

INTECOL - Bulletin

International Association for Ecology

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Message from New President of INTECOL



Tena kotou, tena koutou, tena toutou
Welcome, welcome, welcome

It is with great honor that I have accepted the position of President of INTECOL. It is wonderful to have been welcomed into the supportive and co-operative network of ecologists that is the Board of INTECOL. The INTECOL Congress, which is held every four years, is a very important way of sharing ecological science from around the world, spreading the words about the critical importance of ecology to the world, and to provide a forum for ecologists to networks.

The London Congress was inspiring and also a lot of fun, and sets the bar high for future congresses. The British Ecological Society did a wonderful job. It was superbly organized with excellent world-class plenary sessions, workshops and symposia. The depth and breadth of ecological science presented was phenomenal. It is also good to know that ecologists from all around the world can organize a great party with dancing, as we experienced at the 100-year celebration of the British Ecological Society!



The strong presence of INNGE at INTECOL 2013 was inspiring. Emerging young ecologists are our future and it will be important for INTECOL to continue to foster and grow the relationships with this network.

We are all looking forward very much to the conference in 2017 in Beijing and are extremely grateful to the Ecological Society of Chinese for their enthusiasm and commitment to organizing this conference. I am looking forward to the next four years and to working with other INTECOL Board members

on a number of issues. I would like to sincerely thank the outgoing President Alan Covich for his commitment, enthusiasm and warmth in leading INTECOL for the last four years. *Kia kaha.*

Nga mihi nui
With best wishes

Shona Myers
A New President of INTECOL

New Officers of INTECOL

Shona Myers, New President



Tena koutou, I have worked for over 28 years as an ecologist in New Zealand in both central and regional government. I am currently working as a Resource Management Advisor with the National Office of Department of Conservation, providing the link between policy and planning and ecology. Until several years ago I was manager of the Heritage Department at the Auckland Regional Council where I managed a team of ecologists and heritage specialists responsible for threatened species protection and invasive species eradication programs on the Regional Council's 26 regional parks (over 40,000ha). This included the development of Open Sanctuaries and threatened species translocations at Tawharanui, Shakespear and Waitakere Ranges regional parks, in partnership with community volunteer groups. I have also previously worked as a scientist with the NZ Biological Resource Centre where I was involved in establishing the national Protected Natural Areas Survey Programme, and the national Wetlands Inventory. In 2000, I was a member of a NZ Ministerial Advisory Committee on Biodiversity on Private Land. For the past 15 or more years I have provided expert ecological evidence to many planning hearings, Boards of Inquiry, and Environment Court. This has involved assessment of ecological effects of subdivision, motorway and infrastructure developments. I am the current Secretary and a past President of the New Zealand Ecological Society. The NZ Ecological Society jointly organized the Brisbane INTECOL Congress in 2009, with the Ecological Society of Australia. I have been on the Board of INTECOL since then. I have four grown up children, three daughters and a son. My eldest daughter works in communications and marketing at the Starship Hospital (children's hospital) in Auckland. Another daughter is currently travelling overseas and is heading to New York and San Francisco (where Team New Zealand has been racing!). My third daughter has just spent six months studying art history in Paris. My son is studying engineering at University of Auckland, I am very much looking forward to working with the INTECOL Board and others from around the world for the next four years.



Bojie Fu, New Vice President



Bojie Fu is Professor at the State Key Lab. of Urban and Regional Ecology, Research Centre for Eco-Environmental Sciences, Chinese Academy of Sciences. He is an Academician of Chinese Academy of Sciences and Fellow of TWAS. His research areas are landscape ecology and ecosystem services. He services as Vice Chair of International Long-Term Ecological Research Network. He has published more than 300 scientific papers and 9 books, about 140 papers published in the international journals. His prizes include China National Natural Science Prize and Award of Distinguished Service from the International Association of Landscape Ecology.

