

SER)NEWS

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Letter from SER Board Member James Aronson

To the SER global family,

Climate change may look different depending on the region you live in. As of this writing, New England is digging its way out of an historic snowstorm, while South Africa, western Australia, and coastal Peru are all battling drought and bracing for the biggest El Niño event in recorded history. The issues and outcomes of climate change may manifest differently, but the changes/anomalies/impacts are unmistakable. Unless, that is, you're a follower of the Koch Brothers et al.'s ploys of playing ostrich, or rather, just plain playing greedy.

In reality, wherever you live you're going to see huge changes in your climate patterns and everyday weather over the next 30 years. (*Climate, as the old saying goes, is what you expect and weather is what you actually get.*)

So where does that leave us when contemplating the 21st Session of the Conference of the Parties to the United Nations Framework Convention on Climate Change (COP 21), held in Paris last December, and the engagements agreed upon by nearly all the nations present there? As French President Francois Hollande summed it up: *"In Paris, there have been many revolutions over the centuries. Today it is the most beautiful and the most peaceful revolution that has just been accomplished – a revolution for climate change."*

Will it be a peaceful revolution? Probably not. Will it be enough? No. Even if all the ratifying Parties fulfill their pledges, we'll be looking at a huge "emissions gap." But, it's a good step in the right direction. Certainly COP21 deserves the attention of the ecological restoration community as restoration is clearly being called upon to help bridge the "gap" and, more profoundly still, to help us all make a transition towards a more sustainable and desirable future. Don Falk and Sasha Alexander were both in Paris and have written reports for this issue. Read on to hear their thoughts on where we go from here, and to read Barbara Dean's observations of a changing California landscape. Also in this issue, don't miss highlights of some exciting developments happening within SER.

To borrow a phrase from Barbara,
Onward.



James Aronson
SER Representative-At-Large

James Aronson is a researcher with the Center for Functional and Evolutionary Ecology (CNRS) in Montpellier, France, where he serves as Head of the Restoration Ecology Group. He is also Curator of Restoration Ecology at the Missouri Botanical Garden in St. Louis, Missouri.

Ecosystems are Critical to Solving the Global Climate Crisis

Contributed by Don Falk



It is a fair assumption that many members of the public, as well as elected officials, believe that solving the global climate challenge is primarily a matter of replacing antiquated carbon-heavy technology with carbon-free solutions. While such measures are clearly essential – and long overdue – the fact is that the world’s ecosystems are central, and probably essential, to solving the global climate crisis. In fact, it can be argued credibly that climate change cannot be solved without addressing the state of world ecosystems.

Ecosystems figure into the climate equation in two fundamental ways. On the demand side, it is increasingly clear that global ecosystems – Earth’s oceans, forests and other systems – continue to sequester massive amounts of CO₂ and other greenhouse gases (GHGs). According to the most recent Intergovernmental Panel on Climate Change (IPCC) report, ecosystems absorb 25 - 50% of all anthropogenic GHG emissions annually. Certain areas, tropical and boreal forests in particular, account for a very high proportion of this carbon sink. Worldwide, more carbon is stored in soils (2.5 billion tons) than in the atmosphere (800 million tons) and aboveground plants (560 million tons) *combined*. This is a massive ecosystem service provided by global ecosystems for the carbon-intensive human footprint. Clearly, without healthy ecosystems, the climate crisis would be much worse.

Ecosystems also figure substantially on the “supply” side – that is, as contributors of GHGs to the atmosphere. The leading causes of such emissions are deforestation, land degradation and wildfires. In the decade 2000-2010, more than 9 million hectares of tropical forest were deforested, releasing an average of 3 billion metric tons of carbon to the atmosphere each year. Overall land use accounts for roughly 25% of global GHG emission on an annual basis. In some years the ecosystem source is much larger; for instance, in 1997-8 and then again in 2015-5, wildfires in southeast Asia during strong El Niño events constituted one-third of global emissions for a 12-month period, larger than all cars and trucks in the world combined. These GHG emissions are the foundation for global initiatives such as “REDD+” (Reducing Emissions from Deforestation and Degradation), which continue to evolve to address not only carbon budgets but also forest sustainability, local economies and indigenous land rights.

