



SIL news

Volume 71 – December 2017

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In This Issue

Editor's Foreword	1
SIL General Secretary-Treasurer's Report	2
2 nd SIL International Student Competition	3
<i>Inland Waters</i> Editorial Board	3
Reports and Announcements	6-12
Obituaries	12-17

Material for the June 2018 issue should be sent to the Editor by:

1 April, 2018

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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 foreword

Our Secretary-Treasurer, Tamar Zohary, shares with our readers some good news in the two articles that follow my Foreword. The first good news is about a further rise in the Impact Factor of our SIL journal *Inland Waters*. Jack Jones, Editor-In-Chief of the journal, provides in the present issue some information on the expertise of the Editorial Board members: this includes info in brief about the specialization of each of our editorial board members. I am sorry Jack did not have enough time to provide individual photos of each board member before I sent the draft of this Issue to the publisher. I, however, hope that John will provide the photos of the editorial board members in one of the following issues of the newsletter. Jack Jones was also able to have digitised the proceedings of all the previous Plenary SIL Congresses, held so far since its premier meeting 1922 so that this proceedings issue will be very handy as reference material for preparing manuscripts for publication by both SIL and non-SIL members. Please read more on that in the Report by Tamar that follows my editorial Foreword.

Another good news is a repeat Announcement in this newsletter by Dr. Zhengwen Liu, the chief organiser of the next SIL Plenary Congress to be held in 2018 at Nanjing, China. This is the first time that such a Meeting will be held in China. It will be a biennial congress in August 2018, instead of the periodic triennial congresses held so far since the inception of such SIL Plenary Meetings in 1922. The newsletter also contains a 2nd Announcement by Dr. Elizabeth Walsch and Robert Wallace on the 15th triennial Rotifera Meeting to be held in Texas next year.

There are two Reports, one each from Chile and Brazil, South America in this Newsletter. Dr. Patricio De Los Rios Escalante reports on Crustacean fauna of saline lakes in Chile. In another Report from South America, Prof. Christina Castelo Branco sums up deliberations of a limnology meeting held in July 2017 in Brazil.

Unfortunately, three of our former SIL colleagues and long-term members of SIL passed away this year. The SIL newsletter shares the grief of near ones in all these cases and provides their brief obituaries.

Last, but not least, SIL's new Publisher, Taylor and Francis (T&F), was very helpful in sorting out the initial problems that we had in bringing out the previous issue (SILnewsletter 70) while T&F took over as SIL Publisher from the Freshwater Biological Association (FBA). I take this opportunity to thank Eilise and Alexandra of T&F personally for their exemplary cooperation. The readers must have also observed that the last issue of the newsletter was somewhat delayed but looked good. We hope the present issue though somewhat slimmer, size-wise, will be equally interesting. As always, we are open to our readers' feedback.

My best wishes to all our readers and a happy 2018,

R.D. Gulati, 30 November 2017

Editor, SILnewsletter (gulatird@gmail.com)

General Secretary-Treasurer's Report



Probably the most exciting news from the SIL desk is that the entire series of the SIL Proceedings (also known from their German name as the “Verhandlungen”), and the SIL Communications (the “Mitteilungen”), are in the process of being scanned and uploaded to the Taylor & Francis (T&F) website, and should be freely available to SIL members starting January 2018. Those series span over a period of 9 decades, from 1922 to 2010, with some 7800 short manuscripts in the Proceedings, and several hundred long ones in the SIL Communications, including many classic contributions to our knowledge base. This material represents a huge wealth of limnological data and information not previously available on-line. To find out more about the Proceedings read Jack Jones’(2010) epilogue, which was printed on the last page of the last issue of the Proceedings (Figure 1). To start looking through them, make sure you have paid your membership dues for 2018, log-in as a member on the SIL website, enter the *Inland Waters* page on the T&F website (by clicking on its icon on the SIL home-page). There, click on ‘This Journal’, and again on ‘Journal Information’, and scroll down the page to ‘Publications History’ where you will find links to both the SIL Proceedings and the SIL Communications.

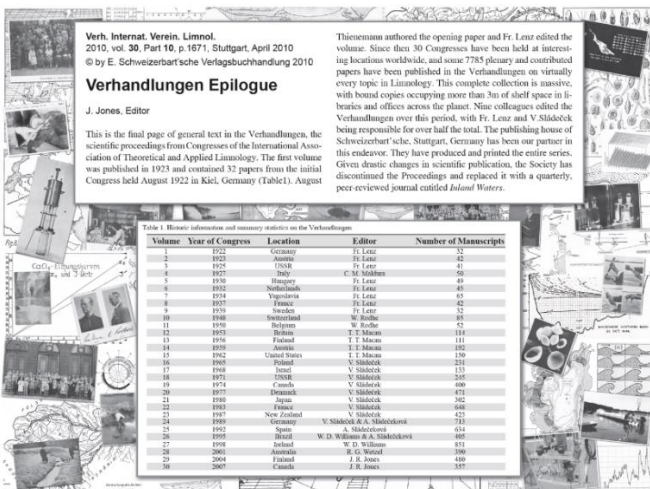
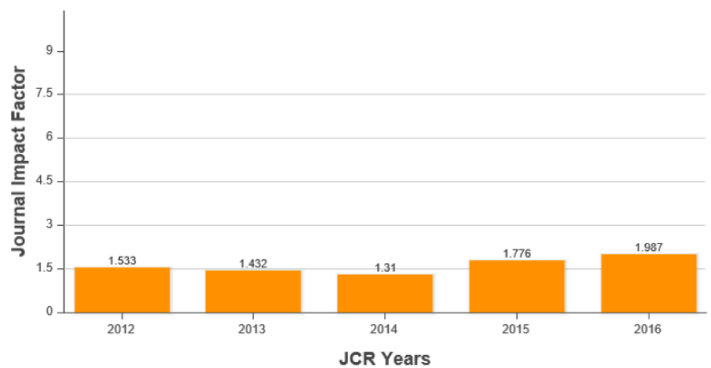


Figure 1. A copy of Jones 2010 Verhandlungen Epilogue – the last page of the last issue of the SIL Proceedings.

It has been almost a year since we changed publisher to T&F. This transition required changing procedures and making adjustments which resulted in unfortunate delays. We apologize for those. We are now steaming forward at full speed in advance of our publication schedule, with a target of further improving the impact factor of *Inland Waters* and its ranking within the limnological journals.

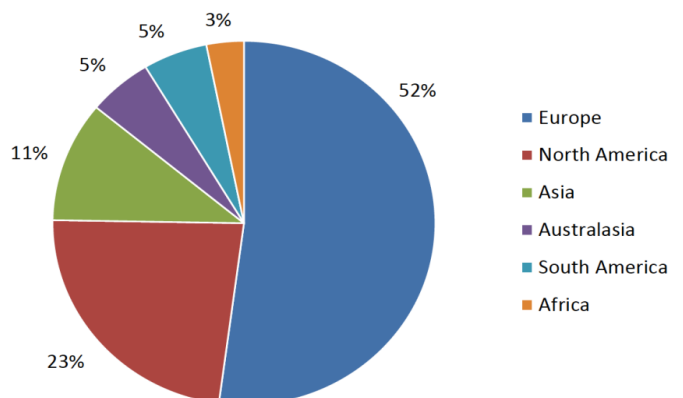
Having said that, it is encouraging to see the statistics in the 2016 Journal Citation Report for our journal (Figures 2-4). The statistics refer to articles published in *Inland Waters* in 2014 and 2015 and cited in 2016 and show the trend of increase of our Impact Factor over time (Fig. 2), specifies our journal’s respectable ranking relative to other limnological journals (Fig. 3), and shows that 52% of our citations come from Europe, 23% from North America, 11% from Asia (Fig. 4).



