Dear SER global family,

In this issue of SERNews, we highlight one of the largest chapters of SER in terms of countries represented and geographical spread - the Australasian chapter (SERA). Australasia is a wide and diverse region encompassing 14 countries and over a dozen language groups. The SERA chapter was inaugurated just five years ago, and has already made its mark as a well-recognized brand in ecological restoration for the region - not least through its well-attended conferences, including a 2014 blockbuster meeting in New Caledonia.

SERA’s reputation as the top regional body in matters relating to restoration has led to its pivotal role in the development of the first Australian National Standards in Ecological Restoration, which are featured in this issue and due out in the first quarter of 2016. SERA has a dynamic and engaged board and member base representing industry, government and the research sectors, including early career/student representatives. This issue of SERNews features the exciting restoration work spearheaded by our board members and members alike. I am excited to announce that SERA will co-host its next conference in New Zealand alongside the Ecological Society of New Zealand in November 2016. This conference is shaping up to be the largest of the three conferences that SERA has had the pleasure of hosting, and we look forward to seeing SER members from the around the world there.

Sincerely yours,

Kingsley Dixon
SER Pacific Regional Representative

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New SER Section: International Network for Seed-based Restoration

Contributed by Olga Kildisheva

Following the outstanding popularity of the US-based Native Seed Network, SER has established the world’s first international network for users of native seed, the International Network for Seed-based Restoration (INSR).
The network was formally established at the SER 2015 World Conference on Ecological Restoration in Manchester and is to be launched before the end of 2016.

The network aims to link the science of seed research with the practice of seed use. The network brings together scientists, seed industry, community, non-governmental organizations, and governments that share an interest in promoting the best and most efficient use of native seed through seed forums, internet-discussion groups and conferences, as well as international publications in seed-based restoration. An important role for INSR will be to connect seed industry professionals who are leading the way in seed innovation with students (through a student forum) who are undertaking research degrees in seed-based restoration technologies.

Functioning as a Section of SER, the INSR will strive to foster understanding and advancement of seed ecology, conservation, and seed-based restoration of degraded systems worldwide through education, networking, and advocacy. The INSR has already attracted a wide diversity of interim members, including scientists, restoration practitioners, business, and industry partners representing more than ten nations – a great first step in building a foundation equipped to further global, cross-institutional collaboration in order to advance awareness and policy around seed conservation.

With an annual net worth of more than $1.6 trillion, ecological restoration is a growing sector, with the seed collection and production industry comprising a notable and fundamentally important part of this value. As a result, there is a growing need to develop standards for native plant seed testing and regulation in order to ensure restoration goals can be achieved. Through engaging with a wide range of stakeholders, the INSR aims to participate in the development of native plant seed standards and to promote ecologically and socially acceptable collection and use of native seed.

With increasing focus on recovery following environmental disasters such as storms (e.g. Hurricane Katrina, Super-storm Sandy), earthquakes (e.g. Japan’s 2011 Fukushima Hamadōri and Nepal’s 2015 Gorkha earthquakes), as well as catastrophic wildfires (e.g. western United States, the Russian Far East), there is often a need for an expert panel equipped with the knowledge and responsiveness to offer specific solutions that can help during the post-disaster recovery process. The INSR can serve as an emergency expert panel and clearinghouse equipped to address the seed issues associated with the development of disaster response restoration.

The INSR will hold annual or biennial meetings and conferences, facilitate and promote workshops, provide network newsletters and forum discussions, undertake field trips, and solicit funding to promote these activities. In time, the INSR hopes to be able to provide funding for improving seed science and seed use in emerging economies through provision of studentships, international grant partnerships, and bursaries for scientific exchanges.
SER members will have full rights and opportunities to participate in INSR. The network planning committee encourages those interested in helping INSR grow to reach out to a wider range of international and institutional membership and have them contact us at info@ser-insr.org. For additional information please visit www.ser-insr.org and keep a lookout for the next international meeting of the INSR.

Contact membership@ser.org to add INSR to your SER membership.

**New SER Section: International Network for Seed-based Restoration**

SER Australasia (SERA) is working with 12 restoration non-profit groups to develop and disseminate a set of national Standards for the practice of ecological restoration in Australia. It is currently still in draft form, open to public comment. It is hoped that the Standards, including an illustrated online version, will be published in early 2016.

Based on the foundational concepts in the SER Primer, the draft standards seek to resolve a number of issues that have arisen in the last decade, namely the need to reaffirm the place of restoration in a changing and uncertain world, positively acknowledge other forms of environmental repair, and enable maximum inclusivity of practitioners without lowering standards for restoration.

