

EDITORIAL OPINION

# Ecosystem Restoration is Now a Global Priority: Time to Roll up our Sleeves

James Aronson<sup>1,2,3</sup> and Sasha Alexander<sup>4</sup>

## Abstract

Ecosystem restoration is now globally recognized as a key component in conservation programs and essential to the quest for the long-term sustainability of our human-dominated planet. Restoration scientists and practitioners are now on the frontline and will be increasingly called upon to get involved in large scale programs addressing immediate environmental crises and challenges. Here, we summarize the advances in mainstreaming ecological restoration in global environmental policy deliberations during the last year, culminating in the recent meeting of the United Nations Convention on Biological Diversity. We

also provide key references for those seeking more information, and set out an agenda as to how the restoration community could respond to and act upon these recent developments. However, we underline the need for caution and prudence; we must not promise more than we can deliver. Thirty years after the emergence of ecological restoration as a scientific discipline and practice, there remain many obstacles and misconceptions about what can be achieved at large scales. Yet, clearly the old adage applies here: nothing ventured, nothing gained.

**Key words:** CBD COP11, enabling factors, Hyderabad Call.

## Good News from Hyderabad

In October 2012, the Convention on Biological Diversity (CBD) held its 11th Conference of the Parties (COP11) in Hyderabad, India. This historic meeting was attended by over 8,000 delegates from 193 countries. During the opening plenary, India announced the “Hyderabad Roadmap” intended to guide the efforts of all 168 signatory countries in achieving the 20 Aichi Biodiversity Targets in the Strategic Plan 2011–2020 agreed to in Nagoya, Japan (CBD 2010). Of these, Targets 14 and 15 set out ambitious but attainable goals for scaling up efforts to restore and rehabilitate degraded ecosystems and landscapes around the world.

Inspired by the wealth of information on the science and practice of restoration, the CBD Executive Secretary emphatically exclaimed that his three main priorities for the next 8 years are “implementation, implementation, and implementation.” In essence, he was inviting countries, communities, corporations, and relevant organizations to integrate ecosystem restoration into legislative, regulatory, and planning frameworks that would facilitate and incentivize action on the ground. Perhaps, the most important legacy of this meeting

will prove to be the Hyderabad Call for a concerted effort and the CBD COP11 decision on ecosystem restoration, both of which are described below.

## Ecosystem Restoration as a Conduit for Achieving Multiple Objectives

In 1992, in Rio de Janeiro, Brazil, the three Rio Conventions were established, including the above-mentioned CBD and UN Convention to Combat Desertification (UNCCD) as well as the UN Framework Convention on Climate Change (UNFCCC). Twenty years after the adoption of the CBD Convention Text and Article 8(f), which states that each Party shall “rehabilitate and restore degraded ecosystems and promote the recovery of threatened species” (CBD 1992), the Parties have now fully recognized the critical role of restoration in the implementation of the Convention and the Aichi Biodiversity Targets for 2020.

The Hyderabad Call (CBD 2012a), like other major initiatives and declarations, affirms that conservation and sustainable use alone are no longer sufficient to stem the loss of biodiversity and ecosystem services. Recognizing that ecosystem restoration is not a substitute for conservation nor is it a rationale for intentionally damaging extant ecosystems (Moreno-Mateos et al. 2012), the CBD has called for a global partnership to not only help achieve the objectives of the Rio Conventions but also help address the urgent global priorities on poverty alleviation, assuring food and water security, and generating sustainable livelihoods.

<sup>1</sup>Centre d'Ecologie Fonctionnelle et Evolutive (CNRS – U.M.R. 5175), 1919, Route de Mende, Montpellier 34293, France

<sup>2</sup>Missouri Botanical Garden, PO Box 299, St. Louis, MO 63166, U.S.A.

<sup>3</sup>Address correspondence to J. Aronson, email james.aronson@cefe.cnrs.fr

<sup>4</sup>Society for Ecological Restoration, 1017 O Street, Northwest, Washington, DC 20001, U.S.A.

Rehabilitation and restoration are now often a prerequisite to sustainable use (Neßhöver et al. 2011), particularly in drylands (Lacombe & Aronson 2007), which represent more than 40% of terrestrial ecosystems and where degradation and desertification are widespread (Bainbridge 2007). At Rio+20, held in June 2012, the UNCCD proposed an ambitious new target that will “strive to achieve a land degradation neutral world” (UN 2012) by 2030. In order to achieve this goal, increased investments in dryland restoration and rehabilitation are essential—this in turn would help meet many of the Aichi Biodiversity Targets.

