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SIL news

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In This Issue

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Contributions on PC formatted disk, in any standard word processor or DOS (ASCII) text, or as e-mail attachments, will assist the Editor.

Editor's note

Hope you have noted the changes in the SIL Secretariat that became effective since the last triennial SIL Congress at Budapest in August last year. The main changes in the composition of Secretariat were reported in the newsletter63 that was posted on the SIL Web page in December 2013. The web page is updated periodically: it keeps you informed with WG and other scientific meeting reports, announcements of international and national meetings and symposia, book reviews and obituaries. The newsletter strives to keep you informed about SIL's scientific activities, i.e. all that is new and happening under the SIL umbrella. Both our new SIL President Dr. Yves Prairie and General Secretary Dr. Tamar Zohary send some important and interesting messages for our readers. I therefore, have put them at the start of the newsletter. Also, there is encouraging news from Dr. Jack Jones, Editor-in-chief of *Inland Waters (IW).* This Journal has already picked up quite well and provides an update on the contents of Volume 4 (Issues 1, 2), which deals with the Proceedings of SIL Congress at Budapest in 2013, including also a couple of papers emerging from plenary lectures.We also welcome in this newsletter some news about the recently baptized SIL WG Asia (WG Chairperson Dr. Brij Gopal), to boost limnology in Asia. I am also happy to apprise you that I was able to get from Pakistan some news for the first time. For this, I thank Dr. Rahat Jabeen who provides some interesting information about different types of waterbodies from Pakistan and research potential for aquatic sciences developing in the near future. I think in the upcoming period more will come from Asia, especially China, Korea, India, and many other Asian countries. I am sorry to share some sad news from Russia, USA and France: I have included three obituaries in this newsletter.

I hope our WG chairpersons will get my reiterated request to contribute more often than so far to the scientific activities of their respective working groups. However, the information contained in the present newsletter, especially in the Announcements section, shows that we have some hectic scientific activities going on in the form of upcoming workshops and symposia both in 2014 and a part of next year. Reports on these meetings are welcome in the newsletter. Two book reviews make the story complete.

I wish our readers a pleasant summer vacation period and good luck with their scientific pursuits.

Ramesh D. Gulati
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Message from the SIL President Yves Prairie

SIL: the road from relevant to essential

In over twenty-five years as an active participant in scientific societies, I've frequently found myself questioning their exact role and relevance in the development of our science. Never has the landscape in which international scientific societies evolve been under such pressure as now, as they are faced with an interconnected world where members can be totally independent regarding their knowledge acquisition, educational opportunities and experience sharing. This is coupled with a growing competitive environment generated by the expansion of national societies onto the international scene and the multiplication of influential voices onto the scientific public space. Having to face the changing needs of its constituents, associations are forced to redefine their missions, how they communicate with stakeholders, and first and foremost, what their unique value proposition is. This SIL leadership recognizes these challenges and is committed to the development of the society's truly unique mission.

We do not have to look very far when affirming our identity. SIL's own name bears three of its vital characteristics. First and foremost, SIL is and has always been the one and only truly international society, entirely and solely devoted to limnology, and this through its membership of both fundamental researchers and applied scientists. The unique conjuncture permitting scientists of all walks of our field and from so many countries to engage, co-create and share knowledge, positions SIL as the single most relevant and powerful global voice on limnological issues. Although national societies may have aspired to occupy that space in response to the evolution of their membership, and may have repositioned themselves by altering their brand, we strongly believe in valuing each group's unique offerings and reinforcing collaboration amongst scientific societies. A more united voice of limnology on the global scene can only generate positive results for the progress of our discipline, but it is also important in places where our expertise is most needed: to share information with and educate the concerned public actors, to help guide legislators in the development of sound environmental policies, and to play a more active role with international non-governmental organizations concerned with freshwater issues. SIL has a central role to play in this: by forging alliances with other like-minded organisations, by organizing or sponsoring joint meetings with them, and by being recognized as the authoritative figure on freshwater issues on the international stage.

We are already pursuing such collaborative efforts with ASLO, beginning with the ASLO plenary at the SIL 2013 meeting and continuing with the SIL-sponsored plenary at their upcoming Granada, Spain next February. SIL will also be collaborating more closely with national association members by sponsoring regional meetings, such as the upcoming ISRLE regional meeting in South Korea next August (see announcement in this Newsletter). We will publish plenary lectures or special issues emanating from those meetings in our SIL journal *Inland Waters* to ensure a broader dissemination of regionally focused limnological research. SIL is also taking steps to join international organizations. Through fostering these partnerships, we are committed to building added value for our members.

Second, I have always viewed SIL congresses as the Olympic games of limnology, a periodic pilgrimage of the global limnological community. This is a great tradition that needs to be maintained and reinforced for many reasons. It is a bridge between all worlds and between very different limnological settings. For example, we know comparatively very little about lakes that are essentially reset on an annual basis by the monsoons, yet this is an important driver in a large section of the world. Like it or not, our vision of lakes through our own field work or through the published literature is still heavily colored by lakes from the temperate and boreal biomes. This bias is not intentional; it is simply the result of the natural geographical frame we impose to make sense of the diversity of lakes around us and of the processes regulating them. But it also defines to some extent what constitutes a "representative lake": it's the average lake we study in our own limnological backyard. The now defunct *Verhandlungen* served the important purpose of permanently preserving data and knowledge from under-studied systems and from all corners of the world. In the age of information overload, members look to their society to aggregate information, curate it, attest to its validity, and disseminate it effectively. The Proceedings may be gone but the underlying need remains, and SIL has a role to play here as well in making such out-of-the-mainstream body of knowledge available to the broader community. SIL is looking at different alternatives for fulfilling the same purpose using

modern technological tools available today. The global SIL community will be asked to contribute to this effort in the near future and the Society will try to maintain the delicate balance between data quality, quantity and geographic coverage.

Lastly for this newsletter, I would like to emphasize the need for SIL to develop a more robust education program in limnology, and to dispense it where it is most needed. One of the core mandates of SIL is to promote the science of limnology in all areas of the world. But good science begins with good training and SIL is now developing and sponsoring specialized courses in limnology in various areas of the world. This is also an excellent way to introduce the next generation of limnologists to the SIL community. The next such SIL sponsored limnology course will take place in Brazil this coming July (for information, contact Vera Huszar - vhuszar@gbl.com.br; see also the Announcement elsewhere in this Newsletter) but there will be many more in the coming months. We welcome suggestions for courses (field courses, lecture based, webinars, eLectures or even MOOCs) both as to topics and location.

The above simply served as a reminder of what some of the core and unique values of SIL are. However, the society needs to continue its evolution in a manner that is both consistent with these core values but also keeping pace with the fast changing landscape of our field and the expectations of our membership. It is the road SIL must travel to go from relevant to essential.

Please feel free to contact us for any suggestions you may have.

Yves Prairie
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Encourage your students and young colleagues to join SIL! (A message from our SIL General Secretary)

SIL will celebrate its 100th birthday soon, in 2022. It is a mature society with a strong tradition of fostering and promoting research in Limnology, and would like to continue to be so into the future. But today, more than ever before, it needs a new generation of scientists.

Recruiting a young generation of SIL members is SIL's current primary goal. SIL depends on you, the individual SIL member, to assist in obtaining this important goal.

What would you tell your students and young colleagues to convince them to join SIL?

- SIL is the single, most important international society of professional limnologists with a tradition of nearly 100 years.
- SIL conferences are particularly useful for meeting colleagues, fellow students, and notable limnologists, presenting research findings, and learning to become an active, influential scientist.
- SIL conferences will be held every two years, instead of every 3 years now, starting from the 2016 Congress in Torino, Italy onwards.
- SIL offers scholarships to students, to assist them in financing their participation in SIL congresses.
- SIL's peer-reviewed journal, *Inland Waters*, is an excellent outlet for publishing your scientific works (see more about the Journal in the second column on this page of this Newsletter).
- Publishing open access in *Inland Waters* is considerably cheaper than in most other journals and is even more economical for SIL members than for non-members.
- Being a SIL member looks wholesome on your CV.
- In a special offer to students' annual SIL membership now costs only US$ 5! (compared with $93.5/year for regular SIL membership).
- Young professionals also benefit from a 50% discount on their SIL membership for the first 5 years after completing their studies.

So please, go ahead, talk to your students and young colleagues today, and direct them to me if they need any more information.

Tamar Zohary
SIL's General Secretary Treasurer
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Announcement, Inland Waters Vol. 4 (1 and 2)

The content of Inland Waters Volume 4 (issues 1 and 2, listed below) is available to SIL members from www.fba.org.uk/journals/index.php/IW/index. These issues include 3 plenary lectures from the Congress in Budapest (August 2013); topics include a morphological analysis of phytoplankton (Naselli-Flores), impact of climate warming in European waters (Dokulil), and the reuniting of limnology and oceanography in response to global change (Downing). The issues also include 19 standard submissions on basic and applied studies in lakes and streams in temperate, arctic, Antarctic, and tropical locations.

The goal of Inland Waters is to foster scientific communication of original work, primarily by SIL members, and especially to provide opportunities for SIL early career scientists to publish. The journal includes standard articles and focal contributions entitled 'Research Briefs.' These short submissions are intended to promote communication of emerging issues and are open access. Manuscripts can be submitted any time using the online journal system maintained by the Freshwater Biological Association. Inland Waters is an 'online first' journal, publishing papers online consecutively and subsequently in 4 printed issues per year. Inland Waters is listed in Science Citation Index Expanded and Current Contents. All papers from Issue 1 are indexed. The journal contents and citations are tracked by Google Scholar, Scopus, Aquatic Sciences and Fisheries Abstracts, among others. The initial Impact Factor is 1.53.

Standard articles published in IW are free of charge if up to 6 pages long. From page 7 a page charge of $150/page applies for SIL members or $175/page for nonmembers. The charge for publishing a standard article in Open Access is $100/page for SIL members or $135/page for nonmembers. This page charge applies from page 1. Research Briefs (<2500 words) authored by SIL members are published free of charge and as open access immediately. Research briefs by nonmembers will be charged as a regular article. The first or corresponding author of the article must be an SIL member to be eligible for the member discount. Becoming an SIL member is easy (see www.limnology.org or contact Denise Johnson at <siloffice1922@gmail.com>) and inexpensive for students (only $5/year). Color figures/plates are published electronically at no additional cost and at cost for the print copy.

