



Climate Change and Biodiversity in Melanesia (CCBM): Assessing Vulnerability of Marine and Terrestrial Ecosystems to Projected Climate Change

Project Summary

7 August 2007

The Bernice P. Bishop Museum and the Pacific Regional Environment Programme (SPREP) are undertaking an expert-led study to assess the vulnerability of biodiversity and island ecosystems in Melanesia to climate change. This project is one of eight grants from the MacArthur Foundation to identify the implications of climate change in the regions where the Foundation funds conservation efforts and to develop conservation and management approaches that address these threats. Other studies are addressing similar issues in Madagascar, Africa and the Caribbean.

The CCBM study carried out by the Bishop Museum and SPREP is in close collaboration with the Pacific Science Association (PSA) and the Indo-Pacific Conservation Alliance (IPCA). The project will largely focus on climate impacts on marine systems but will include those on terrestrial areas as well.

There are three main component activities:

- **Component One:** Assess the current scientific understanding of the impacts of climate change and other biogeochemical processes (e.g. ocean

acidification) on island and marine ecosystems in Melanesia. The objective is to facilitate and document the best state-of-the-science consensus on the implications of these anthropogenic processes on current and future conservation strategies, planning, and policies. Lead Institution: Bishop Museum.

- **Component Two:** Assess the institutional and socioeconomic adaptive capacity of Melanesian countries to effectively respond to climate change impacts including legislation, policies and capacity assessment. Lead Institution: SPREP.
- **Component Three:** Develop an integrated assessment of the vulnerability of Melanesia's biodiversity to climate change, based on Components One and Two. Lead Institutions: Bishop Museum and SPREP.

For the purposes of this study, Melanesia includes Fiji, Vanuatu, New Caledonia, Solomon Islands, Papua New Guinea and the Indonesian province of Papua.

Bishop Museum's assessment in Component One will include an extensive review of the current scientific understanding of how climate change will affect Melanesia's terrestrial and marine ecosystems. The information and data collated from literature reviews, data gathering, digital maps, satellite imagery and consultations with experts will be compiled into an Environmental Information System (EIS) accessible via the Internet for use by conservation, research, and management groups. A multidisciplinary expert workshop will be held in September 2007 in Hawai'i to assess the best scientific understanding of climate change impacts on Melanesia and develop a series of white papers that summarize current knowledge.

All information, data, expert advice and white papers will be synthesized into a consensus report which will be prepared and presented in draft form at the 8th Pacific Islands Conference on Nature Conservation and Protected Areas in Papua New Guinea in October 2007. Researchers, managers and stakeholders attending the conference will be encouraged to provide feedback, additional information and recommendations. This input will be incorporated into the consensus report. A final vulnerability assessment report, based on the consensus report and other data that is gathered, will be completed in 2008. This final report will specify where additional research is needed, detail current scientific understanding and predictions of how climate change will impact the region's development and conservation efforts, and list suggestions for adapting conservation efforts to future projected climate changes.

Component Two will assess the institutional and socio-economic capacity in Melanesia to adapt resource management practices, programs, policies and legislation to mitigate the impacts of climate change. In order to perform this assessment SPREP will document all current management policies and

programs and identify impediments to and opportunities for successful biodiversity conservation and management in the face of projected climate warming and related effects. Additionally, the study will evaluate the consequences of climate change on two important economic sectors, such as coastal fisheries and tourism, and examine how conservation practices can be used to assess the impacts of climate change on those sectors.

After completing the two component assessments, Bishop, SPREP, and partners will integrate the two reviews into a Final Integrated Vulnerability Assessment Report, including a set of recommendations for policymakers and managers in developing and implementing development and conservation strategies that reflect an appropriate and robust understanding of expected climate change. The final assessment will be incorporated into future revisions of the Action Strategy for Nature Conservation, the Pacific Islands Framework for Climate Change and other conservation plans and strategies. This report will also be used to develop a range of communication products for a variety of audiences in Melanesia and beyond.

The final results and products of CCBM will provide conservationists and resource managers in Melanesia with information and tools they need to develop conservation approaches that can successfully address the influence of climate change on biodiversity and social welfare. Additionally, the products will supply the MacArthur Foundation and other grant-making organizations with information they need to determine which proposals have the potential to effectively address the impacts of climate change and merit funding. Efforts like this assessment are an essential step in ensuring that conservation efforts succeed in tomorrow's climate.