Many other global agreements, commitments, and initiatives have established the imperative for ecosystem restoration, which is now recognized as a global priority for countries and communities alike. In September 2012, close to 10,000 representatives of NGOs and governments, came together in Jeju, Korea for the fourth World Congress of the International Union for the Conservation of Nature (IUCN) and issued the Jeju Declaration to work toward a future where conservation, restoration, and sustainable use enhance biodiversity conservation, and the provision of ecosystem services while fostering sustainable development and improved livelihoods (IUCN 2012).

The science and practice of ecological restoration have advanced rapidly in the last decade, creating a wealth of guidance, tools, and technologies, which can be found in Information Documents 17 and 18 prepared for the CBD COP11 (CBD 2012*b*). To cite one recent example among many, the IUCN World Commission on Protected Areas released a new volume in its Best Practice Guideline series in Jeju, entitled “Ecological restoration for protected areas: principles, guidelines and best practices” (Keenleyside et al. 2012). Although many challenges remain in both research and practice, our knowledge base continues to expand and the restoration community is poised to play a significant role in helping the global community address pressing biodiversity and environmental challenges that threaten our sustainability and thus human wellbeing.

### **Ecosystem Restoration Day at the Rio Conventions Pavilion**

In recent years, the Rio Conventions Pavilion has been held at each of the COPs of the respective Conventions to serve as a platform to showcase the inter-linkages, identify potential synergies, and initiate collaborative work programs. The Pavilion also serves to leverage scarce resources and expertise while avoiding duplication. It also includes the Global Environmental Facility (GEF), which has been instrumental in funding large-scale projects that address issues related to biodiversity, climate change, and sustainable land management.

At the CBD COP11 in Hyderabad, the Pavilion featured an entire day on ecosystem restoration which laid the foundation for the Hyderabad Call. A keynote address and various panels convened throughout the day cited local, national, and global

partnerships for achieving cost-effective restoration outcomes on the ground. The day concluded with the presentation of the Hyderabad Call for a Concerted Effort on Ecosystem Restoration, which was supported by 14 partners, including the governments currently hosting the three Rio Convention presidencies, namely India (CBD), South Korea (UNFCCC), and South Africa (UNCCD). This Call, together with the Note from the CBD Executive Secretary (CBD 2012*c*) contributed to the deliberations leading to the historic COP11 decision XI/16 on Ecosystem Restoration (CBD 2012*d*).

### **The Hyderabad Call and COP11 Decision on Ecosystem Restoration**

Recognizing that no single Intergovernmental Organization (IGO) or Non-governmental Organization (NGO) concerned with the conservation and sustainable use of natural resources can achieve its goals alone, the Hyderabad Call begins:

“We, the Governments of India, the Republic of Korea, and South Africa, the Secretariats of the Convention on Biological Diversity (CBD), the United Nations Convention to Combat Desertification (UNCCD), the United Nations Framework Convention on Climate Change (UNFCCC), the Ramsar Convention on Wetlands, the Global Environment Facility (GEF), the United Nations Environment Programme (UNEP), the United Nations Development Programme (UNDP), the United Nations Forum on Forests (UNFF), the Food and Agriculture Organization (FAO), the International Union for Conservation of Nature (IUCN), and the Society for Ecological Restoration (SER) partnered in organizing the Ecosystem Restoration Day on 17 October 2012 at the Rio Conventions Pavilion on the margins of the eleventh meeting of the Conference of the Parties (COP11) to the Convention on Biological Diversity held in Hyderabad, India.”

Furthermore, the Call notes that:

“the effective implementation of restoration projects and programmes not only helps to achieve many of the Aichi Targets under the CBD, but also ecosystem-based adaptation and climate change mitigation under the UNFCCC, striving towards land degradation neutrality and Zero Net Land Degradation under the UNCCD, the wise use of wetlands under the Ramsar Convention on Wetlands, the four Global Objectives on Forests of the UNFF, the Bonn Challenge of the Global Partnership on Forest Landscape Restoration, and sustainable development and other internationally agreed development goals.”

In conclusion, the Hyderabad Call urges:

“parties to the Rio Conventions and other Multilateral Environmental Agreements (MEA), donor agencies, including the World Bank and regional development banks, private, and corporate donors, other relevant international bodies and organizations, indigenous peoples and local community organizations and civil society to *make concerted and coordinated long-term efforts to mobilize resources and facilitate the implementation of ecosystem restoration activities*”

In addition to this significant progress at mainstreaming ecological restoration at the global policy level, regional champions for large scale ecosystem restoration are in place or now emerging. In Asia, these include India’s National Green Mission (GOI 2011) and the Republic of Korea’s National Strategy for Green Growth (ROK 2010). In Africa, South Africa’s longstanding Working for Water programmes (GOSA 2012) and Rwanda’s newly announced Forest & Landscape Restoration programme (GOR 2009) are of note, and in Latin America, Brazil’s Atlantic Forest Restoration Pact (AFRP 2012) provides yet another pathway for developing countries with biodiversity hotspots and significant socio-economic obstacles, as do other notable restoration successes in Colombia, Ecuador, Costa Rica, and Mexico.