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Senior Associate Editor

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Articles

Water quality implications from three decades of phosphorus loads and trophic dynamics in the Yahara chain of lakes
Richard C Lathrop, Stephen R Carpenter

Eutrophication reverses whole-lake carbon budgets
Felipe Siqueira Pacheco, Fabio Roland, John A. Downing

Predicting impacts of an invading copepod by ecological assessment in the animal's native range
Karl E Havens, John R Beaver

Variations in sediment organic carbon between different types of small natural ponds along Druridge Bay, Northumberland, UK
Peter John Gilbert, Scott Taylor, David Cooke, Martin Cooke, Michael Jeffries

Methane cycling dynamics in sediments of Alaskan Arctic Foothill lakes
Kristen A. Bretz, Stephen C. Whalen

Relationships between lake transparency, thermocline depth, and sediment oxygen demand in Arctic lakes
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Bioaccumulation of microcystins in the food web: a field study of four Swedish lakes
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Morphological analysis of phytoplankton as a tool to assess ecological state of aquatic ecosystems: the case of Lake Arancio, Sicily, Italy
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Impact of climate warming on European inland waters
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A long-term study of the factors that influence compositional stability of stream invertebrates
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Phosphorus enrichment of the oligotrophic River Rede (Northumberland, UK) has no effect on periphyton growth rate
Stephanie Jane McCall, Michael John Bowes, Tanya A Warnaars, Michelle S Hale, James T Smith, Alan Warwick, Cyril Barrett

Phytoplankton absorption and the chlorophyll a–specific absorption coefficient in dynamic Onondaga Lake
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Alterations in the photomineralization of allochthonous DOM related to elevated atmospheric CO_2
Dina M Leech, Matthew T Snyder, Robert Wetzel

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Jan Åberg, *Marcus B Wallin*

Evaluation of empirical models coupled with EUTROMOD for water quality prediction in Kansas reservoirs
Lindsey M Witthaus, Val H Smith, Belinda SM Sturm, Edward Carney

Partitioning the contributions of minerogenic particles and bioseston to particulate phosphorus and turbidity
Steven W Effler, Anthony R Prestigiacomo, Feng Peng, Rakesh Gelda, David A Matthews

How does interannual trophic variability caused by vertical water mixing affect reproduction and population density of the Daphnia longispina group in Lake Iseo, a deep stratified lake in Italy?
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Radiocesium contamination of lake sediments and fish following the Fukushima nuclear accident and their partition coefficient
Takehiko Fukushima, Hiroyuki Arai

Assigning hydrogen, carbon, and nitrogen isotope values for phytoplankton and terrestrial detritus in aquatic food web studies
Carol Yang, Grace M Wilkinson, Jonathan J Cole, Stephen A Macko, Michael L Pace

Low disturbances favor steady state: case of cyanobacterial monodominance in a Brazilian coastal lagoon
Melissa G Baptista, Brigitte Nixdorf

Plenary Lecture

Limnology and oceanography: two estranged twins reuniting by global change
John A Downing

Brian Moss honoured by the IHE, Delft, The Netherlands - A brief Report

Introduction of Prof. Brian Moss by Prof. Ken Irvine, Professor of Aquatic Ecosystems at UNESCO-IHE, Delft, The Netherlands

Ladies and Gentlemen, fellow academics, dignitaries, and particularly, today's graduates of UNESCO-IHE, it is my privilege to provide the laudation for Prof Brain Moss. Especially known for his research on the nutrient enrichment of shallow lakes through an ecosystem approach, his work has covered all parts of the globe, lakes as well as rivers, and the landscapes that shape them.

Laudatio is Latin meaning "praise or a tribute". It can also mean "appreciation", "acclaim" "recognition", "commendation" or even, simply "a good word".

So, Professor Moss, I would like to offer you some good words-

some good words on your inspiring teaching, of undergraduates, post-graduates, and fellow scientists to understand through scholarship, not only lakes and other water bodies, but their connection to the landscape. The simple reality that all things are indeed connected, and your curiosity and dedication to understand how things work.

Some good words about your search for knowledge and the merit of challenging the *status quo*; not accepting on face value the noise of administrative systems, or the rhetoric of vested interests. To have an idea and test it, through careful observation-and experiment, in the laboratory and at the scale of whole lakes. In asking the right questions, for example about the possible effects of climate change and creating large outdoor and temperature controlled mesocosms to test those ideas.

Some good words on your belief that solutions to environmental problems are not found only in the pages of learned scientific journals, but through effective communication to wider audiences to help understanding and appreciation of the natural world. Communicating how

Brian Moss giving a talk before being conferred a fellow of the IHC, Delft.

Brian Moss (Left) now Honorary Fellow of the IHE Centre at Delft.

current management of pollution, landscapes and political systems need to take account of ecology if we are to find the solutions to our wicked environmental problems.

Some good words on how you look to history to find solutions to the future, and to art and literature to find synergies with science for delivering scientific results. How you communicate your knowledge in inspiring, often usual, ways

Recognition of your achievements has come from many quarters. It has come from your great text books on Freshwater Ecology, and the Norfolk Broads.

Recognition has come from awards including Distinguished Lifelong Contribution to the Theory and Practice of Limnology

The Society of International Limnology August Thienemann–Einar Nauman Medal for your contribution to the subject.

The British Ecological Society Marsh Book of the Year for your book "Liberation Ecology", itself the result of an award by The International Ecology Institute.

More recently, you even managed to be the Lead Double Bass in the Southport Orchestra, where you seem to prefer to "travel hopelessly than arrive".

But, you have arrived here, at the 2014 Graduation of UNESCO-IHE to accept another accolade as Honorary Fellowship of the Institute.

So, Professor Moss, I am delighted that you accepted this award and very much look forward to the institute's graduates and staff benefitting from your inspiring science and your extraordinary insight.

Thank you
Kenneth Irwin Professor of Ecology
UNESCO – IHE, Delft, The Netherlands
22nd April, 2014

Working Group on Inland Waters of Tropical Asia

For various reasons, mainly economic, very few individuals from Asian and African countries are members of the SIL. SIL has made many efforts to improve research and training in various fields of pure and applied limnology in these countries. SIL also endeavours to enhance communication and exchange of information among the researchers in countries which are not yet adequately represented within the SIL family. In a major step, SIL decided to reduce the membership subscriptions to $US 5 for students registered for a degree but yet not having obtained it. For three years post-Ph.D., subscriptions will be levied at half of the full rate.

Further, at the last Limnology Congress held in Budapest (August 2013), the SIL Executive Committee accepted a proposal for a **Working Group on Inland Waters of Tropical Asia** within SIL. The Working Group will be coordinated for the present by the *Centre for Inland Waters in South Asia* through a Committee for planning and implementing its activities. The SIL has also agreed to endorse and sponsor a series of **Short-Term Training Courses** (1-2 weeks) on various topics, to be organised by the Working Group. While SIL is not able to financially support these courses, it will endorse and support requests for funds from different sources, including proposals for support from the Tonolli Fund.

The membership of the Working Group is open to all individuals throughout Asia irrespective of their membership in SIL. However, every one is encouraged to join SIL as soon as possible. There is no membership fee for joining the Working Group but the Committee may discuss the options for raising adequate resources for the functioning of the Group. The Working Group plans to have a few hundred members from within Asia by the end of 2014. The website of the Centre for Inland Waters in South Asia (www.aquaricecosystems.org/) will host the Working Group and its activities.

As a first step, a small Coordination Committee is being constituted. The Committee will consist of about 25 persons so that most of the countries and subject areas are represented. The Committee will also include a few members from outside Asia who have actively contributed to the region. The immediate tasks before the Committee are (a) to enroll as many researchers – young and old – as possible from all Asian countries, (b) to discuss activities which need to be taken up forthwith (top priority) on a regional basis (at least 3-4 countries), (c) to identify potential sources of funding for the WG activities/projects, (d) to identify institutions in different countries which are willing to join the network and collaborate in organising the activities, and (e) to identify individuals who are willing to share the work of the Working Group. Individuals who have already agreed to join the Working Group and serve on the Coordination Committee are listed below.

Members of SIL from the Asian countries and all those with

current or past interest in the region are requested to join the Working Group and actively help us work to meet its objectives. Suggestions for the structuring, functioning and activities of the Working Group are also welcomed. Individuals are requested to communicate their addresses, email IDs, experience, areas of interest and list of publications (preferably current CV) by email to ciwsa.nie@gmail.com.

Individuals on the Committee

Prof. A.P. Sharma (India)
Dr Malavika Chauhan (India)
Prof. Y. Rangareddy (India)
Prof. Prakash Nautiyal (India)
Prof. R.K. Sinha (India)
Prof. T.V. Ramachandra (India)
Prof. M. Arunachalam (India)
Prof. Subodh Sharma (Nepal)
Dr Jati Sharip (Malaysia)
Prof. Tri Widyanto (Indonesia)
Prof. Sansanee Choowaew (Thailand)
Prof. Mashhor Mansor (Malaysia)
Prof. Wan Maznah Wan Omar (Malaysia)
Prof. S.S.S. Sarma (Mexico)
Dr R.D.S. Papa (Philippines)
Dr Najam Khurshid (Pakistan)
Dr Rahat Najam (Pakistan)
Prof. Reginald Victor (Oman)
Dr. Mala D. Amarsinghe (Sri Lanka)
Dr E.I.L. Silva (Sri Lanka)
Dr R.D. Gulati (Netherlands)

Prof. Brij Gopal
Chairman, SIL Working Group

Obituaries

In Memoriam: Aleksey Ghilarov who died on the 20th of October 2013, aged 70.

Aleksey Merkur'evich Ghilarov was one of the key figures in Russian ecology in general, and aquatic ecology in particular. Many Russian biologists learned ecology by reading his papers and books on, e.g. Population Ecology (Ghilarov, 1990), which is a standard text book of biology for students at Russian universities, and Population Dynamics of Freshwater Planktonic Crustaceans (Ghilarov, 1987), probably the best review of zooplankton ecology ever written in Russian language. Many will certainly enjoy reading his latest and, sadly, last text, *The Ecology of the Biosphere*, due to appear later this year. He finished this work just a few weeks before his passing. However, perhaps Ghilarov's most important role was to act as a lifelong link between the ecologists in Russia and the international ecology community. That was, we believe, his conscious position, perhaps even his mission in science.

Despite having such internationally acclaimed scientists as G.F. Gause, V.S. Ivlev and G.G. Winberg, Russia, in the mid-1960s, when Ghilarov started his scientific career, was a country behind the Iron Curtain and the scientists were very isolated from the international science community. As Ghilarov later recalled (Ghilarov, 2013), it was quite painful to get all the state-of-the-art knowledge only from ecological handbooks without live contacts with international colleagues. Fortunately, the Russian libraries were well stocked with ecological literature, and Aleksey Merkur'evich used to spend long hours in the library, looking through the piles of international journals in aquatic ecology and ecology in general. From the time of becoming a Ph.D. student he adopted a habit that he held on to throughout his entire life of writing about the latest developments in the world of ecology for the Russian audience. His scientific output included dozens of reviews, essays, comments, and science news pieces in scientific journals and, more recently, on popular science websites too. Just an example: it was he who wrote in the Russian Journal of Ecology about the untimely death of Robert MacArthur in 1972 (Ghilarov 1974). There were few people in Russia who valued the importance of MacArthur's work at that time. This eagerness to teach himself and enlighten others was an integral part of Ghilarov's personality.

A.M. Ghilarov was born on 19 May 1943 into the family of Merkury Ghilarov and Irina Blokhintseva. His father was a professor in soil zoology, fluent in several European languages. On his father's side his family gave Russia five generations of professors in the sciences and humanities during the 19th and 20th centuries. His mother's brother, Professor D.I. Blokhintsev, a physicist, was scientific supervisor of the construction of the world's first nuclear power plant in Obninsk, Russia, which became symbolic for the first peaceful application of nuclear energy. Aleksey Merkur'evich graduated from M.V. Lomonosov Moscow State University in 1965 with an M.Sc. in invertebrate zoology. He received his first academic degree of Candidate of Sciences in Biology (an equivalent of Ph.D.) in 1970,

and second degree of Doctor of Sciences (D.Sc.) in 1984, and became a full professor in 1990. For 25 years he taught a general ecology course at the Biological Faculty of Moscow University, which was very popular among students.

He remained associated with his alma mater throughout his life, his scientific career starting from aquatic ecology with focus on zooplankton. One of his very first papers, describing species composition and size structure of zooplankton communities in small coastal rock pools on the White Sea and Barents Sea islands, was published in English (Ghilarov 1967). This was a very unusual attribute for a Russian Ph.D. student at that time. Gradually his interests shifted to more general issues such as mythological aspects of ecology (Ghilarov, 1992, 1996) and the history of the biosphere concept (Ghilarov, 1995). In the 2000s, while working on The Ecology of the Biosphere, he critically examined some ecological methodologies (Ghilarov 2001).