2016. JCR – Journal Citation Report.

Table 1. Current Impact Factor and ranking of *Inland Waters*

2016 Impact Factor	2016 5-year Impact Factor
1.987	2.566
Ranking 6/20 Limnology Category	Ranking 4/20 Limnology Category
Ranking 35/105 Marine and Freshwater Biology Category	Ranking 25/103 Marine and Freshwater Biology Category



The top 5 journals citing *Inland Waters* are:

- *Hydrobiologia*
- *Inland Waters*
- *Water Research*
- *Limnology and Oceanography*
- *Journal of Limnology*

The rate of self-citation is 8%.

Examination of the entire citation record for *Inland Waters* (2011-2016) reveals some outstanding achievements:

- The top-cited article, with 22 citations over the years 2015-2016, is Mackay et al. 2014: Geoengineering in lakes: welcome attraction or fatal distraction? *Inland Waters* 4(4): 349-356.
- Our top-cited author is John Downing (USA), with 10 articles, and a total of 142 citations over those 2 years. Second place is taken by Brian Moss (UK), with 140 citations in 3 articles. Third is Zhengwen Liu (China) with 114 citations in 2 papers.
- The top-cited institution is the Chinese Academy of Sciences, with 146 citations in 7 articles. The second is Wageningen University (The Netherlands) with 143 citations in 4 articles and the third is Iowa State University (USA) with 142 citations in 9 articles. Congratulations!

All the above statistics are an excellent reward to the hard work of our *Inland Waters* team. Specifically, we are extremely grateful to our Editor-in-Chief, Jack R. Jones and his right-hand, the copy-editor Janice Faaborg. Additional thanks are to David Hamilton, our Senior Associate Editor, a team for 32 talented Associate Editors, and several guest editors of special issues, all putting-in their time as volunteers, to the great benefit of *Inland Waters*.

As announced last year, starting in 2017, only members that have paid their annual dues will have on-line access to *Inland Waters*, enjoy the exemption from paying page charges for publishing in *Inland Waters*, and pay discounted fees for congress registration. Furthermore, starting in January 2018, SIL members will also have on-line access to the complete set of SIL Proceedings, 1922-2010. Close to a century of limnological research is contained in those volumes, that until now were mostly unavailable. Note that those volumes will be available to libraries only upon additional charge, so if your library is already subscribed to *Inland Waters*, it will have to pay an additional fee for online access to the Proceedings.

From 2018, annual dues will be collected towards the end of the previous year, as is customary in other societies. We, therefore, ask you to pay your SIL annual dues for 2018 in the very near future, and no later than 31 December 2017. This is different from what we have been doing in the past, but an essential change for SIL, I hope you can help SIL to institute it.

You can pay your annual dues on-line at the SIL website at www.limnology.org, or in most countries you could pay it in your own currency, to your national representative.

All the best for a wonderful 2018

Yours,

Tamar Zohary
SIL General Secretary-Treasurer

2nd SIL International Student Competition

A second SIL International Student Competition was announced earlier this year, for the best published paper in Limnology appearing as a part of recent Ph.D. or M.Sc. thesis of a SIL member.

The Prize: Plenary talk at the 2018 SIL Congress in Nanjing, China, with gratis participation.

Stage 1 of the competition (national level) is now about to reach its end. A total of 40 applicants from 22 countries entered this first stage of competition. By 15 December 2017 each participating country will choose its best applicant who will then represent the country in the Stage 2 of competition (international level), except for the countries with more than 50 SIL members that can send a second competitor. The competing papers will be assessed by an international committee of evaluators, who will also rank the papers. The winners of the first 3 places will be awarded at the August 2018 SIL Congress in China.

The awards consist of one main and two additional prizes, plus merit certificates to all those participating at **Stage 2** of the competition:

- The main prize will comprise a certificate of merit and a grant to attend the August 2018 SIL Congress in Nanjing, including registration fee and travel costs. The winning author will be invited to give a Plenary Lecture on his/her winning article.
- The winners of the second and third prizes will receive certificates of merit and grants to cover their congress registration and accommodation. They will present their papers as regular presentations.
- All participants of Stage 2 will receive a certificate of merit and will be invited to present their papers (oral or posters).

Judit Padisak and Tamar Zohary
padisak@almos.uni-pannon.hu

Editorial Board of *Inland Waters*

Inland Waters enjoys the support of a large and talented Editorial board (listed below). Please recognize the contributions of these colleagues in making *Inland Waters* successful through securing sound reviews and providing constructive comments on submissions. This team is responsible for our Impact Factor of nearly 2 and strong position among the similar journals. Janice Faaborg is our skilled copyeditor, improving the presentation and format of some 1200 manuscripts published by the society.

Editor-in-Chief

John R. Jones, University of Missouri, USA

Dr. Jones is Curators' Professor Emeritus. His research quantified factors regulating algal biomass in lakes and streams. He conducted a long-term study of mid-continent reservoirs in the US and worked in several biomes, including regions dominated by the Asian monsoon.



Senior Associate Editor

David Hamilton, Griffith University, Brisbane, Australia

Dr. Hamilton has research specializations in physical-biological coupling in aquatic systems, lake management, sediment resuspension in shallow lakes, cyanobacteria and ecological modelling. He held long-term academic positions at the University of Western Australia (Centre for Water Research) and the University of Waikato (Environmental Research Institute) before taking up his current position as Deputy Director of the Australian Rivers Institute, Griffith University, Brisbane, Australia.

Associate Editors

Rita Adrian, Leibniz-Institute of Freshwater Ecology and Inland Fisheries, Germany

Dr. Adrian is a freshwater ecologist experienced in plankton ecology and long-term ecological research of lake ecosystems. She is interested in the impact of external drivers such as global climate change on lake physics, plankton communities, biodiversity and subsequent effects on ecosystem functioning.

Martin Berg, Loyola University Chicago, USA

Dr. Berg is an aquatic ecologist and entomologist studying energy flow in aquatic systems, with a particular focus on the role and ecology of non-biting midges (Diptera:Chironomidae).

Leon Boegman, Queen's University, Canada

Dr. Boegman is an Associate Professor of Civil Engineering at Queen's University. His research focuses on physical limnology, including: lake hydrodynamics/modeling, internal waves, boundary layers, turbulent mixing and climate change impacts. Research results are applied to investigate coupled physical-biogeochemical processes such as hypoxia, algae blooms, invasive species and fish recruitment.

Gergely Boros, Balaton Limnological Institute, Hungary

Dr. Boros is a research fellow at Balaton Limnological Institute, Centre for Ecological Research, Hungarian Academy of Sciences. Research interests: Nutrient dynamics in freshwater ecosystems, ecological stoichiometry; Biomanipulation of shallow lakes, lake restoration; Role of fish in nutrient (carbon, nitrogen and phosphorus) cycling; Ecological impacts of introduced filter feeding Asian carps.

Michael Brett, University of Washington, USA

Dr. Brett is a Professor in the Department of Civil and Environmental Engineering at the University of Washington. He does research on food web processes in aquatic ecosystems and especially the role lipids play in aquatic food web processes. His research also explores the importance of terrestrial organic-matter inputs for the production of consumers in lakes. He also studies eutrophication and food web responses to excessive nutrient loading.

Michele Burford, Griffith University, Australia

Dr. Burford is an Associate Professor at the Australian Rivers Institute, Griffith University, Australia. She studies algal ecology and nutrient cycling in a range of aquatic systems and is interested in the whole-of-catchment approach to ecosystem processes.

