

The Pacific Islands Climate Change Cooperative

December 2010

Climate Change in the Pacific

Human-caused changes in climate, ocean chemistry, and sea level will shape the Pacific and its islands in unprecedented ways. We anticipate changes in rainfall and freshwater availability, increases in wildlife diseases, the potential extinction of many rainforest species, degradation of coral reefs, and even the loss of entire low-lying islands. These changes will strongly affect island cultures and the natural resources they depend upon.

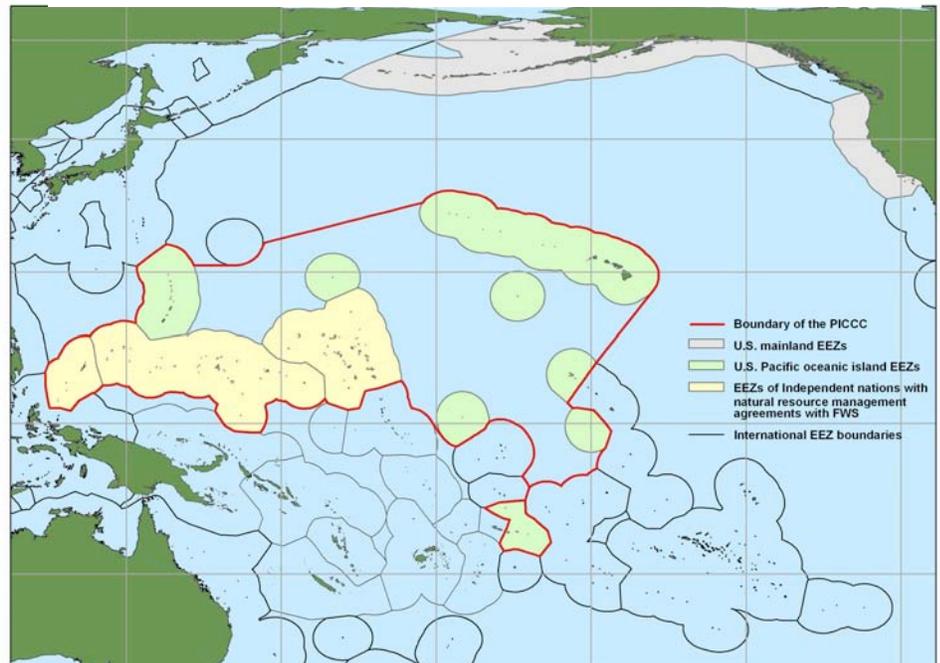
At risk are thousands of unique island plant and animal species, including 410 on the Endangered Species list; some inhabit only one island, and many depend on a network of protected areas that includes 22 National Wildlife Refuges, 11 National Parks, 4 Marine National Monuments, and local and private conservation lands. For them to flourish into the future, resource managers and the public need to know how ecological changes are likely to unfold, and what conservation actions will best perpetuate the unique natural resources of the Pacific.

To help fill this need, the Hawai'i Conservation Alliance (HCA) has facilitated establishment of the Pacific Islands Climate Change Cooperative



Palmyra Atoll, Pacific Remote Islands Marine National Monument. Ocean systems are at risk from rising temperatures, acidification, and sea level rise. Photo: J. Maragos/USFWS.

Geographic Scope of the Pacific Islands Climate Change Cooperative



(PICCC). The HCA's long-established conservation leadership role provides a solid foundation for the PICCC to rapidly engage conservation managers, researchers, and the broader community in Hawai'i and the Pacific Island region.

The PICCC will provide a range of scientific and technical tools to help managers in Hawai'i, the Mariana Islands, American Samoa, and other Pacific island groups make informed

decisions for landscape-scale conservation. These tools will help managers reach explicit conservation objectives for native species and habitats in the face of climate change and ongoing threats such as fire, land conversion, and invasive species.