A.M. Ghilarov was not only a versatile scientist but also a connoisseur of poetry and graphic arts, and quite good at drawing himself. He was an enthusiastic canoeist in his younger days and a keen, though quite selective, fan of music in later years. He always had a passionate love of nature and he had the ability to identify a beast by its footprints or dung, or a bird briefly caught sight of as it flew past. He was a great field biologist, after all.

Aleksey Merkur'evich spent most of his life behind the Iron Curtain, with little opportunity to go abroad (one such fortunate trip is described by Maciej Gliwicz below). We remember how he regretted that he visited the art galleries of Florence and Ravenna first time only at the age of 69. Despite this life experience (or perhaps because of it), his motto was "science has no borders". In 2007, he wrote an essay, published on a Russian website (Ghilarov 2007) on parochialism as a major threat to Russian science and was harshly criticized by some colleagues. He tried not to pay much attention to this quibbling and he was optimistic by nature. Indeed, his surname originates from the Latin "hilaris", meaning cheerful, and was given to his ancestors in the 19th century for their cheerful spirit. That is how we will remember Aleksey Merkur'evich friendly, full of enthusiasm, and always ready to encourage and help others.

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An addendum

The gloomy look on the faces of Joanna Pijanowska (left) and Aleksey Ghilarov in the picture above and on my own (on the opposite side of Alosha's camera), was probably due to another row over the relative importance of food limitation and predation in controlling the density of *Daphnia* populations. We enjoyed these illuminating quarrels that were frequently interrupted by the roar of a loud home-made outboard motor. These were the wonderful days of the summer of 1978 at the Hydrobiological Field Station in Mikolajki, Great Mazurian Lakes, north-eastern Poland. Here, the three of us followed the demography of two

Photograph taken in 1978 by Z.M. Gliwicz using A. Ghilarov's camera.

populations of *Daphnia cucullata* to resolve the controversy that food was more important in one lake, but was outweighed by predation in another (Gliwicz, Ghilarov and Pijanowska 1981).

Alosha's stay with us was one of his first steps into the international community of ecologists and limnologists, and was not easy to arrange at this time of the 'iron curtain'. However, it was the right time, when we almost had a 'Polish Pope' in Rome, and the ten-million strong *Solidarity Movement* was growing. Alosha visited us again and again, also after the curtain had fallen. We regret we were not with him in the last weeks of his creative life. He will stay in our memories forever.

Z. Maciej Gliwicz
University of Warsaw, Poland
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Obituary Francoise GASSE

We are very sad to convey the following sad news that Françoise GASSE, our colleague and our friend, passed away on April 22th, 2014.

Françoise GASSE, paleobiologist, specialist of Diatoms, paleoclimatologist and paleohydrologist dedicated her scientific research to the study of lacustrine sediments and lake waters. She initiated pioneering researches in order to reconstruct Quaternary climates and Environments in Sahara and Sahel, in East Africa (Ethiopia), in Madagascar, in western and south Asia (Caspian Sea, Tibet), and in the Middle East (Lebanon). The present knowledge of the arid zones paleoclimatology is based on her works on lakes and paleo-lakes of these regions. One of her key contributions has been to develop the use of diatom distribution to quantify how lake properties such as depth and salinity have evolved through time. Her research commonly integrated diatom and isotopic data and is characterized by both its sophisticated understanding of the importance of basin hydrogeomorphology in paleoclimatic interpretation and the precision of her taxonomy of diatoms. The impact and quality of her career are and will remain exemplary. She was the first woman to receive the Vega Medal in Gold awarded in 2005 by the Swedish Society for Anthropology and Geography. In 2010, she was awarded the Hans Oeschger Medal of the European Union of Geosciences for her contribution to the reconstruction of climate variability during the Holocene. Her last contribution to the *Journal of Paleolimnology* (January 2014) was an ultimate tribute to the deserts Reminiscences and acknowledgments from a lover of deserts near the end of her professional life. Her friendly and discrete authority, her radiant smile and her cleverness will remain in our memories.

Francoise Gasse receiving the Vega Medal in 2005 award by the Swedish Society for Anthropology and Geography.

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Ann C. Powel (1936-2013)

Ann C. Powel, SIL member and frequent SIL conference participant, passed away on December 14, 2013. Ann is remembered as a many-faceted environmentalist: teacher, graduate student, environmental activist and always intellectually engaged. Ann participated in numerous SIL meetings from Lyon in 1984 to Montreal in 2007.

Ann C. Powel was born in Orange, New Jersey and moved to the Washington area at age 2 in the midst of the Hurricane of 1938. Ann had early training at Madeira School and Wellesley College before returning to obtain a master's degree in education from George Washington University.

She taught briefly in the District before joining the Fairfax County Public Schools as an elementary teacher. In that role she was a leader in getting students into the field to study nature. She continued to take courses in the summer, notably at Tufts University and at the Duke University Marine Lab in Beaufort, NC. She eventually obtained a leave of absence to complete her BS in Biology at George Mason University (GMU) in January 1983. After returning to the classroom for several years she returned to GMU and obtained her MS in Environmental Biology studying peat bogs in New Jersey in 1990.

She then launched into a role as a mostly volunteer environmental advocate including co-founding a group for park protection in Fairfax City with her husband, R. Christian Jones, SIL member and professor at GMU. She also worked as science editor for the National Wetlands Newsletter and a local advocate for such groups as Washington Regional Network and Sierra Club.

In her later years, Ann returned to an avocation from her early life, painting. She took numerous classes at Corcoran College of Art and exhibited her paintings in competitive shows at the Circle Gallery in Annapolis and at the Unitarian Church in Rochester, NY. She attended painting workshops in Skopelos, Greece and Vietri, Italy.

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Reports

An Overview of Pakistan's Ecological Water Wealth

The ecological settings of Pakistan are very rich in general, comprised of mountain ranges, deserts, rivers, streams, natural lakes, coastal belts and the Arabian Sea encompassing the total land area of 803,941 km^2. The population of Islamic Republic of Pakistan is estimated to be 180.44 million people (*2013, world population statistics*). Majority of the population resides near the only permanent River Indus which originates from Tibet (China) and enters Pakistan through Himalayas and runs in the center of the country as a life line in the economy and end up in through its delta in the Arabian Sea in the south.

A total over 780,000 ha of wetlands cover 9.7% of the total land area spread all over the country especially in low lying regions, with 225 nationally significant wetlands, of which 19 have been recognized as Ramsar sites of global significance. These 19 Ramsar sites have been divided in all 4 provinces of Pakistan like 3 sites in Punjab, 5 in Balochistan, 2 in Khyber Pakhtoonkhaw (KPK) and 9 sites belongs to the province of Sindh.

Wetlands

The unique location of country provides all types of wetlands, including:

Glaciers: Pakistan has perhaps more area under glaciers than any other country in non-polar regions.– 13,680 km^2, i.e. about 13% of the mountain area of the Upper Indus Basin

Alpine lakes: There are over 25 significant high altitude lakes in Pakistan, often fed by glaciers, lying at altitudes between 2,000 m and over 4,000 m.

Peat lands: Peat lands in Pakistan cover about 20 km^2. Most of these are high altitude peat lands in Deosai, Ghizer (Shandur) in Gilgit Baltistan (GB) and Chitral in KPK.

Springs and streams occur throughout the country, wherever suitable groundwater conditions prevail, including along the coast. The streams collect the water from the watersheds and feed into the river systems.

Rivers: Pakistan's main river is the Indus, arising in the Himalayas, and flowing through the Gilgit Baltistan. It has a total length of 2,897 km; five major tributaries from the east arising in India (Jhelum, Chenab, Beas, Ravi and Sutlej), come together to make the Panjnad before joining the Indus in Southern Punjab. The flows of the latter three rivers are largely controlled by India. From the west, it is joined by a multitude of small rivers in GB and Hindu Kush mountains of KPK province.

Natural low-lying lakes: A number of natural lowland lakes in Punjab and Sindh can be classified into freshwater and brackish according to their salt content. In Punjab province the major natural lakes in the Salt Range area, include Kallar Kahar, Khabbeki, Jahlar, Ucchali and Nammal Lakes. Simli and Rawal Lakes near Islamabad are formed from the melting snow and natural springs of Murree Hills and are the drinking water source for the city of Islamabad.

In Sindh province, Manchar Lake is the largest freshwater lake in Pakistan and one of the largest in Asia, located west of the Indus River. It fluctuates in area seasonally from about 350 km^2 to 520 km^2 and it

Wintering water birds at Lungh Lake in southern Sindh, Pakistan.

River Indus in Northern Pakistan with spectacular view of Kara Kuram Highway (ancient silk route)

A stunning view of unique desert wetlands Zangi Nawar Lake in southern Balochistan, Pakistan

drains into the Indus River. Keenjhar or Kalri Lake in Thatta District is another very large freshwater lake used for water supply. Both these lakes are threatened with pollution from different sources.

Small dams and large reservoirs: Man-made lakes formed by dams for hydropower and water supply are important wetland resources. They include the small water supply and irrigation lakes such as are found in Balochistan, and the larger lakes formed by dams such as Tarbela dam which has an area of 250 km^2; Mangla dam and reservoir on the Jhelum River between Punjab and Azad Jammu & Kashmir (AJ&K); Warsak dam in KPK; and other larger water supply reservoirs like Khanpur in KPK, Nammal in Punjab, Haleji in Sindh and Hub dam along the border between Sindh and Balochistan.

Irrigation and drainage canals: The irrigation and drainage canal networks throughout the country, particularly in KPK, Punjab and Sindh, form wetland complexes. There are a number of link canals between the "five rivers". Where the canals are unlined, seepage may create adjacent waterlogged areas and swamps, which can be important for local aquatic resources e.g., wetlands in Thal, Punjab, and the wetland complex created by the Nara canal in Sindh, and the associated Chotiari reservoir. Effective drainage of irrigation water is critical to prevent water logging and soil salinization.

Marshes are extensive areas of both freshwater and saline marshes in Sindh, including the Deh-Akro desert wetland complex north of Karachi, and the Rann of Kutch, which are both Ramsar sites. Other smaller marshes are associated with barrages and seepage from irrigation canals. When canals pass through desert areas, the wetlands created by seepage can be locally important such as drainage ponds created in Cholistan, Punjab.

Coastal wetlands: Pakistan's coastal wetlands are a very important category and include mangroves, estuaries, beaches and corals. The total area of Indus Delta is about 600,000 ha and **Mangrove Forest** cover less than 100,000 ha of the Indus Delta. The Makran coastline in Balochistan also contains some valuable pockets of mangroves covering about 10,000 ha, notably at Miani Hor, Kalmat, Hor, and Gwatar Bay;

Estuaries: The Indus flows out to the sea through the Qalandri Creek in the Indus Delta, forming the biggest estuary. The only permanent river forming estuary along the Balochistan coast is Hingol River; other rivers flowing into the sea along the coast are only seasonal. Miani Hor and Kalmat Hor are deep inlets with mangroves and salt marshes.

Biodiversity

The aquatic biodiversity of Pakistan reflects the passage of the Indus River from the high mountains to the sea and the full diversity of wetland ecosystems. The Indus Flyway is a critical migration route for water birds – ducks, geese, cranes and shorebirds.