During the recent Conference of Parties in Paris (“COP21”), these issues were highlighted as never before. The role of forests is stated explicitly in the final agreement, passed by unanimous consent on 12 December 2015. Article 5.1 states that “Parties should take action to conserve and enhance, as appropriate, sinks and reservoirs of greenhouse gases...including forests.” While

nearly everyone agrees that the 2015 agreement is far from perfect – and indeed nowhere strong enough to reduce net emissions sufficiently to prevent global mean surface temperature from exceeding 2°C above pre-industrial levels – this agreement and those that will follow signal a new global motivation to protect existing ecosystems and to restore those that have been degraded.

The 2015 agreement does not invoke ecological restoration explicitly, but restoration plays a large role in strategies being developed to implement REDD+ and other ecosystem-oriented objectives. A 2015 report by the United Nations Convention to Combat Desertification, *Land Matters for Climate*, identifies ecological restoration as one of the key pathways for achieving GHG stabilization in coming decades. This is good news, although it is worth noting that there has been virtually no research on the carbon trajectory of restoring ecosystems over time, which will be a key component of any restoration strategy for global change.

Global change poses new challenges, but also opens new opportunities, for the field of ecological restoration. It's up to all of us as members of this community to figure out how to rise to the moment.

Don Falk was a founding Board member of SER and served as its first Executive Director from 1993-1999. He was a delegate to the COP21 climate summit in Paris in December 2015. Don Chairs the undergraduate degree program in Global Change Ecology and Management at the University of Arizona.

Shifting Gears After Paris: Land Matters for Climate

Contributed by Sasha Alexander



In general, the outcomes of the recent climate conference were seen as a long overdue shift in gears, perhaps from second to third – though some observers feel we are still idling in neutral given the magnitude of the challenge. In spite of the relative success in Paris, there is significant ground that remains to be covered, and we need to get in the fast lane as soon as possible. In order to close the so-called emissions gap and stay within the [2°C target](#), we will need to quickly shift into fourth and fifth gear to avoid overheating and

surpassing ominous thresholds.

Critical to this shift is the inclusion of more ambitious commitments to sustainable land management (SLM) and ecosystem restoration. While the land use sector accounts for almost a quarter of the greenhouse gas emissions, its full potential contribution to the climate solution is still not yet fully recognized or properly financed. Half of these emissions are due to land use change or ecosystem conversion—i.e., the loss of forests, wetlands and grasslands which are some of our most efficient carbon sinks, not to mention the cradle of our remaining biodiversity and many of the ecosystem services that we cannot live without. The other half is the result of

unsustainable management practices currently used in our production systems for food, water, energy and raw materials.

I realize that I am painting a rather simplified picture. Nevertheless, it points to concrete action in the land use sector that we can take right now in terms of mitigating and adapting to the impacts of climate change. We have the knowledge, tools and technologies to accelerate progress, stay on target and help close the gap. The emissions gap – the difference between reductions pledged and those needed to stay within 2°C – remains significant. As we continue to improve the efficiency of energy production and consumption, we will also need to scale up policies and incentives that promote SLM. This includes enhanced carbon stocks through land rehabilitation and ecosystem restoration, in order to reduce the remaining emissions gap in a demonstrable and cost-effective manner.

Ecosystem restoration is a global priority, but so is food, water, energy and job security. So the question is how do we scale up restoration activities that benefit our working landscapes, improve livelihoods, conserve biodiversity and provide vital services for our growing urban and peri-urban communities? We know that losses in productivity drive further land use change to agriculture and other managed systems and increase pressures on our remaining natural ecosystems. Therefore, SLM and restoration must go hand in hand and be marketed as desirable twins that form an integral part of a new landscape approach.

For example, striving to achieve the land degradation neutrality (LDN) target in the [Sustainable Development Goals](#) can translate into meaningful climate action by: 1) protecting our natural carbon sinks like forests, grasslands and wetlands, 2) adopting and scaling up SLM practices that reduce emissions, increase productivity and prevent further land use change, and 3) restoring degraded ecosystems for improved resilience, water, carbon and other services. These pathways of action need not be expensive or complex, especially if we consider the full suite of benefits they generate. We must continue to make the case for land and attempt to quantify both the mitigation and adaptation benefits for discussions leading up to the next climate conference in November.