Mechanisms used to resolve these issues include defining ecological restoration as distinct from rehabilitation – but honoring the latter where the work is the highest and best work currently possible. Encouragement is given to managing landscapes and seascapes in an integrated way to reduce impacts of production areas on natural areas and increase the health of semi-natural and natural areas to the extent possible.

The Standards enable a project to call itself an ‘ecological restoration’ project if it is (i) modeled on a locally indigenous ‘reference ecosystem’ (real or derived) and (ii) the long-term goal is full recovery of that ecosystem’s attributes (even if it takes many generations to get there). If the goal can only be to reinstate just some of the attributes, then the project would be called ‘rehabilitation’.

A number of principles are highlighted including the need to: address or mitigate causal problems; work
with natural processes; prioritize works that harness resilience and counter fragmentation; supplement genetic diversity in fragmented landscapes to optimize potential for adaptation to climate change; and communicate clearly to stakeholders to build community support.

SERA’s 5-star ranking system has been designed to help managers track the extent that a project is reaching its goals for each of the six attributes. Because the outcome is expressed as degrees of ‘recovery’, the same framework can be used to drive improvements in all projects, whether they are restoration or rehabilitation.

Each attribute can be broken down into a range of more detailed component properties, which will have different expressions in different biomes and at different locations. This dictates that each project will have site-specific targets, goals and objectives – with unique and very specific indicators selected to help monitor and then evaluate whether these are being met (Fig 1).

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**Tribute to an Australian Restoration Pioneer: Roger Good**

When the history of restoration in Australia is ultimately written, it will highlight the roles of a handful of pioneers - and one of them will be Roger Good. During a career that stretched from the 1960s until his untimely death in 2015, Roger logged over 50 years’ experience in restoring alpine and wetland ecosystems, particularly bogs and fens in the Snowy Mountains of New South Wales. Roger’s dedication and enthusiasm for mountains and wetlands was utterly contagious and has made a lasting impact on researchers, managers, and policy makers in many fields, both within Australia and internationally. His permanent legacy is a restored National Heritage Listed alpine area that has an extant, rich, diverse and spectacular Alps flora and fauna.

Roger started working on restoration while with the New South Wales (NSW) Soil Conservation Service from 1962 to 1974 - during which time he spent 7 years in charge of the early Snowy Mountains restoration project, conducted in what is now Kosciuszko National Park. He came to the job as a fresh-faced cadet, having previously undertaken college vacation work in the mountains with Alec Costin and Dane Winbush. At the time these two pioneer alpine botanists were studying the impact of livestock grazing in the mountains through the Commonwealth Scientific and Industrial Research Organisation (CSIRO), Australia’s lead research organization. They advised on the restoration project and were Roger’s lifelong mentors and friends.

Restoration was imperative in the mountains at the time. From the 1930s to the 1960s, concern had been building about alarming erosion occurring in the high country as a result of cattle grazing. Up to 1 meter of organic topsoil was estimated to have been lost from some 10 square
kilometers of subalpine and alpine ecosystems. In the early 1960s - after grazing was finally removed to protect the dams and turbines of the Snowy Mountains Hydroelectric Scheme from excessive siltation - the challenge presented to the Soil Conservation Service was to stabilize and return to a near natural condition the area’s extensive herb fields and its many bogs and fens (which had been incised by cattle tracks, drained and eroded). Their work stopped the erosion and triggered catchment recovery, making it one of the great restoration achievements in Australia.

The challenge of revegetating the bogs was met relatively early compared to the challenge of restoring the physical and hydrological capacity of a natural bog. Ultimately, the team worked out methodologies to use subsurface organic matter dams to rewet dried, hydrophobic peats. These techniques were then put into practice to restore the physical and hydrological capacity of bogs after the devastating 2003 wildfire swept across the high country. Following the fire, Roger and others were fortunate to gain an AUD$2.5M grant to restore peat bogs in the burnt areas. This enabled the group to undertake a collaborative research program, which fostered the establishment of a research and restoration group under the guidance of the Australian Alps Liaison Committee.

Although the early erosion control works were completed in the 1970s, Roger remained involved in subsequent work on peat bogs throughout the 70s, 80s and 90s in his role as Research Officer/Botanist - and later as Alpine Ecologist and Senior Project Manager (Alpine catchments) - with the NSW National Parks and Wildlife Service (NPWS). He remained with NPWS for 30 years, during which time he also worked with CSIRO as a Research Scientist studying aspects of alpine ecology and protected area fire management. More recently he was one of four interstate visionaries who initiated and developed the interstate cooperative management program for the Australian Alps Parks, which continues to operate today.

