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43. © Ecological restoration in a developing island nation: how useful is the science?

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OPINION ARTICLE

Ecological Restoration in a Developing Island Nation: How Useful is the Science?

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Abstract

Restoration science is a relatively young branch of ecology that is growing in importance owing to the sheer scale and trend of habitat degradation worldwide and the range of strong benefits that it is seen to potentially carry. Although spearheaded mainly by developed countries, its usefulness at least for the conservation of biodiversity may be greatest in the developing world. Here we examine how Mauritius, a developing island nation that may be regarded as well equipped among developing countries in terms of access to restoration science, is using science to inform the ecological restoration of its degraded native habitats for biodiversity conservation. While Mauritius is known for a number of proactive and at times innovative approaches that may even be setting the pace worldwide, we found that the restoration activities which are impacting the largest areas and an overwhelming proportion of native biodiversity of

the country sometimes remain averse to even basic ecological principles. This includes the removal from restoration areas of fast growing native pioneer species with proven nurse-tree potential to be replaced by a multitude of nursery grown and much slower growing plants that would have naturally grown anyway. Besides representing setbacks to areas undergoing restoration, this elevates restoration costs in the face of scarcity of conservation resources and urgency to restore more than the tiny and isolated areas currently targeted. Research worldwide continues to improve restoration science but blockages to knowledge transfer can seriously undermine its impact where it is most needed.

Key words: developing countries, ecological succession, invasive alien plants, Mauritius, nurse-tree, restoration science.

Introduction

Restoration ecology, a relatively young science with a growing popularity, is set to steadily grow in importance owing to both the worsening worldwide trends in habitat degradation and the increasing realization of the need to restore degraded areas for many reasons, including conservation of biodiversity (Suding 2011). Of particular concern is that ecosystem degradation has been and is predicted to continue to be most rapid in developing or relatively low income countries (Laurance 2001). This is also often where much of the world's biodiversity is concentrated, where biodiversity is often most at risk and where the least resources are available or allocated to biodiversity conservation and restoration (Myers et al. 2000).

It should therefore be heartening to developing countries that restoration ecology has developed into a vibrant and innovative branch of ecology. Several countries, like the United States and Australia, have led development of the science. The progress made can benefit other countries, which both need it much and are relatively poorly equipped to generate similar knowledge themselves owing to their limited

access to resources for research. Knowledge transfer may thus play a proportionally larger role than knowledge creation for informing restoration in many lower income countries.

Against this backdrop, one question of importance to the "raison d'être" of restoration science is how well its principles are reaching practitioners in developing countries and being used to guide actual restoration projects. Are the scientific advances of restoration ecology helping to save species from extinction? Is the science improving practitioners' ability to reach targets quicker and/or with greater economy of resources?

Here we propose a case study of restoration of native forests on Mauritius. Being a middle income country with one of the best economies in Africa (ranked 71st of 190 in the world in gross national income [GNI] – ex-gross domestic product [GDP] – by the World Bank [2011]) and hosting a university that ranks within the top 30% in the world (WWU 2011), the country can reasonably be regarded as being better prepared, in terms of availability of resources or access to scientific knowledge, than most other developing countries in terms of application of the principles of restoration science.

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Biota and General Restoration

Mauritius (1,865 km²) is located in one of the world's biodiversity hotspots (Myers et al. 2000). Within 370 years