New Executive Board Members of INTECOL

Peter Søgaaard Jørgensen



Peter Søgaaard Jørgensen is a biologist, currently finishing his PhD and with an MSc from the Center for Macroecology, Evolution and Climate at the University of Copenhagen. His research focuses on the macroecological effects of global environmental change and options for sustainable management of wild as well as domesticated biological systems. Example wild study systems include birds and insects of Europe and North America, as well as birds of Tanzanian montane forests. Ongoing work emphasizes the role of evolutionary biology in sustainable management across the sectors of applied biology. He was one of the co-founders of the International Network of Next-Generation Ecologists (INNGE.net), a global platform of early-career ecologists developed with the support of INTECOL. In this context he has been engaged in communicating new initiatives such as Future Earth and IPBES and worked for the integration of young researchers in these and related initiatives. During his MSc and PhD studies, he has spent two years studying abroad at the University of California Davis and University of California at Berkeley. These and other travels have been important inspiration and eye opening for the importance of continued transformation of ecological research in terms of openness, relevance to society, and international capacity building.



Silvia Graciela De Marco



Silvia Graciela De Marco received Doctor of Science from South National University -UNS-, Bahía Blanca, Argentina on 2002. She is director and head of Wetlands and Coastal Environments Research Group (Biology Department, Faculty of Exact and Natural Sciences, Mar del Plata National University -UNMdP-, Mar del Plata, Argentina) since 2009 and team member of Environmental Institute of Scientific Networks, (EISN-INSTITUTE.DE), Germany since 2011. She has published more than 40 papers in international scientific journals (*Aquatic Conservation: Marine & Freshwater Ecosystems*, *Archives of Environmental Contamination & Toxicology*, *Chemosphere*, *Continental Shelf Research*, *Environmental Monitoring and Assessment*, *Estuarine, Coastal & Shelf Science*, *Journal of Plankton Research*, *Journal of Coastal Research*, *Mine Water and the Environment*, *The Science of the Total Environment*, *Wetland Ecology and Management*). More than 15 chapters in international edited books, and 2 books related to the environmental issues. She is member of Evaluation Committee of the National Academy for Scientific and Technological Promotion (ANPCyT) and member of Evaluation Committee of the National Council for Scientific and Technological Research (CONICET). She is referee at national and international scientific journals. She has received *Lobo de Mar a la Cultura Award - 2011, in the discipline Scientific Research*.

Shin-ichi Nakano



Shin-ichi Nakano is Professor of the Center for Ecological Research, Kyoto University, and microbial ecologist in freshwater and marine environments. In July 1994, he received PhD due to the dissertation work entitled “The role of bacterivorous flagellates in the phosphorus cycling in Lake Biwa”. Since April 1994, he started his research career as a researcher at the Lake Biwa Research Institute, the Prefectural institute for conservation of Lake Biwa, the largest lake in Japan. He conducted several research projects on bloom forming mechanisms of cyanobacteria (*Microcystis*) in the lake. In 1996, he moved to the Faculty of Agriculture, Ehime University, and focused his research to protistan ecology in freshwater environments, especially in eutrophic lakes. After the establishment of Center for Marine Environmental Studies (CMES), Ehime University in 1999, he moved to CMES and conducted researches on planktonic food web dynamics in a nearby coastal marine system where pearl oyster culture was actively performed. In 2003, he came back to Faculty of Agriculture in the university and conducted researches on food web dynamics in lotic and lentic environments of freshwater and marine systems. In 2008, he moved to the Center for Ecological Research (CER), Kyoto University and has so far been devoting researches on food web dynamics, with special reference to bacterial, algal and protistan ecology, in lakes, especially Lake Biwa. He is the author of more than 100 publications in peer-reviewed international journals. He has been in charge of the Director of CER since April 2013. He is the winner of 17th Biwako Prize for Ecology.