Working in one biome for their entire careers allowed Roger and his mentors Alec Costin and Dane Winbush to observe changes over time – and to maintain quadrats, transects and photo point monitoring that clearly demonstrate both successes and, sometimes, failures. Bogs that were treated in the 60s, 70s and 80s are now restoring themselves naturally, with organic matter building up again within the peat beds.

Roger’s intent was to follow the lead of his mentors and pass on as much knowledge as possible to students and others. For 25 years, he gave a casual lecture at the Australian National University (ANU), the University of New England and the University of Sydney in fire science and management, based on his studies of fire ecology in Kosciuszko. He set up a course at ANU, which is now a full-time course in fire science; he engaged with students through his role as convenor of a Sydney sandstone peat bog research team that is a collaborative between UNSW, Macquarie, Sydney’s Royal Botanic Gardens, the University of Sydney and the Australian National University (ANU).

The main message Roger wanted to convey to students of restoration is that multilateral thinking is key to restoration success. From his own experience, he observed that it is easy to think: “I have a program and I’m going to apply it, hit or miss right across a whole range of ecosystems or vegetation communities. And when you do that, you think ’I’ve done a great job’; but then you find that half of them don’t succeed.” Roger sought to convey to others that ecology is still an unknown, in many cases. “There is so much to learn and so much to do. So
never expect that because you have been to university or have managed sites for ‘x’ number of years you will necessarily have the knowledge to actually do the work. It is a system that we are working with, an ecosystem we need to try to understand. So you need to ask what is the component of the system that you are trying to fix up at any one time. And in most cases you can’t do it all in one program.”

At the time of his death in October 2015, Roger was a Visiting fellow at the Fenner School of Environment and Society at ANU, a Research Associate of the Australian National Botanic Gardens and a Director of the Murray Darling Wetlands Ltd, (Previously Murray Wetlands Working Group).

This article has been summarized from an interview conducted on 8th May 2015 (published in the Ecological Management & Restoration journal, January 2016), with further information provided by Roger’s colleagues Graeme L. Worboys, Andy Spate, Adrienne Nicotra, Graeme Enders, Stuart Johnston and Jennie Whinam.

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**Australasia Restoration Roundup**

Australasia is full of exciting advancements and projects in the field of ecological restoration. The following three pieces offer a small glimpse into some of the work being done across the region.

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**Restoration in New Caledonia**

*Contributed by Bruno Fogliani - L'Institut agronomique néo-Calédonien, New Caledonia*

The settlement history of islands of the Asian Pacific - and New Caledonia in particular - paints an interesting picture of the relationship between man and nature. Fauna and flora have evolved under isolated conditions and limited areal extent to produce important hotspots of global biodiversity. New Caledonia is one of 34 priority areas (hotspots) for the preservation of the planet's terrestrial biodiversity. The New Caledonian archipelago was probably settled for the
first time some 3100 years ago, as part of the complex settlement of Melanesia. Anthropogenic pressures have affected the islands since this time, especially due to the introduction of invasive alien species (e.g. *Rattus exulans*) and the use of fire, which affected the dry forests of the west coast. These impacts accelerated in the 18th and 19th centuries with the arrival of Europeans and increased trade, and have been amplified even more following the discovery and extraction of considerable mining resources.

In the 1970s, awareness of extensive environmental damage caused by mining prompted the development of the first research programs to limit soil erosion and loss of biodiversity in ultramafic environments. Since 2000, programs have expanded to encompass other ecosystems, including dry forests. The first revegetation experiments on mine sites used exotic species, and most failed to achieve adequate establishment. As a result, the study of endemic species has increased, with research focusing on species inventories, and germination and survival following planting. Promising results have led to large-scale use of endemics by private companies and authorities since 1994.

In the last 10 years, research has further integrated ecosystem components at multiple scales with the purpose of achieving higher utilization of native plant species for restoration through the study of seed ecology, dispersal, dormancy, germination and conservation. Currently, New Caledonia employs both passive and active restoration strategies. The former method uses topsoil (photo 1) to cover degraded land, which allows for the establishment of early successional vegetation. This technique can be combined with active restoration through plantation establishment (photo 2) or hydroseeding (photo 3). Several research programs are dedicated to the study of seed ecology and physiology for application toward active restoration. The research objectives are to characterize seeds (photo 4), and identify propagation requirements in order to diversify the species used in ecological restoration programs.
Current programs are spearheaded by mining companies (vegetation on ultramafic soil), the New Caledonian Natural Space Conservatory (dry forest), institutions, NGO’s, as well as tribal communities - all with the goal of restoring damaged lands and raising awareness of the need for action to stop biodiversity loss (photo 5).

