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Editorial

Climate Change and Ecosystem

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EDITORIAL

The health and functioning of the biosphere are inextricably linked to the rapid anthropogenic climate change that we are witnessing in the early twenty-first century. Ecosystems are being impacted by climate change due to changes in mean conditions and variability, as well as other changes such as increased ocean acidification and atmospheric carbon dioxide concentrations. Other stresses on ecosystems, such as degradation, defaunation, and fragmentation, interact with it. Understanding the ecological dynamics of these climatic impacts, identifying hotspots of susceptibility and resilience, and identifying management measures that can help the biosphere adapt to climate change are all necessary. At the same time, ecosystems can help with both climate change mitigation and adaptation. The methods, possibilities, and limitations of such nature-based climate change solutions must be investigated and measured. The relationship of climate change and the biosphere is the subject of this study, which introduces a thematic concern. It examines new ideas on how ecosystems respond to climate change, how to improve ecosystem resilience, and how ecosystems may help meet the problem of a changing climate. The forum focused on developing a scientific understanding of how to help and manage ecosystems in order to improve ecological and/or societal resilience to climate change and ocean acidification, including novel conservation and restoration measures.

A fresh take on biodiversity protection in a world where human activity has dramatically altered the ecosystem. Fundamental biological processes that are unaffected by human action provide a foundation for understanding how ecosystems respond to global change, in which humans rapidly remove, add, and shift species, populations, and genes. These evolutionary and ecological processes continue to function in a human-altered world, with novel ecological communities made up of species, populations, and genes that are well-suited to the altered environment. In the Anthropocene, he makes the startling argument that supporting, rather than opposing, the introduction of new species and genes that give advantages is a justifiable conservation strategy. He calls for a stronger focus on connectedness, or 'trans situ' conservation, which allows species and genes to reach places where they can thrive despite the challenges of a fast changing environment. In contrast to the effects of climate extreme events (storms, floods, heatwaves, and droughts) on post-disturbance ecosystem recovery in high-biodiversity tropical ecosystems, the effects of climate extreme events (storms, floods, heatwaves, and droughts) on post-disturbance ecosystem recovery in high-biodiversity tropical ecosystems provide a novel synthesis across coral reef and tropical forest ecosystems. They show how climate extremes combine with local anthropogenic disturbances and mean climate trends to cause biodiversity loss, and they argue that all three of these causes of biodiversity loss must be addressed for effective conservation management. They highlight examples of key multi-trophic animal-mediated processes (seed dispersal by dung beetles, grazing by parrotfish) that aid ecosystem recovery in tropical forests and coral reefs, highlighting examples of key multi-trophic animal-mediated processes (seed dispersal by dung beetles, grazing by parrotfish).

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