Eighteen threatened species of mammals are found in the country including the Indus River Dolphin (*Platanista minor*); twenty threatened bird species, twelve reptiles and two endemic amphibians are also supported by wetlands. The wetlands also support 187 indigenous freshwater fish species (including fifteen endemics) and 788 marine and estuarine fish species. There are two important migratory fish, the Mahseer, *Tor putitora* and the Shermahi, *Clupisoma garua*, which are threatened by dams. One of the most famous anadromous fish "Palla", *Tenualosa ilisha*, was used to be caught in large numbers in the Lower Indus up to and beyond Kotri barrage but due to the reduction in flows down Indus, there has been a significant fall in the catches of Palla fisheries.

The country's aquatic ecosystems provide vast services and benefits but the significant ones are:

Food production, Fresh water storage and retention of water for domestic, industrial, and agricultural use, water regulation (hydrological flows) and groundwater recharge / discharge. Many wetlands have their spiritual and religious values and provide recreational opportunities.

Threats and Challenges

These important ecosystems are facing many challenges in playing their vital role and providing healthy and full benefits in order to sustain the environment and socio-economic conditions in the country as well as in the region. The ignorance and less attentive behavior of the policy makers creates gradual deterioration overall. Some of the threats are: lack of proper management, degradation of habitats and water quality, overexploitation of natural resources like, fisheries (marine, coastal and freshwater) forest (mountain, mangrove forest, riverine), extensive use of pesticides in agriculture activities also leads to

10 important Ramsar Sites in Pakistan

S. No.	Ramsar site	Province	Area (ha)	Protection status
1	Chashma Barrage	Punjab	34,099	Wildlife Sanctuary
2	Deh Akro-II Desert Wetland Complex	Sindh	20,500	Wildlife Sanctuary
3	Haleji Lake	Sindh	1,704	Wildlife Sanctuary
4	Indus Delta	Sindh	472,800	Includes Wildlife Sanctuaries
5	Indus Dolphin Reserve	Sindh	125,000	Game Reserve
6	Kinjhar (Kalri) Lake	Sindh	13,468	Wildlife Sanctuary
7	Miani Hor	Balochistan	55,000	No
8	Runn of Kutch (Pakistan side)	Sindh	566,375	Wildlife Sanctuary
9	Taunsa Barrage	Punjab	6,576	Wildlife Sanctuary
10	Uchhali Complex (Khabbaki, Uchhali and Jahlar Lakes)	Punjab	1,243	Wildlife Sanctuary; Game Reserves

polluting the water bodies and water quality, etc.

The limnological situation of water bodies in the country is deteriorating since most of the population exploits the water and its biological resources directly for their consumption. On the other hand, the sanitation system is not adequately constructed so the usual practice is to use the nearby water bodies and canals for dumping the human and agriculture wastes. As a result, the water quality and aquatic fauna of these water bodies suffer from many environmental and ecological problems, including eutrophication and high level of pollution etc. Last but not least, the lack of scientific research and approach in managing the ecosystems and biodiversity appear to be the main reason for our ignorance of many such problems.

Since the developmental activities increase indiscriminately in the country they lead to an increase in pressure on these natural ecosystems particularly the aquatic resources. The situation can be improved if the sustainable management practices of natural resources are adopted in developmental projects and planning.

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How To Save Urmia Lake in Iran ?

Introduction to the lake

Lake Urmia is a salt lake in northwestern Iran near its border with Turkey. It is the largest lake in the Middle East and the sixth largest saltwater lake on earth with a surface area of about 5,200 km^2, and it is 140km long, 55 km wide and 16 m deep. The lake has more than 100 islands and is protected by the Iranian Department of Environment. Like the Dead Sea, it is remarkable for the extreme salinity of its waters. Since 1967 Lake Urmia has enjoyed the status of a protected wetland. and the Iranian government has made efforts to increase its wildlife. The shoreline of the lake varies with the lake's waterlevel; when the water is high, it extends into large salt marshes to the east. The lake's south shores are largely uninhabited. The lake is divided into north and south, separated by a dyke in which a 1,500 m gap provides little exchange of water between the two parts. Due to drought and increased demands for agricultural water in the lake's basin, the salinity of the lake has risen to more than 300g/litre during recent years, and large areas of the lake bed have been desiccated and are dry now so that lake's water area has considerably shrunk. The $Na^+$and Cl^- concentrations are roughly four times the concentrations of natural . Because Lake Urmia's waters have no outlet, they are highly saline. The lake is one-fourth as salty as the Dead Sea, with a salt content ranging from 8 to 11 per cent in the spring to 26 or 28 per cent in the late autumn. The lake's hydrography is governed by the lack of an outlet. It forms the dead end of a large drainage system that covers an area of about 52,000 km^2 and is subject to great seasonal variations.

Integrated Lake Basin Management (ILBM)

Based on years of successful work on lakes and reservoirs in various countries, ILEC (International Lake Environment Committee) formulated the ILBM platform (Nakamura and Rast, 2011). ILBM is based on six fundamental governance measures including: (1) policies; (2) institutions; (3) participation; (4) information; (5) technology, and (6) finances.

Based on these six measures, it is possible to build a healthy Urmia Lake. ILBM is an instrument that assists lake basin managers and stakeholders in achieving management of their lakes and basins for their sustainable use. It assumes that lakes have a great variety of resource values, whose sustainable development and use require special management considerations characteristic of their lentic (static) water properties. Good lake basin management can be realized only through ILBM, which represents continuous lake basin governance for improvements. ILBM integrates institutions, policies, participation of science, technology and finances. ILEC promotes ILBM globally, with long-term and strong political commitment, in order to improve the state of world's lakes. A primary characteristic of ILBM is that it is not a prescriptive planning procedure. Rather, it is the result of a compilation of lessons learned from the global experiences of past lake basin management. They were synthesized to address complex planning issues with a basin governance framework reflecting the unique features of lentic waters such as lakes and reservoirs. These features of lakes and reservoirs include a long water retention time, complex response dynamics, and an integrating nature of the management measures (Nakamura and Rast, 2011).

Successful lake basin management requires that we fill the gaps between what has already been done, and what remains to be achieved in facilitating its application, based on long-term and strong political commitment. Continuous efforts will be necessary to further expand and refine the ILBM concept to achieve a brighter future for lakes and other water bodies experiencing serious degradation threats, particularly those attributable to human activities and climate change (Nakamura and Rast, 2011). To achieve this goal, the following governance pillars, which constitute the basic components of ILBM, and which are all potentially available for Lake Urmia in Iran, must be addressed. These include: 1) A management system with an appropriate organizational setup will help ensure sustainable benefits for lake basin resource users; 2) Policy tools must be better developed to facilitate concerted societal actions for sustainable lake basin management; 3) All lake basin stakeholders should participate in the decision-making process for managing the lakes and their basins for sustainable use; 4) Technologies.

Although such effects often tend to be limited in certain areas and over short time periods, physical interventions, such as shoreline and wetland restoration, provision of sewerage and industrial waste treatment, water treatment systems, afforestation, and mitigation measures for siltation control, can play a significant role in improving the lake environment. It also will be necessary to initiate actions for

Bridges over Urmia Lake.

A coast of shrinking Urmia Lake.

Irrigation Revolution (best practice of irrigation) and Green Revolution (using newly-selected domestic plants requiring less irrigation water); 5) Information. Scientific and public perceptions regarding lake basin management can differ from case to case. Without knowledge generation and sharing, human and financial resources mobilized in the lake basin management efforts may not be effective; and 6) Finances. Financial resources should come from all basin stakeholders that directly or indirectly benefit from the use of lake resources. Efforts must be made to develop innovative approaches for generating locally usable funds.

Based on these ILBM elements, the roadmap for Saving Urmia Lake should be as follows:

1) Only the water resources in the local catchment area should be used. There is no need to import water from areas outside the Urmia Lake catchment area;

2) Only animals and plants in the local area should be used. There is no need to import or bring in animals and plants from outside the catchment area;

3) Only local people and local nations should be involved. There is no compelling need to bring people from outside the catchment area;

4) Only local people and local leaders should have the authority to decide how to save Urmia Lake and its catchment area. Any experts sought from abroad should only be requested to evaluate the positive and negative parameters of restoration efforts;

5) Professional bodies from throughout the Islamic Republic of Iran should be invited to participate in saving Urmia Lake and its catchment area. In addition to scientists and decision makers, religious leaders, philosophers, historians, artists, writers, sportsmen, etc., of all ages (young and old), and from all parts of Iran should be involved.

The above type of approach was used to save the Northern Aral Sea, which is now exhibiting the first signs of success of the management measures. As stated at the onset of this message, it will not be possible to achieve a healthy Urmia Lake and basin without creation of the six fundamental ILBM pillars (measures) mentioned. To this end, the six ILBM governance pillars within Urmia Lake and its basin should be evaluated and refined during 2015–2017. This approach would work for all continents, and should also work for lakes in Iran. Indeed, it would be very beneficial to develop appropriate policies, create the institutes for such policies, and allocate the necessary funds to develop capable staff to accomplish the desired goals. Indeed, it would be inspirational to build a symbolic ILBM "Pavilion" on the shores of Urmia Lake. This would be a first step towards developing a healthy Urmia Lake with expected rise in water level by 2017. It will be one small step for people inhabiting the Urmia Lake catchment area. This Pavilion will become a physical symbol for all people involved in the restoration of Urmia Lake and its catchment area.

It would be desirable to write new poems and songs about Urmia Lake and its catchment area. New films and new photo albums about the Urmia Lake landscape should also be developed. New books about the lives of people inhabiting the Urmia Lake surroundings and within its catchment area should be written. Further, it is not sufficient only to write scientific and technical papers about the problems of Urmia Lake and its catchment area. Rather, hymns and songs also should be written that would become spiritual symbols for all people in the Urmia Lake 'Rescue Team.'

In order to overcome the Urmia Lake crisis, people engaged in scientific and cultural activities relevant to the lake and its catchment area should unite in developing a common approach directed to the better future of this lake.

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No science, no evidence, no truth, no democracy

Travelling on the London Underground is convenient and fast but it is also noisy. Conversation is difficult (though the English tend not to be loquacious in public anyway) and one's attention is drawn to the advertisements inside the train for things and services one probably does not want to buy. But in 1986 an American writer, Judith Chernaik, had the idea that some of the advertising space might be used for short poems: classical, international, contemporary and new. 'Poems on the Underground' is now supported by the Arts Council of the UK and the British Council and is a great success. It has 3000 advertising spaces and the poems are changed three times a year.

One day on the train, I saw a very short poem, written in his private letters by Osip Mandelstam, a Russian, born in 1891, who lived through the Russian Revolution and the establishment of a totalitarian regime under Joseph Stalin, of whom Mandelstam was openly critical. In 1938 Mandelstam was arrested (Fig. 1) and died in a transit camp on his way to imprisonment in Siberia. His poem on the Underground was pithy, expressing the fact that no matter how great the government suppression, it was not possible to cover up truth.

The poem came to mind when I was asked to support (which I did) a letter (http://action.ucsusa.org/site/Advocacy?s_oo=v5GUkb1VRL8xdKOBj8a-Ng&id=4025) on behalf of Canadian scientists increasingly suppressed, during the last seven years, by governments whose intentions seem increasingly to exploit tar sands and other minerals and generally to ignore the needs of environmental quality. One government tactic has been to prevent government scientists from speaking to the press without censorship by the government's publicity department. The words climate change, water pollution, oil, polar bears, and caribou all seem to excite total clampdown. Moreover a large number of environmental programmes and laboratories of Environment Canada (including the Experimental Lakes Area in Ontario) have seen reduced funding or closure, and it is alleged that sets of long-term data gathered on the western Canadian lakes by the Winnipeg and other laboratories have been destroyed. One internationally prominent Canadian limnologist has called it the new fascism.

