

Pacific Islands Climate Change Cooperative



The Need for a New Approach

Human-caused changes in climate, ocean chemistry and sea level will increasingly shape the landscape of Pacific Islands in unprecedented ways. Unlike threats from invasive species or human activities, these global changes will not yield to local preventive or regulatory efforts. To conserve native species as landscapes change, resource managers need to know how ecological changes are likely to unfold, and what conservation actions will best support their management mandates.

To help fill this need, the U.S. Fish and Wildlife Service (USFWS) is supporting the development of regional Landscape Conservation Cooperatives (LCCs) that will integrate local climate models with models of climate-change responses by species, habitats and ecosystems. Cooperatives will collectively plan and design appropriate conservation actions at a landscape scale, monitor responses to climate change, and assess the effectiveness of management strategies in a process referred to by the USFWS as Strategic Habitat Conservation.

The Pacific Islands Climate Change Cooperative (PICCC), as an LCC partnership, will provide a range of scientific and technical decision support tools for landscape-scale conservation design to a wide array of managers. These tools will help managers identify and target explicit biological objectives for native species and habitats in the face of climate change and other stressors.

The PICCC is sponsored and partly supported by the USFWS and hosted by the Hawai'i Conservation Alliance (HCA). The PICCC steering committee is comprised of HCA members and other partners, forming a cooperative partnership of Federal, State, private, Hawaiian, and non-governmental conservation organizations and academic institutions. The goal of the partnership is to develop and maintain a strategic conservation response to the ecological changes induced by climate change. This can best be accomplished by collaboratively sharing expertise, knowledge, and resources.



Coral reefs are at risk from rising temperatures, ocean acidification, and sea level rise. Coral garden, Palmyra Atoll NWR, by J. Maragos/USFWS.

PICCC Members

- USFWS
- U.S. Geological Survey
- National Park Service
- National Oceanic and Atmospheric Administration
- Natural Resources Conservation Service
- U.S. Forest Service
- U.S. Army
- Office of Hawaiian Affairs
- Hawai'i Department of Land and Natural Resources
- University of Hawai'i
- The Nature Conservancy
- Kamehameha Schools

Functions of the PICCC

To meet the partnership goal, the PICCC will:

Develop bio-climate models that integrate ecological information with outputs from downscaled climate models and project how natural resources and processes may change. Targets of modeling might be ecosystem-modifying invasive species; rare or ecologically critical native species; natural ecosystems such as bogs, coral reefs, or forest types; or critical ecological

processes such as nutrient or hydrological cycles.

Assess management options using bio-climate 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 in a continuously changing climate.

Validate bio-climate models and management actions through research and coordinated monitoring. Experimental tests of key assumptions will be needed to clarify how native species respond to novel conditions. Strategic monitoring of biological responses to climate change and to management actions will be crucial to refining models and decision-making in an adaptive management process based on Strategic Habitat Conservation.

Provide a forum for continuous exchange, feedback, and understanding among stakeholders, researchers, land managers, and other interested parties. As a true partnership, the PICCC will serve the needs of its members, and will act as a hub of information, projections, and conservation design for any group or individual interested in conserving biodiversity in the Pacific Islands.

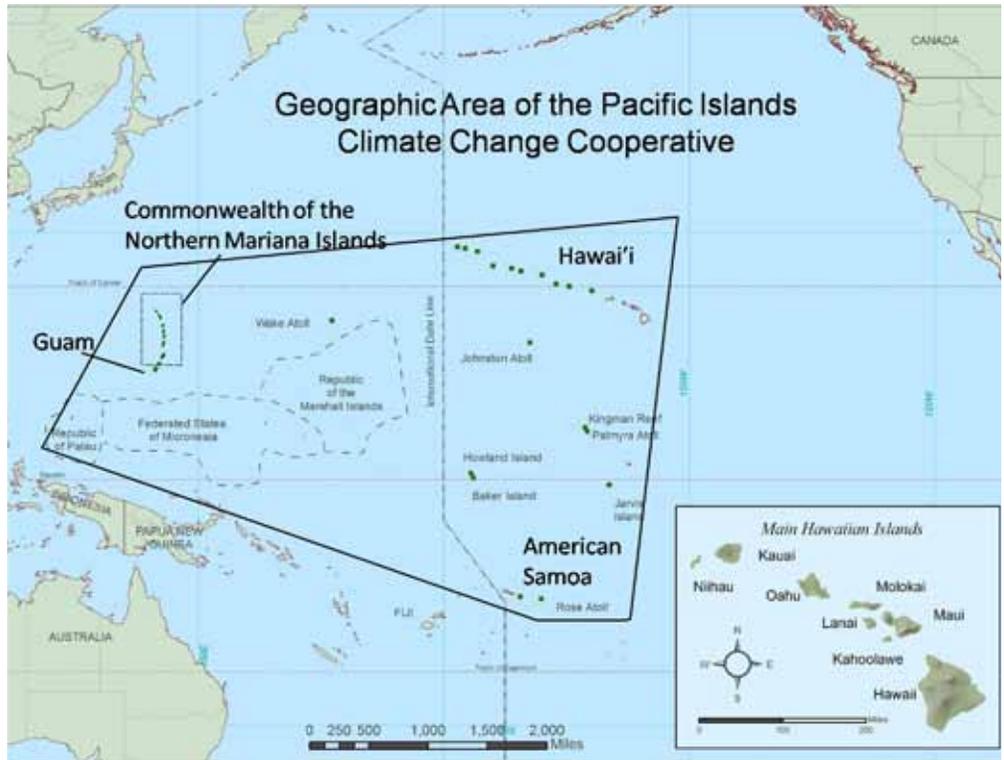
Open public access to PICCC products will promote acceptance and support of changes in conservation strategy.

Structure of the PICCC

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

The USFWS will support several key positions that may include:

- Cooperative coordinator
- Science and technology coordinator
- Species modeler
- Landscape conservation planner
- Monitoring planner
- GIS/data products specialist
- Administrative support



- Social scientist

- Traditional knowledge expert

Example Products of the PICCC

PICCC will provide unique support for effective conservation in Hawai'i and other Pacific Islands. Some of the products that could be generated are:

- Potential ranges of native species and invasive species under temperature and precipitation projections.
- Vulnerability assessments for rare species, communities, and common species that structure habitats.
- Decision mechanisms that integrate long-term costs and benefits of management actions.
- Web-based GIS decision support tools for managers and the public.
- Future potential community composition within protected areas under different scenarios.
- Potential corridors linking present and future habitat.
- Acquisition priorities based on future climate and sea level.

Timeline

October 2009

Interim Coordinator designated.

FY 2010

- Redirect and hire key positions; work with partners to identify other staff.

- Develop work plan.

- Begin development of bio-climate models and assessment of management options based on these models.

- Promote information exchange and feedback from interested parties and public.

FY 2011

- Continuation of FY 10 priorities
- Begin validation of bio-climate models and management actions

The *Pacific Islands Climate Change Cooperative* will help conserve and protect the natural heritage of the Pacific Islands.

Contact

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'I'iwi on 'ohi'a; Jack Jeffrey Photography

Additional staffing from partners may include:

- Population modeler
- Vegetation ecologist
- Fire modeler
- Hydrologist
- Marine ecologist
- Coastal geomorphologist
- Avian ecologist
- Monitoring and evaluation team
- Outreach specialist