At the closing plenary of CBD COP11, the Parties adopted Decision XI/16, which outlines various ways and means that local, regional, and global partnership can assist countries, corporations, and communities in designing and implementing knowledge-based, cost-effective, and participatory restoration projects and programs. Specific tasks include:

1. Capacity building initiatives, which include regional workshops and technical training courses;
2. Knowledge sharing through searchable databases, including e-learning modules, case-studies, and best practices;
3. Exchange programs among agencies, restoration practitioners, and researchers;
4. Awareness-raising and communications outreach on the economic, ecological, and social benefits of ecosystem restoration including the general public, policymakers, and environmental managers; and
5. Integration of ecosystem restoration into broader planning processes.

### **A Way Forward: Global Partnerships for Local Results**

These positive developments in global environmental policy priorities and the outcomes of the CBD COP11 are encouraging. However, in order to be effective at the local level, the involvement of restoration practitioners, professionals, and researchers is required. From seed-savers and community volunteers to decision-makers and corporate leaders, the restoration community will play an increasingly important role. As

political will and a long-term vision for ecological restoration begins to coalesce, the effective implementation and financing of restoration activities on the ground remain our biggest hurdles.

National commitments are the first critical “enabling factor” identified in the CBD Executive Secretary’s Note to the Parties. That document also identifies three other factors necessary to scale up restoration efforts. These can be summed up as: Open-access transfer of knowledge, guidance, tools, and technologies; Partnerships among governments, corporations, and communities; and Finance and other incentive mechanisms, such as Payments for Ecosystem Services. This last factor is particularly important to encourage and facilitate investments in our ecological infrastructure (TEEB 2010). All of the above enabling factors are taken into account in the agenda outlined in CBD Decision XI/16.

In addition, there is a clear need for continued advances in restoration science, from genes to whole landscapes. Such research should not only improve our ability to undertake restoration activities so as to protect biodiversity, but also contribute to capacity-building, sustainable livelihoods, and improving the human condition in general. Finally, without a committed and experienced restoration community, we will not be able to achieve the objectives of the Rio Conventions and respond to the Hyderabad Call. We need to get better informed and keep up to date about international and national policy decisions, and discover the opportunities that await us in this new age where ecosystem restoration and rehabilitation is now a global priority. The tasks outlined in CBD COP11 Decision XI/16, and the expanded list of enabling factors provides a partial roadmap for the way forward.

In closing, we repeat that we must not promise more than we can deliver. Also, not every restoration ecologist or practitioner will be able to engage in large scale projects or help in policy debates or negotiations; every little bit helps though, as we think globally and act locally. Furthermore, there are major implementation and financing hurdles to overcome before large scale restoration projects can be implemented and sustained. The Atlantic Forest Restoration Pact (AFRP 2012) in particular offers hope that such efforts can be achieved. The AFRP programme is particularly notable for being a “bottom-up” coalition that has succeeded in attracting both private and government investors. With a top-down approach, national government programs, such as South Africa’s Working for Water, are beginning to show great promise. Various industrial and finance sectors are also showing much greater interest in, and commitment to restoration, especially in relation to the concept of ecosystem services (Sukhdev 2012). Hopefully, the Hyderabad Call, the Bonn Challenge on Forest Landscape Restoration, and other such policy initiatives will lead to more movement in these positive directions.

Thus, great potential and exciting prospects now exist. In view of the many accounts of successful restoration in this journal, over many years, and the many projects and programs highlighted on the Society for Ecological Restoration’s Global Restoration Network Case Study Database (SER 2012), we are confident that the science and practice of restoration are

moving forward. Despite the great challenges presented by accelerating climate change, alien invasive species, and other anthropogenic sources of degradation, we are indeed in a position to offer hope for the future. Therefore, let us roll up our sleeves, join forces, and get to work.

## Acknowledgments

We are very grateful to N. Davidson, R. Hobbs, D. Lamb, D. Moreno Mateos, M. N. Roble, and P. Woodworth, who reviewed earlier drafts of this editorial and made helpful comments.

