Abstracts, Reviews, and Meetings

To develop the following abstracts, the editorial staff searches more than 100 scientific journals, professional and organizational newsletters, conference proceedings, and other resources for information relevant to ecological restoration practice and research. Please send suggested abstract sources to the *Ecological Restoration* editorial staff (journals@uwpress.wisc.edu).

SER Avignon 2010

Plenary session abstracts of the **7th SER European Conference on Ecological Restoration**. T. Dutoit, E. Buisson, F. Isselin-Nondedeu, organizers. Held August 23–27, 2010, in Avignon, France. www.seravignon2010.org

Restoring Natural Capital—A Priority for Global Society: Getting Scientists, Economists and Politicians to Work Together. 2010. Aronson, J. (Centre National de Recherche Scientifique, CEFE/CNRS-UPR 5175, Montpellier, james.aronson@cefe.cnrs.fr). Plenary session 1, August 24.

Increasing human population growth and resource consumption place ever greater demands on all ecosystems to deliver goods and services. Thus we must alter consumption patterns and increase our ability and will to restore impaired ecosystems. This will require new paradigms about our relationship with Nature and long-term investments in restoring natural capital (RNC). Like conservation, restoration should be seen as an investment rather than a cost. And both pay well, when total economic value is considered, and human wellbeing and true wealth are given greater priority. Examples from the Mediterranean region, the European Community, and elsewhere will show that economists, engineers, applied ecologists, and everyone concerned with the environment need—and can—work together toward a sustainable and desirable future. By making explicit the mutually reinforcing linkages between environmental and economic well-being, the multiple benefits achieved through RNC can play a crucial role in bridging ideological or professional divides and can open a promising road toward policies of sustainability.

Ecobiogeographical Features and Threats within the Mediterranean Basin Biodiversity Hotspot. 2010. Médail, F. (Mediterranean Institute of Ecology and Palaeoecology, UMR CNRS-IRD 6116, Aix-Marseille University (University Paul Cézanne), Europôle méditerranéen de l'Arbois, BP 80, F 13545 Aix-en-Provence cedex 04, France, f.medail@univ-cezanne.fr). Plenary session 2, August 24.

The biotic originality of Mediterranean ecosystems is due to complex interactions between a highly heterogeneous historical biogeography and unique ecological processes. Among the 34 hotspots of species diversity in the world, this ecoregion also constitutes a hotspot of human population density and growth, which inevitably raises serious conservation problems. What distinguishes Mediterranean landscapes is their long history with humans. Changes in Mediterranean biodiversity are therefore most closely linked with human population pressures. At present, the Mediterranean ecoregion is facing rapid and previously unknown global environmental changes, with important repercussions in structure and function. Habitat destruction and fragmentation are increasing, notably along the coasts. The 10 regional hotspots of *plant* biodiversity are seriously threatened by the severity and speed of current and forecasted environmental changes. Therefore, it is necessary to launch a conservation biogeography framework at the Mediterranean Basin scale. Biogeography furnishes the requisite tools to identify crucial conservation areas in today's context of global change, such as the 50 or so "glacial" refugia that have provided suitable habitats for plants during unfavorable climatic periods. Refugia preservation may be critical because they encompass the bulk of genetic diversity and endemism of Mediterranean plants. Thus a better understanding of ecological processes of the past, including the less-often studied local persistence of species, should improve management decisions related to conservation and restoration ecology.

Restoring Forest Wilderness Areas in Europe: Over Passing Oxymorons to Face Well-Founded Stakes. 2010. Vallauri, D. (WWF, 6 rue des Fabres, 13001 Marseille, dvallauri@wwf.fr). Plenary session 3, August 24.

In a motion voted in February 2009, the European Parliament calls the Commission to develop actions on wilderness areas. A wilderness conference hosted during the Czech presidency of the Council of EU (Prague, May 2009) followed. Aiming to restore wilderness in Europe has been criticized as an oxymoron, for two main reasons. First, the common culture of western and Mediterranean Europe emphasizes the millenary history of nature transformation. The questions of how ecologically and culturally

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relevant is wilderness, what are the aims for such policy, and how much wilderness is left today require some deliberation to avoid misunderstandings. Second, given the bioengineering and restoration approaches implemented in some part of Europe, in terms of goals and methods, restorationists could question the compatibility between restoration science and wilderness. In this session, we synthesize and discuss 1) the available data on forest wilderness areas in Europe; 2) the multiple concepts behind wilderness (gradients of naturalness, human footprint, and wildness; maturity, ancientness, spontaneous dynamics, connectivity, functional integrity, etc.); 3) develop links with ecological restoration concepts (reference ecosystem, irreversibility threshold, target ecosystem, restoration trajectory, landscape approach); and 4) present European and other examples to discuss the variety of stakeholders, goals, and approaches for forest landscape restoration. The World Wildlife Fund believes such developments could help resolve these apparent oxymorons and develop the scientific basis of an EU policy on wilderness areas.

