

INTECOL - Bulletin

International Association for Ecology

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Future of Ecology

Ecosystem Services: Ecology's Next Frontier

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I have been part of a very lucky generation, personally and scientifically. I was born in a place and at a time that ensured I did not have to worry much about wars (the cold war may have been a real threat but in western Europe it was a spectator not a participant experience) and when technology enabled some societies to utilise global resources to develop an exceptionally high and certainly unsustainable standard of living. I have also been lucky scientifically; able to take advantage of new techniques that have allowed my scientific curiosity to follow lines of enquiry that would have been unthinkable when I started out. Starting as a plant ecologist, I now find myself asking questions about microbial communities in soil,

investigating organisms that are largely unculturable but clearly keystone species in most communities, namely mycorrhizal fungi. With hindsight, I can trace an intellectual journey in all that, which has been hugely satisfying to me. I doubt that such a degree of self-indulgence will be open to the next generation of ecologists. The ecological challenges facing our species are so large and so urgent that we may need a different model of science to tackle them.

I believe that there is one transcending issue that faces ecologists and the discipline of ecology at present, which is to understand the consequences of the rapid loss of species from the planet for the way in which ecological processes work. There can be no



doubt that we are currently losing species at a rapid rate, many of them having never troubled the science of taxonomy, nor that is the rate of loss going to increase. The human population of the earth is already large enough to capture for itself probably a third or more of global primary production. That population is bound to increase, perhaps by 50%, and its living standard will also go up on average. Taken together, those two pressures mean that we may well be using half or even a substantially greater fraction of primary production within the next 50-100 years. Unless we learn some radically different agricultural technologies in a very short time, such increases in food production will inevitably mean the further transformation of large areas of land that currently supports a diverse community of organisms into monocultures of crop species. The implications are alarming.

We have allowed a view to emerge that the principle benefit that humans get from the land is food. There is an acceptance that we should protect patches of land which are especially rich in species or where unusually charismatic species are found, but the argument for doing this is an ethical or even aesthetic one, which ultimately will yield precedence to the utilitarian one of human survival. Defending the last patches of rainforest from the immediate needs of starving people is not a situation in which most ecologists would like to find themselves.

As a naturalist as well as an ecologist, I am a strong supporter of the argument that biodiversity has intrinsic value and that we should conserve ecosystems and their component species as an ethical imperative. But that argument will not suffice in the face of the pressures we are going to experience, which is why the current argument over ecosystem services is of such fundamental importance. The evidence seems to me to be clear that there is a link between the biodiversity of an ecosystem and its ability to deliver services, and I recently chaired a working group for EASAC (European Academies Science Advisory Council) that set out the evidence for that in a European context (<http://royalsociety.org/EASAC-Ecosystem-services-and-biodiversity-in-Europe/>). The report of the TEEB (The Economics of Ecosystems and Biodiversity) project, which has already started to publish reports, will offer a comprehensive statement of the current

scientific position.

It seems to me that there are two reasons why biodiversity is going to be critically important for human survival and wellbeing. The best known one is the insurance argument: ecosystems are going to experience major environmental change as climate changes and as direct human pressures alter nutrient inputs, drainage patterns, water tables and so on. Under these circumstances, ecosystems with few species are likely to experience major changes as environmental conditions become unsuitable for what are currently dominant or keystone species, and that means that the processes within those ecosystems may undergo major changes. Even more important, in my view, is the increasing need we shall have to obtain multiple services from ecosystems. Since humans started to manage ecosystems for their own ends, they have tended to focus on single outputs - food, water, timber, fibre, recreation. Maximising the output of one service, almost inevitably means minimising both the number of species and the output of other services. As our need for food and water from ecosystems increases, we are going to need to find ways of managing them to ensure that we can get multiple services from single ecosystems, and achieving that demands that we maintain biodiversity.

Two things are needed urgently. First, we must develop a proper understanding of the underlying ecological relationships between biodiversity and service delivery (or ecosystem processes in less anthropocentric terms). There is already a good empirical evidence base that shows that the links exist, but it is largely anecdotal, lacks strong theoretical underpinning and is heavily focussed on a few ecosystems, services and geographical regions. Second, and in parallel with the basic research programme, we need to develop management tools that allow us to optimise service delivery from land (and where relevant the seas as well). This may mean some loss of production from the largely unsustainable levels that can be achieved in intensive high-input agriculture, but the benefit will be better water storage, carbon sequestration, a more sustainable system - oh, and better biodiversity as well.