Restoration of threatened plant species in Australia’s southwest biodiversity hotspot

Contributed by Dr. Shane Turner - Research scientist at the University of Western Australia and Kings Park

Out of an estimated 12,000 plant species native to Western Australia, 425 are currently listed as threatened with another 2,900 listed as conservation concerns. It is easy to feel a little overwhelmed given these alarming statistics, yet much valuable work is currently underway to turn these declines around.

Researchers at Perth’s Kings Park and Botanic Garden, Curtin University and the University of Western Australia have developed an integrated conservation model that blends several scientific disciplines. Over 60 rare species have been protected using this approach. Many have also been successfully returned to suitable restoration sites to help expand in situ numbers.

In recent years much of this work has focused on three contrasting species: *Androcalva perlaria* (Figure 1), *Symonanthus bancroftii* (Figure 2) and *Ricinocarpos brevis* (Figure 3) from the south coast, wheatbelt and mid-west of Western Australia respectively. Over many years the
detailed life history of each of these species has been carefully investigated, leading to successful reintroductions of all three species. For example, *A. perlaria* is known from only 6 locations from the south coast of Western Australia all of which occur within a ~15 km radius. It is a fringing wetland species occurring in a largely agricultural landscape, so habitat loss and fragmentation are its single biggest challenges. At present, less than 350 individual plants are known to occur in the wild. Work sponsored by the mining company Grange Resources has been instrumental in completing detailed work on the propagation requirements of this species, understanding its habitat needs, assessing its remaining genetic diversity and investigating the ecophysiology of adult plants, which has led to the implementation of several translocations over the last few years with the most recent (2014) showing over 90% survival after 12 months of growth.

In some respects the second species, *S. bancroftii*, was in a far worse situation as in recent times it was only known from just two remaining individuals both of which were fortuitously brought into plant tissue culture. This species is dioecious and luckily the two remaining plants were male and female. Shortly after both were established in the Kings Park plant collection the female subsequently died in the wild rendering the species functionally extinct. From that tiny amount of propagation material hundreds of new plants of both sexes have not only been propagated but also re-established in the wild in several sites and have also generated thousands of viable seeds many of which have also been used for additional research purposes. Indeed, seed investigations on this species has found that seeds are highly smoke responsive, and form a persistent soil seed bank that can last for at least 5 years without any appreciable decline in viability or germination capacity. This seed work is still ongoing.

The final species, *Ricinocarpos brevis*, is a narrow range banded ironstone specialist. Unlike the other two species it still numbers well over 15,000 individuals in the wild. However, it has highly specific habitat requirements growing out of tiny rock crevices or skeletal soils and is largely restricted to south facing ridge tops in only three locations in the semi-arid mid-west of Western Australia. Unlike the other two species *R. brevis* appears to be much longer lived (~100+ years) even though the plants themselves are relatively small (<2 m tall). Given its harsh environment, it appears to set seeds and recruit sporadically perhaps only once every three or more years. This species’ biggest threats at present are mining, climate change and feral animal grazing. Research sponsored by Cliffs Resources since 2013 has focused on understanding the ecology of this species with the intention of using this knowledge to establish new populations on south-facing waste rock dumps which can rise to similar heights as natural ridge tops. Tubestock and seeds are currently being tested as planting material with some success with many plants actively growing on the waste rock dumps from both sources (Figure 4).

Although there is still much work to do on

![Figure 4. Young seedlings derived from direct sown seeds of *Ricinocarpos brevis*. In this experimental translocation highest in situ emergence was attained after seeds were subjected to hydropriming in a solution containing Gibberellic acid and KCI for 3 days then removed, redried and sown in situ several weeks later. Figure credit: Carole Elliott.](image)
conserving and restoring Western Australia’s threatened species, each of these three examples demonstrates the underlying potential of using an integrated approach for threatened flora conservation. While it has taken many years to successfully restore each of these species, we strongly believe that the knowledge and experience gathered provides a template for rolling out conservation programs across a broader range of threatened taxa.

New Zealand conservation and restoration update

Contributed by Bruce D. Clarkson and Catherine L. Kirby - Environmental Research Institute, University of Waikato, Hamilton, New Zealand

The islands of Aotearoa/New Zealand have been isolated in the South Pacific for around 60 million years, resulting in a unique and highly endemic terrestrial flora and fauna. Recent human settlement (around 700 years ago) and the associated habitat destruction and exotic introductions have significantly disrupted many native ecosystems across the country. There are now approximately 2264 introduced species (comprising 30 mammals, 34 birds and 2200 plants) naturalized in terrestrial habitats and competing with, or predating upon New Zealand’s indigenous species. Habitat loss and the displacement of indigenous flora and fauna by introduced species are the primary challenges faced by conservation and restoration practitioners.

