

RESPONSE ARTICLE

The evolution of Society for Ecological Restoration's principles and standards—counter-response to Gann et al.

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In response to our recent article (Higgs et al. 2018) in these pages, George Gann and his coauthors defended the Society for Ecological Restoration (SER) International Standards, clarified several points, and introduced some new perspectives. We offer this counter-response to address some of these perspectives. More than anything, our aims are in sharpening the field of restoration in a time of rapid scaling-up of interest and effort, and support further constructive dialogue going forward. Our perspective remains that there is an important distinction needed between “Standards” and “Principles” that is largely unheeded by Gann et al. (2018). We encourage SER to consider in future iterations of its senior policy document to lean on principles first, and then to issue advice on standards that meet the needs of diverse conditions and social, economic, and political realities.

Key words: ecological restoration targets, global restoration policy, reference ecosystems, restoration principles, restoration standards

Implications for Practice

- Constructive dialogue, extensive and diverse consultation, careful assessment of scientific evidence, detailed reviews, and transparent process are essential in guiding restoration policy and practice especially during a time of rapid change and scaling-up of restoration effort.
- A principles-first approach can be consistent with a standards approach, and offers a clear moral structure to restoration guidance.
- International agreements such as the Convention on Biological Diversity, the Intergovernmental Science-Policy Platform for Biodiversity and Ecosystem Services, and the Land Degradation Neutrality Framework of the UN Convention to Combat Desertification depend on restoration guidance that accounts for ecosystem and landscape legacies, and open and flexible approach to future trajectories across a wide variety of ecosystems and cultural perspectives.

In response to our recent article (Higgs et al. 2018), Gann et al. (2018) defended the Society for Ecological Restoration (SER) International Standards, clarified several points, and introduced some new perspectives. We offer this counter-response with the aim of sharpening the field of restoration in a time of rapid scaling-up of interest and effort.

We learned from Gann et al. that McDonald et al. (2016) was meant to be the first version of a living document. This was not clear to many of us, and Higgs et al. (2018) was written with

the notion that revisions were needed. Strategically, we would have preferred there to be more discussions and internal reviews about such an important SER document before it was released. Indeed, we think the 2 years of international effort producing the IUCN restoration guidance on protected areas on which SER was a cosignatory (Keenleyside et al. 2012) might have been leveraged more extensively, and SER's own Code of Ethics figured prominently. While vastly more complicated, international

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peer-reviewed processes such as the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES 2018), validated both by experts and governments, point the way to closer links between the best that restoration science can offer alongside advances in diverse practices. There is so much that can be gleaned from advances in our knowledge and techniques across the full interdisciplinary range that informs restoration, and this is how the field will evolve to meet existing and new responsibilities, challenges, and opportunities.

We acknowledge that the groups still seem to disagree on some points.

Our perspective remains that there is an important distinction between “standards” and “principles” that is largely unheeded by Gann et al. (2018). That distinction is consequential for how the responsibilities of restoration are understood, yet it is not addressed fully in the ambiguity over the “effective, efficient, and engaging” principles from Keenleyside et al. (2012) and the six new key concepts. We note that there was no serious consideration of our five recommendations (Higgs et al. 2018).

We remain unconvinced that the 2016 version avoids the temptation to bin ecosystems. Intriguingly, Gann et al. (2018) state that “... measurable standards may be required to prevent governments or practitioners from merely ‘ticking the box’ to reach international commitments or legal obligations.” However, this contradicts the original document it tries to defend. McDonald et al. (2016) created a series of what are, effectively, tick boxes—a five-star system, a recovery wheel, and a Restoration Continuum—that makes a clear break between “restorative activities” and actual bona fide “ecological restoration,” and thus parting company with the 2004, internationally agreed, definition by changing ecological restoration from a *process* (a means) to a *product* (an end). We contend the messages in McDonald et al. (2016) and Gann et al. (2018) send mixed signals. The abovementioned variants on the tick box scheme reinforce a prescriptive approach. And, for example, our perspective is that an erratum noted by Gann et al. (2018)—the Orr et al. (2017) and Cowie et al. (2017) confluations—arose because of those mixed messages.

A five-star system suggests restoration puts an ecosystem on a predefined path rather than a trajectory of change. It is why Suding and Gross (2004), Suding and Hobbs (2009), Standish et al. (2014), Suding et al. (2015), and Murphy (2018) focus on moving the measurement and management goals in restoration ecology to approaches that explicitly focus on proxy variables for resilience or alternative stable states because those better reflect open-ended trajectories where management choices must be made and must be explicit. It better reflects reference ecosystems that are not going to be “historical” in any strict sense as a consequence of human-caused climate change, development, or economics, because reference ecosystems can have multiple natural and culturally driven stable states.

