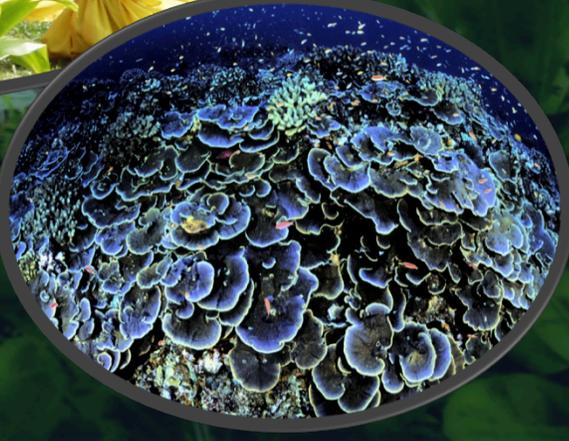


Pacific Islands Climate Change Cooperative 2010 Report



Our Mission

To improve the ability of native island species and ecosystems to accommodate future climate change and related perturbations, and support the long-term protection of key cultural resources by providing useful projections of climate and natural resource change in the Pacific Islands, innovative management options, and a membership that supports coordinated action among institutional and community stakeholders.

Members

American Bird Conservancy
Bishop Museum
Hawai'i Conservation Alliance
Hawai'i Wetland Joint Venture
Kamehameha Schools
National Park Service Inventory and Monitoring
National Park Service Pacific West Region
NOAA National Marine Fisheries Service
NOAA NESDIS NCDC Climate Services Pacific Region
NOAA Office of National Marine Sanctuaries
NOAA Pacific Services Center
Office of Hawaiian Affairs
Pacific Science Association
State of Hawai'i Department of Land and Natural Resources Division of Aquatic Resources
State of Hawai'i Department of Land and Natural Resources Division of Forestry and Wildlife
The Nature Conservancy Hawai'i Office
Trust for Public Lands Hawai'i Office
U.S. Army Garrison Hawai'i Natural Resource Program
U.S. Department of Agriculture Forest Service Pacific Southwest Research Station
U.S. Department of Agriculture Natural Resources Conservation Service
U.S. Department of Interior Office of Insular Affairs
U.S. Fish and Wildlife Service Ecological Services Pacific Islands Fish and Wildlife Office
U.S. Fish and Wildlife Service Migratory Birds
U.S. Fish and Wildlife Service National Wildlife Refuge System Hawaiian and Pacific Islands National Wildlife Refuges
U.S. Fish and Wildlife Service Wildlife and Sport Fish Restoration Program
U.S. Geological Survey Pacific Basin Information Node
U.S. Geological Survey Pacific Island Ecosystems Research Center
University of Hawai'i at Mānoa Center for Conservation Research and Training
University of Hawai'i at Mānoa Social Science Research Institute

Introduction

The Pacific Islands Climate Change Cooperative (PICCC) is dedicated to developing and funding science and decision tools to support climate change adaptation strategies. In partnership with decision makers, natural and cultural resource managers, communities, and indigenous peoples, we strive to ensure the continued vitality of the Pacific Islands region's biocultural heritage.

The Pacific Islands are home to unique human and natural communities of global significance. From the Hawaiian Islands in the north to the Samoan Islands in the south to the Marianas Islands in the west, the region encompasses roughly 2,300 islands, over 6,500 miles of coastline, and more than 90% of the nation's coral reefs (13,000 mi²). Several distinct jurisdictions representing a rich diversity of living cultures characterize the region: the State of Hawai'i; the Territories of American Samoa and Guahan (Guam); the Commonwealth of the Northern Mariana Islands; and three independent affiliated nations – the Republic of the Marshall Islands, Federated States of Micronesia, and the Republic of Palau.

The region also is characterized by a variety of habitats: volcanic high islands, low-lying islands, atolls, coral reefs, and deep trenches that extend across the world's largest ocean. It's biodiversity is rich and yet fragile: more than 400 species are listed under the Endangered Species Act, many of which are found in a network of protected areas including 22 National Wildlife Refuges, 11 National Park units, 4 Marine National Monuments, 2 National Marine Sanctuaries, and state, territorial, local, and private conservation areas.

In September of 2009, federal, state, private, indigenous, academic, and non-governmental conservation agencies and organizations came together in Honolulu, Hawai'i, to form the Pacific Islands Climate Change Cooperative (PICCC). Sponsored by the Department of Interior, the PICCC is part of a national landscape conservation cooperative network spanning the continental United States, portions of Canada and Mexico, and affiliated islands in the Caribbean and Pacific.

The PICCC's primary focus is *climate change* because of the immediacy of the threat it poses to the region – seas are rising, the marine environment is warming and becoming more acidic, precipitation and stream flows are declining, and ambient temperatures are rising faster at higher elevations than the global average, all of which threaten the lands, seas, and very way of life of the Pacific Islands.

