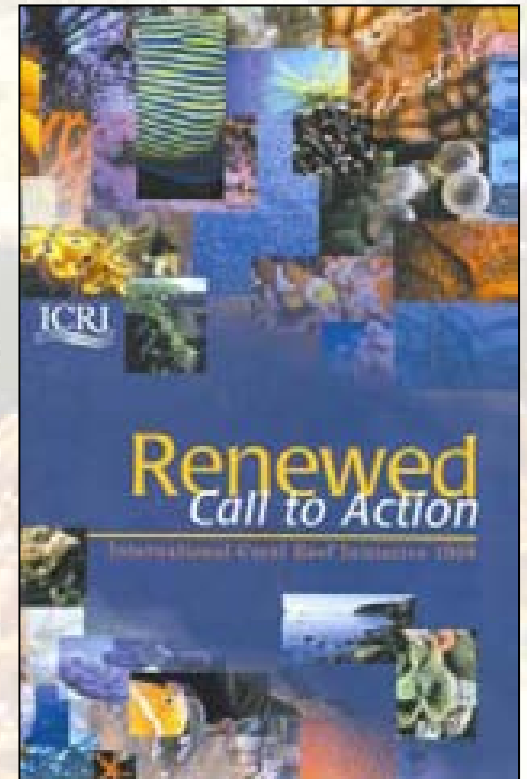


Advance planning: Time to Gain Support

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Policy



Capacity

