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The John D. and Catherine T. MacArthur Foundation

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CLIMATE CHANGE AND CONSERVATION

AT A GLANCE

- Climate change, more specifically changes in the duration or characteristics of climate conditions that last a decade or longer¹, is causing the warming of global surface temperatures, sea level rise, decreases in snowfall and ice extent, increases in extreme weather events, and measurable changes in precipitation.
- Climate change is unequivocal and will require the adoption of regionally appropriate mitigation and adaptation strategies to minimize and eventually halt the impacts of global climate destabilization.
- Since launching our climate change adaptation initiative in 2005, the MacArthur Foundation has invested over \$5.8 million to assess how climate change will impact biodiversity, strengthen the scientific foundation of the field, develop new tools to conserve biodiversity in the face of predicted climate change, and build individual and institutional capacity to make informed decisions about future biodiversity management. By 2012, MacArthur expects to have invested an additional \$25 million in climate-related work.

OUR GOALS

The Foundation's approach to addressing climate change has two components:

(1) Decreasing the production of greenhouse gases by slowing or stopping deforestation within conservation and sustainable development's focal areas² and

(2) Adapting current biodiversity conservation efforts to climate change within these areas.

In tropical regions, where MacArthur focuses conservation efforts, investment opportunities to lower greenhouse gas emissions are limited. Alternatively, and through existing grants, MacArthur aims to slow or halt deforestation, which is the developing world's primary contribution to the climate problem. Since 2000, MacArthur has made 234 grants, investing over \$66 million to protect standing forests.

MacArthur's climate adaptation grantmaking pursues four objectives. First, we will help build the fundamental knowledge needed

to make better decisions about biodiversity conservation in the face of global climate change. The foundation also supports efforts to refine climate change science necessary to craft biodiversity adaptation policies and management interventions. Third, we will contribute towards the development of new tools and technologies that assist in the implementation of effective biodiversity adaptation measures. Finally, the foundation seeks to build national and regional technical capacity to integrate adaptation strategies into biodiversity conservation initiatives.

¹ This definition is provided in the 2007 synthesis report produced by the Intergovernmental Panel on Climate Change.

² Focal areas are reviewed at 10 year intervals and currently include: Insular Caribbean, Northern and Southern Andes, Albertine Rift, Madagascar, Eastern Himalaya, Lower Mekong, and Melanesia.

KEY FACTS

- The Earth's average temperature experiences natural long-term fluctuations between glacial and interglacial periods, but during the last two centuries, since industrialization, the globe has warmed rapidly between 0.7 and 1.4 degrees Fahrenheit.
- Warming at the poles is occurring in greater magnitude, but more deleterious consequences will occur in tropical regions, where most plants and animals currently live closer to their optimal temperature.³
- Capacity to adapt to regional changes in climate is dependent on socio-economic and environmental circumstances, as well as the availability of information and technology.
- Much less information exists about adaptation strategies than mitigation measures.⁴

WHAT WE FUND

Grantmaking under this theme will take place primarily within CSD's existing geographic areas, with an initial focus on assessing how climate change is likely to affect biodiversity. Under this initiative grants have been provided to World Wildlife Fund, Conservation International, The Bishop Museum, International Center for Integrated Mountain Development, Inter-American Institute for Global Change Research and Caribbean Natural Resources Institute, among others, to carry out broad brush assessments of the impact of climate change on both marine and terrestrial systems in each of the Foundation's eight focal areas.

To improve climate science a grant was provided to International Union for the Conservation of Nature (IUCN) to look at the impacts of climate change on a significant number of endangered species. This will promote greater understanding of the additive impact of this threat. Additional support was provided to BirdLife International to understand climate's impact on bird species and associated habitats in Africa.

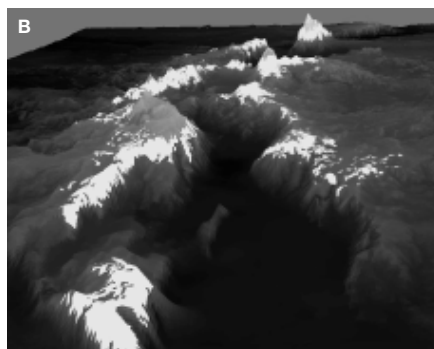
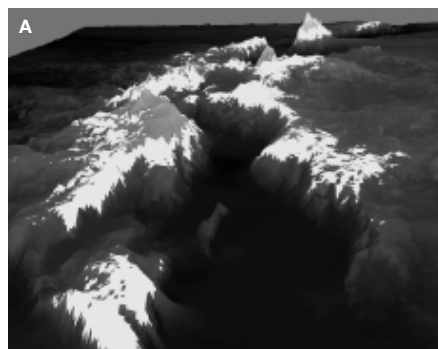
Support will also be considered for new technologies, tools, and interventions to conserve biodiversity in the face of

climate change. Focusing primarily on coral reef resilience, IUCN has received support to establish a technical Working Group on Tropical Marine Ecosystems which develops resilience-based coral reef management strategies. Likewise, support for The Nature Conservancy allows them to train managers to use Marxan, a geospatial tool that identifies optimal protected areas, to develop a network of resilient marine protected areas in Melanesia.

The first round of capacity building for climate change adaptation provided a grant to the International System for Analysis, Research, and Training Secretariat (a part of the American Geophysical Union) to begin the process of building capacity around the climate issue, focusing on the Albertine Rift.