Making Science Happen: Linking Research and Practice to Restore Degraded Drylands. 2010. *Cortina* Segarra, J. (Departamento de Ecología, Universidad de Alicante, Apartado de correos 99, 03080 Alicante, Spain, jordi@ua.es). Plenary session 4, August 25.

Drylands cover 41% of the Earth's land surface and sustain 38% of the global population. Their extent will probably increase in the next future following climatic change and increased human pressure, especially in developing countries. The estimated surface area of drylands affected by desertification is 10%–20%, making this one of the worst environmental problems worldwide, often closely related to poverty. Numerous actions to prevent and combat desertification have been launched in recent decades. Among them, ecological restoration shows great potential to recover landscape ability to provide goods and services and contribute to human welfare. Recent advances in our understanding of dryland ecology have improved traditional restoration techniques and fostered the development of new technology. But scientific progress and restoration programs often run in different directions because the latter is frequently anchored to old paradigms and driven by unsupported approaches. Collaboration among researchers, practitioners, and policymakers is urgently needed to develop integrated participative and adaptive management programs. Various tools may help to bridge the gap between science and practice and improve the efficiency and the social impact of ecological restoration. These include 1) new socioecological approaches, where cost-effectiveness of ecological restoration is evaluated considering both biophysical and social impacts; 2) networks of pilot and demonstration projects, where technologies are tested at a management scale and the most successful are documented and used as examples; 3) stakeholder platforms to develop collaborative management; 4) accessible databases and information and communication tools to reciprocally exchange knowledge; and 5) new funding schemes to sustain these efforts. We will illustrate this framework by introducing PRACTICE, an EC action to address a large range of desertification syndromes worldwide.

Perspectives in Restoration of Biodiversity and Ecosystem Services in Mediterranean Agricultural Landscapes. 2010. Rey Benayas, J.M. (Departamento de Ecología, Universidad de Alcalá, E-28871 - Alcalá de Henares, Spain, josem.rey@uah.es). Plenary session 5, August 26.

Ecological restoration is widely used to reverse the environmental degradation caused by human activities. A metaanalysis of 89 restoration assessments in a wide range of ecosystem types across the globe indicates that ecological restoration increased provision of biodiversity and ecosystem services by 44% and 25%, respectively. However, values of both remained lower in restored than in intact reference ecosystems. At this global scale, increases in biodiversity and ecosystem service measures following restoration were positively correlated. Cultivation and cropping are major causes of degradation and destruction of natural ecosystems throughout the world, and farmland currently covers more than 40% of the land's surface. "Passive restoration," whereby abandoned agricultural land undergoes secondary succession, is often slow, owing to biotic and abiotic limitations. "Active restoration" by planting trees can be very expensive if large areas are to be restored. We suggest "woodland islets" as an alternative approach in extensive agricultural landscapes, particularly in low-productivity environments. This approach allows conciliation of farmland production, conservation of values linked to cultural landscapes, enhancement of biodiversity, and provision of a range of ecosystem services. If "further research is needed," action is desperately needed. Thus we are implementing demonstration projects of this conciliation in Mediterranean areas. Restoration actions are accompanied by a variety of social and educational values, including citizen science.

Restoration of Degraded Mediterranean Rangelands. 2010. Papanastasis, V.P. (School of Forestry and Natural Environment, Aristotle University of Thessaloniki, Greece.vpapan@for.auth.gr). Plenary session 6, August 26.