Conservation and ecological restoration approaches in New Zealand have evolved significantly since the 1890s. Early efforts were focused on saving threatened endemic birds on small offshore islands but there has been a gradual shift towards ecosystem management and restoration, first of larger offshore islands and, more recently (since the mid-1990s), of mainland islands or sanctuaries often with the aid of novel fencing and predator control technologies. Currently, there are 73 sanctuaries on or near the NZ mainland, 42 of which are community-led. Urban ecological restoration, the new frontier, has a relatively short history in New Zealand. Urban projects in the 1970s and 1980s were characterized by revegetation and weed control but the emphasis has been moving steadily towards bringing indigenous nature back into urban environments. Restoration projects in urban settings provide greater opportunities to engage people, especially children, with nature and provide a diverse range of environmental, social, recreation and health benefits.

Researchers and practitioners across New Zealand continue their diverse work on offshore islands, mainland sanctuaries and in rural, periurban and urban environments, providing ‘islands of hope’ resisting the tide of biodiversity decline. In the face of conservation budget cuts and greater environmental awareness, a groundswell of volunteers and innovative ideas are refreshing the efforts to protect and enhance our native species and ecosystems. The next big
challenge is how to integrate public, private and individual efforts for greater enhancement of our natural heritage at regional and national scales.

To provide a forum for new approaches, research findings and people active in restoration, the Australasian chapter of SER will be joining with the New Zealand Ecological Society to host a conference (November 19-23, 2016) in Hamilton, New Zealand. The conference, titled *Ecology & Restoration, Australasia* will provide diverse symposia, field trips and community engagement opportunities to herald a new age of large-scale, collaborative ecological restoration programs. Field trips offered will include: Maungatautari Ecological Island (predator proof fenced reserve enclosing 2500 ha of indigenous temperate rainforest); Tongariro National Park (central North Island volcanoes); Waitomo (karst and cave ecosystems); Waikato wetlands (bogs, swamps and fens); Urban restoration in Hamilton City; and Hobbiton (Lord of the Rings).

The organizers of ERA2016 encourage international speakers and delegates to register their interest at www.ERA2016.com.

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**A new paradigm toward sustainable rehabilitation of mine tailings: Research from the Centre for Mined Land Rehabilitation**

*Contributed by Longbin Huang - Associate Professor, Program Leader (Ecological Engineering of Soil-Plant Systems), Centre for Mined Land Rehabilitation (CMLR), a Centre within the Sustainable Minerals Institute, The University of Queensland*

Metal mine tailings, a common sight at nonferrous (e.g., Au, Ag, Cu, Ni, Pb, Zn) and ferrous (e.g. magnetite mine) metal mines, represent the highest level of ecological and economic risk within mined landscapes. The tailings are waste byproducts resulting from ore/mineral processing and refining, and are composed of fine-textured particles and hydrogeochemically unstable minerals (e.g., sulfidic minerals, soluble salts). Mine tailings generate toxic physicochemical conditions and inhibit colonization by soil microbes and plants.

The conventional approach for dealing with tailings is to build elaborate covers, or caps, with massive volumes of clay, rock and topsoil over hundreds of hectares of tailings. This practice is economically and environmentally unsustainable at most remote mine sites in the highly weathered landscapes of inland Australia. At many metal mines, there has also been little success in tailings rehabilitation from efforts focusing on metal-tolerant plant-based technology (e.g., hyperaccumulator species) coupled with rhizosphere (rooting zone) remediation and agronomic practices. The extreme difficulties associated with sustainable rehabilitation in remote mining sites result in high economic costs to mining companies and long-term environmental risks to communities, thus threatening the mining industry’s “social license to operate.”

Only recently, a new technology of “Eco-engineering tailing-soil (or technosol) and soil-plant systems” to rehabilitate metal mine tailings has been proposed and advocated by Associate Professor Longbin Huang and his team. This technology builds upon the sciences of geomicrobiology, mineralogy, pedogenesis, soil microbial ecology, rhizosphere biology, and ecological dynamics of soil-plant systems. By treating tailings as engineered parent materials,
this new technique involves (1) alteration of mineral and organic constituents in the tailings, (2) priming and acceleration of microbial processes to bio-weather primary minerals, (3) stimulation of processes that will hasten the development of primary soil-like physicochemical properties, (4) the colonization of soil/rhizosphere microbes, and (5) the development of ecological linkages (e.g., in situ litter decomposition and nutrient cycling) with target assemblages or communities of keystone species, under local climatic conditions. Up-to-date research findings from 5-year field trials with Cu/Pb-Zn mine tailings have supported the promising opportunities offered by this new paradigm. Results have shown the development of hydrogeochemically stable and biogeochemically functional technosols following treatment of Cu/Pb-Zn tailings, and the successful establishment of native grass and woody shrubs under subtropical and semi-arid climatic conditions without ongoing water and fertilizer inputs. Future research aims to supplement these findings and develop technological modules, which would be tailored for site-specific mineralogy of tailings and local climatic conditions at metal mine sites.