David da Motta Marques, Universidade Federal do Rio Grande do Sul, Brazil

Dr. da Motta Marques is a biologist and limnologist. His current research interests include the link between biological communities, metabolism and hydrodynamics, large scale and cross scale changes, and ecological modelling of complex systems lakes-wetlands, integrating high sampling frequency monitoring systems.

John Downing, University of Minnesota, Duluth, USA

Dr. Downing is Director of the Minnesota Sea Grant Program, a senior researcher at the Large Lakes Observatory on Lake Superior, and a member of the Department of Biology. His principal specializations include biogeochemistry, eutrophication, harmful algae blooms, carbon cycling, groundwater, the ecology of phytoplankton, zooplankton, benthos and fish, economic valuation, and global limnology.

Paul Hanson, University of Wisconsin, USA

Dr. Hanson is an ecosystems ecologist with interests in aquatic metabolism and carbon cycling, prediction of harmful algal blooms, and the development and use of sensor networks for ecosystems science.

Anne Hershey, University of North Carolina, USA

Dr. Hershey is the Julia Taylor Morton Distinguished Professor of Biology at the University of North Carolina at Greensboro. Her research focuses on the ecology of streams and arctic lakes, emphasizing the use of stable isotopes to understand relationships between aquatic invertebrate consumers and biogeochemical cycles.

Yannick Huot, Universite de Sherbrooke, Canada

Dr. Huot is the chairholder of the Canada Research Chair in Earth Observation and Phytoplankton Ecophysiology. His research focuses on phytoplankton ecophysiology aquatic optics and remote sensing in lakes and oceans.

Bas Ibelings, University of Geneva, Switzerland

Dr. Ibelings is a senior scientist at the Netherlands Institute of Ecology. His work is in fundamental science, but equally recognizes the value of applied studies. Phytoplankton is at the heart of his research, because short generation times and large population sizes allow integration of ecology and evolutionary biology.

Vera Istvanovics, Budapest University of Technology and Economics, Hungary

Dr. Istvanovics studies both theoretical and applied aspects of eutrophication management. Phosphorus cycling in lakes and wetlands (sediments, phytoplankton, aquatic macrophytes). Phytoplankton ecology in lakes and rivers. Use of high frequency time series to elucidate functioning aquatic ecosystems.

Dean Jacobsen, University of Copenhagen, Denmark

Dr. Jacobsen's research covers basic and applied tempered and tropical stream ecology. It includes spatial distribution and temporal variability in communities and diversion benthic macroinvertebrates, as well as eco-physiology in relation to habitat characteristics such as altitude, temperature and oxygen, and human impacts such as organic pollution and deforestation. Currently he is working mainly with structure and function of glacial in the high Andes.

Erik Jeppesen, Aarhus University, Denmark

Dr. Jeppesen is a Research Professor in a joint position with the National Environmental Research Institute, Department of Freshwater Ecology and University of Aarhus, Denmark. His research interests include shallow lake ecology, lake restoration, biological interactions with nutrient dynamics and climate, biomanipulation, paleoecology and ecosystem modelling.

Martin Kainz, WasserCluster Lunz, Austria

Dr. Kainz is a research scientist at the inter-university center for aquatic ecosystem research WasserCluster Lunz, Austria. His research interests include food web ecology, trophic indicators including lipids and stable isotopes, coupling of terrestrial and aquatic subsidies, climate change, and aquatic ecotoxicology.

Bomchul Kim, Kangwon National University, Republic of Korea

Dr. Kim is a Professor in the Department of Environmental Science. Research field: eutrophication of reservoirs, primary productivity of phytoplankton, plankton community analysis, eutrophication modelling.

Pirkko Kortelainen, Finnish Environment Institute, Finland

Dr. Kortelainen has experience on biogeochemical cycles across ecosystem boundaries including both pristine and managed freshwater systems such as headwater streams, large rivers and lakes with links to major environmental drivers such as acidification, forestry, agriculture, climate change and atmospheric deposition.

Peter Leavitt, University of Regina, Canada

Dr. Leavitt is the Tier 1 Canada Research Chair in Environmental Change and Society. His work integrates monitoring, modelling, experiments, and paleolimnology to quantify the hierarchal relationships between environmental change and lake response.

Zhengwen Liu, Jinan University, Peoples Republic of China

Dr. Liu is a lake ecologist. He is interested in zooplankton-fish interactions, food webs, ecological role of macrophytes and eutrophication process using stable isotope approaches. Currently he focuses on management and restoration of eutrophic shallow lakes including food web manipulation and macrophyte restoration.

David Livingstone, Swiss Federal Inst of Env. Sci. and Tech, (EAWAG), Switzerland

Dr. Livingstone's research focuses on the physical response of inland

the influence of climatic enforcing on lake temperature profiles, river temperatures, groundwater temperatures and ice phenology, but also involves the analysis of patterns of regional coherence in the behaviour of limnological variables, and the determination of their response to large-scale climate modes.

Stephen Maberly, Centre for Ecology and Hydrology, UK

Dr. Maberly has worked on aquatic systems for 30 years. His main interest is to understand the mechanisms that control the functioning of aquatic systems, particularly the link between resource availability and the ecophysiological response of algae and macrophytes, and how that interaction can affect species distribution.

Marianne Moore, Wellesley College, USA

Dr. Moore's research focuses on how physical and biological factors structure freshwater plankton communities. She is currently co-leading a team of Russian and American scientists who are investigating how contemporary climate change is affecting phytoplankton and plankton community structure in Lake Baikal.

Shin-ichi Nakano, Center for Ecological Research, Kyoto University, Japan

Dr. Nakano has been conducting studies on ecology of heterotrophic bacteria, picocyanobacteria and protists, with special reference to food web dynamics among those microorganisms. In addition, he is also interested in ecology of bloom-forming cyanobacteria. His work includes studies on protistan grazing on *Microcystis*.

Rebecca North, University of Missouri, USA

Dr. North is an Assistant Professor of Water Quality. She is an emerging researcher in aquatic ecology and biogeochemistry with expertise on nutrient and algal dynamics in water bodies. She addresses questions regarding the sources and timing of nutrient loading from land to lake.

Michelle Palmer, Ontario Ministry of the Environment, Canada

Dr. Palmer is an aquatic ecologist specializing in the assessment of multiple stressors, their interactive impacts on lake physics, chemistry, and biology, and implications for restoration.

Martin Sondergaard, Aarhus University, Denmark

Dr. Sondergaard specializes in freshwater ecology and applied research. Key areas of research comprise nutrient dynamics in lakes and the importance of biological structure in lakes and ponds. Specific research includes internal phosphorus loading, lake restoration, submerged macrophytes and lake classification in relation to the EU Water Framework Directive.

Bryan M Spears, Centre for Ecology and Hydrology, UK

Dr. Spears is a freshwater ecologist with particular expertise in the biogeochemical transformation of nutrients within shallow aquatic ecosystems and the role of aquatic organism in regulating these processes. He has experience in studying the roles of benthic

microalgae, macrophytes, bacteria and macroinvertebrates in regulating nutrient cycling between sediments and overlying waters in shallow lakes.

Susie Wood, Cawthron Institute, New Zealand

Dr. Wood is Science Leader in the Aquaculture and Biotechnology group at the Cawthron Institute (Nelson, New Zealand). Her areas of expertise include phytoplankton systematics, taxonomy, ecology and physiology, and cyanobacterial toxin production.

Haihan Zhang, School of Environmental and Municipal Engineering, Xi'an University of Architecture and Technology, China

Dr. Haihan's research focuses on exploring linkages between urban lake/reservoir physics and microbial ecology using metagenomics and transcriptomics techniques, as well as predicting water quality and sediment microbial community dynamics, determining the inland water microbial abundance and diversity using real-time PCR and DNA sequencing.