The Professional Institute of the Public Service of Canada, through an independent survey, to which over 4000 scientists responded, has found that 24% were frequently asked to exclude or alter technical information in federal government documents for non-scientific reasons. The requests came from their direct supervisors, business or industry, other government departments, politically appointed staff and lobbyists. Over a third agreed that public relations departments had obstructed them, and 71% said that development of policy, law and programmes based on scientific evidence had been compromised by political interference. About half were aware of cases where their department or agency had suppressed information, and believed this led to incomplete, inaccurate or misleading impressions.

Fig. 1: Narodnyy Komissariat Vnutrennikh Del (NKVD) photograph of Osip Mandelstam at the time of his arrest.

Over 15000 people were sent the questionnaire and there is a good chance that these percentages, of those responding, underestimate the problem. My awakened interest led to some literature research (yes, there is a literature and even an area of sociology that deals with the suppression of science) and the finding of Wilson and Barnes (1995) that more than half of 70 senior Australian environmental scientists believed that their career prospects or research funding would be jeopardised by speaking out on environmental issues. Only twenty percent thought not and the rest were unsure. Sociologists in this area recognise a strong element of self-censorship. Perhaps that is why among established American ecologists there is a lot of acceptance that severe environmental problems exist, but relatively little action to campaign for solution of them (Reiners et al., 2013).

My searches led to a detailed report by the Union of Concerned Scientists (2004) into the US administration's misuse and censorship of science and to articles by the British science journalist, George Monbiot, (http://www.monbiot.com) detailing some very peculiar attitudes to evidence on the part of the UK government and some of its chief scientist advisors. The current British Secretary of State for the Environment grudgingly acknowledges climate change but believes it to be natural and perfectly normal and a potential boost to the economy.

Suppression of science would appear to be rife in Canada, the UK and the USA, three major democracies of the western world. What about mainland Europe? Sociologists observe that suppression need not only be overt though there seems to be a lot of evidence for such direct interference. Back in the 1970s when I was campaigning to have phosphate stripping installed at sewage works discharging to a heavily eutrophicated system, the regional manager of the Water Authority responsible started enquiring as to whom I answered to and how I could be silenced. That individual later became a pillar of the water industry and much appointed to government bodies, including some in Europe. But the sociologists note that suppression of science can also be in the setting of agendas, and the shaping of people's beliefs, where powerful people and groups are able to get their way without blunt intervention and consequently make their power appear legitimate. The current agenda for Horizon 2020, the new research programme of the European Community, is centred on three foci: Responding to the economic crisis to invest in future jobs and growth; Addressing people's concerns about their livelihoods, safety and environment; and Strengthening the EU's global position in research, innovation and technology. There might be some comfort in the second proposition but the first and third suggest that business is going to be very much as usual. The oil and gas will not stay in the ground; the aspirations of the Water Framework Directive will remain modest; climate will continue to worsen; and the problems will continue to mount. We will collude because we have laboratories and livelihoods to support. But perhaps we should not.

In Europe we are yet some way from the frustration of the Canadian scientists, who organised demonstrations in autumn last year with the slogan: ' No science, no evidence, no truth, no democracy' but

Mandelstam, in his poem displayed on the London Underground, put things equally succinctly:

You took away all the oceans and all the room.
You gave me my shoe-size in earth with bars around it.
Where did it get you? Nowhere.
You left me my lips, and they shape words, even in silence.

We face a complicated future. Will we be participants, observers or prisoners of it?

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Workshop on Taxonomy and Ecology of Freshwater Zooplankton at Department of Zoology of University of Pune, India (25-28th November 2013)

A four day workshop entitled "Taxonomy and ecology of freshwater zooplankton : theory and practice with emphasis on scientific manuscript preparation" was held jointly in the Departments of Botany and Zoology of University of Pune (UoP) at Pune, India from 25th to 28th November 2013. University of Pune is one of the premier Universities of India founded in a unique geographical location in the Western Ghats, a biodiversity hotspot bordering Deccan Plateau. The Department of Zoology is one of the first departments to be established by the University of Pune in 1950. The Department offers postgraduate courses leading to M. Sc., M. Phil. and Ph.D. degrees in Zoology with emphasis on fundamentals and modern biology, and has developed into a full- fledged Centre of teaching and research in modern biology. These developments led to recognition of the department in to a Centre for Advanced Studies (CAS) in by the University Grants Commission (UGC) since 2005. The UGC provides funds through a *Committee on Strengthening of Infrastructure for Science and Technology* (COSIST). The M.Sc. syllabus in the third semester emphasizes on six credit course (theory and laboratory and field practical) in the Biosystematics and Biodiversity.

This workshop was held under the auspices of University with Potential for Excellence (UPE) Program, conferred to UoP in 2011 by UGC, Government of India.

Western Ghats is one of the biodiversity hotspot, which is rich in diversity and harbours many endemic species of fauna and flora. Western Ghats constitute a mountain range along the western side of India. It is a UNESCO World Heritage site and is among the eight "hottest hotspots" of biological diversity in the world. The mountain range runs north-south

Fig. 1: Activities undertaken during the workshop on taxonomy & ecology of zooplankton in the University of Pune (UoP) Courtesy UPE-UoP Program of University Grants Commission, New Delhi.

along the western edge of the Deccan Plateau and separates the plateau from a narrow coastal plain, called Konkan, along the Arabian Sea. These hills cover 160,000 km^2 (average elevation about 1200m) and form the catchment area for complex riverine drainage systems that drain about 40% of India.

The area has over 5000 species of flowering plants, 139 species of mammals, 508 species of birds and 179 species of amphibians. It is likely that there are still many undiscovered species inhabiting the Western Ghats. At least 325 globally threatened species are known to occur in the Western Ghats.

Zooplankton in the Western Ghats comprises a large number of species belonging to rotifers, cladocerans and other microcrustaceans, ostracods and protozoans. Majority of the studies done are from North eastern part of India while studies on aquatic fauna from Western Ghats fauna are scant and scattered.

The workshop was held under the patronage of Prof. Sujata Bhargava, Head & Coordinator of UoP-UPE Programme, Department of Botany; Prof. Bimalendu B. Nath, Head, Department of Zoology and Prof. Kalpana Pai, Department of Zoology, who was also the Course Coordinator.

The resource persons were prominent scientists in the field of ecology and aquatic biodiversity. They were Prof. Ramesh D. Gulati from The Netherlands Institute of Ecology, Wageningen, The Netherlands, Prof. Y. Reddy, Acharya Nagarjuna University, Guntur, India, Prof. S.S.S. Sarma, and Prof. Nandini Sarma, National Autonomus University of Mexico, Mexico. Numerous students from the University of Pune and other Uni-

Fig. 2: Group photograph of participants attending the workshop on taxonomy & ecology of zooplankton in the University of Pune (UoP) Courtesy UPE-UoP Program of University Grants Commission, New Delhi.

versities and the affiliated colleges participated in the workshop.

The theme of the workshop included the basic ecology and taxonomy of freshwater metazoan zooplankton, i.e., collection of Rotifera, Cladocera and Copepoda, preparation of permanent slides, identification of species, preparation of zooplankton culture media, setting up of mass algal cultures for aquaculture and ecotoxicology and scientific manuscript preparation.

Prof. Sujata Bhargava in her lecture gave an overview of the UPE Project: Biodiversity of Western Ghats. Prof. Kalpana Pai introduced Dr. Hemant Ghate, Ex-Head of the Department of Zoology, Modern College, Pune. He was also the chief guest of the session. He gave a key note lecture on biodiversity of Western Ghats, followed by a series of lectures by resource persons, including "The effects of climatic change on lake ecosystems" by Prof. Ramesh Gulati;"Basics of Calanoid Copepod Morphology and Taxonomy" by Prof. Y. Reddy; "Rotifers in eco-toxicological research" by Prof. S.S.S. Sarma, and "Ecology of Cladocera" by Prof. Nandini Sarma.

On day two the lectures delivered included the "Causal factors and symptoms of lake eutrophication" by Gulati, "Freshwater calanoid copepods in India" by Reddy and "Zooplankton culture techniques" by Sarma and Nandini followed by interactive sessions with the participating students.

The day three mainly focused on the taxonomy and ecology of rotifers and laboratory exercises dealing with zooplankton culture techniques. Day four concluded with talks by the scientists. An interactive session was held to get the feedback from the participants. It was addressed by the resource persons. The workshop concluded with certificate distribution to the participating students. Overall feedback by the participants was very good, and there were request by the participants for similar workshop of longer duration in future.

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Announcements

The 15th World Lake Conference "LAKES: The Mirrors of the Earth - Balancing Ecosystem Integrity and Human Wellbeing - "

The Conference: History and Scope

Italy will be hosting the World Lake Conference in Perugia during September 1-5, 2014 (http://www.wlc15perugia.com). The World Lake Conference (WLC) history started after the Shiga Conference on Conservation and Management of World Lake Environment in 1984, known as LECS' 84, which was held in Otsu, on the shore of Lake Biwa, Japan. The aim of the LECS' 84 was to promote scientific approaches in the world lake basin management. The success of this Conference convinced the Shiga Prefecture, in cooperation with the United Nations Environment Program (UNEP), to establish the International Lake Environment Committee Foundation (ILEC – http://www.ilec.or.jp/en/), a public interest incorporated foundation based in Japan with an advisory body, known as the Scientific Committee, composed of internationally renowned scientists and experts on lake and reservoir management and conservation. Ever since then, ILEC has been realizing the trans-generational succession of the Conference and its main aim is to contribute to develop world-wide rational management plans for lakes and their catchment basins. ILEC has thus been promoting sound management of world lakes (natural and man-made) and their catchment areas consistent with sustainable development policies in several countries of the world. These goals are also achieved through the publication of newsletters, manuals and reports (http://www.ilec.or.jp/en/pubs) and the journal *Lakes and Reservoirs: Research & Management* (http://onlinelibrary.wiley.com/journal/10.1111/(ISSN)1440-1770).

Since its establishment in 1986, ILEC has co-convened WLCs in various parts of the world including USA, Hungary, Italy, Argentina, Denmark, Kenya, India, China and Japan. Today, the Conference is globally recognized as a place for multi-sectoral participants (i.e., academia, government, citizens, NGOs and enterprises) to exchange their views and experiences on the sustainable management of inland waters and their basins.

Thus, the continuing scope of this World Lake Conferences is to bring together experts in the field of inland water environments and habitats, with the underlying goal of establishing a basis for developing multidisciplinary solutions to multidisciplinary issues. Further, since *multidisciplinary* is a keyword in regard to this Conference, different approaches and points of view are taken into account to address complex issues dealing with lakes and other inland water ecosystems. Therefore, the Conference is addressed not only to scientists, but also to resource managers, politicians, and lake basin stakeholders and users. The interactions among this diverse audience can result in a wider discussion, with the goal of connecting a top-down approach to a bottom-up perspective aimed at solving complex basin issues.

Moreover, this event also would likely have a strong influence on young generations of researchers, managers and lake users, launching different didactic experiences for children and graduate students, and teach them how to focus on world lake issues and how to connect with others in a worldwide research network.

The structure of the 15th World Lake Conference is based on 8 main session streams articulated in sub-sessions (including regular and special sessions, as well as workshops and round tables):

1: Ecology and Biology of Inland Waters
2: Inland System Processes and Dynamics
3: Inland Systems and Global Changes
4: Informatics, Mapping and Monitoring
5: Lakes and Human Connections
6: Lake Basin Management Experiences and Challenges
7: Governance and Management: Participation and Challenges
8: Lake Basin Best Management Practices

Perugia's landscape.