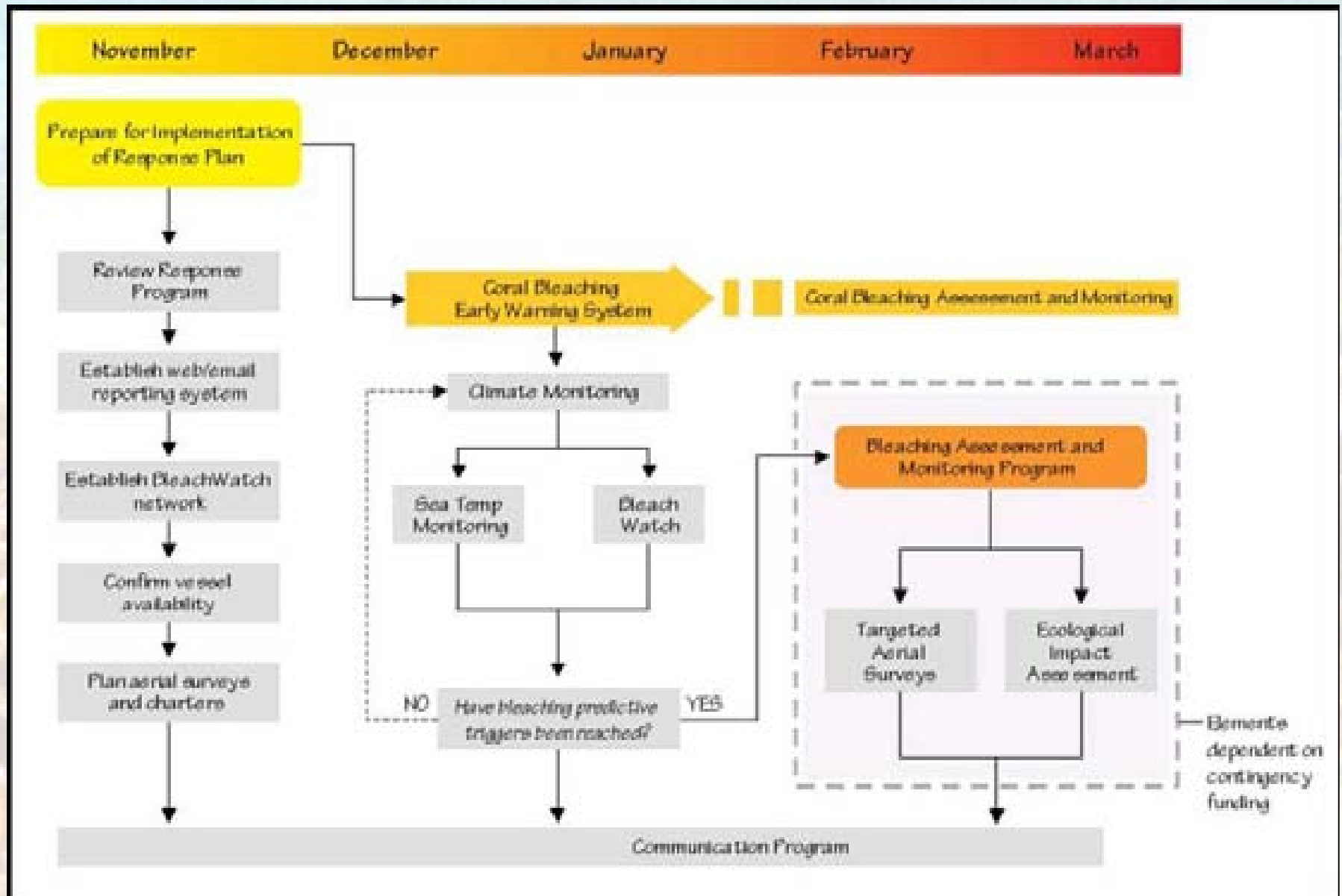


Advance planning: Time to set objectives

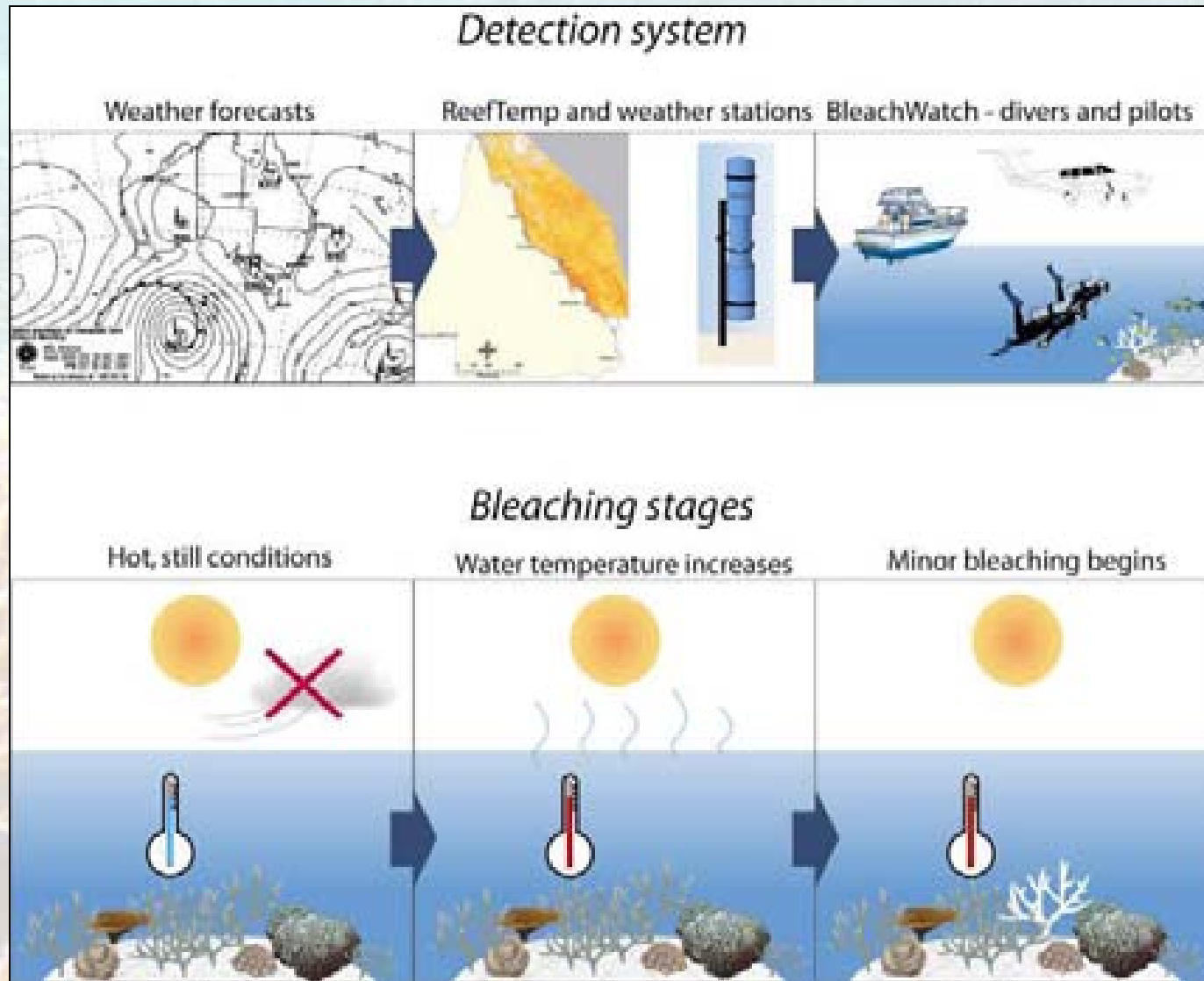
Objectives might include documenting:

1. The extent and severity of coral bleaching (if an event occurs)
2. The duration of a coral bleaching event
3. The ecological impacts of a coral bleaching event
 - a. changes to species diversity and/or coral cover?
 - b. changes to relative abundance of different species?
 - c. changes to reef structure and habitat complexity?
 - d. changes to the ability of reefs to recover from other impacts?
4. Whether other anthropogenic stresses affect the severity of coral bleaching, and the ability of a reef to recover

Advance planning: Writing your Response Plan



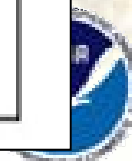
Routine tasks: check early warning system



**Identify
resistant and
resilient reefs**

Routine tasks: set response triggers

Trigger	Definition
High bleaching risk	<ul style="list-style-type: none">• Persistence of strong hotspots (anomaly $> 1.5^{\circ}\text{C}$) for 2 weeks or very strong hotspots (anomaly $> 2^{\circ}\text{C}$) for 1 week over majority of GBR region;• degree heating days index is greater than 21 at multiple sites;• bleaching thresholds exceeded at inshore and offshore sites; or• there are anecdotal reports of bleaching from multiple sites.
Low bleaching level	<ul style="list-style-type: none">• Reliable reports of low coral bleaching (1–10 % of colonies completely white) from multiple sites from multiple locations spanning at least two GBRMP sectors; or• reliable reports of mild bleaching (10–50%) from a few sites only, scattered throughout the GBRMP or concentrated in only one sector.
Moderate bleaching level	<ul style="list-style-type: none">• Reliable reports of moderate coral bleaching (10–50% of colonies completely white) from multiple sites from multiple locations spanning at least two GBRMP sectors; or• reliable reports of severe bleaching ($>50\%$) from a few sites only, scattered throughout the GBRMP or concentrated in only one sector.
Severe bleaching level	<ul style="list-style-type: none">• Reliable reports of severe to extreme coral bleaching ($>50\%$ of colonies completely white) from multiple sites spanning multiple GBR sectors.



Responsive tasks: assess impacts



Ecological

- Scale
- Methods
- Response teams

Socioeconomic



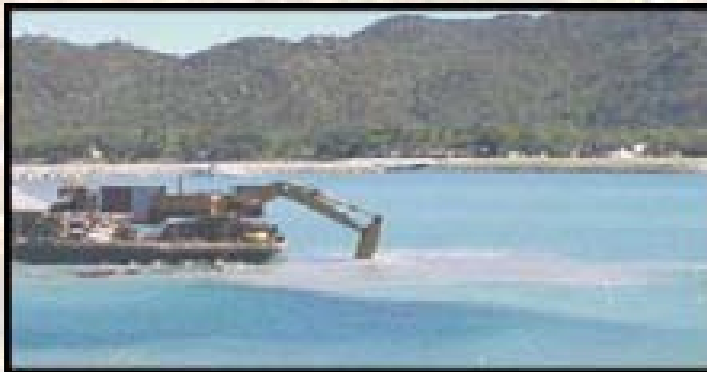
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Responsive tasks: communicate