Photos: Magnetite particle surface pitted by microbes in Cu-tailings amended with sugarcane residues (A) and native plants (B) Triodia spp., (C) Pilostachys exaltatus) established in highly weathered and engineered Cu-Pb-Zn tailing-soil at a mine site under subtropical and semi-arid climatic conditions.

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**SER Chapter Conference Highlights**

**SER-Southeast Annual Conference: Mussels and Mines, Restoring Disturbed Ecosystems of the Southeast**

*October 14-16, 2015*

*University of Tennessee, Knoxville, Tennessee*

*Contributed by John Tobe*

The Southern Appalachians were the backdrop for the 2015 membership meeting of SE-SER. The region is noted for its ancient evolutionary history, endemic species and relictual ecosystems; the prehistoric geology - complete with 300 million-year old carboniferous fossils - was on display during our field trip to a mine reclamation site. Due to the unique, often endemic, flora and fauna of the region, the conference focused strongly on the ecological restoration of regional biodiversity and the physical and
biotic barriers to restoration.

A number of presentations highlighted excellent case studies that support the importance of long-term commitments to stream and river restoration in the recovery of endemic fish, amphibians and mussels. Other talks covered themes of forest, watershed and wetland restoration. Our keynote speakers, Dr. James A. Burger and Dr. John Schwartz, are authorities on land reclamation of the Appalachian coalfield region and stream restoration, respectively. Attendees learned how slow but steady advancements made in stream restoration and mine reclamation are built upon years of research and practical experience. Balancing the recovery of ecological complexity at degraded sites with the requirements of economic, political, regulatory, and other stakeholders is a major challenge in stream and mine restoration, particularly when the goal is to create a landscape that trends toward ecological self-sustainability.

We extend a sincere thank you to Dr. Jennifer Franklin and Dr. Mike McKinney for organizing a fantastic meeting that showcased the unique environmental challenges of our region, and offered a diverse assortment of regional presentations and interesting discussions. In addition we were fortunate to have the illustrious Dr. André Clewell, author of the “Ecological Restoration, Principles, Values, and Structure of an Emerging Profession” teach the pre-conference workshop, “Restoring for Value: Getting the Most from Restoration.”

SER-Texas Annual Conference: TXSER Turns Twenty!

November 13-15, 2015
Trinity University, San Antonio, Texas

Contributed by Gwen Thomas

The Texas Chapter of the Society for Ecological Restoration (TXSER) celebrated its 20th year of connecting and educating the Texas restoration community at its annual conference in the Center for the Sciences and Innovation (CSI) at Trinity University in San Antonio. Over 100 participants from academic institutions, private and non-profit organizations, and federal, state, and municipal government agencies joined TXSER’s Board of Directors over the weekend for field trips, presentations, and networking.

The Keynote Speaker, Steven Whisenant, a founding member of TXSER, served on SER International’s Board of Directors from 2003-2014 and as Chair of SER’s Board from 2011-2013. In his address, Whisenant, Professor Emeritus of Ecosystem Science and Management at Texas A&M University was optimistic about the direction we are moving, stressing that “what we do matters” and that it is our job to continue protecting and restoring the planet that we live on.
Additionally, two Plenary Speakers - Mitch Greer, Assistant Professor of Biological Sciences at Fort Hays State University in Fort Hays, Kansas, and Glen Gillman, Park Land Manager for Travis County Parks – shared their experiences with the entire group. TXSER was also pleased to present the annual “Excellence in Ecological Restoration Award” to the City of San Antonio Natural Areas Team consisting of Gail Gallegos, Jayne Neal, and Wendy Leonard. A new conference feature this year was a plant identification competition, held in recognition of the importance of plant identification as a necessary skill set for restoration ecologists and rangeland and wildlife managers. The first place award for the team competition went to Texas A&M University. Sarah Galvan, an undergraduate student at Texas A&M University in San Antonio won first place in the Academic Team, Student Individual AND the Professional Plant Identification categories beating out many highly qualified contenders!

In and around the array of field trips, presentations and awards, friends and former colleagues reconnected, research and field experiences were shared, and new linkages and associations made. It allowed the Texas restoration community the opportunity to think creatively about how far we have come in this field and where we see ourselves going in the future, ensuring the protection and restoration of the Texas landscape for years to come.