Yunlin Zhang, Nanjing Institute of Geography and Limnology, Chinese Academy of Sciences, China

Dr. Zhang is interested in physical limnology, particularly lake optics and thermal stratification as it relates to climate warming. His interest in remote sensing is to estimate chlorophyll a, total suspended matter, diffuse attenuation coefficient, dissolved organic carbon and other attributes of lakes. Work on chromophoric dissolved organic matter utilizes fluorescence and carbon isotope techniques.

Tamar Zohary, Israel Oceanographic & Limnological Research

Dr. Tamar Zohary is a senior research scientist at the Kinneret Limnological Laboratory, Israel Oceanographic and Limnological Research. Her research interests are focused on phytoplankton ecology, food-web interactions in aquatic systems, and how those aquatic systems respond to anthropogenic stresses, with focus on man-induced water level fluctuations.

Copyeditor

Janice Faaborg

Ms. Faaborg has a MS degree in scientific journalism from the University of Missouri.

XXXIV SIL Congress (SIL 2018), Nanjing, China, (19-24th August, 2018)

The XXXIV SIL Congress (SIL 2018) will be held in Nanjing (Jiangsu province), China, from 19th to 24th of August 2018. For updated information, **including the latest Circular**, please visit the website: www.sil2018.com.

Freshwater ecosystems are increasingly threatened by human activity and the effects of climate change. The global response to these challenges has been mixed. In the developed world, the issue

of eutrophication of inland waters has been a matter of intense focus and some remarkable counter measures, whilst in developing countries the situation has continued to worsen, as seen in the increasingly frequent and severe cyanobacterial blooms in Lake Taihu, China.



The host city of SIL 2018 is Nanjing, the capital of Jiangsu province, eastern China. The photo shows the modern Nanjing surrounded by old city walls.

As a highly integrative science with elements of physics, chemistry and biology, ecology, hydrology and geology, limnology is charged with developing a holistic understanding of freshwater ecosystems in order to inform responsible future management. The urgent demand for knowledge and techniques for the management and restoration of aquatic ecosystems is reflected in the theme of SIL 2018, Limnology, a Science for the Preservation and Restoration of Aquatic Ecosystems.

The regular sessions include:

- 01 Phytoplankton and zooplankton ecology;
- 02 Macroinvertebrates and benthic communities;
- 03 Microbial ecology and biodiversity;
- 04 Physical limnology;
- 05 Food webs;
- 06 Sediment-water interactions;
- 07 Biogeochemistry and ecosystem functioning;
- 08 Global change and aquatic ecosystems;
- 09 Macrophyte ecology and management;
- 10 Fish and fisheries;
- 11 Modeling lake and river ecosystems;
- 12 Paleolimnology and long-term changes in aquatic ecosystems;
- 13 Resilience and regime shifts in aquatic ecosystems;
- 14 Management and restorations of aquatic ecosystems; and
- 15 Catchment process and the impacts on aquatic ecosystems.



The congress will take place in Nanjing International Expo Convention Center. The photo is Zhonghua Hall having an area of 5,000 m² and accommodation of 2,500 people in classroom style.



Jiangsu Province known as a “land of fish and rice” in China. The photo shows the traditional fish ponds in Jiangsu province.

Special sessions will be also organized to supplement the regular programme of SIL 2018, and are intended to provide a sample of the state-of-the-art in a field of special interest to inland waters.

The host city of SIL 2018, Nanjing, is the capital city of Jiangsu Province, known as “land of fish and rice” in China. As one of the Four Ancient Capitals, Nanjing is a vital cradle of Chinese civilization, and over a long stretch of time, and it has been the political and cultural pivot of South China.

The congress will take place at Nanjing International Expo Convention Center. Twenty inter-connecting meeting rooms which can accommodate 7000 people in all. We look forward to seeing you in China in August 2018.

Contact information:

Dr. Zhengwen Liu
 Secretariat of SIL 2018
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Announcing the 15th International Rotifer Symposium – June 3-9, 2018



Since 1976, an International Rotifer Symposium has taken place every three years, providing a unique opportunity for researchers, students, and other rotifer enthusiasts from around the globe to gather together for scientific exchange and friendship. The International Rotifer Symposium is the largest scientific forum that provides an up-to-date perspective on all aspects of rotifer biology.

The conference will be held on the campus of the University of Texas at El Paso. Located on the culturally vibrant US-Mexico border, the University of Texas at El Paso is a national research university with more than 24,000 students. El Paso is a bicultural community of 800,000 people, and among the safest large cities within the United States. The city is adjacent to the state of New Mexico and the country of Mexico, making it the nation’s leading area for cultural diversity and border health research. El Paso is the sixth largest city in Texas and 19th largest city in the US. The 9,700 ha Franklin Mountains State Park, the largest urban park in the United States, lies entirely within the city of El Paso. The Rio Grande River flows through the Rio Grande Rift. This river defines the border between El Paso and Ciudad Juárez to the south and west until it turns north of the border with Mexico, separating El Paso from New Mexico.

The theme of the conference is *Crossing Disciplinary Borders in Rotifer Research*. Seven thematic sessions (see below) will provide a venue for oral and poster presentations. Several workshops, including laser microdissection and establishing a working group to correct misidentifications of rotifer on the internet, are also planned.

Session themes with invited review topics:

- **Biogeography – dispersal in space and time, phylogeography, biodiversity patterns**
Invited review: Status of rotifer biodiversity: past, present, and future - Diego Fontaneto
- **Long-term ecological studies – decadal or more – pending**
- **Experimental ecology and evolution**
Invited review: Invertebrate predators on rotifer – S. Nandini
- **Genomic approaches at any level**
Invited reviews: Genome size evolution - Claus-Peter Stelzger; Comparative genomics of monogonont rotifers - Jae-Song Lee
- **Theme: Evolutionary biology**
Invited review: Age-related gene expression and maternal effects - Kristin Gribble
- **Theme: Examining the border between acanthocephalans and rotifers**
Invited review: Highly specialized rotifers: The inner and outer morphology of endoparasitic Acanthocephala - Holger Herlyn
- **Theme: Applied research**
Invited reviews: Using non-brachionid rotifers in larviculture - Atsushi Haginara Bioconcentration of toxicants in rotifers - Roberto Rico-Martinez

Deadlines: Information on payment of registration fees and abstract submission will be given in the 3rd Circular. (NB: all banking charges must be paid by the participant.)

- Early registration opens: 30 October 2017
- Regular registration opens: 31 January 2018
- Registration closes: 13 May 2018 (on-site registration will be available at a higher rate)
- Submission of abstracts closes: 31 January 2018
- Notification of abstract acceptance: 3 March 2018
- Submission of manuscript: no later than 15 July 2018

Abstracts (≤ 300 words) may be submitted via the website until 31 January 2018. The proceedings will be published as a special issue of *Hydrobiologia*, following the editorial policies of the journal.

For more information about the conference, please go to www.utep.science/rotiferXV or email rotifer15@gmail.com

Elizabeth Walsch (ewalsh@utep.edu) Robert Wallace

Studies of Saline and Freshwater Lakes: In Search for a Common Ground (A Report of an International Meeting)

Thirteenth International Conference on Salt Lake Research (www.icslr2017.ru) was held during 21-25 August in the city of Ulan-Ude, Republic of Buryatia, Russia. About 120 scientists from 15 countries gathered there to discuss various studies focused on saline and freshwater lakes. This gave an impression about the nature of Trans-Baikal area and established contacts for future collaborative research.