Both these research programmes are fitting challenges for 2010, the International Year of



Biodiversity. They will be team efforts and they will be international, since the problems are global. INTECOL is well placed to promote this approach and the international community of ecologists has a responsibility to raise public awareness of the issues. Just as climate scientists have had to raise their heads into the line of fire, so will biodiversity scientists. What the science of ecology points to be a need for changes in living styles, in just the same way that climate science does. There is an inevitable incompatibility between the survival of biodiversity and the sustaining of ecosystem services on the one hand, and continuing increases in consumption by humans on the other. The reason why climate scientists are the subjects of such vitriol is not because there is anything suspect about

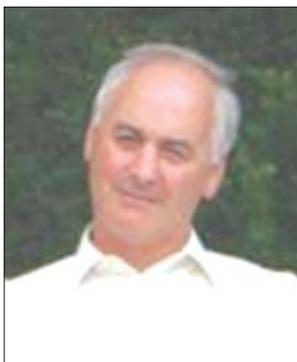
their science, but because their science has huge political implications. Ecology has the same implications now. If we are successful in making the case for the importance of our science, we should expect the same unwelcome attentions. If nobody attacks ecologists, then that probably means the message is not being heard or taken seriously.

The world's ecologists gather in London in 2013 for the next INTECOL Congress. It is our chance to discuss the underpinning science and agree the next steps to achieve sustainability, but it is also a chance to raise public awareness of the scale and urgency of these issues.

I hope to see you there.

New Board Members

Vice President of INTECOL



Alastair FITTER

Alastair Fitter is Professor of Ecology at the University of York where he was Pro-Vice-Chancellor for Research from 2004 to 2010. His research focuses on plant-soil interactions and mycorrhizal symbioses, especially in relation to the biological impacts of climate change. He is a Fellow of the Royal Society and Council member of both the Natural Environment Research Council and the Royal Society. He was appointed Commander of the Order of the British Empire (CBE) in 2010. He chaired the working group that produced the European Academies Science Advisory Council ' report on Ecosystem Services and Biodiversity in Europe in 2009.

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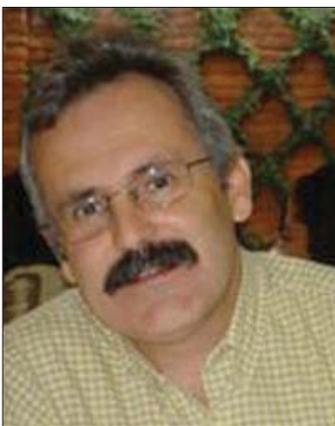
Executive Board Members



Shona MYERS

Shona MYERS is the Group Manager of a busy but small Heritage team at the Auckland Regional Council in New Zealand. In this role she manages teams of professional ecologists and historic heritage specialists who implement regional ecological, cultural and archaeological survey, monitoring and conservation programmes. Her council manages over 40,000ha of regional parkland close to the largest urban centre of New Zealand. Her team implements high profile conservation and ecological restoration programmes including mainland islands and threatened species conservation projects. She works closely with ranger staff, community groups, volunteers and research agencies to deliver these programmes. Her interests lie in protection and conservation of lowland ecosystems (forests and wetlands) and working with communities and landowners to encourage protection of biodiversity and heritage on private land. She also has experience and an essential background in implementing conservation measures through regional strategy, policy and resource management. She is the past president of the New Zealand Ecological Society. She has four children (now teenagers and adults) who also keep her busy and happy.

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Manuel MAASS

Manuel MAASS is a research scientist at Center for Ecosystem Research (CIEco) of the National Autonomous University of Mexico (UNAM) in a relatively new campus in the city of Morelia, Michoacan. For the last 20 years, Manuel has been coordinating a long-term ecosystem research (LTER) project aimed at understanding the structure and functioning of the tropical dry forest of Chamela in the Pacific Coast of Mexico. Since he returned from his graduate studies in the University of Georgia, he has been promoting in Mexico long term research with an ecosystem approach, as well as the use of watersheds/basins as research and management units. He is now particularly interested in promoting the transition from an ecosystem view to a socio-ecosystem perspective (from LTER to LTSER). He is currently the Co-chair of the Mexican Long-Term Ecological Research network (Mex-LTER), and a member of the Executive Committee of the International LTER network. He has been a visiting scholar at the Coweeta Hydrologic Laboratory in North Carolina, USDA Forest Service, as well as in the Biology Department at Stanford University, and in the Land and Water Division at the Commonwealth Scientific and Industrial Research Organization (CSIRO), Canberra, Australia. Currently he is enjoying a sabbatical leave at the Doñana Biological Station (EBD-CSIC) in Seville, Spain.

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Congratulatory Message from INTECOL Board

Rebecca Sharitz received 2010 US National Wetlands Award



Professor/Dr. Rebecca Sharitz, an INTECOL Board Member and researcher at the University of Georgia Savannah River Ecology Laboratory, received the US National Wetlands Award for Science Research at a ceremony in Washington, D.C. on May

19, 2010. She was chosen for her expertise on southeastern floodplain forests and Carolina bays and substantial contributions to wetland science in USA. She has been invited to serve on four US National Academy of Science committees and has published more than 160 papers or chapters in the scientific literature.