Sasha Alexander is a Policy Officer with the United Nations Convention to Combat Desertification (UNCCD).

UNCCD video "Land degradation neutrality"
<https://www.youtube.com/watch?v=DPgtdEw5lqI>

UNCCD publication "Land matters for climate"
http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/2015Nov_Land_matters_For_Climate_ENG.pdf

UNCCD brief "Pivotal soil carbon"
http://www.unccd.int/Lists/SiteDocumentLibrary/Publications/2015_PolicyBrief_SPI_ENG.pdf

Reflections from a Shifting Landscape

In keeping with this issue's theme of global change, we are delighted to share some thoughts from Barbara Dean, co-founder and former Executive Director of Island Press. Barbara was

awarded the 2015 SER Communication Award in recognition of her dedication to the advancement of restoration theory, practice and public awareness through innovative communication strategies. She continues to contribute to the field of ecological restoration with her beautifully penned observations of California's changing landscape.

Contributed by Barbara Dean

Every autumn, about mid-October, when the meadow is past its golden stage and turning to grey, my eyes begin to scan Douglas-fir trees during daily walks, as the dogs and I explore the hills and forests of the ranch. The calendar is heading toward Christmas—and I am reacquainting myself with the Doug-firs of a certain size, wondering which might be the right tree to join our household in late December.

This year, the fourth year of California's drought, it seems to me that the trees I considered a year ago haven't grown over the past twelve months: if they were a bit too short in 2014, they seem still not quite tall enough now. And too many have dying branches—orange instead of green—that I don't remember from last year.

The prolonged drought has ratcheted up the stress not only on the firs but also on other trees on the ranch. Forested hills are splashed with pockets of orange, mostly ponderosa pines—our most common pine species—that have been killed by pine beetles taking advantage of the weakened trees, no longer healthy enough to produce enough resinous pitch to drown the beetles (and therefore withstand their assault). On the way to the river, I pass a cluster of big dead and dying Douglas-firs, their trunks marked with vertical scars, which we first thought might have been made by the claws of black bears going after the trees' sweet sapwood. But further observation and investigation (via books, Google, conversations) confirmed that the tracks come from another, species-specific beetle: the Douglas-fir beetle.

One of the great pleasures of retirement is having time to dig into the questions that each walk poses. I know that bark beetles are not unusual in the West—and that outbreaks are always worse in times of drought. But the multi-layered situation that much of the western US faces now—higher temperatures, not enough rainfall, complicated by some underlying stresses such as diseased root systems, exacerbated by windstorms, wildfires, changing communities of mammals, birds, other insects and plants—is not only unusual but also hard to anticipate and prepare for, because no one knows with certainty how those factors, along with others we may not be aware of yet, will develop and interact.

In more than thirty years of editing books about these and related topics, I've become fascinated by the intricacies of the natural world—the details of how nature works—and expect that these questions will captivate me for the rest of my life. Sometimes people ask if I think I'll find retirement boring. As far as I can see, there's not much chance of that.

The fall of 2015 started wet—a good sign, but one we've seen before, only to watch the rain totally stop in late December. This year, the forecasters seem confident that El Niño will really bring the soaking rains we badly need (with or without mudslides). But even if that happens, I know that it will take more than a couple of very wet winters for California to replenish aquifers and "normal" water cycles.

Society News

Dear SER Members,



We've had a very busy start to 2016 at SER's main office in DC (with satellites in Tucson, AZ and Missoula, MT). Perhaps the most significant internal project we've worked on is the SER global restructuring. In January, the Board agreed conceptually to the proposed new bylaws. The bylaws were then circulated to all of the chapters for feedback, and we are now incorporating their comments into a final proposal for board approval in March. As a result of the proposed restructuring, we are working with the North American chapters to create a new communication structure and North American conference schedule – we'll be discussing that at the SERNW conference in Portland, Oregon in April, as outlined below.

In addition to restructuring, SER chapters, board members and staff have been busy with a variety of different topics. For example, we're delighted about the new SER "Section," the International Network for Seed-based Restoration – see below for more information about how you can get involved with this important work.

We're also humbled by the fantastic response to our 2015 year-end fundraiser to build capacity in low-income countries. Thank you so much to everyone who supported this effort – we could not have done it without you, and we are looking forward to welcoming many new members into SER as a result of your donations!