**SER- Southwest Chapter’s First Annual Conference**

**November 20-22, 2015**  
**Reid Park Double Tree Hotel, Tucson, Arizona**

**Contributed by Allison Kutcher**

The first annual Society for Ecological Restoration Southwest Chapter conference was a huge success, with 150 guests, 51 speakers, and over 60 different organizations represented. Featured speakers Don Falk (founding member of SER and Fire Ecologist at the University of Arizona) and Steve Buckley (Botanist with the National Park Service) drew a crowd and encouraged everyone to shift their views on restoration from a focus on how things used to be, to a focus on the future by building resilient ecosystems that can persevere through climate change. The conference buzzed with excitement as non-profits, private landowners, government workers and students collaborated, realizing we can do so much more together than we can do on our own. As we discussed our work and goals, we became the voice for the environment; we analyzed how to reorganize the parts and pieces of an ecosystem to restore natural processes and create resilience.

None of this would have been possible without the hard work of our planning team and support from our many sponsors including the Coronado National Forest, National Park Service, and
Tucson Electric Power who helped us provide scholarships for high school, college and graduate students. The SW Chapter is committed to developing young leaders in restoration!

The southwest is vibrant with diversity of life, but in great need of restoration to its degraded ecosystems. The 2015 conference facilitated communication and encouraged coordination to take on the unique challenges the faced by the southwest. The new connections we made and ideas we shared will enable us continue the conversation so we can begin reestablishing an ecologically healthy relationship between citizens of the Southwest and the environment.

SER Ontario Annual Meeting and Workshop

November 14, 2015
University of Waterloo, Ontario, Canada

Contributed by Stephen Murphy

The SER Ontario AGM and Workshop was held at the University of Waterloo on November 14, and we had an overflow crowd! The subject was Novel Ecosystems and the allied concept of Socioecological Resilience. Stephen Murphy, past-chair of SERO and current Editor in Chief of Restoration Ecology, kicked off the meeting and set the stage for the day by focusing on the utility of the novel ecosystems concept, noting that in some cases, it is akin to triage. Steve emphasized that we are beginning to understand how novel ecosystems can be used as a management framework. He also discussed how to detect when an ecosystem has crossed a threshold into novel territory, and how the concept focuses on restoring native species diversity and functionality even if the local ecosystem is not equivalent to a reference site.

A series of talks from graduate students in the University of Waterloo’s Department of Environment and Resource Studies ensued, covering a wide variety of topics that investigated and applied the novel ecosystems concept. The afternoon included a series of talks by other folks from across the region; Kate Hayes and Scott Sampson of the Credit Valley Conservation Authority did a groundbreaking presentation of how they have used the novel ecosystems concept in working with land and water management. They showed how it was possible to occasionally restore to historical conditions; in other cases the historical conditions were an illusion to begin with, and restoring to novel ecosystems could be a positive if well-planned and implemented. SERO Members were given good news about our financial state and activities; our student members have been very active in local university and college chapters and are planning a meeting in 2016 so stay tuned! Retiring for dinner and beverages, the SERO crowd colonized (invaded?) a local pub to restore our energy.
Land Restoration: Reclaiming Landscapes for a Sustainable Future
Edited by Ilan Chabay, Martin Frick, and Jennifer Helgeson

Land Restoration provides a holistic overview of land degradation and restoration as it addresses the issue of land restoration from both scientific and practical development points of view. Furthermore, the breadth of chapter topics and contributors cover restoration in the context of a wealth of connected issues, such as security, development, and environmental issues. The use of graphics and extensive references to case studies also make the work accessible and encourage it to be used as a reference, as well as in active field-work planning.

By David A. Pyke, Jeanne C. Chambers, Mike Pellant, Steven T. Knick, Richard F. Miller, Jeffrey L. Beck, Paul S. Doescher, Eugene W. Schupp, Bruce A. Roundy, Mark Brunson, and James D. McIver for the US Geological Survey

“This restoration handbook is the first in a three-part series on restoration of sagebrush ecosystems. In Part 1, we discuss concepts surrounding landscape and restoration ecology of sagebrush ecosystems and greater sage-grouse that habitat managers and restoration practitioners need to know to make informed decisions regarding where and how to restore specific areas... Greater sage-grouse are considered landscape birds that require large areas of intact sagebrush steppe; therefore, we describe concepts of landscape ecology that aid our decisions regarding habitat restoration. We provide a brief overview of restoration techniques for sage-grouse habitat restoration. We conclude with a description of the critical nature of monitoring for adaptive management of sagebrush steppe restoration at landscape- and project-specific levels.”