## LITERATURE CITED

- AFRP (Atlantic Forest Restoration Pact). 2012. <http://www.pactomataatlantica.org.br/index.html> [accessed on 20 November 2012].
- Bainbridge, D. 2007. *A guide for desert and dryland restoration*. Island Press, Washington, DC.
- CBD (Convention on Biological Diversity). 1992. CBD convention text. <http://www.cbd.int/convention/text/> [accessed on 20 November 2012].
- CBD (Convention on Biological Diversity). 2010. Aichi biodiversity targets of the strategic plan 2011–2020. <http://www.cbd.int/sp/targets/> [accessed on 20 November 2012].
- CBD (Convention on Biological Diversity). 2012a. Hyderabad Call for a concerted effort on ecosystem restoration. [http://www.ramsar.org/cda/en/ramsar-news-hyderabadcall/main/ramsar/1-26%5E25955\\_4000\\_0\\_\\_](http://www.ramsar.org/cda/en/ramsar-news-hyderabadcall/main/ramsar/1-26%5E25955_4000_0__) [accessed on 20 November 2012].
- CBD (Convention on Biological Diversity). 2012b. CBD COP11 Information documents (INF/17, INF/18, and INF/19). <http://www.cbd.int/doc/?meeting=COP-11> [accessed on 20 November 2012].
- CBD (Convention on Biological Diversity). 2012c. Note from the executive secretary. <http://www.cbd.int/doc/meetings/cop/cop-11/official/cop-11-21-en.pdf> [accessed on 20 November 2012].
- CBD (Convention on Biological Diversity). 2012d. CBD COP11 decision XI/16. <http://www.cbd.int/cop/cop-11/doc/2012-10-24-advanced-unedited-cop-11-decisions-en.pdf> [accessed on 20 November 2012].
- Government of India (GOI). 2011. National mission for green India. <http://moef.nic.in/downloads/public-information/GIM-Report-PMCCC.pdf> [accessed on 20 November 2012].
- GOR (Government of Rwanda). 2009. Rwanda forest & landscape restoration programme. [http://www.cbfp.org/docs/research\\_docs/Facilitation%20canadienne%202011/Rwanda%20Forest%20Landscape%20Restoration\\_Workshop%20Report.pdf](http://www.cbfp.org/docs/research_docs/Facilitation%20canadienne%202011/Rwanda%20Forest%20Landscape%20Restoration_Workshop%20Report.pdf) [accessed on 20 November 2012].
- GOSA (Government of South Africa). 2012. Working for water programme. <http://www.dwaf.gov.za/wfw/> [accessed on 20 November 2012].
- IUCN (International Union for the Conservation of Nature). 2012. Jeju declaration. [http://cmsdata.iucn.org/downloads/jeju\\_declaration\\_15\\_september\\_final.pdf](http://cmsdata.iucn.org/downloads/jeju_declaration_15_september_final.pdf) [accessed on 20 November 2012].
- Keenleyside, K. A., N. Dudley, S. Cairns, C. M. Hall, and S. Stolton. 2012. *Ecological restoration for protected areas: principles, guidelines and best practices*. IUCN, Gland, Switzerland.
- Lacombe, M., and J. Aronson. 2009. *Restoring natural capital in arid and semiarid regions: combining ecosystem health with human wellbeing*. Les dossiers thématiques du CSFD.N7. Agropolis International, Montpellier, France.
- Moreno Mateos, D., M. E. Power, F. A. Comin, and R. Yockteng. 2012. Structural and functional loss of restored wetland ecosystems. *PLoS Biology* **10**:e1001247.
- Nebhöver, C., J. Aronson, J. N. Blignaut, D. Lehr, A. Vakrou, and H. Wittmer. 2011. The economics of ecosystems and biodiversity in National and International Policy Making. Pages 401–448 in P. ten Brink, editor. *Investing in ecological infrastructure*. Earthscan, London, and Washington.
- ROK (Republic of Korea). 2010. National Strategy for Green Growth. [http://www.unep.org/PDF/PressReleases/201004\\_unep\\_national\\_strategy.pdf](http://www.unep.org/PDF/PressReleases/201004_unep_national_strategy.pdf) [accessed on 20 November 2012].
- SER (Society for Ecological Restoration). 2012. Global restoration network case study database. <http://www.globalrestorationnetwork.org/database/> [accessed on 20 November 2012].
- Sukhdev, P. 2012. *Corporation 2020. Transforming business for tomorrow's world*. Island Press, Washington, DC.
- TEEB (The Economics of Ecosystems and Biodiversity). 2010. *Investing in our ecological infrastructure*. <http://www.TEEBweb.org> [accessed on 20 November 2012].
- UN (UN General Assembly). 2012. Rio+20: “The future we want.” <http://daccess-dds-ny.un.org/doc/UNDOC/GEN/N11/476/10/PDF/N1147610.pdf> [accessed on 20 November 2012].