Naupaka Zimmerman



Naupaka Zimmerman is an ecologist interested in the ways in which plants and their associated microorganisms interact with each other, and the consequences of these interactions for how ecosystems function. A microbial ecologist with a background in biogeochemistry and community ecology, he is particularly interested in fungal endophytes -fungi that inhabit the healthy leaves of trees. He recently completed his PhD at Stanford, and has begun a postdoc at the University of Arizona. His undergraduate studies were in Environmental Science, Public Policy, and Social Anthropology, a combination of majors that reflects his long-standing interest in the ways in which people interact with the natural environment (scientifically, culturally, aesthetically) and in how these differing views come together to shape policy. These diverse interests are also shaped by his experiences growing up on the Island of Hawaii, where many different cultures are in constant contact. He was one of the co-founders of the International Network of Next-Generation Ecologists (innge.net), a global network of early-career researchers developed with the support of INTECOL.

Summary of INTECOL 2013, London 18-23 August 2013, ExCel, London, UK

It's now three months since the 11th INTECOL Congress closed and a perfect time to reflect on the six days of talks, posters, plenaries and social events. The congress has been five years in the organization and many people came together to plan this special event, doubly special as it coincided with the British Ecological Society's centenary. I was brought in by the Society to develop a centenary programme but also to oversee the INTECOL conference. I have very much enjoyed the past three years working with the International Scientific Committee, the Local Organizing Committee, the academic sponsors, ecological societies from across the world and of course the INTECOL organization itself.

Through all these individuals and organizations we were pleased to welcome to London this August, 2065 delegates from sixty seven countries, across all continents, from students to eminent professors. Throughout the six days of the conference there were

eleven plenary talks, sixteen parallel sessions, 1080 oral presentations, 580 poster presentations and 30 workshops. The conference reflected the international ecological science taking place across the world today.

Sunday 18 August began with a series of tours to places in South East England that held a special ecological interest. Delegates enjoyed a trip to Wytham Woods in Oxfordshire, Kew Gardens and Rothamsted Research among others. The day was finished off by the Welcome Mixer, which was very well attended and provided an excellent format for meeting old colleagues and friends and making new ones.

Monday 19 August began with the Opening Ceremony, with remarks by Professor Alan Covich, President of INTECOL, Professor Georgina Mace, President of the British Ecological Society and Professor Ilkka Hanski, representative of the International Scientific Committee. The delegates then listened to the opening plenary lecture by Professor



Sandra Díaz from the Córdoba National University, Argentina talking on the tangled bank.

Each day delegates enjoyed two and on some days three plenary lectures on a wide variety of topics. Professor Díaz was followed by Professor Joel Cohen, Rockefeller University, talking about Taylor's law. Tuesday 20 August saw Professor Ove Hoegh-Guldberg from the University of Queensland, on the challenge of climate change on coral reef ecology, Professor Nancy Grimm from Arizona State University spoke on prospects for resilient urban water systems and Professor Ilkka Hanski from the University of Helsinki talking on spatial structure of populations and biodiversity.

Professor Georgina Mace from University College London spoke on biodiversity conservation as part of the British Ecological Society Presidential address on Wednesday 21 August. Unfortunately our Wednesday afternoon plenary Dr. Jane Lubchenco was unable to travel due to illness and Professor Bill Sutherland stepped in to give the lecture, which was followed by a debate on policy. Dr. Bojie Fu from the Research Centre of Ecology and Environment, Chinese Academy of Sciences began the proceedings on Thursday 22 August, talking about ecosystem services in a changing landscape. Unfortunately Professor Susan Trumbore was unable to attend due to illness and Professor David Tilman of the University of Minnesota stepped in to give a lecture. Friday's plenaries were given by Professor Martin Nowak from Harvard University on the evolution of eusociality and Professor Tim Clutton Brock from the University of Cambridge on the ecology of cooperation.

Each day there were two scheduled parallel sessions, held close together; it enabled delegates to move easily between rooms to attend the talks of most interest to them. Each lunch-time a series of interactive workshops were held and each afternoon we held a dedicated poster session. There was lots of opportunity to network through several social events including the British Ecological society's centenary party held in Old Billingsgate in Central London.

