

News from the field: botanic gardens and arboreta can help move us towards a science-based 'restoration culture'

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Abstract

There are huge needs, challenges, risks and opportunities today for everyone engaged in ecological restoration. Globally, large-scale ecological restoration is now recognized as one of the keys to maintaining biodiversity, mitigating anthropogenic climate change, and nurturing of well-functioning, "healthy" ecosystems and landscapes that provide ecosystem services for people and all forms of life. Working together on restoration sites and programs is also a marvelous way to reweave a healthier relationship between people and "nature" wherever it has been lost or eroded. Scientists, professional practitioners, volunteers, stakeholders and government agencies and policy-makers must all pitch in.

What can botanic gardens do? Help jumpstart, plan, carry-out, communicate, upscale and mainstream ecological restoration for starters; help identify appropriate species assemblages and the ecological structure and core processes of chosen or constructed "reference ecosystems" to guide restoration work; plan and execute long-term experiments, devise cost-effective control or eradication of invasive species, and many other things, They can and should also participate as hubs and meeting places for societal interchange and, integration of ecological restoration (and rehabilitation) are considered desirable, achievable and sustainable at landscape and regional scales.

After all, botanic gardens are incubators and repositories of fundamental knowledge, skills, and resources for restoration, such as seedbanks and nurseries (Miller et al. 2015). Developing effective techniques to collect, store and germinate seeds, vegetative propagation and cultivation of trees and other plants targeted for reintroduction are yet other examples, along with monitoring outcomes of restoration efforts - from both natural and social science perspectives - and playing a role in education and capacity-building are vital as well. Finally, we must serve as advocates and advisors for ecological restoration plans and programs at local, and national levels. This will require institutional commitment as well as that of individuals. As a consortium, the Ecological Restoration Alliance of Botanic Gardens could one day play a big role internationally to help bridge

the yawning science-policy, science-practice, and practice-policy gaps that exist in this young field today.

We will illustrate these ideas with examples from ongoing Mo. Bot. Garden restoration projects in the US and Madagascar, and give a brief report from the Denver Botanical Garden, a new member of the Ecological Restoration Alliance. We will also mention some outstanding projects underway led by people from other ERA members who could not attend this meeting in Xalapa.

Reference cited: Miller, J.S., P.P. Lowry II, J. Aronson, S. Blackmore, K. Havens & J. Maschinski 2016. Conserving biodiversity through ecological restoration: the potential contributions of botanical gardens and arboreta. *Candollea* 71:91-98.



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