The conference was organized by the International Society for Salt Lake Research (ISSLR) together with several research institutions from Siberia, namely the Institute of General and Experimental Biology (Ulan-Ude), Institute of Biophysics (Krasnoyarsk), Institute of Natural Resources, Ecology and Cryology (Chita), and Buryat State University. There were several specific topics that were mentioned and discussed during the conference.

Extremophiles microbiology

Studies of unique microorganisms living in salt lakes are dominated by the number of papers in science of saline lakes. Many saline ecosystems are extreme habitats: in addition to high salinity, many of them experience strong solar radiation and low temperature (mountain lakes), high temperature (thermal springs), anoxic conditions (meromictic lakes). Extremophiles are interesting, for example, from the point of view of searching for extraterrestrial life. Such organisms are also used to search for genes responsible for the resistance to extreme conditions, and to understand how life operates under extreme conditions. There are intensive studies on unique biogeochemistry of microorganisms living in extreme environments, the ability to couple cycles of different nutrients (e.g. sulphur, iron, nitrogen). Some species or isolated enzymatic systems can be used for various biotechnological applications, e.g. wastewater treatment.

The session devoted to extremophiles during the conference was most diverse. There were oral and poster talks on bacteria from high-altitude saline lakes in Chile, soda lakes of Transbaikalia, Hungary and Romania, the drying lakes of Australia and North America, and the deep waters of Lake Baikal.

In search for a common ground

The intensity of research studies on saline and freshwater lakes is not equal to the much higher number of papers published on various aspects of freshwater science. However, the total volume of water stored in salt and freshwater lakes worldwide is almost comparable (Messenger et al., 2016). Moreover, due to climate changes and various anthropogenic effects, division into saline and freshwater lakes is not always justified. It is more appropriate to consider a wide range of possible conditions (from fresh to salt waters) and to study how ecosystems are transformed when the concentration of salts increases.

The comparative plenary talk by Erik Jeppesen (Denmark) was focused on the reactions of saline and freshwater lakes to climate change. He discussed the differences and similarities between them. Even reports on freshwater Lake Baikal were presented at the salt lakes conference. Now there is a slight decrease in the water level in Lake Baikal, most likely this is temporary phenomenon. However, for saline lakes this problem is typical. Saline lakes are closed basins. The water level in salt lakes depends on the amount of water inflow from the watershed and surface evaporation.

Analysis of the dynamics of the inland water areas in the last 32 years demonstrated that almost 70% of the changes are due to the shrinking, as for the Aral Sea (Pekel et al., 2016). This catastrophic decline in water volume in Aral Lake is mainly caused by the anthropogenic water diversions from inflowing rivers. Aral has not become a lesson for humanity. At the conference in Ulan-Ude there were several participants from Iran. They talked about the fate of Lake Urmia. The fate of this large lake with an area of several thousand square kilometers is similar to that of Aral Lake – it is drying up.

For freshwater lakes, the variability of water level and salinization having become important because of climate change. For example, in the zone of the Mediterranean climate, there is a change in the ratio of the amount of water flowing in and evaporation losses from the territory (Jeppesen et al., 2015). As soon as excessive evaporation begins to concentrate salts, lakes become more



Group photo of participants of 13 International Conference on Salt Lake Research, 21-25 August 2017, Ulan-Ude, Russia

saline. It is, therefore, important for the conference to discuss similar problems of the two research topics and to find common ground.

Young scientists support



Winners of the ISSLR Best paper award. Left: Julia Margit Aszalos (Eotvos Lorand University, Hungary). Right: Zsófia Horváth (Wasser Cluster Lunz, Austria)

Following the initiative of SIL, an international contest was announced before the conference for the best paper published by young scientists in 2014–2016 on the topic of saline lakes research. Winners of this competition received a diploma, a cash prize and an opportunity to make a plenary report.

There were two winners of the prize: Julia Margit Aszalos (Hungary) presented plenary talk “Diversity of extremophilic bacterial communities hosted by two high-altitude saline lakes located in the Puna de Atacama Plateau, Chile, and Zsófia Horváth (Austria) talked on “Biodiversity of zooplankton in European soda pans.”

Two prizes for young scientists for the best oral and best poster talk were also awarded at the conference. The main prize of the society is Bill Williams award that was given to Long Li (China) for the oral talk “Thermodynamic properties of lithium borates and their aqueous solution systems” and to the Elena Anufrieva (Russia) for the poster talk “Abundance and the ecological role of *Eucypris mareotica* (Crustacea, Ostracoda) in the Crimean hypersaline lakes”.

The other prize, Salinology award, was generously supported by the President of the ISSLR academician of the Chinese Academy of Geological Sciences, Zheng Mianping. Salinology awards were given to Ruy Santos (Belgium) for the oral talk “Halophilic bacteria and archaea as part of the *Artemia* diet” and to Veronika Dashkova (Kazakhstan) for the poster talk “Assessment of phytoplankton community structure of Lake Balkhash using a FlowCam imaging flow cytometer”.

Other topics that were discussed at the conference included physical processes in saline lakes; geology and geochemistry of saline lakes; salt lake ecology and biology, food webs and

biogeochemical cycling; paleolimnology; salt lake–landscape interactions, watershed studies; services provided by salt lakes: from chemical resources to cultural and social services and ecosystem modeling.

Two post-conference field trips were organized for conference participants to visit and have a glimpse of the Trans-Baikal area and local saline lakes and other unique ecosystems. This excursion is a tradition of the meetings of the ISSLR, to make scientists familiar with local ecosystems of saline lakes, to expand knowledge and intensify research contacts.

For organizers, the work is not over yet. Selected articles after careful selection and peer-reviews will be published in special issues of the Chinese Journal of Oceanology and Limnology and the Journal of the Siberian Federal University. After, scientists on saline lakes will start preparations for the next forum. There are three applications to host next conference of the ISSLR in 2020 from Iran, Hungary and Spain, giving the board of directors of the society a difficult choice.

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Post-conference field trip to Dauria steppe. Shore terraces of saline lake Nozhii.

Zooplankton of saline lakes in Atacama desert and Patagonians plains, Chile



Laguna Amarga, a saline lake in the extreme south of Chile

In Chile, the existence of numerous saline lakes has been reported. These lakes are located mainly in the north part of Chile in Atacama desert, which has an extreme arid climate and these saline lakes are associated with sulphate deposits of volcanic origin called “salares” (Chong, 1988). These lakes have low species diversity due their high salinity, and many of the species present are endemic and extremophiles (Demergasso et al., 2003; De los Ríos-Escalante, 2010). The ecological communities are single, based on producers that include halophilic microalgae and bacteria, that are grazed by halophilic crustacean grazers. At salinities lower than 90 g/L the calanoid copepod *Boeckella poopoensis* Marsh, 1906 is the main grazer, whereas at salinities above 90 g/L, *Artemia franciscana* Kellogg, 1906 is exclusive component of the crustacean grazers (Hurlbert et al., 1986; De los Ríos-Escalante, 2010). Many of these lakes do not have zooplanktivorous fishes, and the main zooplankton predator is the Chilean flamingo *Phoenicopterus chilensis* (Molina, 1782), whereas Andean flamingo *Phoenicoparrus andinus* (Philippi, 1854) and James flamingo *Phoenicoparrus jamesi* (Rahmer, 1886) graze on phytoplankton and bacteria (De los Ríos-Escalante, 2010). These lakes require conservation management, because these are nesting and feeding sites of migratory aquatic birds (Victoriano et al., 2006).