We can tell you how we much we enjoyed the conference, but it's real success was made a success by all of the delegates and speakers that we welcomed to

London. Below we share some of their comments on what they liked best:

- Attendees from across the globe! Wide range of attendees, from Masters students to international hero professors;
- The content, the ability for professional ecologists to interact and discuss the material presented and the shared effort of all participants to make ecology a more straightforward and team-spirited field of biology;
- Wide topics including politics challenge, excellent plenary speakers and chance to talk worldwide researchers;
- Plenaries were phenomenal;
- The grand plenaries that set our science in context;
- The number and diversity (in terms of students/professors/etc.) of speakers. The informal and easy opportunities for networking/socializing. The structure, alternating plenaries and sessions and workshops;
- Well-structured program, good key note speakers from a variety of research fields, and an excellent last-night party. BES did a fantastic job with organizing such a party, the venue, food and the band were excellent - a great way to get to know other delegates.

We hope you enjoyed the meeting, the final act on Friday 23 August was to hand the baton over to the Ecological Society of China for the 12th INTECOL Congress in Beijing in 2017, we wish them a happy and fruitful organization and hope to see you all there.

Julie Hodgkinson
Festival of Ecology Manager
The British Ecological Society





Dr. Bojie Fu giving the BES a plaque on occasion of the BES centenary.



Poster session hall and exhibition during congress



Symposium Reports of INTECOL 2013

1. Integrative island biogeography: new perspectives on a classic theory

Ana M. C. Santos¹, Richard Field² & Alan Gray³



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Islands are often seen as natural laboratories for studying ecological and evolutionary patterns and processes. However, until the mid-20th century, islands were generally perceived as predominantly static entities. In the 1960s a paradigm shift occurred, driven by the revolutionary work of Robert MacArthur and Edward Wilson (M&W), who proposed an elegantly simple theoretical model, where the number of species on an island tends towards a dynamic equilibrium state resulting from the balance between local extinction and immigration from a mainland species pool. This year marks the 50th anniversary of the first publication of the M&W theory, in their 1963 paper “An Equilibrium Theory of Insular Zoogeography”. This symposium, which was supported by the Biogeography Research Group of the Royal Geographical Society (with IBG) had two main aims: (i) to provide new insights into the roles played by the three classic aspects of the M&W theory: immigration, extinction and area; and (ii) to focus on processes marginalized in the core M&W

model-specifically, the roles that species interactions and evolution play on islands.

Robert Whittaker gave the keynote, integrating research on the species-area relationship with island life-cycles and his recent General Dynamic Model of oceanic island biogeography. Ruben Heleno showed that sea- and wind-dispersed plants are respectively over- and under-represented in the Azores in comparison to the European (source) flora. Thomas Schoener evaluated 6 hypotheses centred on the question: are biotic interactions stronger on smaller or larger islands? Alyssa Cirtwill found structure in colonisation and extinction in the classic Simberloff & Wilson mangrove islet data, using a predator-prey network approach. Tim Blackburn found that human influences result in species-area relationships for alien species that often closely mimic the forms classically seen for native species. Adam Algar showed that climatic niche evolution on islands depends on area and climatic heterogeneity, suggesting that the zone of radiation still

offers exciting research opportunities. Finally, Daniel Gruner focused on the processes involved in the early stages of diversification on Hawaii, drawing on both ecology and evolutionary biology. Informal feedback on the symposium reinforces our impression that the event

successfully captured some of the excitement and innovation characterising the recent resurgence of, and interest in, island biogeography.



From left to right: Helen Moggridge (Biogeography Research Group, RGS), Alan Gray, Robert Whittaker, Richard Field, Ana Santos, Daniel Gruner, Adam Algar, Ruben Heleno and Thomas Schoener. Photograph by David Orme.