Forming the Cooperative

The PICCC is governed by a Steering Committee of member representatives who collectively determine the cooperative's structure and goals, describe the breadth of its activities, and provide guidance to staff.

In 2010 the Steering Committee developed and adopted an organizational Charter. Forged by consensus, the Charter lays out an operational framework built on a shared vision of supporting and developing climate change adaptation capacity in the Pacific Islands region. The Steering Committee also elected an Executive Council and devised a rotation strategy to ensure both continuity of institutional knowledge and equitable representation.

In the spirit of a true cooperative, the 'building' of the organization is a joint endeavor. The U.S. Fish & Wildlife Service hired the Coordinator and Science Manager in July 2010. Shortly thereafter a new office was established via a Cooperative Agreement with the University of Hawai'i. Additional Core Team members being hired include:

- Cultural Resources Climate Change Coordinator (NPS)
- Species Modelers (USGS & USFWS)
- Ecosystem Modelers (USGS & USFWS)
- Data/GIS Managers (USFWS & NPS)
- Communications Manager (USFWS)
- Administrative Assistant (USFWS)

Another 2010 milestone was the granting of \$780,000 to support climate change research in Hawai'i and the greater Pacific Islands region. These and additional member-supported projects provide the foundation for assessing future impacts to natural and human systems and inform potential adaptation strategies.

2010 Science Projects

Climate Modeling for the Hawaiian Archipelago

Regional atmospheric modeling to produce climate change projections at a scale that is ecologically relevant to natural resources management.

Climate Downscaling

Statistical downscaling to derive estimates of changes in future rainfall over the Hawaiian Islands for the mid- and late-21st century that will inform estimated risk potential for endangered species in Hawai'i's ecosystem.

Climate and Ecosystem Monitoring

Continued operation and maintenance of the HaleNet climate and ecosystem monitoring network to provide critical high-quality data for calibration and validation of downscaled climate models for Maui Island, Hawai'i.

Mapping Sea-level Rise

Spatial and temporal modeling of sea-level rise on sites of high significance on the coastal plains of O'ahu and Maui (Hawai'i) in order to define potential ecological and cultural impacts and support management responses.

Reversing Coral Reef Impacts

Testing management methods to reverse localized coral bleaching by locally increasing pH to counter ocean acidification on a reef at Tutuila, American Samoa.

Bioclimate Projections

Project changes in the distributions of native Hawaiian plants based on projected future temperature and precipitation estimates derived from first-generation statistical climate downscaling.



The paradigm under which existing conservation strategies, programs and organizations have developed does not account for the kind of accelerating and unavoidable changes in the global environmental system that will occur under the current climate change trajectory. Successful long-term natural and cultural resource conservation now requires adaptive management strategies that incorporate climate change projections while acknowledging uncertainties about the specific local and regional impacts. This, in turn, requires the understanding, support, and meaningful participation of Pacific Islands communities.

The PICCC's collaborative structure supports a full spectrum of capabilities and services that function as an integrated yet iterative endeavor linking scientific and social initiatives addressing climate change in the Pacific. These include new research and synthesis of existing knowledge, guidance on adaptation planning and implementation, monitoring and evaluation, and stakeholder engagement.

Working with other regional initiatives – including the Pacific Information Climate System and Pacific Regional Integrated Science and Assessment – we are developing a robust adaptation framework to assess the multi-sector impacts of global climate change in the Pacific Islands at regional and local scales. Once developed, this framework will support the PICCC's iterative, science-based planning and landscape-level prioritization that focuses conservation programs on those resources most sensitive to environmental change.

By linking scientific and social initiatives, coordinating programs and activities, and leveraging resources, the PICCC is playing a critical role in preparing policy makers, resource managers, and Pacific Island communities for the future.

PICCC Core Services

- Coordinated application of geospatial and other information management technologies to support planning, monitoring, and evaluation of activities and outcomes at various eco-regional scales.
- Coordinated and leveraged delivery of private, state, and federal conservation program actions targeted at priority species, habitats, and other natural and cultural resources.
- Active engagement with communities regarding future directions in island ecosystems and conservation priorities.
- Analyses of alternatives and formulation of recommendations for policy makers, resource managers, and Pacific Island communities.

Photo Credits: red-footed Booby at Palmyra Atoll NWR (Laura M. Beauregard/USFWS); Halau Hula Kahiko at Hawai'i Volcanoes National Park (NPS); coral at Jarvis Island NWR (Jim E. Maragos/USFWS); Strawn Island at Palmyra Atoll NWR (Laura Beauregard/USFWS); sea turtle (Patte/USFWS); tuna wrapped for umu (NPSA); Hawaiian moorhen (USFWS); petroglyph (Deanna Spooner); taro lo'i (Deanna Spooner).

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