We'd also like to extend an extra thank you to our Science and Policy Committee Board members who succeeded in submitting a compelling and important ecological restoration "motion" to be considered at the upcoming World Conservation Congress. The motion encourages the International Union for the Conservation of Nature to increase the implementation of ecological restoration as a way to conserve biological diversity and improve human well-being. It was co-sponsored by 8 different entities around the world, including IUCN members in Kuwait, China, Peru, Mexico, Canada and the US. We're thrilled to be able to continue this important international work to advance ecological restoration.

Please read on for a few more details about some of SER's activities over the past few months.

A handwritten signature in black ink, appearing to read 'Bethanie Walder', written in a cursive style.

Bethanie Walder
Executive Director, SER

North America Coordinating Meeting

This April, in conjunction with SERNW's Regional Conference in Portland, Oregon, SER's North American Chapter leaders will come together for their first coordinating meeting to discuss how to create a more engaged communication network among the Chapters.

During this meeting we will:

1. Provide an opportunity for North American Chapter leaders to meet in person/virtually so we can share information about challenges, successes and resources.
2. Create a structure for delivering a biennial or quadrennial North American Conference to provide networking and collaboration opportunities for restoration ecology professionals across the US and Canada on a regular basis. Our North American members have spoken loudly and clearly about how important this is, especially now that our World Conferences are not being held in North America as often as initially projected.
3. Set up a reliable, consistent, and effective communication structure for North American chapters to discuss conferences, potential candidates to run for the board, policy issues and other regional restoration opportunities as they arise.

SER's ongoing global restructuring process elevated the importance of creating strong continent-level coordination. This has been missing in North America, and our Portland meeting should help rectify that. If you have any thoughts or ideas about the meeting you would like to share, please drop a note to membership@ser.org.

With regard to the full global restructuring project, we expect the Board to vote on the final proposal at the March board meeting, pending final feedback from the chapters. We expect to be able to provide a more complete update in the next SER News.

INSR Launch!

Though we briefly mentioned the creation of our newest thematic section, the International Network for Seed-based Restoration (INSR), in the December issue of *SERNews*, we are very excited to report that INSR has officially launched! Its web page, as well as the development of discussion forums among seed-based restoration ecologists around the world, offers an important and valuable new networking opportunity for SER members. To join INSR (membership is free for SER members), click here.

Please join us in welcoming INSR's inaugural board:

- Board Chair, Kingsley Dixon
- Chair Elect, Rob Fiegener
- Director at Large, Olga Kildisheva
- Director at Large, Nancy Shaw
- Secretary, Stephanie Frischie

You can read biographical information about the INSR board members on SER.org.

2015 Year-end Fundraising Campaign



Practitioners, land managers and decision makers from the Convention on Biological Diversity capacity building workshop in Ghana

You may recall our 2015 year-end fundraising campaign where we set a goal to raise \$10,000 to build SER membership and capacity in low-income countries. We are thrilled to report we not only met, but exceeded our goal, raising just over \$11,000! On behalf of the staff and board of the Society for Ecological Restoration, we want to thank everyone who contributed to our campaign.

In our initial email, we told you about the West African restorationists we met at a capacity-building workshop on ecosystem restoration in Ghana. You'll be pleased to know we have already begun the process of offering them complimentary SER membership and resources - due to the generous support of SER members.

Throughout the year we will extend this gift to restoration colleagues in areas of the world where restoration is so critically important and capacity still so limited. We'll keep you posted on our progress.

New SER Members

The following businesses and organizations became new SER members in December and January. Welcome!

[Civil Voice](#), Yerevan, Armenia,

[Watershed Consulting, LLC](#), Missoula, Montana, USA

[King County Noxious Weed Control Program](#), Seattle, Washington, USA

[Mitchell Lake Audubon Center](#), San Antonio, Texas, USA

[The City of Gresham](#), Oregon, USA

[Maia Environmental Consultancy](#), Subiaco Western Australia

[Tucson Electric Power](#), Tucson, Arizona USA

SER Chapter Conferences & Events

[SER Mid-Atlantic Annual Conference](#)

Eleventh Annual Chapter Meeting

March 14-15, 2016 Stockton Seaview Inn, Galloway, NJ (just outside of Atlantic City)

There's still time to register for SERMA's annual meeting. This year's theme is *Highlands to High Tides – Restoring our Watersheds*.