Other zones in Chile with saline lakes are in southern Patagonian plains, specifically between 51 and 53° S, that has subpolar climate with prairies exposed to strong winds that generate evaporation in water bodies with the high salinity levels (Campos et al., 1996; Fuentes & Gajardo, 2016). These plains have temporal and ephemeral pools, and in this last scenario, these are present only during early spring, because in autumn and winter they freeze or are snow covered, whereas during summer there is a drought (De los Ríos-Escalante, 2012). The biotic composition and functioning are apparently similar to northern Chilean saline lakes in term of low crustacean species numbers, and in the presence of halophilic crustaceans (Campos et al., 1996; De los Ríos-Escalante, 2010).

Nevertheless, the halophilic copepods (*B. poopoensis*) can coexist with *Artemia persimilis* Piccinelli & Prosdocimi, 1968, in some cases (Fuentes & Gajardo, 2016), this species can be exclusive component of saline lakes with salinities higher than 30 g/L (Campos et al., 1996). These lakes are devoid of fish, and the main predator is the big-sized calanoid *Parabroteas sarsi* Mrázek, 1901, that is an active predator on small bodied crustaceans. The presence of *P. chilensis* with its migratory routes can arrive the southern Chilean Patagonia (De los Ríos-Escalante, 2010).

From a biogeographical view-point, both zones are interesting because both would have dispersion zone of species with high dispersion ability such as micrustaceans, e.g. centropagids copepods (Menu-Marque et al., 2000). In this respect, it would be interesting do more systematic studies at temporal and spatial scales with the aim of studying the population and community dynamics with the view point of metapopulations (grazer crustaceans such as *Boeckella sp*) and metacommunities (grazer and predator crustaceans, such as *Boeckella sp* and *Parabroteas sarsi*, respectively, De los Ríos-Escalante, 2012).

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Laguna Amarga, a saline lake in the extreme south of Chile



Salar de Atacama, a saline lake in the North of Chile

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Salar de Atacama, a saline lake in the North of Chile

A Report of Brazilian Congress of Limnology, held in July 2017



Miquel Lüring plenary lecture on “Managing eutrophication and controlling cyanobacterial blooms”.

Six-hundred participants attended the XVI Brazilian Congress of Limnology. The Congress was held from held from 23 to 27th July in Rio de Janeiro. Most of them (60%) were undergraduate and graduate students, emphasizing once again this event as an incentive for young limnologists. There were also participants coming from Latin America, including Uruguay, Paraguay, Argentina and Guatemala, followed by those from Australia and the USA.

Eleven mini-courses were given; they covered topics including:

- *Environmental Legislation,
- *Microbial Water Quality,
- *Scientific Photography,
- *Functional Diversity,
- * Environment Programming,
- *Tools for Biomonitoring of Aquatic Ecosystems,
- *Microbial Trophic Web,
- *Ecological Modelling,
- *Writing of scientific articles in Limnology,
- *Ecosystem Services Analysis and
- *Environmental Impact Assessment in continental aquatic systems.

Three plenary lectures were given by both national (Professors José Marengo, Odete Rocha and Sandra Azevedo) and international (Prof Erik Jeppesen, Gwenael Abril, Miquel Lüring and Walter Dodds) speakers. These talks included:

- * Topics on climate change and water resources,
- *Climate change and its effects on the trophic structure and metabolism of aquatic ecosystems,
- * Wetlands and carbon balance,
- * Toxic cyanobacteria, with an example of an interrelationship between environment and health,
- * Eutrophication management and cyanobacteria proliferations,
- * Concept of the biome gradient in continental waters and
- *Integration of knowledge in the limnology of Brazil in the face of global changes.



Round Table on the Rio Doce disaster and consequences

Eleven roundtables were organised and these sought to focus on extremely important topics in South America such as the Rio Doce, Aquaculture and Hydroelectric Power Plants, Environmental Education, Strategic Vision in Water Use, Environmental Legislation and Major Enterprises, Strategies for the conservation of water resources in South America, Theoretical and Experimental Approaches, Interactions of organic matter that affect the carbon balance, and International Cooperation in Limnology, which emphasized the importance of Special Visitors Researchers of the Science Without Borders Program of CAPES. The poster and oral presentations were jointed in 26 special and thematic sessions that included: Actions and strategies against climate change, Biodiversity, biomonitoring and ecotoxicology, Population dynamics, Environmental education and scientific divulgation, Functioning of aquatic ecosystems, Impact of climate change on aquatic ecosystems, Trophic interactions, Limnology and health, Physical and chemical limnology, Spatial and temporal patterns in communities, Restoration of ecosystems, Environmental services and Taxonomy. Every day, an honour session to scientists who greatly contributed to the dissemination of research in Limnology in Brazil closed the daily congress activities.

Prof. Dra Christina Wyss Castelo Branca

Cbranco.unirio@gmail.com



Every-day poster sessions



Honouring session with Professors Carolina Silva and Francisco Esteves congratulating Prof Wolfgang Junk.

Obituary: Prof. Dr. Maria Rosa Miracle (1945-2017)

With great sadness, we report to the SIL family that Prof. Dr. Maria Rosa Miracle of the University of Valencia (Spain) passed away on May 28th 2017, after battling a long illness. She is survived by her daughter Olga and two sons, Dicky and Dani.

Born on 2nd June 1945 in Barcelona, Maria Rosa graduated from the School of Biology of the University of Barcelona with a distinction in 1968. She immediately started her teaching career as Assistant Professor in the School of Biology with a scholarship from the Spanish Ministry of Education and Science. Winning a prestigious Fulbright scholarship (1971–1973) allowed Maria Rosa to continue her education with the Limnology Research Group of Charles Goldman, University of California, Davis (USA). Her research there was reflected, in part, in her doctoral dissertation (1974) on the zooplankton of Lake Banyoles, which was one of the first advised by Prof. Dr. Ramon Margalef. Having achieved the highest rating for her Ph.D. presentation, Maria Rosa returned to the University of Barcelona, in Catalonia, on a "Juan March" fellowship — her second prestigious award. There, she studied the Pyrenean lakes, funded by the National Institute for Nature Conservation.

Maria Rosa became Assistant Professor at the University of Barcelona in 1976 and in 1979 she became Associate Professor at the University of Valencia. There, she quickly gained a Full Professorship in Ecology at the School of Biological Sciences (1981), and was the Head of the Ecology Department between 1981 and 1987, and between 2003 and 2009. From 1987 to 1990, Maria Rosa was President of the Academy of Environmental Biology of India and, from 1994 to 2002, she was President of the Iberian Limnological Association. Maria Rosa educated many biologists and ecologists and continued her research, until she retired in 2015 continuing her research as an emeritus Professor.



Maria Rosa made significant contributions to Spanish and Catalan research, and especially to the plankton ecology of inland waters. Her first publication focused on the zooplankton of Lake Banyoles (Miracle 1971), but her interests in aquatic science ranged widely and were global in scope. As an example, Maria Rosa's most recent publications contributed to our understanding of zooplankton taxonomy (Montoliu et al. 2015), Palaeolimnology (López-Blanco et al. 2012), ecology of shallow lakes and coastal lagoons (Vicente and Miracle, 1992), zooplankton feeding dynamics (Miracle et al. 2014), eutrophication (Ferriol et al. 2017), the biology/chemistry of meromictic lakes (Camacho et al. 2017), the influence of climate in shaping zooplankton community structure (Marco-Barba et al. 2013), and the ecosystem processes in these systems (Armengol et al. 2012, Onandia et al., 2015). During her research career, Maria Rosa authored or co-authored >200 scientific papers and >20 book-chapters or books.