2. Evolutionary management: sustainable food, health and biodiversity for the next 100 years

Peter Sørengaard Jørgensen¹ & Scott P. Carroll²

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The unexpectedly swift eco-evolutionary response of the natural world to human actions has substantial implications for the next 100 years in ecological science, society and policy. From pathogens to weeds, fish to trees, rapid evolution is reshaping the world, and with it our health prospects, economy, agriculture and ecosystems. To retain utility and relevance, ecology must therefore better incorporate contemporary evolutionary dynamics. This symposium brought

together perspectives from medicine, agriculture, fisheries and conservation biology to show how formalizing eco-evolutionary approaches can help reframe management of ecosystems to address these new challenges.

The symposium was kicked-off by a keynote presentation by Scott Carroll entitled “Conciliation: using evolutionary principles to manage novel biotic systems”. Scott highlighted how novel biotic systems,



such as those formed through the introduction of species for pest control or inadvertent introductions of non-native species, often result in unintended evolutionary consequences. Scott used the history of repeated introductions of European rabbits to highlight examples of resistance and virulence evolution such as the well-known case of myxoma virus. Scott argued that ecological contexts such as pest-control and invasive species that appear to call for control or eradication could instead be managed for coexistence.

Ben Raymond, through his talk Evolutionary ecology is useful: sustaining future pest management by understanding selection on resistance in *Bacillus thuringiensis* (Bt), highlighted how GM crops with the Bt insect toxin provide a unique example where licensing depended on meeting regulatory requirements for the execution of resistance management plans, which in turn were built upon ecological genetics. Resistance evolution is the main risk to the sustainability of Bt crops, a vulnerability that cannot be completely eliminated. Ben stressed that up to the present resistance has evolved where compliance with resistance management plans has been poor in terms of dosage and refuge requirements. This highlights the socio-ecological context to which evolutionary-informed management strategies must be tailored.

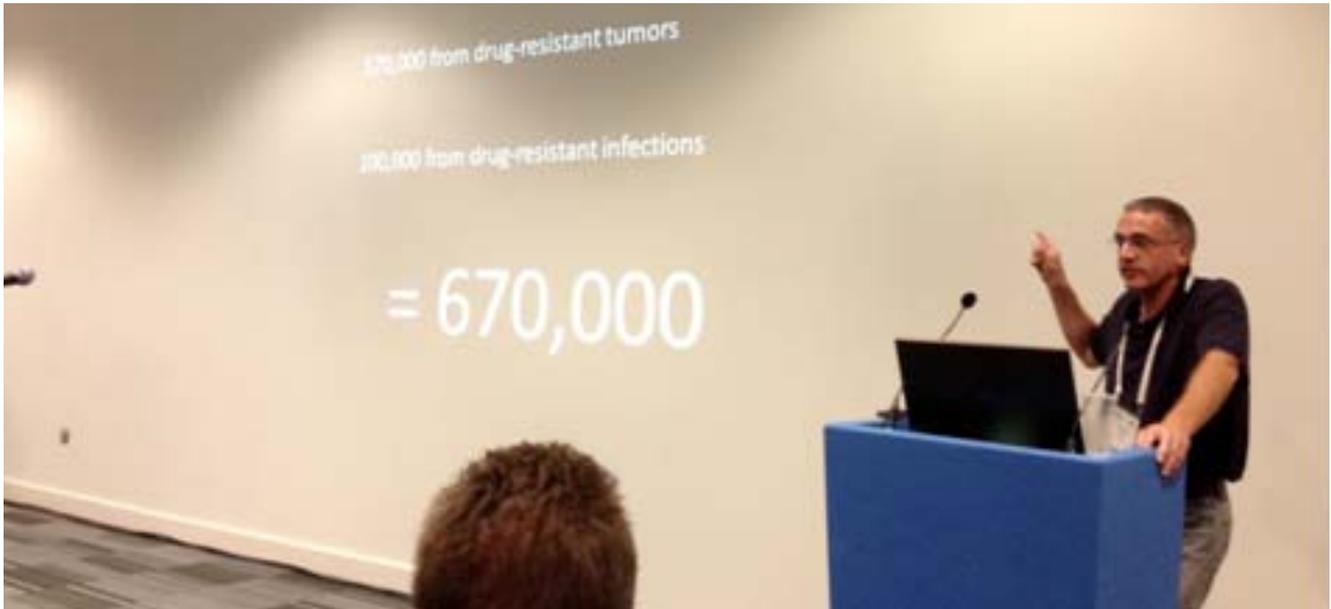
Esben Olsen's talk Evolutionary management of harvested fish stocks: warning signals for sustainability provided a state-of-the-science overview of contemporary evolutionary dynamics in fisheries. Esben suggested that fisheries should pay more attention to the strategies used for centuries in the domestication of animal and plant species. Domestication efforts are based on the propagation of valuable genotypes whereas fisheries commonly target big and fast growing individuals, favoring genotypes that produce less valuable slower growing individuals that mature at smaller sizes. Several strategies can help minimize such undesired eco-evolutionary responses such as the use of upper size limits and marine reserves to protect larger-bodied individuals. Above all, it might be hard to reverse fisheries induced evolution, and early warnings signals of such change could therefore aid