The "Maggiore Fountain": an iconic symbol of Perugia.

Perugia, Italy: The Venue of the 15th World Lake Conference

Perugia is the capital city of the Umbria Region, the green heart of Italy. This beautiful hill town, located in the central Italy between Rome and Florence, has been the center of the region since the ancient times. One of the oldest remains that tells its origin is the Etruscan town walls built about 2,500 years ago. It is said that the Etruscans settled in the area because of the rich water resource of the region; water abundance and the proximity of Lake Trasimeno, an important resource providing food through fishery and agriculture, has certainly been the main reason for the cultural development of this city since the middle age and during the "Italian Renaissance". Attractions that cannot be missed are the iconic landmark in the main street, Fontana Maggiore and the thirteenth century aqueduct, now a promenade, but originally built to bring the water up to the fountain located at the higher altitude of the town. Just walking around the old district, it is possible to find medieval wells and drinking water fountains in every other corner. Moreover, other historical cities as Assisi, Gubbio and Spoleto are easily reachable from Perugia, in a few minute by bus/car ride. The mid-conference excursions will also offer participants extraordinary experiences to witness some of the historical, cultural and natural heritage that are unique to the region as Lake Trasimeno, the Tiber River valley and the town of Assisi.

All the details of the conference can be found at www.wlc15perugia.com.

We look forward to meeting you in Perugia!

Yasue Hagihara
Secretariat, ILEC
wlc15@ilec.or.jp

Luigi Naselli-Flores
Scientific Committee, ILEC
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The 16th International Symposium on River and Lake Environments

"Climate Change and Wise Management of Freshwater Ecosystems"
25-27 August 2014, Chuncheon, S. Korea

Organized by
Steering Committee of ISRLE, Korean Society of Limnology (KSL) and Chuncheon Global Water Forum (CGWF)

Sponsored by
Japanese Society of Limnology, Chinese Academy of Science International Society of Limnology (SIL), Global Lake Ecological Observatory Network (GLEON)

Co-sponsor
Kwater

First Announcement

Korean Society of Limnology (KSL) and Chuncheon Global Water Forum (CGWF) invite you to the 16th International Symposium on River and Lake Environment (ISRLE) to be held during 25-27 August, 2014, Chuncheon, S. Korea. The symposium should serve as a forum for the exchange of the progress in various fields of freshwater science and related fields. For a successful meeting, we would greatly appreciate your help in distributing this announcement and sharing it with your friends and colleagues.

Dates of Symposium: 25-27 August, 2014

Venue: Ladena Resort in Chuncheon City which is one of the most beautiful "City of Lakes"

Topics
1. Ecology and biology of freshwater biota
2. Biogeochemical cycling and water chemistry
3. Food-web dynamics
4. Predictive modeling and ecological informatics
5. Ecotoxicology and environmental chemistry
6. Biotechnology and environmental application
7. Restoration of lakes (reservoirs) and rivers
8. Ecosystem health, management and conservation
9. Other aspects of aquatic sciences

Schedule
May 30, 2014 Abstract submission
August 24 Registration
August 25, 26 Scientific sessions
August 27 Technical tour

Publication of special issue
We are planning to publish selected papers in a special issue of an international journal (SCIE) with the tentative title of "Limnology in the Summer Monsoon Region".

Contact address
Main contact: 2014isrle@gmail.com

KIM, Bomchul: President of the Korean Society of Limnology, bkim@kangwon.ac.kr
KIM, Jai-ku: General Secretary of ISRLE2014, jaikim@kangwon.ac.kr
SHIN, Kyunghoon: Vice-Chair of LOC (scientific program) shinkh@hanyang.ac.kr
KIM, Jinhee: Secretary of the Korean Society of Limnology, (financial) kslimno@empas.com
KWON, Yongbum: the secretary of the Chuncheon Global Water Forum (logistics) ccwaterforum@hanmail.net

Language
All presentations and papers will be in English.

Preliminary Registration

Please answer the questionnaire to help us assess the number of participants and organizing sessions. If you are considering to attend the ISRLE 2014, you can fill the following information and send your request by email to 2014isrle@gmail.com, by 1 March 2014.

Name: First Name: _____
Family Name: _____

Affiliation and Address: _____
_____
_____

Email address: _____

I am planning to give a presentation; Yes ( ) No ( )
I want to present in oral session ( ) or poster session ( )
My presentation topic will be about ( )
I want to moderate a session with the topic " "

International Rotifer Symposium XIV- 2015 First Announcement

31. August – 5. September 2015, České Budějovice, Czech Republic, www.rotifera.org

Dear Colleagues and Friends,
Rotifer Symposia that take place every three years represent unique opportunities for scientific researchers, students and other rotifer enthusiasts from all over the world to get together and promote scientific exchange and friendship. The International Rotifer Symposium is the largest scientific forum to provide an up-to-date perspective on all topics related to rotifer biology. The 13th such Meeting will be held at České Budějovice under the auspices of the University of South Bohemia, Faculty of Science and the Biology Centre, Academy of Science of the Czech Republic

The best way to be informed about the symposium and the deadlines is to subscribe to our mailing list on www.rotifera.org

Scientific Topics

1. Patterns in biodiversity (Taxonomy, Biodiversity, Zoogeography & Barcoding)
2. Organism functioning (Molecular Biology, Phylogeny, Genetics & Biochemistry)
3. Population studies
4. Ecosystem functioning (Feeding, Trophic Interactions, Behaviour and Autecology & Population Ecology)
5. Integrative and applied research (Aquaculture, Ecotoxicology & Indicator Organisms)
6. Bdelloid Rotifera as models in evolutionary research (Special Session)

Scientific committee

William C. Birky Jr., USA
Miloslav Devetter, Czech Republic
Diego Fontaneto, Italy
Christian D. Jersabek, Austria
Linda May, UK
Hendrik Segers, Belgium
Michal Šorf, Czech Republic
Robert Wallace, USA
Elizabeth Walsh, USA
David Mark Welch, USA

Local organizing committee

Chair: Miloslav Devetter
Michal Šorf
Michala Bryndová
Kateřina Máchalová-Zemanová
Eva Doležalová
Daniel Vondrák

Location and city

České Budějovice or Budweis - is the South Bohemian capital of the Czech Republic, located some 150 km south of the Czech capital Prague. It was founded in 1265 by Přemysl Otakar II and boasts a rich and eventful history. Naturally, Budweis is famous as a brewery town; beer has been brewed here since the 13th century. Currently there are two breweries in Budweis: Budvar, where the genuine Budweiser beer (not the American one with the same name!) has been brewed since the beginning of the 19th century, and Samson the town brewery, founded in 1795. Additionally, the town (region) has many remarkable places ideal for sightseeing.

The main University conference hall has a seating capacity of around 200 and is technically well equipped. The large lobby area allows for many posters to be exhibited. The university building, as well as the Biology Centre buildings are situated on campus, not fare from the city centre which can be easily reached by public transport or by a 15 to 20 min walk. The Biology Centre has its own canteen and public cafeteria. There are many restaurants, cafes and hotels in the town centre to choose from as well as those near the campus.

Transportation

From Prague international airport (Václav Havel Airport Prague, PRG): Bus, and train ticket ca. 10 Euro, travel duration around 3 hours. A shuttle service from Vaclav Havel international airport, Prague will be available for those who communicate the date, the flight number and the precise time of their arrival/departure).
From Linz in Austria: Bus and train approx 10 Euro, travel duration around 3 hours.
From Vienna international airport (Austria): Bus and train approx. 42 Euro, travel duration 4.5 hours.

Visa requirements and currency

The Czech Republic is a member of the European Union. Visitors from Schengen countries do not require visa. Please feel free to contact the Organising Committee if you require any help regarding visa information and invitation letter for non-EU countries. Official currency of the Czech Republic is Czech koruna (CZK). The exchange rate at the time of this announcement was: 1 EUR = 27 CZK, 1 US $ = 19 CZK.

Important Deadlines

First Circular: April 2014
Second Circular: September 2014
Registration Open: January 2015
Submission Special Session/Workshop Proposals: March 31, 2015
Early-bird Fee Registration and Payment Deadline: May 31, 2015
Abstract Submission Deadline: May 31, 2015
Notification of Acceptance: June 30, 2015
Latest Payment: June 30, 2015
Arrival of Participants:August 29-31, 2015
Symposium dates: August 31 – September 5, 2015
Manuscript Submission (for peer-review): October 30, 2015

Contact:

Chair of Local Organizing Commitee:
Miloslav Devetter
Biology Centre of ASCR
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Web pages: www.rotifera.org

10th Symposium on Cladocera

28 September to 3 October 2014, Lednice, Czech Republic.

The Symposium on Cladocera, a traditional triennial meeting of researchers studying Cladocera (Crustacea), will be held this autumn in the Czech Republic. To celebrate the anniversary of 10th such meeting, it is fitting to find a spectacular place, and invite special guests. Thus, we will hear talks and admire posters on ecology, evolutionary biology, diversity, systematics, genomics, and many other aspects of these increasingly important model organisms in the recently restored baroque riding hall of the Lednice Chateau, one of the landmarks of the UNESCO World Heritage sites in Lednice-Valtice Cultural Landscape. The keynote talks will be presented by Luc De Meester (Katholieke University Leuven, Belgium) and Michael Lynch (Indiana University, Bloomington, USA). As it has become a tradition, a special issue of Hydrobiologia will be published as the conference proceedings.

Apart from an exciting scientific programme, the conference participants and their accompanying persons will get opportunities to admire the historical, natural and oenological treasures of this unique region of Central Europe. To learn more, visit the conference website www.cladocera2014.org. The abstract submission deadline is approaching!

Adam Petrusek
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September 7-11, 2014, Bialystok-Augustow, Poland: "Plankton research in modern ecology"

www.peg2014.syskonf.pl

Organizer:

The Department of Hydrobiology (Institute of Biology, University of Białystok)

Co-organisers:

The International Society of Limnology (SIL)
The Polish Hydrobiological Society

Aim of the Meeting:

The organizers welcome contributions adopting a new approach to modern ecology. The organizers would like to highlight the role of evolution in plankton communities, modeling of plankton communities, and wish to devote special attention to the components of plankton communities that have been rarely studied. Therefore, there is provided a special session devoted to issues related to the functioning of planktonic fungi and their impact on other communities.

Deadlines:

Registration of participants: open (deadline Aug.15, 2014)
Abstract submission open (deadline June. 30, 2014)
Abstract notification – July 31, 2014

Publications:

Presenters at the PEG2014 Meeting will be invited to submit a manuscript for a cluster issues dedicated to plankton research in modern ecology, to be published in the peer-reviewed SIL journal Inland Waters.

Contact Persons:

Andrzej Górniak
Chair of the Meeting
e-mail: hydra@uwb.edu.pl

Jolanta Ejsmont-Karabin
Secretariat of the Symposium
jolanta@onet.pl

General Conference Chair:
Prof. Andrzej Górniak
Conference coordinators
Ass prof. Jolanta Ejsmont-Karabin (head of programme and secretariat)
Ass.prof. Elżbieta Jekatierynczuk-Rudczyk (head of logistics and organization)

Local Organizing Committee
Joanna Bołtruszko
Adam Cudowski
Magdalena Grabowska
Maciej Karpowicz
Anna Pietryczuk
Helena Samsonowicz
Katarzyna Puczko
Adam Więcko
Piotr Zieliński

International Scientific Committee
Prof.Andrzej Górniak (convenor)
Dr Lisette N. de Senerpont Domis
Prof Ryszard Chróst
Prof. Maciej Gliwicz
Prof. Ryszard Gołdyn
Dr. Miquel Lurling
Prof. Ramesh D. Gulati
Prof. Marcin Pliński
Prof. S.S.S. Sarma

Important Information

Registration fee:
SIL members – from 400 to 500 Euro
SIL non-members – from 450 to 550 Euro
Students (Young Academy) and accompanying persons – from 250 to 350 Euro
The registration fee covers all conference materials, refreshments between the scientific sessions, dinners, cultural events, mid-conference excursions, meals and accommodation during the field sessions.