SER Midwest-Great Lakes Annual Meeting

Eighth Annual Chapter Meeting

April 1-3, 2016 – Indiana University, Bloomington, Indiana

The meeting's theme is *Overcoming Challenges to Ecological Restoration in the 21st Century*. Participate in an exciting array of plenary lectures, workshops and field trips to unique Indiana ecosystems.

SER Northwest Annual Meeting

Monitoring Ecological Restoration: Measuring Change and Seeing Results

April 2-6, 2016 – Red Lion Inn, Portland, Oregon

The 2016 SERNW regional conference *Ecological Restoration: Monitoring Ecological Restoration – Measuring Change, Seeing Results* will bring together restoration practitioners, researchers and scientists, managers and planners, students and volunteers.

Joint Annual Meeting of Great Basin SER Chapter and Great Basin Native Plant Project

2016 Annual Meeting

April 11-12, 2016 – Boise, Idaho

Presentations and a poster session will highlight a variety of topics including genetics and climate change, development of native plant materials, restoration with plant materials, landscape ecology, and many more!

SER Europe Conference 2016

Best Practice in Restoration

August 22-26, 2016 – Freising, Germany

The 10th European Conference on Ecological Restoration promises a friendly and exciting atmosphere to stimulate dialogue between restoration scientists, practitioners and policy makers, and to collaborate on the challenge of **Best Practice in Restoration**.

SER2017 World Conference on Ecological Restoration

Linking Science and Practice for a Better World

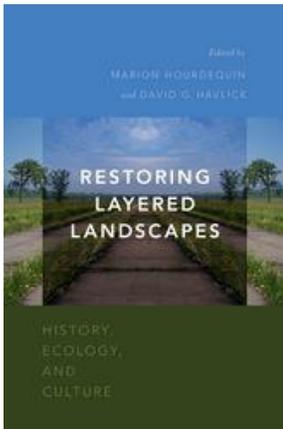
September 2017 – Iguassu Falls, Brazil

The 7th SER World Conference on Ecological Restoration will take place in Iguassu Falls, Brazil in September 2017. Be sure to mark your calendar for what promises to be a spectacular venue and spirited group of conference goers! Details are forthcoming.

New Publications

[Restoring Layered Landscapes: History, Ecology, and Culture](#)

By Marion Hourdequin and David G. Havlick



From the Abstract: “This book focuses on ecological restoration in landscapes with complex histories: ‘layered landscapes’ shaped by ongoing, reciprocal interaction between humans and nature. These landscapes challenge the identification of predisturbance reference conditions and raise questions about the role of ecological and social histories in restoration. Many layered landscapes—which range from the Scottish Highlands to former military and postindustrial sites—are not only characterized by natural ecosystems worth preserving and restoring, but also embody significant political, social, and cultural histories. This volume grapples with the challenges of restoring and interpreting these complex landscapes: What should we aim to restore in such places?”

[Forest Landscape Restoration as a Key Component of Climate Change Mitigation and Adaptation](#)

By John A. Stanturf, Promode Kant, Jens-Peter Barnekow Lillesø, Stephanie Mansourian, Michael Kleine, Lars Graudal, Palle Madsen

“Drawing on state-of-the art scientific knowledge through analysis of restoration case studies and review of scientific literature, IUFRO [International Union of Forest Research Organizations] scientists developed a framework to demonstrate how forest landscape restoration (FLR) can contribute to climate change mitigation and adaptation. One of the major results of this study was the identification and detailed description of the many different ways in which FLR contributes to both mitigating climate effects and helping ecosystems and society to adapt to adverse effects of a changing climate.”

Restoration Ecology, Editor’s Picks



The January 2016 issue of [Restoration Ecology](#) (Vol. 24, Issue 1) is available online and Wiley Online Library has made this issue open access (no subscription needed) through March 31. *In February only*, SER members will receive a 50% discount on a full year’s subscription to Restoration Ecology. Order by Monday, February 29th, and receive a one-year subscription for just \$42.50. To receive the discount, enter the code **LeapYearJournal** at checkout.