The award is one of six 2010 National Wetlands Awards given by the Environmental Law Institute with support from the U.S. Environmental Protection Agency, the National Oceanic and Atmospheric Administration-National Marine Fisheries Service, the U.S. Fish and Wildlife Service, the Natural Resources Conservation Service, the Federal Highway

Administration, the U.S.D.A. Forest Service, and the George and Miriam Martin Foundation.

Her research was the first to show a link between flooding characteristics and forest regeneration - an important finding to understand how southeastern floodplain forests react after experiencing hurricanes, alteration from dams, and discharge of thermally hot waters from nuclear reactors.

Becky is a dedicated, long-term member of INTECOL and is internationally respected ecologist. She has played a major role in advancing the INTECOL by serving INTECOL as Executive Board, Secretary General, and Vice President who organized wetlands conferences and played the major role in organizing the 9th INTECOL Congress in Montreal.

The INTECOL Board extends it to Becky upon her receiving this award.

For more information on the US National Wetlands Awards program or the 2010 Award recipients, please contact Landon Yoder at +1-202-939-3829 or wetlandsawards@eli.org. Information is also available online at www.nationalwetlandsawards.org.





Meetings & Congress

1. *EcoSummit 2012*



30 September - 5 October 2012, Columbus, Ohio, USA

"Ecological Sustainability: Restoring the Planet's Ecosystem Services"

This EcoSummit, the fourth in a series started by a committee of international ecological journal editors in 1996, will focus on integrative aspects of all ecological science and its application under the general theme of Ecological Sustainability: Restoring the Planet's Ecosystem Services

For more information, please contact: William. J. Mitsch, Ph.D.
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Website: <http://swamp.osu.edu/ecosummit2012/>
Phone: 1-614-292-9774, **Fax:** 1-614-292-9773
E-mail: mitsch.1@osu.edu

2. *The 7th European Conference on Ecological Restoration*

23 - 27 August 2010, Avignon, Provence, France

"Ecological Restoration and Sustainable Development - Establishing Links Across Frontiers"

The 7th conference of the Society for Ecological Restoration (SER) Europe will be held in Avignon, South-Eastern France in 2010. For scientists and practitioners who work on biodiversity and habitat restoration, this SER International European meeting offers an outstanding opportunity for transboundary contacts and exchange of knowledge, experiences and good practices in ecological restoration.

Important dates

Deadline for registration with regular fees: 15 July 2010

Website: <http://www.seravignon2010.org>
Contact: Pr. Thierry Dutoit (ser2010@univ-avignon.fr)



3. The 4th EAFES International Congress in conjunction with the 8th ILTER-EAP Regional Conference

13-17 September 2010, Kyungpook National University - Sangju Campus, Korea

"Ecological Challenges and Opportunities for Green Growth and Biodiversity Conservation in East Asia"

The theme of the Congress is *"Ecological Challenges and Opportunities for Green Growth and Biodiversity Conservation in East Asia"*. There will be a range of plenary lectures, symposia, and workshops to illustrate the theme, together with other activities on diverse ecological topics. EAFES is the East Asian

Federation of Ecological Societies composed of Ecological Society of China (ESC), Ecological Society of Japan (ESJ), Ecological Society of Korea (ESK), International Long-Term Ecological Research East Asia-Pacific Regional Network (ILTER-EAP) and Society of Subtropical Ecology (SSE).

The Secretariat, The 4th EAFES International Congress (EAFES 2010)
6F, Sunghwa B/D, #1356-51, Manchon 1-dong, Suseong-gu
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Website: www.eafes-sangju.org

4. ECOpole'10 Conference



CHEMICAL SUBSTANCES IN ENVIRONMENT

We have the honor to invite you to take part in the 19th annual Central European Conference ECOpole'10, which will be held in 13-16 Oct. 2010 (Wednesday-Saturday) on Wilhelms Hill at Uroczysko in Piechowice, the Sudety Mts., Lower Silesia, Poland.

The Conference Programme includes oral

presentations and posters and will be divided into five sections - SI - SV:

- SI. Chemical Pollution of Natural Environment and its Monitoring
- SII. Environment Friendly Production and Use of Energy
- SIII. Risk, Crisis and Security Management



- SIV. Forum of Young Scientists and Environmental Education in Chemistry
- SV. Impact of Environment Pollution on Food and Human Health

Contributions to the Conference will be published as:

- Abstracts on the CD-ROM (0.5 page of A4 paper sheet format)
- Extended Abstracts (4-6 pages) in the semi-annual journal *Proceedings of ECOpole*
- Full papers will be published in successive issues of the *Ecological Chemistry and Engineering/Chemia i Inżynieria Ekologiczna* (Ecol. Chem. Eng.) ser. A or S.

