



Project Title: Coral Reef Resilience

Headline Title (2-5 words):

Brief Summary (Abstract):

Project Location: National - International

Partners: NOAA, EPA, the 14 federal agency members of the USCRTF, the Nature Conservancy, the Australia Great Barrier Reef Marine Park Authority, academic partners and local natural resource agencies in the US States, Territories and Jurisdictions with coral reef resources, and the Stockholm Resilience Center and the Oceans Tipping Point Project.

Background: NOAA and partners are working to provide coral reef managers with frameworks and tools to incorporate climate change into decision making through two projects. The NOAA Coral Reef Conservation Program is funding and leveraging activities to advance field and desktop methodologies for assessing resilience and develop the analytical and legal frameworks that can ensure resilience to climate change is increasingly included in coral reef management and conservation decisions. The work focuses on informing resilience assessments with data and products, refining frameworks for assessing resilience, employing these methods in different geographies and at different scales. The goal is to provide information to management partners on how to quantify the relative resilience of their coral reefs, understand what non-climate stressors are increasing reef vulnerability and then use that information to identify and prioritize management actions that can increase or maintain resilience. The portfolio of work involves NOAA, The Nature Conservancy, USGS, state and territorial governments and agencies, the Australia Great Barrier Reef Marine Park Authority, academic institutions, the Stockholm Resilience Center and the Oceans Tipping Point Project. The outcomes and lessons learned from this work will be communicated to not only our management partners but to the larger global community working on these questions. In addition, an exploration of frameworks and methodologies for climate change adaptation planning for coral reef management has begun as a collaborative project through the Climate Change Working Group of the US Coral Reef Task Force. The project will: review recent advances in assessment and planning for climate change by coral reef practitioners, and use this information to tailor recent theoretical adaptation methods into a form that is more useful for coral reef management. This effort is co-led by NOAA and EPA and taps into the expertise of the 14 federal agency members of the USCRTF, the Nature Conservancy, the Australia Great Barrier Reef Marine Park Authority, academic partners and local natural resource agencies in the US States, Territories and Jurisdictions with coral reef resources.

Project Goals: 1) To quantify the relative resilience of their coral reefs, understand what non-climate stressors are increasing reef vulnerability and then use that information to identify and prioritize management actions that can increase or maintain resilience. 2) To develop frameworks and tools to



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help local coral reef managers incorporate climate change information into effective decision making that minimizes their risks to climate change.

Strategy Goals Implemented: 2, 3, 7

Climate Impacts Addressed:

Status of Project Implementation (Timeline, Milestones, Next Steps):

- Resilience assessments have already been completed around Saipan, and will be completed for Rota and Tinian.
- Develop component of the new Climate Smart Conservation framework tailored to coral reef adaptation planning in the Pacific.
- Test methodology at a stakeholder workshop in the Pacific and apply lessons learned to transfer the framework to other regions.
- Support partnerships and grants to complete assessments in the US Virgin Islands and potentially in West Maui.
- Develop data and information products to inform assessments.

Project Outcomes: Coral reef managers will have the frameworks and tools needed to incorporate climate change into coral reef management. The management implications of this body of work have great potential – the ability to quickly prioritize areas of reef for action, to target actions to decrease the vulnerability of reefs, and to incorporate adaptation planning into management planning.

Funding Sources: The NOAA Coral Reef Conservation Program

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Photos/Attachments:

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Example Submission

Project Title: “Assessing the vulnerability of species and ecosystems to projected future climate change in the Pacific Northwest”

Headline Title (2-5 words): Pacific Northwest Vulnerability Assessment

Brief Summary (Abstract): A collaborative project to assess the vulnerability of species and ecosystems to future climate change impacts in the Pacific Northwest.

Project Location: Washington, Idaho

Partners: This project is a collaboration among researchers, managers, and planners at the [University of Washington](#), [U.S. Geological Survey](#), [The Nature Conservancy](#), the [National Parks Service](#), the [U.S. Forest Service](#), the [Washington Department of Fish and Wildlife](#), the [University of Idaho](#), the [National Wildlife Federation](#), the [Oregon Department of Fish and Wildlife](#), and [Idaho Fish and Game](#).

Background: In the Pacific Northwest temperatures have increased by about 0.8 °C and models project warming of 1.8°C by the 2040s and 3.0°C by the 2080s . Precipitation is also projected to change, with general increases projected for the Pacific Northwest, and with a more intense seasonal precipitation cycle - autumns and winters may in fact become wetter and summers may become drier. Further, regional climate models indicate that extreme precipitation in western WA will increase and the snowpack in the Cascades will decrease. Although the trend in direction of change is broadly recognized, there is uncertainty associated with what actual extent of changes may occur through time and in local areas.

Project Goals: The goals of this project are to incorporate climate change information into management planning and implementation efforts by providing: (1) downscaled regional climate models (~1km), (2) simulated shifts in vegetation, (3) an extensive database of documented species vulnerabilities, (4) models of species range shifts for selected species, (5) summaries of the extent of uncertainty in the climate, vegetation, and species changes, and lastly (6) a collaboration of resource managers working to incorporate climate change information into management planning and implementation efforts.

Strategy Goals Implemented: Goal 2, Strategy 2.2, Action 2.2.1 Use vulnerability assessments to design and implement management actions at species to ecosystem scales.

Goal 2, Strategy 2.1, Action 2.1.3 Identify species and habitats particularly vulnerable to transition under climate change

Climate Impacts Addressed: Impacts on species and habitats

Status of Project Implementation: Project is ongoing. Currently, over 570 species are in the database and nearly 200 are complete.



Project Outcomes: The Pacific Northwest vulnerability assessment includes two distinct components; first, a database that highlights and details the sensitivity of species and habitat in the study region. The estimated sensitivity of individual species will be based on the ability of the species to disperse and whether dispersal barriers exist, dependency on disturbance regimes (e.g. fire or flood), physiology (e.g., temperature, salinity), dependency on climatically-sensitive habitat requirements (e.g., alpine areas, shallow wetlands), whether the species is a generalist or specialist, and whether the species existence is tied to other specific species. The second component of the assessment involves modeling the potential effects of climate change on species and habitats. This includes: 1) downscaling the climate change projections, 2) simulating potential changes in vegetation, and 3) modeling potential effects on the distribution of 12 focal wildlife species using a hierarchical approach.

Funding Sources: USFWS, TNC, University of Washington, National Park Service, National Wildlife Federation, USGS

Photos/Attachments: www.climatevulnerability.org

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