Book Review: Liam Heneghan on The New Wild: Why Invasive Species Will be Nature’s Salvation


“Pearce takes aim at the edifice that has coalesced around conservation efforts in the face of invasion. He does not simply remove the dodgy bricks, nor does he merely replace the edifice with a new edifice. Rather, he inverts the edifice, standing the whole darned thing on its head.”
The November 2015 issue of *Restoration Ecology* (Vol. 23, Issue 6) is available online. Featured below are some “Editor’s Picks” from the issue, courtesy of Editor-in-Chief and Managing Editor of *Restoration Ecology*, Stephen Murphy and Valter Amaral.

**Restoring species through reintroductions: strategies for source population selection**  
*Aimee Lee S. Houde, Shawn R. Garner, and Bryan Neff*  
The importance of incorporating both ecological and genetic knowledge in species’ reintroduction decisions is paramount for their success. In this timely review, the authors examined 26 studies that explored the fitness of source populations in repopulating foreign target locations. Two of the most successful approaches in selecting populations for restoration through reintroduction are the ‘pre-existing adaptation’ approach and the ‘adaptive potential’ approach; the authors found the first strategy was more successful than the latter. There is still a large knowledge gap regarding relationships between reintroduction outcomes and gradients of genetic similarity, environment similarity, and heritable genetic variation. We agree these three aspects should take priority in future research.

**Fauna community trends during early restoration of alluvial open forest/woodland ecosystems on former agricultural land**  
*Geoffrey C. Smith, Tom Lewis, and Luke Hogan*  
Biodiversity monitoring is fundamental to better understanding the biotic and abiotic forces that influence restoration pathways and thereby improving the chances of restoration success. This study evaluated faunal successional trajectories after 10 years of active and passive restoration on former agricultural lands in a eucalyptus system in southeast Queensland, Australia. Plantings and natural regeneration areas shared more than half of the species between them, and closer to 75% with remnant forest areas. Likely, natural regeneration areas benefited from starting with a richer and more structurally complex flora community. It’s still worth noting that although passive and active restoration can both quickly augment fauna diversity, the associated implementation and maintenance costs may differ.

**Dispersal and establishment filters influence the assembly of restored prairie plant communities**  
*Emily Grman, Tyler Bassett, Chad R. Zirbel, and Lars A. Brudvig*  
The concept of community assembly filters offers an explanation of the factors underpinning the success or failure of species recruitment. The authors of this study offer a much-needed empirical basis in support of community ecology theory. They looked at both establishment and dispersal filters governing (or not) the plant species composition of nearly 30 restored prairies in southwest Michigan, U.S.A, and found observational support that both types of filters may dictate, either by itself or in combination, the occurrence and persistence of plant species. The authors also note a high degree of species idiosyncrasy, which altogether suggests that we can devise particular restoration programs for particular site conditions and restoration targets.
Should reference conditions be drawn from a single 10 ha plot? Assessing representativeness in a 10,000 ha old-growth European beech forest

JeriLynn E. Peck, Brigitte Commarmot, Martina L. Hobi, and Eric K. Zenner

JeriLynn Peck and colleagues raise an important issue about whether restoration ecologists choose sufficient numbers of reference sites for management targets. Working in Ukraine, they examined whether a 10 ha research plot was representative of several 500-m² inventory plots spread across a larger forest reserve. No matter what metric was used, the reference plot over-estimated the old-growth metrics that would dictate management targets. Fundamentally, this is consistent with the current debate that cautions against using static states drawn from arbitrarily chosen locations or time-periods as references; a process-based (functional) metric is often more useful; even then multiple metrics and sites are needed. This is a good reminder that restoration ecologists often forget the obvious: ecosystems are dynamic.

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Restoration in the News

In each issue we highlight news articles and happenings from around the world. Use the interactive map link below to quickly navigate through restoration news from around the world.

>View the Interactive Map Here<

More restoration news not included on the map:

Sebastião Salgado Has Seen the Forest, Now He's Seeing the Trees
By McKenzie Funk for Smithsonian Magazine

Renowned photographer Sebastião Salgado has returned to the Brazilian valley where he was born, to restore a landscape damaged by decades of deforestation and livestock production.

Global goals received with rapture in New York – now comes the hard part
By Liz Ford for The Guardian

As the UN gathered in NY to ratify 17 sustainable development goals that will guide world development over the next 15 years, many recognize that success requires comprehensive financial and political commitments from the world’s governments.

Thinking Restoration? Think big and think inclusive.
By Michael Casey for Forests News

An analysis of 119 restoration projects in Colombia points to the need for simultaneous top-down and bottom-up approaches to achieve large-scale restoration goals.

Planting in clumps boosts wetland restoration success
From Duke University for Phys.org

Research on wetland restoration finds that planting marsh grasses in clumps increased growth and survival by 107 percent compared to traditional, well-spaced plantings – a finding that could have significant repercussions for wetland restoration around the world.