The deadline for sending the Abstracts is 15 July 2010 and for the Extended Abstracts: 1 October 2010.

Further information is available from:

Prof. Maria Waclawek

Chairperson of the Organizing Committee of ECOpole'10 Conference
University of Opole, Poland

E-mail: Maria.Waclawek@o2.pl, mrajfur@o2.pl

Tel. +48 77 455 91 49, +48 77 401 60 42, **Fax:** +48 77 401 60 51

Conference website: ecopole.uni.opole.pl

The actualized list (and the Abstracts) of the Conference contributions accepted for presentation by the Scientific Board, one can find (starting from 15 July 2010) on the Conference website. The papers must be prepared according to the Guide for Authors on Submission of Manuscripts to the Journals. The Conference fee is 300 € (covering hotel, meals and transportation during the Conference). It could be reduced (to 170 €) for young people actively participating in the Forum of Young Scientists. But the colleague has to deliver earlier the Extended Abstract (4-6 pages) of his/her contribution (deadline is on 15 August 2010), and a recommendation of his/her Professor.

At the Reception Desk each participant will obtain a CD-ROM with abstracts of the Conference contributions as well as Conference Programme (the Programme will be also published on this site).

5. 15th International Conference on Heavy Metals in the Environment

19-23 September 2010, Gdańsk, Poland

Although there are workshops, conferences and symposia on many metals (from arsenic to zinc), the International Conference on Heavy Metals in the Environment (ICHMET) remains the only forum that provides an integrated perspective on research and policy initiatives on all heavy metals in a trans-disciplinary context. Scientists need to understand not only the unique features and behavior of individual heavy metals but also the differences, similarities and interactions of different metals at the ecosystem, systemic and cellular levels if we are to deal with the

problems of global heavy metal pollution in a sustainable manner. ICHMET endeavors to break down the expertizing walls that are increasingly being erected around individual heavy metals, and believes that there are advantages in having a forum for specialists to share their research on arsenic, cadmium, copper, lead, mercury, nickel, zinc and other metals. The forthcoming conference will feature some of the world's leading authorities on various heavy metals including many members of the International Scientific Committee.



15th ICHMET- is a continuation of a series of highly successful conferences that have been held in major cities of the world since 1975. These conferences typically draw 500-1000 participants from countries in many parts of the world. Well over 5000 scientists have taken part in this series of conferences including most leaders in the field. Apart from the city's natural beauty, Gdansk is logical choice for the 15th Conference to highlight the outstanding work that is being done on heavy metals in central Europe. The venue for the meeting will be the Gdansk University of Technology (GUT) which features many tourist attractions.

The Conference will include a number of invited lectures treating frontier topics prepared by specialist with international reputation, oral presentation and poster sessions. ICHMET welcomes contributions on all aspects of any heavy metal in the environment. All presentation will be connected with main problems:

- Global mercury pollution, management and policy
 - Heavy metals in food
 - Heavy metals in sediments and remediation technologies (special session)
 - Heavy metals in solid waste
 - Impact of climate change on cycling of heavy metals
 - Life cycle analysis
 - Measurement and exposure assessment
 - Metal mixtures - mechanistic and epidemiological studies
 - Metals and metalloids
 - Nutrient-metal interactions
 - Plant contamination
 - Remediation technologies
 - Risk assessment and risk management
 - Risk communication
 - Soil contamination
 - Sources, emission, emission inventories
 - Susceptibility and protection of children from toxic metals in their environment
 - Trend tracking/analysis of heavy metal data - spatial and temporal
 - Wastewater treatment
 - Heavy metals in the marine environment
 - Others
- Advancements in analytical tools (procedures and measurement instruments)
 - Biomarkers of exposure and effects of heavy metals
 - Control strategies for heavy metal emissions and deposition
 - Emerging heavy metals
 - Gene-environment-metal interactions





INTECOL, International Association for Ecology

INTECOL is affiliated with the ICSU family of scientific organizations as the section responsible for general ecology within the International Union of Biological Sciences (IUBS). The association will assist and/or support the development of the science of ecology and the application of ecological principles to global problems, especially by assisting international cooperation; the collection, evaluation and distribution of information about ecology; national, regional and international actions which will serve ecological research, training of personal, coordination of general publications of ecological principles and the recognition of the importance of ecology for economy and society; the organization of conferences, meetings, symposia, programs and projects, conduct of speaking-series, publication of manuscripts, and measures which are deemed necessary to reach the goals of the association.

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Deadline for sending information for next e-Bulletin

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