Over her career, Maria Rosa led 15 research projects financed by the Spanish Government, six international projects (e.g., Nigeria, Australia and the United States), and several at the regional level. Either as Principal Investigator or Co-investigator, Maria Rosa participated in >20 Spanish-funded research projects, >10 European or International Projects, and >15 technical studies. These projects allowed her to conduct research around the world, including Australia, Belgium, Great Britain, Hungary, Nigeria, Portugal, the USA (California, Oregon, Utah) and, of course, Spain. Maria Rosa also organized more than 15 International Congresses and Workshops.

In addition to working on many Spanish lakes, wetlands, and lagoons, Maria Rosa collaborated with some of the best-known limnologists from around the world. She met Henri Dumont from Belgium at her first SIL meeting (Winnipeg 1974) and, in 1976, participated in one of Henri's expeditions to the Hoggar Mountains in the central Sahara. This area, with its numerous springs and 'lakelets', was a highlight of her early career. In 1979, Maria Rosa joined the late Charles King in an experimental study of rotifer population dynamics and survival. In 1983, she worked with Bland Finlay at the Windermere Laboratory (UK), investigating life in micro-aerophilic and anoxic environments and using electron microscopy to study ciliates and bacteria at the interfaces of oxic-anoxic environments. In 1987, Maria Rosa collaborated with Peter Tyler in studying chemoclines in stratified lakes of Gordon River, Tasmania. In 1993, she worked with Henri

Dumont again, this time studying the primary production of marginal lakes associated with the River Niger; they also collaborated on an EU ERASMUS education project. In 2002, she joined Wayne Wurtsbaugh to study the eutrophication of a marginal basin in the Great Salt Lake. From 2005 to 2007, Maria Rosa worked with Keve Kiss to develop a Spain-Hungary integrated project of the Hungarian Academy of Sciences for plankton studies. In 2014, she visited Brazil, contributing to the First Aquatic Biology Meeting and a postgraduate course at the Universidade Estadual de Maringá. Maria Rosa also collaborated with Victor Alekseev (Russian Academy of Sciences) on a joint study of cyclopoid taxonomy. In addition to her travels to work with other scientists, many visited Maria Rosa's laboratory to collaborate with her on shallow lakes in the Mediterranean coastal region, stratified solution lakes of Arcas and the karst area at Cañada del Hoyo, the latter with studies on the organisms ecology, biogeochemistry and Palaeolimnology in the meromictic Lake La Cruz.

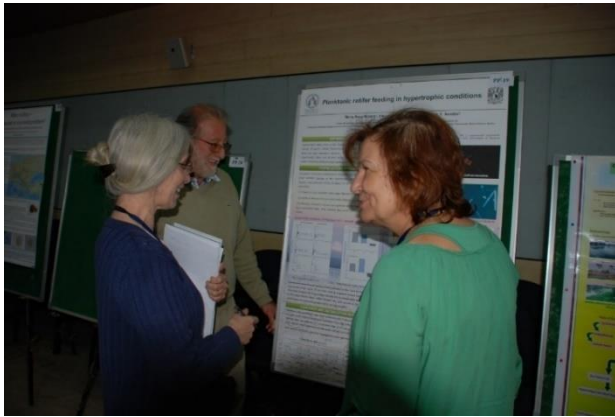
Maria Rosa was indefatigable in her approach to science education. During her years of active service, she supervised >20 Masters students and >20 Ph.D. students, many of whom are now university professors, active scientists, or environmental managers. .

An account of 40 years of professional activities does not tell the whole story of Maria Rosa's remarkable life. She was involved in solving environmental problems, especially those involving loss or degradation of Mediterranean wetlands, and she was active in many conservation projects (e.g., Limne Foundation and Projects VOLCAM). Through these works she gave talks to citizen groups and participated in the infrastructure of environmental foundations (e.g., President of the Foundation Friends of Parc Natural de l'Albufera), using her knowledge of ecological principles to explain the causes and consequences of deterioration in aquatic environments.

Maria Rosa was a renaissance scientist, working on organisms as varied as bacteria, rotifers, microcrustaceans, and fish, in habitats as diverse as Mediterranean ponds and coastal lagoons, neotropical floodplains, and meromictic lakes, and in disciplines as varied as zooplankton feeding, DNA barcoding, eutrophication, and the effect of the North Atlantic Oscillation on carbonate signatures in lakes, among many others.



Maria Rosa with Ramon Margalef on a sampling trip to Lake Banyoles.



Maria Rosa speaking to Linda May with her colleague Eduardo Vicente (background) at the XIIIth International Rotifer Symposium (Shillong, India, 2012).

Maria Rosa was a kind and gracious soul, a tireless worker, dedicated to the advancement of science across disciplines and continents, and with people of different backgrounds. A great scientist and a good friend, Maria Rosa will be greatly missed. We thank many colleagues who helped us prepare this tribute to “a truly remarkable woman” (H. Dumont, pers. comm.).

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Obituary: Hakumat Rai (10th March 1933 – 2nd February 2017)

Dr. Hakumat Rai who was suffering from Parkinson’s disease for the last few years, died on 2nd February this year just 5 weeks before his 84 birthday. He left behind a son Ravi and daughter Tanya. We the three undersigned, the authors of this obituary, knew Hakumat Rai from different periods and for different reasons. NK and Hakumat Rai were classmates in the B.Sc. (honours:1951-1953) and M.Sc. (1954-1956) at the Department of Zoology, University of Delhi, Delhi. I (RDG) was two years junior to Hakumat, and met him for the first time in 1953 because his M.Sc. group and our B.Sc. (honours) group shared a lab at the Zoology Department. MA from Canada came to know of Hakumat much later in early 1990s because of their common interest in the dynamics of lipids of algae.

Hakumat Rai, finished his M.Sc. study on Fish and Fisheries in 1956 under the guidance of late Prof. H.L. Sarkar at the Zoology Department, Delhi University. Hakumat then did a few odd jobs in Delhi and other places in North India between 1956 and early 1960s. Hakumat was very fond of football. After having represented his school in inter- school tournament he played for the Hansraj College team from 1951 to 1955 and was captain of the college team in 1955-1956. Being well-built physically, Hakumat played at the forward right position. In his last year at the university, he played for the Delhi University football team.

In 1956, the year when Hakumat Rai passed the M.Sc. examination, he joined the Delhi Water Works. This was a year after the water-borne disease jaundice had inflicted some 50,000 people overnight in Delhi, presumably after the polluted water entering the river Jamuna river reversed its flow and got mixed with water at the Intake point of the drinking water supply. During his short-term job at the Water Works, where he worked under the guidance of Dr. S.V. Ganapati,



Hakumat Rai (left) and one of his colleagues Christiana Krambeck at Plön, Germany

the famous Indian limnologist who was especially called from Madras in South India to head the Delhi water-works as its chief water analyst. During Hakumat's stay in Delhi, and his brief teaching assignment at the Roorkee Technical University, Hakumat also worked on the plankton ecology of the River Jamuna at Delhi.

Dr. Hakumat Rai left India for the USA in 1963 to join Prof. Dr. Arthur D. Hasler's Laboratory of Limnology at Madison, University of Wisconsin, for doing his doctoral research. However, he did not complete his study at Wisconsin but published in 1964 a paper on separation of phyto-pigments using thin-layer chromatography on the work he had done in Madison (see references). This apparently helped pave the way for Hakumat to move to Switzerland in or around 1965 to work for his Ph.D. degree under guidance of the famous Prof. Dr. E.A. Thomas at the Department of Botany, Zurich University, Zurich, Switzerland.