The PICCC steering committee consists of Federal, State, private, indigenous, and non-governmental conservation organizations and academic institutions, forming a cooperative partnership that determines the overall organizational vision, mission and goals.

PICCC Charter Members

- American Bird Conservancy
- Bernice Pauahi Bishop Museum
- Hawai'i Conservation Alliance
- Hawai'i Department of Land and Natural Resources
- Hawai'i Wetland Joint Venture
- Kamehameha Schools*
- National Oceanic and Atmospheric Administration
- National Park Service
- Office of Hawaiian Affairs
- Pacific Science Association
- The Nature Conservancy Hawai'i
- Trust for Public Lands Hawaiian Islands Program
- U.S. Army Garrison Hawai'i
- U.S.D.A. Forest Service
- U.S.D.A. Natural Resources Conservation Service

- U.S. Geological Survey
- U.S. Fish and Wildlife Service
- U.S. Office of Insular Affairs*
- University of Hawai‘i

*Charter signing in process.

Functions of the PICCC

To meet the partnership’s goals, the PICCC will:

1. *Develop models* that predict how natural resources and processes may respond to climate change. The focus of modeling will be ecosystem-modifying invasive species; rare native species; common species that structure ecosystems; natural habitats such as bogs, coral reefs, or forests; and critical ecological processes such as nutrient or hydrological cycles.

2. *Assess management options* using models and historical data, and collectively determine priority conservation strategies. To make the link between modeling and management, the PICCC will assess the vulnerability of targeted species and ecosystems, and assist partners in choosing among potential management strategies based on their likelihood for success.



T'wi, Hawai‘i. Climate-related expansion of avian disease is a threat to forest birds. Photo: © Jack Jeffrey Photography.

3. *Validate ecological models and management actions* through research and coordinated monitoring. Experiments will be needed to clarify how native species respond to novel conditions. Strategic monitoring of responses to climate change and management actions will help refine models and decision-making in an adaptive management process.



Kaena Point Natural Area Reserve, Hawai‘i. Terrestrial systems are at risk from sea level rise, habitat loss, shifting habitat conditions, and expansion of invasive species and diseases.

4. *Provide a forum for continuous exchange, feedback, and understanding* among stakeholders, researchers, land managers, and communities. As a true partnership, the PICCC serves the needs of its members, and acts as a hub of information, projections, and conservation design for any group or individual interested in conserving biodiversity in the Pacific Islands. Open public access to PICCC products will promote understanding and support of changes in conservation strategy.

PICCC Structure

Accomplishing these functions requires clear guidance and a dedicated staff. The PICCC members collectively determine the structure of the PICCC, the breadth of its activities, and the priority projects to be addressed by the staff.

PICCC members are supporting several key positions. The funding agency is indicated in parentheses.

- ◆ PICCC Coordinator (USFWS)
- ◆ Science Manager (USFWS)
- ◆ Administrative Support (USFWS)
- ◆ Communications specialist (USFWS)
- ◆ Conservation Planner (USFWS)
- ◆ GIS/Data Manager (USFWS)
- ◆ Species Modelers (USGS, USFWS)
- ◆ Ecosystem Modelers (USGS, USFWS)
- ◆ Hydrologist (USGS)
- ◆ Cultural Resources Specialist (NPS)
- ◆ Cultural Fellow (HCA)
- ◆ Marine Scientist (tbd)

PICCC Products

PICCC provides unique support for effective conservation in Hawai‘i and other Pacific Islands. We will be working on a number of key products, including:

- Developing adaptation strategies to protect biodiversity and cultural heritage across the Pacific.
- Mapping potential ranges of native species and invasive species under future temperature and precipitation projections.
- Publishing vulnerability assessments for rare species, native ecosystems, and keystone species.
- Developing web-based decision support tools for managers and the public.
- Predicting future potential community composition within protected areas under different climate scenarios.
- Identifying potential corridors linking present and future habitat.
- Recommending conservation and acquisition priorities based on future climate and sea level.

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