PEG2014 is composed of two sections. The first section will be held from 7 to 10th September in the centre of Bialystok. It includes lectures, poster sessions and a half day trip to the Narew National Park. For the second section (from 10-11th September) the participants move north-up and visit Augustów, The Wigry National Park and the Suwalki Landscape Park.

For further information: www.peg2014.syskonf.pl **or e-mail to** jolanta@onet.pl

8th International Shallow Lake Conference "Ecology of Shallow Lakes in a Fast-Changing World"

Turkey will be hosting the shallow lakes conference for the first time during 12–17 October, 2014 in Antalya.

The conference will focus on the theme "Ecology of Shallow Lakes in a Fast-Changing World". The main purpose of the triennial conference is to provide more information on recent developments and achievements on shallow lakes ecology. The scientific topics include:

- Food webs along gradients in latitude, longitude and altitude
- Interspecific interactions
- Structures, function and metabolism of polar, temperate, subtropical, tropical and arid ecosystems
- Interactions of multiple stresses
- Hydrological constraints and salinity
- Eutrophication and harmful algal blooms
- Adaptation, plasticity and evolution of organisms
- Theoretical developments Ecosystem services and goods
- Biodiversity and invasive species
- Water Framework Directive and other legislations
- Restoration, conservation, recovery and sustainability
- Paleolimnology
- Ecosystem modeling

The conference will bring together researchers, students and managers, all enthusiasts from around the globe to exchange ideas and discuss the more recent results of research on shallow lakes, ranging from molecular level to ecosystem level.

Plenary speakers:

- **Dennis Trolle** (Department of Bioscience, Aarhus University, Denmark): Aquatic ecosystem functioning, and mathematical models.
- **Gabriel Yvon-Durocher** (Environment and Sustainability Institute, Exeter University, UK): Temperature dependence of biogeochemical cycles: linking populations, communities and ecosystems.
- **John Smol** (Department of Biology, Queen's University, Canada):A window on the past and a view to the future: Paleoecological perspectives on shallow lakes in a multiple stressor world.
- **Kendra Spence Cheruvelil** (Department of Fisheries and Wildlife, Michigan State University, USA): Landscape limnology: Understanding lakes at regional to continental scales.
- **Luc De Meester** (Laboratory of Aquatic Ecology, Evolution and Conservation, University of Leuven, Belgium): Changing perspectives on change: the challenges and promises of integrating ecological and evolutionary responses in understanding responses to environmental change in shallow lakes.
- **Meryem Beklioğlu** (Middle East Technical University, Department of Biological Sciences, Turkey): Effects of Hydrology, water level fluctuations and salinity changes on structure and function of shallow lakes.

• **Brian Moss** (School of Environmental Sciences, Liverpool University, UK): The way we live now: a retrospective of the Shallow lakes Meeting in Antalya Closing Remarks of Shallow Lakes 2014.

Moreover, conference participants will have an excellent opportunity of recreation via mid-conference tours to some of Antalya's exceptional natural and cultural heritage sites:

• Termessos - Duden and Kurşunlu waterfalls
• Perge – Aspendos - Köprülü Canyon
• Phaselis – Olympos - Yanartas
• Lake Avlan Arycanda and Highlands Hiking

Important Dates

Abstract Submission Deadline: 01 April 2014
Notification of Acceptance: 15 May 2014
Early Registration Deadline: 02 June, 2014
Author Registration Deadline: 01 July 2014

More detailed information about registration and can be found at the conference website: www.shallowlakes2014.org.

Contact Person

Meryem Beklioğlu (**Conference Chair**)
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Ankara, TURKEY.
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International Wetlands Conference, 14-18 September 2014, Huesca (Spain)

The Conference *Wetlands Biodiversity and Services: Tools for Socio-Ecological Development* (Huesca, Spain, 14-18 September 2014) plans to be a meeting point for different professionals and persons interested on the integration of land and wetland uses for the sustainable development of people, in addition to formal specialized sessions on all the research and management aspects of wetlands.

This Conference is at the same time as the IX European Wetland Congress, which has been organized by the Society of Wetlands Scientists European Chapter (http://www.sws.org), and the 6th Congress of the European Pond Conservation Network (http://www.europeanponds.org). Edward Maltby (University of Liverpool) and Gerarde van Halsema (Wageningen University) will be invited for the two plenary sessions entitled "A Wetlands Vision for the 21st Century. Meeting the challenges of transforming research to actions for societal benefit", and "Integrating wetlands management and conservation into the socio-ecological development", respectively.

The Conference will be a forum for meeting farmers, managers, decision makers, GOs and NGOs, scientists, professionals, etc., to present experiences, prospects, and expectations on the integration of land, water, biodiversity and other resources for contributing to a wise socio-ecological development.

The Conference will take place at the Huesca Congress Palace (Palacio de Congresos de Huesca) in the city of Huesca, Huesca Province, one of the three provinces of the Aragón Autonomous Community, in northern Spain.. The Conference Venue is close to a number of hotels

Fig. 1. Estany de Vilaüt, a freshwater pond located in the Natural Park of Aiguamolls de l'Empordà. (NE of the Iberian Peninsula). Author: Dani Boix

Fig. 2. Estany de Canadal de Baix, a temporary pond located in the plain of the Albera Massif (NE of the Iberian Peninsula). Author: Jordi Sala

i.e. at a 10-25 min walking distance from the hotels in Huesca. In the web page (wetlands2014@csic.es) you will find different possibilities to participate in this Conference. Please visit the Programme, Calls and the Registration Section and make your choice for participating. If you wish to contribute as Partner or Sponsor, please visit the Exhibitor/Sponsor Section or contact with the Conference Secretariat.

Dani Boix (dani.boix@udg.edu)

Metabolism of inland waters: climate change and the aquatic greenhouse gas balance.

CAPES (Brazil)/NUFFIC (the Netherlands) Course for Graduate Students in Aquatic Ecology. Sponsored by the International Society of Limnology (SIL), 14-20 July 2014

Invited Scientist: Sarian Kosten, Ph.D., Radboud University Nijmegen, the Netherlands

Organizer: Vera L M Huszar, vhuszar@gbl.com.br, Federal University of Rio de Janeiro, Brazil. Phone (5521) 25626759, Fax (5521) 25672009

One-week course mainly for M.Sc. and Ph.D. students, and young scientists (5 years of Ph.D.) interested in carbon balances in inland waters to be hold in the Brazilian Semiarid-Tropical region in the Catinga Biome.

Objectives

After attending this course the students should be able to:

1. Identify major metabolic processes in inland waters
2. Experimentally determine process rates
3. Set up and run a metabolic model
4. Assess greenhouse gas balances
5. Evaluate the (potential) impact of climate change on the greenhouse gas balance in inland waters

Place and course details

Estação Ecológica do Seridó (Ecological Station of Seridó), Rio Grande do Norte State, Brazil (06o34´49,05¨W; 37o15´25.86¨S).

The course will be hosted by the Federal University of Rio Grande do Norte. We will stay at the Ecological Station of Seridó, which is located on the shore of a small reservoir, inside the Caatinga Biome in a semi-arid region. The reservoir is regularly monitored for limnological characteristics. There are no fees for the course, housing, and for transportation from Natal to Seridó. The students will pay about US$ 20 per day for food (seven days). Transportation to reach Natal city, in the State of Rio Grande do Norte is not covered and has to be funded by the students.

SIL financial assistance

We are trying to get SIL sponsorship for students from developing countries, including Brazil.

Maximum number of students: 20 (including 4 with SIL sponsorship)

Students should be in Natal on 13th July (Sunday), departure from Natal to Ecological Station of Seridó (ESS) will be early morning July 14th (Monday).

Lecturers

Dr. Sarian Kosten	Radboud University Nijmegen, Netherlands
Dr. Jeroen de Klein	Wageningen University, Netherlands
Dr. Vanessa Becker	Universidade Federal do Rio Grande do Norte, Brazil
Dr. André Megali	Universidade Federal do Rio Grande do Norte, Brazil
Dr. Nathan Barros	Radboud University Nijmegen, Netherlands
Dr. Raquel Mendonça	Uppsala University, Sweden

Activities and lectures

1. Introduction to the research site
2. Short introduction to aquatic oxygen and carbon dynamics
3. Overview "oxygen and carbon budgets"
4. Carbon modelling
5. Detailed instructions for lab essays and field measurements - Chlorophyll (phytopam). Primary production, respiration. Sediment-water and water-atmosphere gas fluxes (diffusive & ebullition). Water – atmosphere gas diffusion coefficient. Methane oxidation
6. Metabolism of aquatic ecosystems in a changing world
7. Modelling, wetland N_2O emissions, link between oxygen and nutrient dynamics
8. Carbon budget case studies, importance of burial assessment, climate influence on outgassing
9. Impact of climate on eutrophication and possible remediation techniques and its subsequent effect on aquatic metabolism
10. The role of hydrology on phytoplankton dynamics
11. Four days of lab essays & field measurements
12. Modelling and further elaboration of the lab essays and field measurement
13. Preparation of presentations
14. Group presentations

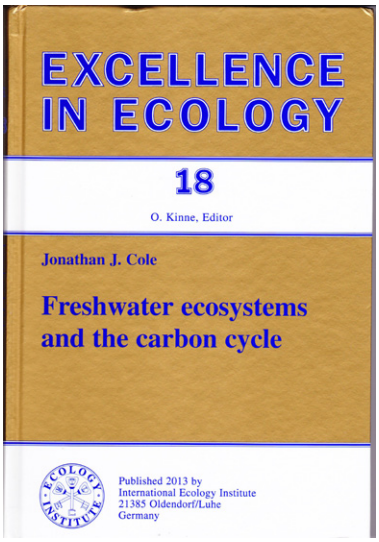
A manual (Metabolism of inland waters: climate change and the aquatic greenhouse gas balance) will be sent to the students by July 1st 2014

Practical schedule

	Tuesday	Wednesday		Thursday		Friday
GROUP	**Afternoon (I)**	**Morning (II)**	**Afternoon (III)**	**Morning (IV)**	**Afternoon (V)**	**Morning (VI)**
1	Spatial variation	Water atmosphere gas fluxes	Methane oxidation	Gas diffusion coefficient	Sediment respiration	Plankton P&R
2	Plankton P&R	Spatial variation	Water atmosphere gas fluxes	Methane oxidation	Gas diffusion coefficient	Sediment respiration
3	Sediment respiration	Plankton P&R	Spatial variation	Water atmosphere gas fluxes	Methane oxidation	Gas diffusion coefficient
4	Gas diffusion coefficient	Sediment respiration	Plankton P&R	Spatial variation	Water atmosphere gas fluxes	Methane oxidation
5	Methane oxidation	Gas diffusion coefficient	Sediment respiration	Plankton P&R	Spatial variation	Water atmosphere gas fluxes
6	Water atmosphere gas fluxes	Methane oxidation	Gas diffusion coefficient	Sediment respiration	Plankton P&R	Spatial variation

Book Reviews

Cole Jonathan J (2013) Freshwater Ecosystems and the Carbon Cycle



*In Kinne, O (**ed.**) by, Excellence in Ecology Book 18 International Ecology Institute, Oldendorf/ Luhe, Germany, XVIII+ 124PP. 33 (USD $45). Series ISSN 0932-2205 (Available from the publisher: https://secure.int-res.com/ eebooks/EEBooksOrder.php*

Jonathan J. Cole whose work is focused mainly on microorganisms and carbon cycling in freshwater ecosystems is a distinguished limnologist for nearly 45 years now. He pays in his research studies particular attention to the exchange of carbon between freshwater and terrestrial systems, as well as with the atmosphere. He has both as editor and coeditor contributed to several important books on aquatic ecosystem studies. Jon Cole has served on several scientific committees, and on panels of the National Science Foundation (USA). He has been also very active in the American Society of Limnology and Oceanography (ASLO) for which he organized special sessions at its annual meetings. He was also President of ASLO from 2004 to 2006.