management to reduce the risk of fisheries collapse.

Andrew Read's talk entitled Evolutionary management in medicine likely left many with a very tangible impression of the importance of evolution in the 21st century. Through rapid evolution of resistance, cancers and microbes are killing 570,000 and 100,000 Americans each year, respectively. As Andrew put it - this is unsurprising, as evolvable life forms can adapt rapidly to overcome environmental insults; when we use chemicals to attack life forms that harm us, we impose intense selection for resistance. Andrew presented several options for how to better use existing products requiring an evidence-based approach soundly grounded in ecological and evolutionary theory.

Finally, Carla Sgro rounded off the five speakers with her talk Biodiversity conservation and climate adaptation: towards evolutionary resilient landscapes. Carla examined risk assessment in conservation management, and considered the tension between the potential benefits of augmenting genetic diversity in small isolated populations with facilitated gene flow from other populations, versus the risks of disrupting local adaptation. Carla used examples from Australia and the case of the Pygmy Possum, where populations separate for thousands of years were mixed. She contrasted this case with that of the now extinct Tasmanian Thylacine.

The symposium then broke into 30 minutes of discussion that provided opportunity for follow up questions and synthesis. Georgina Mace highlighted the five speaker's role in providing increasing evidence for the commonness of rapid evolutionary dynamics. Furthermore a commonality of all the case studies seems to be the conflicting incentives at the individual versus the group level, e.g. for the patient versus the public, the single farmer or fisher versus the whole community and in protecting the uniqueness of local populations versus ensuring the survival of the entire species. Potential management tools to resolve such conflicts may make use of the fact that individual versus group incentives tend to align over longer time scales.



Andrew Read summarizes the negative impact of resistance evolution on human health in the United States.

Report of Congress and Meeting

11th Conference of the Spanish Association of Terrestrial Ecology

“INVITATION TO ECOLOGY: STRENGTHENING TIES WITH SOCIETY”



Between May 6th and May 10th 2013 the Spanish Ecological Association for Terrestrial Ecology held its bi-annual meeting at the Public University of Navarre, in Pamplona, Spain. The conference attracted 276 registered delegates from 14 different countries, but the total attendance was much higher, due to the importance of the open sessions for the general public had at the conference. The main objective of the conference, as highlighted by its motto, was to share the latest advances in ecology not only among scientists but also with the society.

In the scientific side of the conference, attendants delivered 186 oral presentations and 84 posters, divided into 11 different thematic sessions covering the whole range of topics currently being researched in ecology. In addition, as part of both the scientific meeting and the activities open to the general public, the invited plenary speakers (Pedro Jordano, Miguel Verdú, Anna Traveset, and Stefan Schnitzer) made an outstanding effort to make the latest scientific advances known to a wider audience. Their talks can be seen in a permanent link at UPNA TV. The conference also hosted the symposium “Ecology and Society”, in which experts on education and science divulgation shared with the attendants tips

to better communicate ecological science to students and the general public.