An organization wishing to approach the Foundation may submit a letter of inquiry informing the Foundation of the proposed project. The format of these letters can be found in the "How to Apply" section of MacArthur's website, www.macfound.org. Based on the letter of inquiry, the Foundation may invite proposals from prospective projects and organizations.

*These images were created through a tool produced by BirdLife International which models changes in distribution of important bird species as landscapes are modified by climate change. In this 3-D representation of the Albertine Rift white coloration demonstrates regions with suitable environmental conditions for Regal Sunbird, *Nectarinia regia* in a) the present; b) 2025; and c) 2085. The grey scale background is a digital elevation, with light grey representing higher altitudes.*



3 Duetsch, Curtis A., Tewksbury Joshua J., et al. "Impacts of climate warming on terrestrial ectotherms across latitude." *Proceedings from the National Academy of Science* 105.18 (2008): 6668-6672.
 4 IPCC (2007). "Climate Change 2007: Synthesis Report. An Assessment of the Intergovernmental Panel on Climate Change" (Cambridge university Press, Cambridge, UK).

REPRESENTATIVE GRANTS

AMERICAN GEOPHYSICAL UNION (START)
Washington, DC
\$300,000 in support of building capacity for conservation biodiversity in a changing climate in the Albertine Rift region.

BERNICE P. BISHOP MUSEUM
Honolulu, HI
\$290,000 to support an assessment of climate change vulnerability of coastal and marine ecosystems in Melanesia.

BIRDLIFE INTERNATIONAL
Cambridge, United Kingdom
\$250,000 in support of assessing the impact of climate change and developing an adaptive management framework for conservation in the face of climate change in the Albertine Rift and as a model for other parts of Africa.

CARIBBEAN NATURAL RESOURCES INSTITUTE
Trinidad, West Indies
\$250,000 in support of assessing climate change impacts on biodiversity in the Caribbean.

CONSERVATION INTERNATIONAL
Washington, DC
\$200,000 in support of integrating climate change into the Durban Vision in Madagascar.

FIELD MUSEUM
Chicago, IL
\$325,000 in support of an assessment of the impact of climate change on the elevational distribution of Malagasy land vertebrates and building capacity in conservation biology.

INTER-AMERICAN INSTITUTE FOR GLOBAL CHANGE RESEARCH
São José dos Campos, Brazil
\$450,000 to assess climate change impacts on biodiversity in the Andes.

INTERNATIONAL CENTRE FOR INTEGRATED MOUNTAIN DEVELOPMENT
Kathmandu, Nepal
\$150,000 to support an assessment of climate change vulnerability of mountain ecosystems in the Eastern Himalaya.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES
Gland, Switzerland
\$350,000 in support of an assessment of species vulnerability to climate change.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES
Gland, Switzerland
\$186,000 to coordinate consultation for the design of a Global Climate Change Adaptation Program and network of Regional Adaptation Centers.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES—UNITED STATES
Washington, DC
\$300,000 to facilitate the exchange of scientific ideas and generation of new management tools effecting coral reef ecosystems that are under stress due to the effects of global climate change.

INTERNATIONAL UNION FOR CONSERVATION OF NATURE AND NATURAL RESOURCES—UNITED STATES
Washington, DC
\$250,000 to undertake a rapid assessment of bleaching resistance and resilience of coral reefs in the Caribbean, East Africa and South Pacific.

MISSOURI BOTANICAL GARDEN
St. Louis, MO
\$300,000 to assess impacts and mitigate consequences of climate change upon Madagascar's plants.

NATURE CONSERVANCY ASIA/PACIFIC REGION
Arlington, VA
\$500,000 to develop practical methods for applying resilience principles to coral reef conservation and sharing the science and methodology of coral resilience through training programs in areas of high coral reef importance around the world.

UNIVERSITY OF CALIFORNIA BERKELEY NATURAL HISTORY MUSEUMS
Berkeley, California
\$390,000 in support of technological innovations for biodiversity conservation in the face of climate change in Madagascar.

WILDLIFE CONSERVATION SOCIETY
New York City, New York
\$250,000 in support of an assessment of the impacts of climate change on biodiversity and ecosystem services in the Albertine Rift region.

WILDLIFE CONSERVATION SOCIETY
New York City, New York
\$300,000 in support of research on coral reef vulnerability and resilience to climate change in order to guide the establishment of marine protected areas in Madagascar.

WORLD WILDLIFE FUND
Washington, DC
\$250,000 in support of a climate change vulnerability assessment for coastal and marine conservation in Madagascar.

WORLD WILDLIFE FUND
Washington, DC
\$250,000 in support of an assessment of climate change vulnerability and impact of the freshwater and forest ecosystems in the Lower Mekong focal area.

WORLD WILDLIFE FUND
Toronto, Ontario, Canada
\$250,000 to develop a species-centered approach to understanding adaptation to climate change in the Insular Caribbean.

WORLD WILDLIFE FUND
Toronto, Ontario, Canada
\$200,000 to bring MacArthur's climate change assessment grantees to the World Conservation Congress in Barcelona, Spain, to discuss research approaches with a broader conservation community.

For More Information about the Foundation's conservation and sustainable development grantmaking

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About the MacArthur Foundation

The MacArthur Foundation supports creative people and effective institutions committed to building a more just, verdant, and peaceful world. In addition to selecting the MacArthur Fellows, we work to defend human rights, advance global conservation and security, make cities better places, and understand how technology is affecting children and society. More information is available at www.macfound.org.

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