After obtaining a Ph.D. degree in Switzerland in 1969 (see reference list), he moved to Germany in 1970 to join as a post-doc fellow at the Department of Tropical Limnology of the Max-Planck Institute of Limnology (MPIL) at Plön to work under the guidance of Prof. Sioli on the lakes and rivers of Amazon flood plains, Brazil. He also worked on waters in some other countries (e.g. Ivory Coast in Africa). He was promoted in 1972 in his job to a Research Associate and worked in this position until Prof. Sioli retired in 1980. Moreover, since the retirement of Sioli, Hakumat Rai joined the Department of Plankton Ecology of the MPIL, Plön, headed by Prof. Winfried Lampert. He continued working there until his own retirement in April 1998. He worked there on various fields relating to phytoplankton production, phytoplankton pigments, lipids and size-fractionated photosynthesis in lakes. During this period he also studied the ecology of phytoplankton of German lakes adjoining the city of Plön.

Hakumat Rai and one of us (MA) were invited by the Japanese colleagues on a six-week scientific trip of Japan from May to mid-June in 1996. The trip was sponsored by the National Institute of Environmental Studies at Tsukuba, Japan. The purpose of the trip was two-fold: 1). to give several talks at different universities and other institutions; and 2). to test the effects of different underwater light conditions on the fatty-acid synthesis in aquatic biofilms growing on unglazed ceramic tiles. Unfortunately, the installations of the experiment were destroyed by an unexpected heavy storm and the experiment was, therefore, abandoned. Six weeks together gave me

(MA) not only glimpses of Hakumat's scientific pursuits but also about his other interests in life. After this Japan trip, I (RDG) invited Hakumat along with about 30 other well-known scientists to the Netherlands Institute of Ecology (NIOO), Nieuwersluis to attend an international PEG (Plankton Ecology Group) Workshop on the role of biochemical composition and elemental ratios of phytoplankton and zooplankton in the food chain of lakes.

Most of Hakumat's scientific colleagues perhaps did not know about Hakumat's extracurricular interests. One of these was his hobby of producing 'scientific ceramics' using microorganisms (e.g. phytoplankton, cases of caddis fly larvae) as model organisms. At Plön, he had set up a workshop at his home with instruments, including an electric oven (kiln) for high-temperature baking of the ceramics. He was so good at the art of producing ceramics that he was invited by Dr. Richard Robarts (then the editor of SILnews letter) to publish an illustrated account of the ceramics produced by him in the newsletter around the year 2005. This contained information on the different forms, shapes, sizes and colours of individual phytoplankters made of ceramics by him. He exhibited his artworks at Ostholstein Museum near Plön in Germany for 6 weeks in March-April 2008. He used microphotographs made with a scanning electron microscope (SEM) for the microorganisms, giving a holistic view of the structure of different parts. For detailed information, see: www.oh-museum.de

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Obituary: Dr. Mark Chutter

Mark Chutter passed away on Saturday 5th August 2017 at Howick in the KwaZulu-Natal Midlands of at the age of 84. Born in 1933 at Berkhamstead, Hertfordshire, England, Mark was the son of an Anglican parson who emigrated to South Africa in 1937 and became chaplain and schoolmaster at Michaelhouse, Balgowan. After completing his high schooling at Michaelhouse, Mark enrolled at Cambridge University in 1952 to study Agriculture but he soon changed direction and graduated with a BA (Natural Sciences) in 1955. He then returned to South Africa and, in 1956, joined the Council for Scientific and Industrial Research (CSIR) in Pretoria, staying with them for 37 years. His first job was as aquatic ecologist at the National Institute for Water Research, a division of the CSIR.

While in Pretoria, Mark graduated with an M.Sc. in Zoology (1960) at the University of Pretoria. He married Marlene (née Jorissen) in 1959, and their two daughters Leslie and Gillian were born in Pretoria.

In 1963, Mark became a founder member of the Limnological Society of Southern Africa, now the Southern African Society of Aquatic Scientists. In the 1970s and 1980s he served as the Society's President for three terms of office (1972-74, 1976-80 and 1984-85) and in July 1990 was awarded its Gold Medal. He was only the third person to receive this prestigious award, made in recognition of scientific excellence and outstanding service to the Society.



In 1963 he was transferred to Grahamstown to be part of a team of limnologists associated with the Botany and Zoology Departments of Rhodes University. Under Brian Allanson's supervision at Rhodes, Mark graduated with a Ph.D. in river ecology (1967), based on his studies while with the CSIR on invertebrate communities of the Vaal River. During his work on the Vaal River, Mark discovered an undescribed biting midge, which was subsequently found to be a significant pest to livestock. Based on specimens collected by Mark, DJ Lewis named this now well-known species *Simulium chutteri*.

In 1969, Mark was awarded a Post-Doctoral Research Fellowship with the National Research Council of Canada and so the family spent a year at Belville, Ontario. He and his family moved to the NIWR in Durban in 1971. In 1976 he moved back again to Pretoria to his original group, by then known as the Limnology Division of the NIWR, taking over from Daan Toerien as its head. By this time emphasis in limnology had moved substantially over to impoundment limnology, and among his original staff members were Willem Scott, Ferdie Schoeman, Archie Archibald, Roy Wilkinson, Maitland Seaman, Danny Walmsley, Mike Butty, Pete Ashton, Sigrid Kohlmeyer and Auriol Carbonatto. This period, Richard Robarts, Ferdi de Moor, Ralph Heath, Tamar Segev, Andy Jarvis and others joined his group.

Mark was always a scientist, first and foremost, and was allowed to develop his career as Specialist Scientist. During the period 1988-1993, foreseeing the pendulum swinging back to river limnology, he developed the now widely-used tool and mainstay in the environmental management of rivers, namely the South African Scoring System (SASS). This Biotic Index of water quality based on macro-invertebrate community composition has developed through a number of versions, including one for Namibia, as well as a simplified version for use by schoolchildren.

Although not a prolific scientific writer, Mark's output of over 70 articles and reports was of very high quality. He was able to use the English language correctly, rationally and frugally, which few can emulate. As an outstanding scientific thinker and writer, he mentored a number of young limnologists.

He retired prematurely from the NIWR in 1993 in order to develop a career as an environmental consultant at a time when river ecosystems



Mark Chutter at work in the field

were becoming seriously threatened and environmental awareness was growing. Mark's frugality and understanding of systems helped ensure that his business, Afridev Consultants (Pty) Ltd., flourished. In the late 1980s the Lesotho Highlands Development Authority (LHDA) invited Mark Chutter, Peter Ashton and John Hely-Hutchinson to build a mathematical model of seasonal temperature profiles in Katse Dam, Lesotho. Then, having done a preliminary evaluation of the impact of Lesotho Highlands water on the Wilge River system in 1989, in 1994-6 the LHDA needed river experts, including Mark and fellow invertebrate specialist Rob Palmer, to undertake a baseline study of their aquatic systems.

Mark was a keen squash player, enjoyed fly fishing, and was also a serious collector of stamps. Mark and Marlene retired to Howick and have spent the last 12 years there. Fifteen years ago Mark was diagnosed with Parkinson's, which affected him seriously only during the last three years of his life. He is survived by Marlene, two daughters Leslie and Gillian, five grandchildren and two great-grandchildren.

Mark will be remembered as an exceptional and honest scientist, a stickler for standards, a good friend and a special husband, father, grandfather and great-grandfather. Though he has passed on, his legacy will long be cherished.

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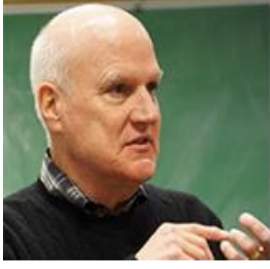





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The International Society of Limnology (formerly International Association of Theoretical and Applied Limnology; Societas Internationalis Limnologiae, SIL) works worldwide to understand lakes, rivers, and wetlands and to use knowledge gained from research to manage and protect these diverse, inland aquatic ecosystems.

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