Due to the variation in context, the standards should speak more to professional competencies expected rather than—as Clewell and Aronson (2013) cautioned against—trying to anticipate or compare and rank endpoints. We can see some

regional value in setting more specific professional goals, but beyond that scale, any comparisons will fail because, for example, what is relevant to northern Australia is not going to be relevant to northern Canada. Indeed, the Bonn Challenge (2018), one of the main global policy drivers for restoration, explicitly acknowledges that “[t]here is more than one way to restore,” and works with a different perspective on what restoration is than that contained in the SER Standards. Similarly, the Convention on Biological Diversity’s 2016 decision recommends the adoption of a “short-term action plan on ecosystem restoration as a *flexible framework and adaptable to national circumstances and legislation*” [emphasis ours].

The strong debate over SER Standards reflects the rapid, extensive, and exciting innovations across the entire field of ecological restoration. The conceptualization of what restoration is, what it can be, and what it should be has been challenged and shaken.

That’s cathartic.

And, by definition, what follows catharsis?

Renewal and Restoration.

LITERATURE CITED

- Bonn Challenge (2018) Restoration options. <http://www.bonnchallenge.org/content/restoration-options> (accessed 12 Apr 2018)
- CBD (Convention on Biological Diversity) (2016) Decision adopted by the conference of the parties to the Convention on Biological Diversity XIII/5 Ecosystem restoration: short-term action plan. <https://www.cbd.int/conferences/2016/cop-13/documents> (accessed 11 Apr 2018)
- Clewell AF, Aronson J (2013) Ecological restoration: principles, values and structure of an emerging profession. Island Press, Washington D.C.
- Cowie AL, Orr BJ, Sanchez VMC, Chasek P, Crossman ND, Erlewein A, et al. (2017) Land in balance. The scientific conceptual framework for land degradation neutrality. *Environmental Science and Policy* 26:25–35
- Gann GD, Aronson J, Dixon KD, Walder B, Hallett JG, Decler K, et al. (2018) The SER standards: a globally relevant and inclusive tool for improving restoration practice—a reply to Higgs et al. *Restoration Ecology* 26:426–430
- Higgs E, Harris J, Murphy S, Bowers K, Hobbs R, Jenkins W, et al. (2018) On principles and standards in ecological restoration. *Restoration Ecology* 26:399–403.
- IPBES (Intergovernmental Science-Policy Platform Panel on Biodiversity and Ecosystem Services) (2018) Land degradation & restoration: better evidence-based information critical to achieve global goals. <https://www.ipbes.net/land-degradation-restoration-better-evidence-based-information-critical-achieve-global-goals> (accessed 11 Apr 2018)
- Keenleyside KA, Dudley N, Cairns S, Hall CM, Stolton S (2012) Ecological restoration for protected areas: principles, guidelines and best practices. IUCN, Gland, Switzerland
- McDonald T, Gann GD, Jonson J, Dixon KW (2016) International standards for the practice of ecological restoration – including principles and key concepts. Society for Ecological Restoration, Washington D.C.
- Murphy SD (2018) Restoration Ecology’s Silver Jubilee: meeting the challenges and forging opportunities. *Restoration Ecology* 26:3–4
- Orr BJ, Cowie AL, Castillo Sanchez VM, Chasek P, Crossman ND, Erlewein A, et al. (2017) Scientific conceptual framework for land degradation neutrality. A report of the science-policy interface. United Nations Convention to Combat Desertification (UNCCD), Bonn, Germany

Standish RJ, Hobbs RJ, Mayfield MM, Bestelmeyer BT, Suding KN, Battaglia LL, et al. (2014) Resilience in ecology: abstraction, distraction, or where the action is? *Biological Conservation* 177:43–51

Suding K, Gross K (2004) Alternative states and positive feedbacks in restoration ecology. *Trends in Ecology & Evolution* 19:46–53

Suding KN, Hobbs RJ (2009) Threshold models in restoration and conservation: a developing framework. *Trends in Ecology & Evolution* 24:271–279

Suding K, Higgs E, Palmer M, Callicott JB, Anderson CB, Baker M, et al. (2015) Committing to ecological restoration. *Science* 348:638–640

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