[Functional composition trajectory: a resolution to the debate between Suganuma, Durigan, and Reid](#)

Pedro H.S. Brancalion and Karen D. Holl

Broadly, the quest to determine how best to measure 'success' in restoration ecology is a lively one. The series of papers that chronicle the exchange between Suganuma & Durigan and Reid reflect the contentious nature of the debate. Reid has questioned whether the variables recommended by Suganuma & Durigan (basal area, species richness, and abundance and richness of naturally regenerating seedlings) offer an effective means of capturing a restoration project's trajectory toward a reference site(s). Brancalion & Holl recommend a middle ground strategy that includes the weighted averages of functional traits like shade tolerance, seed size and wood density. They contend that these variables are more easily measured and provide more meaningful information on restoration trajectory than does species richness. It will be interesting to see how these varying approaches to mapping restoration success apply to a wide range of ecosystems (most of the debate has focused on tropical forests).

[Local soil, but not commercial AMF inoculum, increases native and non-native grass growth at a mine restoration site](#)

Taraneh Emam

Soil communities at mined sites often require restoration to assist in the recovery of native plants. Because of the symbiotic relationship between arbuscular mycorrhizal fungi (AMF) and plants, AMF inocula have been explored in restoration practice with mixed results. In a mined grassland system, the author compared a commercial AMF inoculum with a "local" inoculum obtained from soil collected from beneath native grasses. The commercial and local inocula were assessed for their effects on native and non-native plant biomass and nutrient content. Local inoculum showed the best results. Inoculation with the "local" AMF resulted in increased biomass of both native and non-native plants. These results highlight the need to consider potential non-native responses, as well as methodological and site characteristics, when choosing commercial AMF vs local soil inocula.

[Restoring native understory to a woodland invaded by *Euonymus fortunei*: multiple factors affect success](#)

Jonathan T. Bauer and Heather L. Reynolds

The decline of native species is often associated with competition from non-native invasive species. Non-natives can negatively impact ecosystems as actual primary drivers of change or by taking advantage of system previously altered by anthropogenic drivers. In this study the authors show that *Euonymus* appears to prevent recruitment of native plant species from seed, but has little ability to displace already established plants. Nevertheless, other mechanistic events (not necessarily anticipated during the experimental design), such as herbivory, drought, storms and limited seed dispersal may have just as much impact on native plants as competition with non-natives. To achieve success, all impacts must be considered in restoration actions.

[Does restoration of a habitat-forming seaweed restore associated faunal diversity?](#)

Ezequiel M. Marzinelli, Martin R. Leong, Alexandra H. Campbell, Peter D. Steinberg, and Adriana Vergés

Ecosystem engineers, or habitat-forming species, are key players for ecosystem organization and biodiversity. They physically change their environment and create habitat conditions for associated fauna and flora. Their loss or degradation, however, is under-evaluated, especially in the marine realm. Attempts to restore macroalga *Phyllospora comosa* in Sydney, Australia, demonstrate that this species is not redundant with other co-existing habitat-forming algae, and supports different biodiversity composition and abundances. However, it is also clear that the complex biodiversity composition and organizational functioning supported by restored habitat-forming organisms requires a long time to fully develop.

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In Case You Missed It

We shared the following articles from *Restoration Ecology* via Twitter and Facebook earlier this month.

[Does the Return of the Wolf Help Rewilding? Maybe Not](#)

Typically, species reintroductions and rewilding of natural areas are thought of as complementary ingredients of ecological restoration. However, recent work conducted at the University of Aberdeen and the James Hutton Institute finds that reintroduction of animals may sit at odds with... [read more](#)

[Seeing the Forest and the Trees: Outcomes of Forest Restoration in The Bronx](#)

Planting native trees can revive an ailing forest, but trees alone cannot fight the spread of invasive species. According to a study by the NYC Department of Parks & Recreation (NYC Parks) and the USDA Forest Service, continued maintenance is also necessary to meet restoration goals. In a study ... [read more](#)

[How Reliable Are Your Restoration Data?](#)

Rigorous quality assurance/quality control (QA/QC) data in a restoration project are essential for evaluating the success of the project, and they provide the only objective legacy of the dataset for potential legal challenges and future uses. However... [read more](#)

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