Rangelands amount to 52% of the Mediterranean basin, thus the largest land type of the region. They are characterized by a large variety of plant communities and high biodiversity. At the same time, they are considered the most degraded as a result of human activities. Their degradation is mainly attributed to overgrazing by livestock, which leads to elimination of plant cover and subsequent soil erosion. A

total grazing ban is generally proposed so that they convert to woodlands through natural succession or reforestation. Research over the last few decades, however, suggests that Mediterranean ecosystems, and rangelands in particular, have evolved with the presence of livestock, and grazing exclusion may result in more serious degradation than overgrazing. Undergrazing and land abandonment may lead to fuel accumulation and subsequent devastating wildfires. Restoration can be achieved by adjusting the grazing management when only the biotic function of rangelands has been damaged. However, if abiotic function has also been affected, then additional measures are needed. In any case, grazing management should be an essential part of restoration. The various options for restoring degraded rangelands are analyzed and discussed, and case studies from several parts of the Mediterranean region are provided.

Biogeochemical Constraints and Restoration Perspectives after Degradation by Atmospheric Nitrogen Deposition. Bobbink, R. (B-WARE Research Centre, Radboud University Nijmegen, PO Box 9010, 6500 GL Nijmegen, the Netherlands, r.bobbink@b-ware.eu). Plenary session 7, August 27.

Atmospheric nitrogen depositions nowadays one of the main threats for European (semi-) natural ecosystems of high conservation value. Long-term nitrogen input from the atmosphere may cause eutrophication, soil acidification, and/or ammonium toxicity. The severity of these impacts depends on the biogeochemistry of the particular ecosystem but is especially severe under oligo- to mesotrophic, weakly buffered soil conditions. Long-term field trials have been set up in deteriorated dry grassland and heathland sites since the early 1990s to counteract the severe impacts of N pollutants. The first aim was to restore former soil conditions, as we feel that rehabilitation of ecosystems should start with recreating appropriate abiotic conditions. Removal of the vegetation and top soil ("sod cutting"), liming, or a combination of measures was used depending on the actual biogeochemical constraint after the degradation. Effectiveness was evaluated by following the soil chemistry and plant composition during a 10–12-year period. This presentation gives an overview of the experimental restoration measures and the main factors of success or failure. Several combinations of measures proved to be successful in restoring appropriate soil conditions in a low-productive sward. Full recovery of plant diversity was, however, seriously limited when the characteristic species had already disappeared, especially in dry conditions, or when it was impossible to increase the soil buffer capacity after acidification. Additional measures to counteract the dispersal limitation of many endangered species may be needed.

A Global Approach to Ecological Restoration in Protected Areas. 2010. Keenleyside, K. (Ecological Integrity Branch, Parks Canada, 25, rue Eddy, 4ième étage (25-4-S) Gatineau (Québec) K1A 0M5, Canada, karen.keenleyside@pc.gc.ca). Plenary session 8, August 27.

The establishment and effective management of well-connected networks of protected areas are seen as a major part of the solution to global conservation challenges, such as biodiversity loss, land use conversion, overexploitation of resources, and climate change. However, protected areas rarely contain complete, unaltered ecosystems, particularly in densely populated regions. Despite growing international attention to the values and practice of ecological restoration and its scientific and policy context, the global protected-area community lacks clear, consistent decision-making guidance for ecological restoration. In recognition of this gap, the IUCN's World Commission on Protected Areas is developing such a best practice guidance, which will be based on the Canadian "Principles and Guidelines for Ecological Restoration in Protected Natural Areas" that builds upon the foundation work of the Society for Ecological Restoration International. Ecological restoration in protected areas should be effective, practical, and affordable; enable and encourage meaningful participation, support, and commitment of indigenous and local communities; and recognize and embrace interrelationships between people, culture, and nature. This presentation highlights challenges and issues being addressed through this work and invites conference participants to offer suggestions to further its objectives.

Grasslands

Effect of Introduced *Euphorbia esula* on the Pollination of *Viola pedatifida*. 2009. Montgomery, B.R. (Dept of Biology, 1001 E 3rd St, Indiana University, Bloomington, IN 47405-3700, benmontg@indiana.edu). **Botany** 87(3):283–292.

Both closed and open flowers of prairie violet (*Viola pedatifida*) undergo pollination. Montgomery found that leafy spurge (*Euphorbia esula*) pollen was present on pistils of most open violet flowers and that application of spurge pollen to violet stigmas before conspecific pollen reduced seed set, suggesting the possibility of competition. However, in the field, leafy spurge did not reduce prairie violet seed set and fruit set was actually higher. Nor was there an interaction between the presence of leafy spurge and open or closed flower type. Montgomery suggests that the violet and spurge share pollinators, but there is no evidence that competition reduces the violet's fecundity or increases its reliance on closed flowers.