In this new book Jon Cole examines the role of freshwater ecosystems in the global carbon cycle and subsequently focuses on terrestrial subsidies to lake food webs. He analyzes the complex mechanisms responsible for converting allochthonous C into CO_2efflux to the atmosphere, and discusses the importance of lake sediments as the planet's principal hotspots of carbon sequestration. This five-chapter book starts with a brief introduction by Drs. Otto Kinne and Mathias Seaman to the book and book author Johnathan Cole, the ECI Prize, the ECI Winners, the Otto Kinne Foundation .and the ECI Winners and their books since 1986 when the award was first instituted. Jon Cole is more formally introduced with A *Laudatio* by Dr. Colin Reynolds. The book that is dedicated by the author to the memory of Darwin Cabin, which was built in 1930 but demolished in 2009 It housed researchers and teachers and, apparently, served as a birthplace of most of the research covered in this book.

In Chapter 1 Preface (five pages) the author talks about *Tollund Man*, a freshwater mummy, discovered from Denmark and now on display in a museum in Silkenburg, Denmark. He draws a parallel between the mummy of Iron Age Dane and the Danish limnologist Dr. Morton Sondergaard (who was until last year the SIL General Secretary) and who too worked on carbon cycle in freshwaters. The existence of such bog people in some freshwater environments according to Jon alerts us about the way organic matter is cycled in freshwaters is different than in salt waters Jonathan Cole talks about the overly oceanographic view of lake ecosystems, i.e. most C comes largely from primary production and is thus autochthonous, organic C . He considers this as a hermetic view of C Cycle that ignores allochthonous C. carried over from the times of Forbes (1987) *'The lake as a microcosm'*. In contrast, it seems that limnologists knew well that dissolved organic C (DOC) of terrestrial origin entered lakes in large amounts but they considered it as biologically inert. In brief, limnologists did not fully appreciate that this terrestrially derived organic material was also biologically highly active. In contrast, the limnologists who worked on streams and rivers knew the importance of terrestrial C, which could affect metabolic and organic matter balances, and food webs. Dr. Cole thus concludes that the streams and lake literature was considered to be on different trajectories during the 1980s. This was also the period when techniques were being developed to measure the rates at which bacteria synthesized new biomass (secondary production).In section on *What about streams,* the author mentions about the several fates of terrestrially derived C in lake ecosystems and how this external input affects the C cycle in lakes. Lastly, in this chapter, the author tightens the scope of this book to three areas as discussed in the ensuing three chapters (Chapters 2, 3 and 4). The last chapter (Chapter 5) is a succinct review of our present knowledge of storage of organic C in lake sediments and how these systems preserve organic matter at such high rates.

Chapter 2 is titled *The role of inland waters in the global and regional carbon balance*. It examines the "big picture" giving the time scale and the amount of participation of inland waters in the C balances of their watersheds, regions and the globe. The C budget is simply one of relocation of C among pools. Organic pool has its input only from Gross Primary Productivity (GPP) and its return as CO_2 comes from respiration and abiotic oxidation. The Storage (S) of C is just a balance between GPP and oxidations. The entire planet Earth is essentially sealed or closed for C but the comprising ecosystems are not. The author presents the C balance equations in what he calls as *The algebra of ecosystem carbon budgets*. The author provides Flux equations for O_2 demonstrating that net gas exchange is never zero. Depending upon dissolved oxygen (mean % saturation) the flux of oxygen across the air-water interface in aquatic ecosystems can be derived. Temporal imbalances in GPP and R are causal in initiating a flux, which if negative will tell us that imported organic C is being respired. The author provides an inventory of organic C in 8 of the world's largest lakes and water sheds for a comparison with that in the sediments. The ratio of lake sediment C to water shed C varies by > 4 orders of magnitude (Table 2, page 15) For example, Lake Tanganyika has 3273 times more C in its sediment than in its water shed *vs* the ratio of sediment: watershed for Lake Ontario of 0.2. Such differences would be also reflected in man-made ponds (area <1 ha) and reservoirs (area >2000km^2) both of which have very high burial rates of organic C. The rate of burial is inversely proportional to the area of the system (Log burial=-29 x log (area)+3: see Fig. 3; p.16). It seems most lakes are supersaturated in CO_2 and are thus sources of CO_2 emission to the atmosphere. Such an exchange is large enough to command further interest at the global scale.

Chapter 3 deals with *"Patterns magnitudes of terrestrial subsidies: are fish made from trees*? In the 43 pages (pages. 27-69) the author provides an introduction to allochthony, allochthony in lakes and how allochthony is studied. Interestingly, loading of allochthonous material to some lakes can be equal to, or is larger than, the loading from autoch-

thonous primary production. Moreover, it is equally interesting to note that in many lakes respiration is greater than gross primary production (R=>GPP). Allochthony is studied in lakes using ambient stable isotopes or radio-isotopes. The author presents an interesting review of the state of our knowledge about the allochthony of key consumers or compartments in lakes, starting with top consumers fish (Table 5; P. 35) downwards to bacteria, and ending with standing stocks of DOM and POM.

The *Allochthony Controversy* is continued in the next 24 pages that form Chapter 4. "Trouts are made of trees", (Fig. 20;P.72), the book cover of Sayre and Enele (2008) conveys the very apt message to the reader about the importance of allochthonous material in lakes. The chapter also summarizes the data from whole lake ^{13}C additions and the interesting works and studies on terrestrial subsidies to zooplankton, are based on some fascinating laboratory evidence that zooplankton can consume terrestrial particles. The last Chapter, Chapter 5, is headed *Why is there so much carbon in the sediments of lakes?* The questions raised are both challenging and fascinating. Whereas Jonathan Cole poses a thought-provoking question about the mechanisms that promote C preservation in lake sediments but the answer is that these are poorly understood. We are told that the importance of this sediment carbon lies in the fact that it is comparable with that in the soil and vegetation of our terrestrial biosphere. That the lake sedimental carbon is on the increase is attributed to anthropogenic effects of agriculture. Interestingly, oceanography tells us more about the carbon deposition in the marine sediment than limnology does about lakes. The organic content of about 30 % for lake sediment would correspond to organic C content of about 15% in this sediment. Strikingly this is negatively correlated with lake area: the smallest lakes (area ≤15 ha) having an organic content of 60%, i.e. double the average of 30% for all lakes.What controls the carbon burial in lakes is discussed in some detail in this chapter. Apparently, the burial efficiency in smaller lakes is much higher than in larger lakes. Allochthonous matter is an important contributor and depends on the very high ratio of the watershed area to the lake area in smaller lakes. It seems low oxygen and allochthonous inputs are associated with high C burial. However, there are other factors that may play a role, e.g. mineralization rates that are temperature driven. Main conclusion from the chapter is that there is an increasing evidence that allochthonous inputs may increase the organic C burial in lake sediments so that such inputs are selectively preserved in the sediments compared with autochthonous inputs. However, we need to know more about the mechanisms.

I enjoyed reading every bit of this short five chapter book. I congratulate Dr.Jonathan Cole for his excellent effort to bring out this interesting book. The book is written very lucidly using both the state-of-the-art knowledge and includes recent works, both published and in progress. I realize that proportionately with the book size, this review is rather long, also because of my keenness to share all that is interesting or new. The book will do well in the libraries, especially at the ecological institutions. Many students and young colleagues starting their career in limnology/ecology will certainly like to procure a personal copy of this book.

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Physiology of the Cladocera

*Nikolai N. Smirnov (2013)– **Physiology of the Cladocera** Institute of Ecology, Russian Academy of Sciences, Moscow with additional contributions from Margaret J. Beaton and Carli M. Peters; Stuart KJR Auld and Dörthe Becker et al. pp336. Published by Academic Press, 2013, ISBN 978-0-12-396953-8*

This magnificent book will be a must for everyone with an interest in any species of Cladocera, wherever they occur, or aspects of freshwater invertebrate physiology. The chapters range from basic morphology and all aspects of physiology to immunology and genomics. It is primarily an overall review of the whole subject with a reference list filling 57 pages and thus demonstrating the enormous range of literature that has been used to compile this book, which is nevertheless very readable. Perhaps I should own up to having edited, at the author's request, the English of the whole book.

Chapters 1-15 are all by Nikolai Smirnov who has studied Cladocera all his working life. Several older members of SIL will remember meeting him during conferences of the International Biological Programme PF section in the late 1960s and early 70s, despite the Iron Curtain. He therefore has a lifetime experience of international contacts and communication, which is reflected in the wide range of the research summarised in this book. After a brief overview of cladoceran anatomy, illustrated with large, detailed drawings, and a summary of the types of methods used to study their physiology, Chapter 3 summarises their chemical composition. This is followed by chapters on Nutrition, Respiration, Circulation, Excretion, Osmotic Regulation, Cell and Tissue Metabolism, Growth and Molting, Reproduction, Locomotion, the Nervous System and Sense Organs, Behavior, and Ecophysiology. Chapter 16, by Beaton and Peters, is titled *A Cytological Perspective*; Chapter 17 by Stuart Auld is on *Immunology and Immunity*, and Chapter 18, by Becker *et al*, *The Genomics of Cladoceran Physiology*. Throughout the book each chapter has sub-headings of its sections that add to the clarity with which all this detailed information is presented and there are also many clear and detailed drawings, diagrams and data illustrations. It is certainly a must for everyone working with Cladocera.

Mary J. Burgis, (pat.morris5@outlook.com)

International Biological Programme – Archives

As many older SIL members will remember the International Biological Programme took place from 1964-74 and its Central Office was based in London. The archives from Central Office are now stored by the Royal Society of London (royalsociety.org) and a list summarising the contents of each box has recently been compiled. Although there is a relatively small amount of material concerned with the Freshwater (PF) section of IBP, I am asking any SIL member who knows anyone who might be interested in the archives from other sections of IBP to pass on this information regarding their location. This is particularly relevant regarding the IBP-CT (Conservation Terrestrial) section because the archive includes the original data sheets that were sent in from all over the world recording information about the vegetation of protected terrestrial sites (see Clapham, A.R., (Ed.) IBP 24: The IBP survey of conservation sites; an experimental study. (Cambridge: Cambridge University Press, 1980). This survey resulted in more than 3,000 data sheets from 55 countries and could be of considerable interest to those studying vegetation changes in specific areas, particularly if copies of the data sheets have not been retained in local archives.

Mary J Burgis, (pat.morris5@outlook.com)

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Submissions should include:

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- information on where potential applicants may obtain further information, including names of contact persons, telephone numbers, fax numbers, e-mail addresses, and web site addresses, where appropriate.

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Submissions for the SIL web site should be sent by e-mail to webmaster@limnology.org or by fax to the attention of Gordon Goldsborough at: +1 (204) 474-7618.

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For Your Information

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