Additional activities hosted at the conference were the first video and photography competitions, with contestants trying to answer the questions “what ecologists do?” and “what ecologists study?” with 1-minute videos and digital photographs. The winning works were shown in on-site exhibition and they can be seen at the AEET’s website (www.aeet.org).

The conference also organized a panel discussion open to the general public around a topic often in the news, “Should we worry about global change?” Experts from climatology, energy, and ecology answered the questions of the public regarding this topic. As a final activity, the conference delegates visited two emblematic forests in the western Pyrenees: Irati (the second-largest beech forest in Europe) and Larra (one of the most exemplary karstic landscapes in Western Europe). Conference attendants enjoyed not only the beauty of the landscapes, but also the explanations of the local rangers and biodiversity technicians who explained how ecosystems are managed in both areas.

In summary, the 11th Conference of the Spanish Association of Terrestrial Ecology supposed a clear



Figure 1. Opening ceremony. From left to right Dr. Fernando Valladares (AEET president), Mr. Andrés Eciolaza (General Director of Navarre’s Environment and Water), Dr. Julio Lafuente (UPNA Chancellor), and Dr. J. Boscolmbert (president of the organizing committee).



Figure 2. Dr. Julia Dordel (University of British Columbia), introducing the graduate program TerreWEB, to train graduate students to communicate the science of global change.



Figure 3. Conference delegates in the field trip to Irati forest (western Pyrenees).

increase both in number of delegates as well in number of scientific sessions and communications compared to the 9th edition (the 10th edition was jointly held with the European Ecological Federation, in a European-wide event). Given the current constrictions for funding in ecological research everywhere but specially in Spain, the AEET considers the conference a complete success,

having met the original goals of allowing for a space for ecologists and the society to share the latest knowledge on how our environment works.

Dr. Juan A. Blanco
Coordinator of the Scientific Committee



Next INTECOL Congresses

1. The 12th INTECOL Congress

The 12th INTECOL Congress will be held in Beijing, China at China National Convention Center (CNCC) in 2017. Theme is “Ecology and Civilization in Changing

World”. If you have any question, please contact Dr. Bojie Fu, Vice President of INTECOL.

2. Call for Outline Bids for XIII International Congress of Ecology in 2021

The INTECOL Board is seeking offers to host the XIII International Congress of Ecology. The International Congresses of Ecology are usually held every four years. The last congress was held in London, United Kingdom in 2013 and the XII Congress will be held in Beijing, China in October 2017. The Board is seeking outline bids which should be sent by e-mail to the Secretary General of INTECOL, to arrive not later than 31 December 2013.

The outline bids should contain the following information:

- (a) the proposed location and its convenience for international travel;
- (b) the infrastructure to hold a conference for 1,000 to 2,000 participants, and in particular the ability to house plenary lectures, concurrent oral and poster sessions;
- (c) the availability of hotel and hostel accommodation with approximate price ranges;
- (d) any experience of organising previous large meetings;

- (e) whether or not the proposal is supported by, or comes from, the appropriate national ecological society;
- (f) the estimated cost per head for providing the conference venue, projection facilities, poster boards, printed conference programme, book of abstracts and any projected staffing costs based on 1500 participants;
- (g) the potential for obtaining sponsorship to reduce costs;
- (h) the proposed structure of the local organising committee;
- (i) a proposed potential theme for the congress;
- (j) a plan in finance to promote INTECOL by hosting the Congress;
- (k) any other information which may be useful to the Board in considering the bid.

The bids will be considered by the Board during early 2014 with a view to making a decision, possibly involving further discussions with bidders, in January 2014.



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.

Officers and Executive Board Members

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Deadline for sending information for next e-Bulletin

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