New study shows world's protected areas threatened by climate change

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Climate change will affect national parks, forest reserves and other protected areas around the world, in some cases altering conditions so severely that the resulting environments will be virtually new to the planet, according to a study presented at the U.N. climate change talks in Bali, Indonesia.

Scientists from Conservation International (CI), the University of Wisconsin and the University of Maryland analyzed the World Protected Areas Database with ten Global Climate Models and three different scenarios examined by the U.N. Intergovernmental Panel on Climate Change.

They found that under the most likely scenario, more than half the world's protected territory is vulnerable to impacts of climate change, with some regions facing the disappearance of current climatic conditions by 2100 or a transition to conditions not found on Earth in the previous century.

"We previously assumed that if the land is protected, then the plants and animals living there will persist," said Sandy Andelman, lead author of the study and CI's vice president who heads the Tropical Ecology Assessment and Monitoring (TEAM) network. "That may be wishful thinking."

Countries where 90 percent or more of the total protected territory has climate conditions that will disappear globally or be transformed to novel

climates are Benin, Bhutan, Bolivia, Burkina Faso, Burundi, Colombia, Cuba, Ecuador, Ethiopia, Ghana, Guyana, Ivory Coast, Mexico, Niger, Rwanda, Sri Lanka, Sudan, Swaziland, Togo, Uganda and Venezuela.

With millions of people living in the most seriously affected countries, maintaining the health of protected areas and the biological diversity they contain is crucial to the availability of fresh water, food, medicines and other life-sustaining benefits of nature.

However, the study indicates that climate change will cause increased extinctions of species unable to adapt to altered climatic conditions, and substantial changes to the natural ecosystems.

“We urgently need to better understand how climate change will affect life on Earth so we can develop solutions, and to do that we need consistent data about long-term trends at a very large scale,” Andelman said.

Her TEAM network, established through CI funding, monitors such long-term trends in the biological diversity of tropical forests. A network of tropical field stations using standardized methods of data collection allows scientists anywhere on Earth to quantify how tropical nature is responding to climate change and human impacts. The first five TEAM sites operate in tropical forests across Latin America, with the program expanding to Africa and Asia by the end of 2008 and plans for 20 sites on three continents by the end of 2009.

The study also identified “refuge” countries where protected areas face minimal risk from climate change, including Botswana, Equatorial Guinea, Gabon, Guinea-Bissau, Liberia, Libya, Madagascar, Mali, Mauritania, Mozambique, Myanmar, Namibia, Saudi Arabia, Sierra Leone and Somalia. Ensuring the adequate protection of nature reserves in these countries will provide baseline information to help understand

the dynamics of biological diversity relatively unaffected by climate change.

Along with Andelman, the paper's authors are Jan Dempewolf of the University of Maryland, Jack Williams of the University of Wisconsin, and two members of CI's Center for Applied Biodiversity Science – Jenny Hewson, a remote sensing specialist, and Erica Ashkenazi, a GIS specialist.

Source: Conservation International