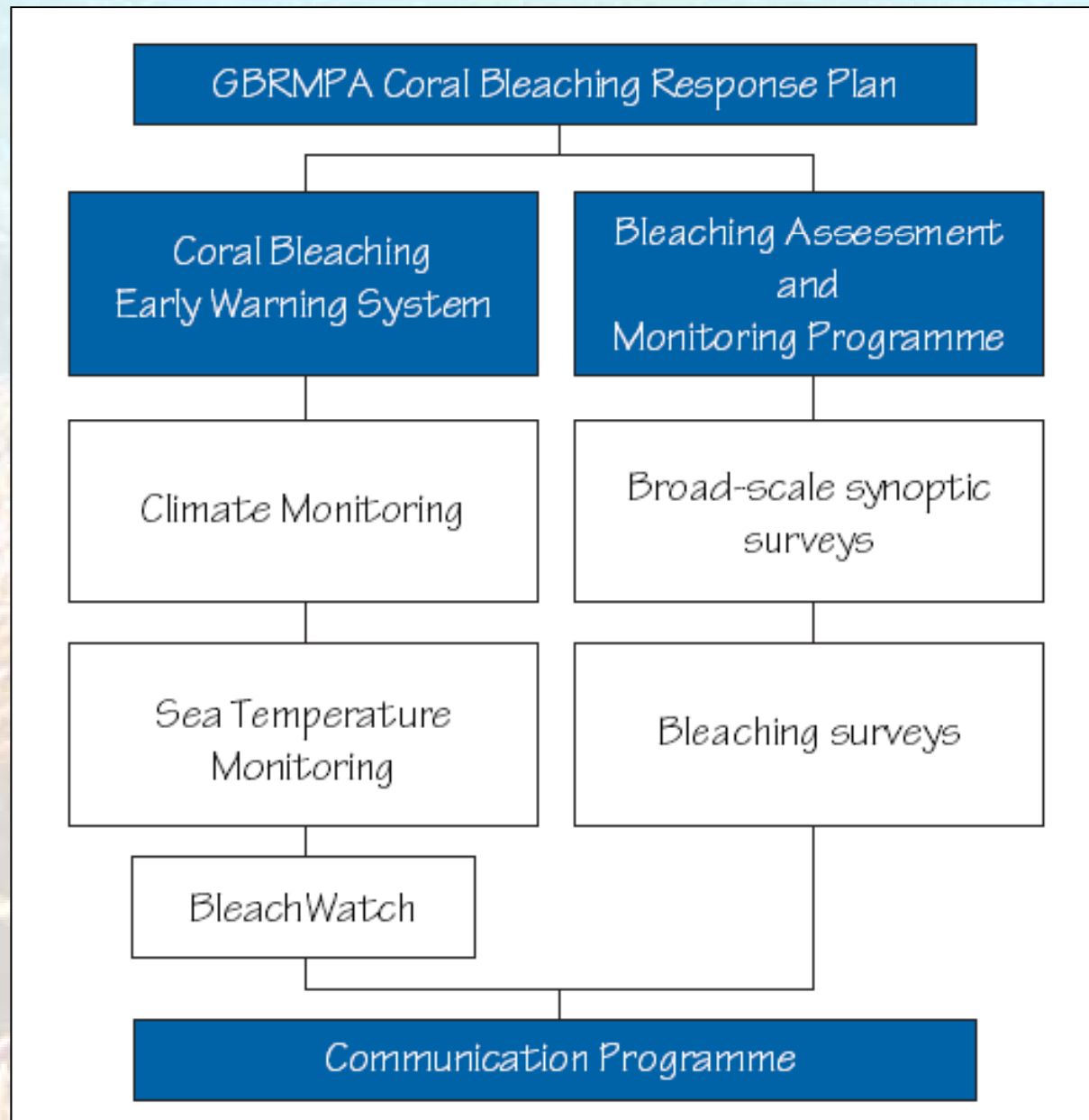


Responsive: management actions

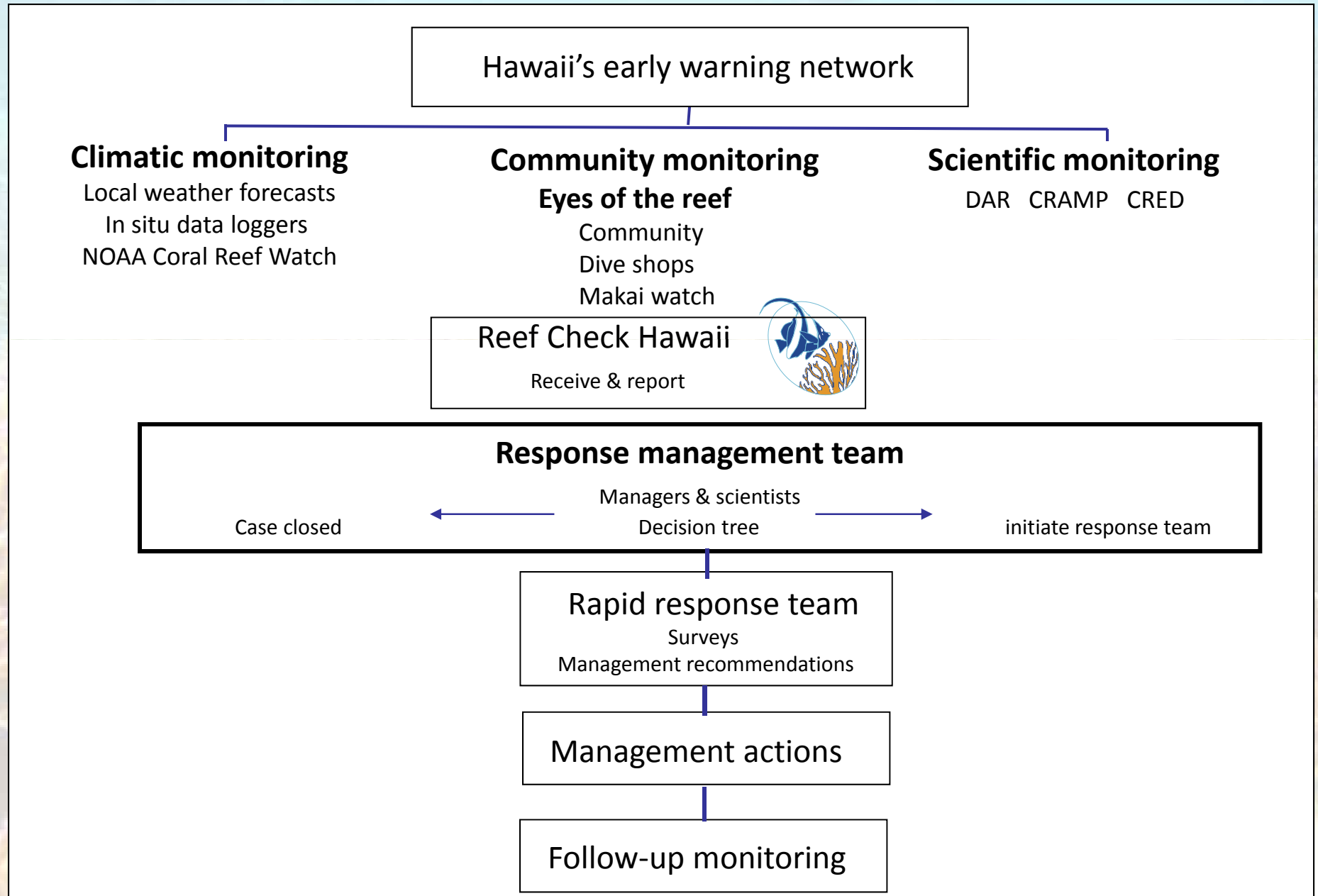


Minimize damage
Maximize recovery

Example flowchart for a Bleaching Response Plan



Hawaii's rapid response contingency plan



Other Models of Response

Coral Disease and Health Consortium

- Disaster Response Model
- Establishes Outbreak Investigation Response Teams
- Operational guide to coordinate effective, informative responses

Let the Planning Begin!

