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From Forest Nursery Notes, Winter 2012

**102. © Opportunities and challenges for ecological restoration within REDD+.**

Alexander, S., Nelson, C. R., Aronson, J., and Lamb, D. Restoration Ecology 19(6):683-689. 2011.

OPINION ARTICLE

# Opportunities and Challenges for Ecological Restoration within REDD+

Sasha Alexander,<sup>1,2</sup> Cara R. Nelson,<sup>3</sup> James Aronson,<sup>4,5</sup> David Lamb,<sup>6</sup> An Cliquet,<sup>7</sup> Kevin L. Erwin,<sup>8</sup> C. Max Finlayson,<sup>9</sup> Rudolf S. de Groot,<sup>10</sup> Jim A. Harris,<sup>11</sup> Eric S. Higgs,<sup>12</sup> Richard J. Hobbs,<sup>13</sup> Roy R. Robin Lewis III,<sup>14</sup> Dennis Martinez,<sup>15</sup> and Carolina Murcia<sup>16</sup>

## Abstract

The Reducing Emissions from Deforestation and Forest Degradation (REDD+) mechanism has the potential to provide the developing nations with significant funding for forest restoration activities that contribute to climate change mitigation, sustainable management, and carbon-stock enhancement. In order to stimulate and inform discussion on the role of ecological restoration within REDD+, we outline opportunities for and challenges to using science-based restoration projects and programs to meet REDD+ goals of reducing greenhouse gas emissions and storing carbon in forest ecosystems. Now that the REDD+ mechanism, which is not yet operational, has expanded beyond a sole focus on activities that affect carbon budgets to also include those that enhance ecosystem services

and deliver other co-benefits to biodiversity and communities, forest restoration could play an increasingly important role. However, in many nations, there is a lack of practical tools and guidance for implementing effective restoration projects and programs that will sequester carbon and at the same time improve the integrity and resilience of forest ecosystems. Restoration scientists and practitioners should continue to engage with potential REDD+ donors and recipients to ensure that funding is targeted at projects and programs with ecologically sound designs.

**Key words:** carbon emissions, carbon sequestration, ecosystems services, forest-dependent communities, forest restoration, forested wetlands, reducing emissions from deforestation and forest degradation, tree plantations.

<sup>1</sup> Society for Ecological Restoration, 1017 O Street, NW, Washington, D.C. 20001, U.S.A.

<sup>2</sup> Address correspondence to S. Alexander, email sasha@ser.org

<sup>3</sup> College of Forestry and Conservation, University of Montana, 32 Campus Drive, Missoula, MT 59812, U.S.A.

<sup>4</sup> Centre d'Ecologie Fonctionnelle et Evolutive (CNRS-UMR 5175), Montpellier, France

<sup>5</sup> Missouri Botanical Garden, 4344 Shaw Blvd., PO Box 299, St. Louis, MO 63166-0299, U.S.A.

<sup>6</sup> Center for Mined Land Rehabilitation, University of Queensland, Brisbane 4072, Australia

<sup>7</sup> Department of Public International Law, Ghent University, Universiteitstraat 4, 9000 Gent, Belgium

<sup>8</sup> Kevin L. Erwin Consulting Ecologist, Inc., 2077 Bayside Parkway, Ft. Myers, FL 33901, U.S.A.

<sup>9</sup> Institute for Land, Water and Society, Charles Sturt University, PO Box 789, Albury, NSW 2640, Australia

<sup>10</sup> Environmental Systems Analysis Group, Wageningen University, PO Box 47, 6700 AA Wageningen, The Netherlands

<sup>11</sup> School of Applied Sciences, Cranfield University, Bedfordshire MK43 0AL, U.K.

<sup>12</sup> School of Environmental Studies, University of Victoria, Victoria, BC V8S 3L7, Canada

<sup>13</sup> School of Plant Biology, University of Western Australia, Crawley, WA 6009, Australia

<sup>14</sup> Lewis Environmental Services, Inc., PO Box 5430, Salt Springs, FL 32134, U.S.A.

<sup>15</sup> Indigenous Peoples Restoration Network, PO Box 495, Douglas City, CA 96024, U.S.A.

<sup>16</sup> Department of Biology, University of Florida, Gainesville, FL 32611, U.S.A.

## Introduction

In forested ecosystems around the globe, ecological restoration can assist with climate change mitigation and adaptation while providing other tangible co-benefits to humans and natural systems. The contribution of afforestation and reforestation to reducing greenhouse gas emissions was first recognized under the Clean Development Mechanism of the Kyoto Protocol. More recently, the UN Framework Convention on Climate Change (UNFCCC) introduced reducing emissions from deforestation and forest degradation (REDD) as an international fund- or credit-based mechanism for reducing carbon emissions and protecting forest ecosystems. Now known as REDD+, it embraces “policy approaches and positive incentives on issues relating to REDD in developing countries; and the role of conservation, sustainable management of forests and enhancement of forest carbon stocks in developing countries” (UNFCCC 2010). Although ecological restoration is not explicitly mentioned, the inclusion of sustainable management and carbon-stock enhancement has opened the door to REDD+ funding for forest restoration activities that reduce emissions, sequester carbon, and provide important benefits to communities and biodiversity. To date, nine developing nations have submitted Readiness Preparation Proposals to the World Bank’s Forest Carbon Partnership Facility for initial monies to