



Press Release from Bournemouth University

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Restoring the ecology can boost the economy

Research co-authored by Bournemouth University (BU) Professor Adrian Newton and his colleague Dr Anita Diaz published in the leading journal *Science* this week (Friday, 28 August, 2009) shows that ecological restoration in areas of environmental degradation can help reverse global biodiversity losses, as well as promoting recovery of ecosystem services.

However the paper, entitled "Enhancement of Biodiversity and Ecosystem Services by Ecological Restoration: A Meta-Analysis" also showed that measures of biodiversity and ecosystem services are higher in pristine land, freshwater and marine systems than in restored systems. Examples of ecosystem services include improved water quality and increased carbon storage, services which benefit human well-being.

The research was carried out by an international team from the University of Alcalá in Spain, the UK's Centre for Ecology & Hydrology, and Bournemouth University in the UK.

Professor Newton, an environmental conservation expert from BU's Centre for Conservation Ecology and Environmental Change said: "These results highlight the importance of ecological restoration approaches for addressing the environmental degradation that has occurred in many parts of the world. The research suggests that restoration can offer a 'win-win' solution, by increasing the provision of environmental benefits to people, while at the same time increasing biodiversity."

Lead author, Professor José M. Rey Benayas from the University of Alcalá and President of the International Foundation for Ecosystem Restoration said: "In addition to the improved biodiversity resulting from ecological restoration, our findings show that such restoration also has benefits for ecosystem services. These services can act as an engine of economy and a source of green employment, so our results give policymakers an extra incentive to restore degraded ecosystems."

Ecological restoration is widely used to reverse the environmental degradation caused by human activities. However, the effectiveness of restoration actions in increasing provision of both biodiversity and ecosystem services has not previously been evaluated systematically.

The research team analysed results from 89 restoration assessments carried out in a wide range of ecosystem types across the globe. On average, ecological restoration increased

provision of biodiversity and ecosystem services by 44% and 25% respectively. Increases in biodiversity and ecosystem service measures following restoration were positively correlated. However, values of both remained lower in restored than in intact (undamaged) reference ecosystems.

The results indicate that restoration actions focused on enhancing biodiversity should support increased provision of ecosystem services, particularly in tropical terrestrial areas, which hold the largest amounts of biodiversity and are usually subject to high levels of human pressure."

Co-author, Professor James Bullock from the Centre for Ecology & Hydrology said: "We have shown that across the globe restoration projects are able to help reverse loss of the biodiversity and ecosystem services in areas degraded by human activities. While restoration can help reverse losses, this research shows it is critical for human well-being that we conserve pristine habitats and the biodiversity and ecosystem services they provide."

Editor's Notes:

1. Bournemouth University (BU) – BU has been named the UK's number one 'new' university in the *Guardian University Guide* over the last two years (2009 & 2010). In the most recent Research Assessment Exercise (RAE), Bournemouth University recorded one of the largest improvements in research performance in the UK.
2. BU's Centre for Conservation Ecology and Environmental Change at BU undertakes internationally recognised research on environmental change and its impacts on biodiversity. (www.bournemouth.ac.uk/conservation/)

Funding

1. The research was funded by a variety of sources including the UK Natural Environment Research Council, the International Foundation for Ecosystem Restoration (FIRE), the Spanish Ministry of Science and Education, and the ReForLan project funded by the EC.
2. The Spanish Ministry of Science and Education partially funded this project through the project CGL2007-60533-BOS lead by the senior author; the aim of this project is to explain the effects of both passive (i.e. cropland abandonment) and active (i.e. tree and shrub plantations) ecological restoration on the dynamics and diversity patterns of plants and birds in agricultural landscapes. http://www.remedinal.org/plt_Home.aspx
3. This research was partly supported by the ReForLan project, an international initiative involving researchers from six countries, funded by the EC. The project is focusing on the ecological restoration of native forest in dryland areas of South America, and includes the use of remote sensing and GIS technologies to assess the environmental degradation that has taken place, and the potential for ecological recovery. Further details at <http://reforlan.bournemouth.ac.uk/>. The project is coordinated by Prof. Adrian Newton of Bournemouth University.

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