

How to Prepare an MPA for Coral Bleaching

A Checklist for MPA Managers

1 Set Up Your Early Warning System

- Track for thermal stress before it arrives, using early-warning platforms like [NOAA Coral Reef Watch](#) (5-km bleaching alerts, Degree Heating Weeks, and outlook products). Use the [Allen Coral Atlas](#) to support reef mapping and bleaching detection.
- [Subscribe to NOAA's Satellite Bleaching Alerts](#) for your Regional Virtual Station(s) to receive an automatic email when the bleaching heat-stress status changes.
- Deploy or check local temperature loggers (e.g., HOBO loggers) at monitoring sites. Satellite sea-surface temperature can miss fine-scale reef or lagoon variability that matters for decisions.
- Set alert-level thresholds in advance that trigger each stage of your response. For example, at NOAA Coral Reef Watch's "Bleaching Watch" alert level, managers pick the [virtual station](#) most relevant to them and look at the 'Alert and Gauges Outlook' 12-week outlook:
 - If forecasts indicate increasing bleaching alert levels, initiate response actions (e.g., enforce closure, move colonies to a cooler location).
 - If forecasts indicate decreasing bleaching alert levels, continue monitoring conditions week by week.

2 Communicate Early and Often

- Share clear, early information with communities, tourism operators, and fishers about the likely scale and impact of the heatwave.
- Build shared ownership of the response. For example, involve communities in the decision to close a site rather than imposing it unilaterally.
- Provide regular updates as conditions change so stakeholders can adjust in real time.

3 Activate Your Bleaching Response Plan

Develop or refresh a [marine bleaching response plan](#) that clearly defines:

- Roles and responsibilities across agencies, NGOs, and community partners.
- Communication protocols – who alerts whom through which channel at each alert level.
- Monitoring priorities – which sites, species, and metrics get tracked first.
- Decision authority – who can trigger emergency management actions.

4 Establish a Pre-Bleaching Baseline

- Confirm baseline percent coral cover and community composition at key sites before thermal stress arrives.
- Identify sites likely to bleach heavily (shallow, high-light, historically susceptible) and potential refugia (deeper, shaded, higher-flow).
- Use this map to focus on protection efforts now and recovery monitoring later.

5 Reduce Other Stressors

Corals under thermal stress have less capacity to tolerate additional pressure.

Improve their survival odds by reducing local stressors. For example:

- Consider temporary closures of high-risk sites to limit tourism, fishing, anchoring, or diver access during peak thermal stress.
- Tighten enforcement of existing rules on runoff, sedimentation, anchoring, and overfishing heading into heatwave season.

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Consider Experimental Cooling Approaches

- If feasible, consider emerging interventions to create localized cooling or shading during peak heat. For example:
 - [Marine fogging systems](#) that spray fine seawater droplets over reef areas (up to tens of km²).
 - [Shading of high-priority corals](#) (up to tens of meters).
- Treat these interventions as pilot efforts on small, high-value areas. Evidence on the effectiveness, feasibility, and potential risks of these interventions is still developing. Some interventions raise governance questions. Document and share outcomes.

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Take Action After Bleaching

- Share your experience with other MPA managers. What worked, and what didn't? Learn and adjust.
- Communicate outcomes and next steps with local communities. Acknowledge and thank them for their support and contributions, and provide opportunities for continued involvement.
- Before returning to normal operations, take time to adjust to allow for areas to recover.
- Reverse temporary interventions such as shade structures.
- Conduct post-bleaching monitoring to assess survival and identify reef refugia and heat-resistant colonies.
- Revise your emergency response plan based on lessons learned, in preparation for the next event.

Bottom Line:

No single action guarantees reef survival through a severe heatwave. Early warning, a clear response plan, a pre-bleaching baseline, and reduced local stressors can help managers prepare and respond effectively. When combined with early, honest communication, we give reefs and communities the best chance to respond and recover.