Saving Super Reefs

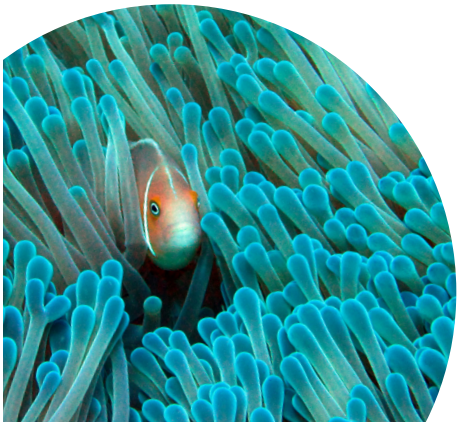
An alliance to help ensure the future of coral reefs in a warming ocean

superreefs.whoi.edu

Woods Hole Oceanographic Institution

The Nature Conservancy

Stanford University



THE CHALLENGE

Coral reefs occupy barely 1 percent of Earth's surface, yet they host more than one quarter of marine life, protect communities and coastlines from waves and storms, and support almost 1 billion people. They are the tropical ocean's most valuable ecosystem, yet their future is highly uncertain. Climate change, particularly ocean warming, has already killed thousands of square kilometers of reef and extinction looms as ocean temperatures rise.

THE HOPE

Newly discovered "Super Reefs" have the ability to survive in a warming ocean. With state-of-the-art tools and technologies that include autonomous underwater vehicles, hydrodynamic modeling, and genomic analysis, our team is locating these extraordinary places and uncovering their secrets. Some are genetically adapted to resist extreme heat; others are cooled by natural oceanographic processes. Super Reefs that survive have the capacity to restock neighboring regions.

THE FUTURE

Ensuring the future of coral reefs starts with the protection of Super Reefs from overfishing, pollution, dynamiting, and development. Governments of coral reef nations, conservation groups, and resource managers around the world know that climate resilience is key to effective MPA design and long-term restoration efforts, but the tools to identify resilient corals and resilient reefs have been lacking. Until now. For the first time, global experts in coral reef research, conservation, and restoration are uniting to identify and protect resilient reefs and are bringing these tools and methods to communities and governments of coral reef nations around the world.

THE TEAM

Experts in ocean science, conservation, and management have teamed up to support governments and communities at a critical time in the history of coral reefs. Our goal is to protect a global network of Super Reefs that is vital to the future of corals and the lives they support.

Our process

leverages the unique strengths of each partner to locate corals and reefs that will survive climate change, protect them within MPAs, and propagate them as part of community-based restoration efforts.

1. IDENTIFY

governments in the Pacific, Atlantic, and Indian Oceans interested in establishing or expanding existing MPAs

2. DEVELOP

3D hydrodynamic models to identify potential Super Reef locations

3. DEPLOY

divers and autonomous vehicles to collect initial data

4. CONDUCT

heat-stress and genomics testing with local scientists and partners to confirm heat tolerance

5. ESTABLISH

larval connectivity between Super Reefs and neighboring location to promote reef recovery following disturbances

6. SYNTHESIZE

data into maps of manageable, climate-resilient reef locations and tailor MPA designs to current and projected local conditions

7. ENGAGE

governments and communities to support integration of Super Reefs into existing and planned MPAs

8. SUPPLY

community-run nurseries with Super Reef corals to restore degraded reef habitats