



SIL news

Volume 73 – December 2018

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Editor's foreword

The 34th SIL Congress in China last August was a special one in many ways. Firstly, it was held only two years after the 33rd Plenary meeting at Torino, instead of the routinely three years between two successive meetings. This is the first time that the SIL conference was held biennially. But it will also be held in South Korea, two years after the meeting in China. Moreover, the conference in China was marked by greater student participation and activities. Thanks also to encouragement in various ways provided by SIL's various committees but especially owing to the efforts put in by Tamar Zohary, the General Secretary/Treasurer. Congratulations for the success of the last meeting also goes to Dr Zhengwen Liu the local Chief Organiser, who despite having a serious illness during the meeting, continued his hard work to make the China meeting a big success.

It was also befitting to hold the meeting in China because the country has made unprecedented economic progress in the last 3 decades or so. The country also has enormous, contrasting regional problems of water scarcity in the northern China whereas south has generally no such issues.

The contents on this issue of the newsletter are a proof of the changes taking place and progress made by the SIL. We are not far

from the milestone 100 years that will be reached very soon. This landmark feature of the SIL will be celebrated in Germany soon.

The sad news is as given in by the two obituaries. Dr Han Golterman (The Netherlands) passed away very recently at a ripe age of 90 years. He was former director of the Limnologisch Institute (Nieuwerslus). Dr Niels de Pauw (Belgium) died in May 2018. Both were very dear to me personally. Dr Golterman was a personal loss to me because he is the one who accepted me as a trainee in water chemistry in 1968, exactly half a century ago. We both retired from NIOO (the Netherlands Institute of Ecology) between 1995 and 2000. Dr Niels de Pauw was also a dear colleague. We worked together as Editorial Board members of Aquatic Ecology from 1996 to 2010. The obituaries of these old colleagues are included in the present newsletter.

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The Nanjing 2018 Congress
in a 3.5 min video by Veronica
Nava
<https://vimeo.com/291157170>

Report on the 34th SIL Congress, Nanjing, Jiangsu, China



Figure 1. Zhengwen Liu opens the 34th SIL Congress at the Nanjing International Expo Centre with some of the members of the organising committee seated in the foreground.

What was the most memorable aspect of the 34th SIL Congress for you? For my Ph.D. student it was the realisation at the end of the Welcome Reception on the Sunday night, preceding the main program (Monday to Thursday), that he had just ‘rubbed shoulders’ with several of the world’s leading limnologists, and he was able to readily converse with them about his study and broader aspects of limnology. This small anecdote is true for many of us; SIL has a wonderful welcoming atmosphere that leads to great friendships and collaborations that often last for a career, and beyond. That atmosphere was also promoted by our Chinese hosts who were exceptionally welcoming and efficient in all aspects of the scientific, social and field trip programs, including with a series of social dinners. Zhengwen Liu (see Fig. 1) and Boping Han, as co-chairs of the Local Organising Committee, together with their large team, did a superb job of the conference organisation and making everything flow smoothly.

The conference was preceded on Saturday and Sunday by a ‘Retreat’ (Fig. 2). The Retreat was an opportunity for the executive committee and a few others to be involved with planning a strategy for SIL’s future. The importance of this strategy was emphasised in Yves Prairie’s opening address at the conference where he showed that SIL membership had declined in the past 20 or so years, before stabilising more recently – in common with many other large societies. The Retreat brought in fresh thinking including Genevieve Leclerc as the new SIL Business Manager, who facilitated the Retreat, and input from several early career researchers. Committees were formed to guide SIL into the new era, with emphasis on outreach and communication, business and

commercial operations including published materials, and new strategies to reach out to Ph.D. students and early career scientists. Committees aligned with these areas will be reporting back to the Executive and will move forward the agenda to grow SIL in forthcoming months.

The Baldi Memorial Lecture was given by Sally MacIntyre who provided an excellent overview of the importance of physical limnology for understanding lake processes in her address: ‘Mixing dynamics: from Hutchinson to the 21st century’. Richard Robarts, giving the Kilham Memorial Lecture, gave a sobering account of the dire state of African inland waters based on many years of experience with working in African systems. A synthesis of Robarts’ talk is now online in *Inland Waters* (Limnology and the future of African inland waters – R. Robarts and T. Zohary).

One of the conference plenary lectures was given by Matthew Guzzo (Fig. 3) who won the ‘Best Paper’ Ph.D. award amongst a highly competitive field. Guzzo provided a superb and beautifully polished talk, telling his audience about the effects of climate warming in ‘squeezing’ habitat for cold-water fish. A theme of effects of climate warming was common through many of the SIL talks, including Luc de Meester’s plenary about how aquatic biota have rapid eco-evolutionary adaptation mechanisms to respond to global change. This talk was one of the highlights of the conference for me and suggested that we need to be cognisant of the complex responses of biota to climate change. At the same time, a clear message from the conference was that with global warming and other anthropogenic impacts taking their toll on inland water resources, limnologists must get more engaged in conveying their research findings to policy and decision makers. Such active involvement can reduce the risks to earth’s freshwaters.



Fig. 2. Participants at the retreat planning out a strategy for the future of SIL.



Fig. 3. Winners of the second SIL student competition (left to right) Matthew Guzzo (1st), Ralf Aben (2nd) and Clay Prater (3rd).

Other plenary lectures were from: (1) Jake Vander Zanden who provided a perspective on the role of benthic production and food web linkages in lakes – traditional limnology has focused on the pelagic zone of lakes but it is now evident that much more attention should be given to littoral zones where interactions with human activities are often most strongly observed, (2) Ji Shen, who outlined how the paleolimnology to examine past global change in China, (3) Philippe Van Cappellen who provided an overview of the global impacts of dams and reservoirs, and (4) Stuart Bunn who showed how catchment prioritisation leads to effective implementation of restoration to help degraded rivers and streams.

We should remind ourselves of the scale of SIL meeting in China: occupying the whole of the Nanjing International Expo Centre, 20 special sessions, 114 posters and 5 fantastic field excursions, and awards given and received (Fig. 4). Now we look forward to the 35th Congress of the International Society of Limnology in Gwangju (Republic of Korea) from August 23-28, 2020.

David Hamilton

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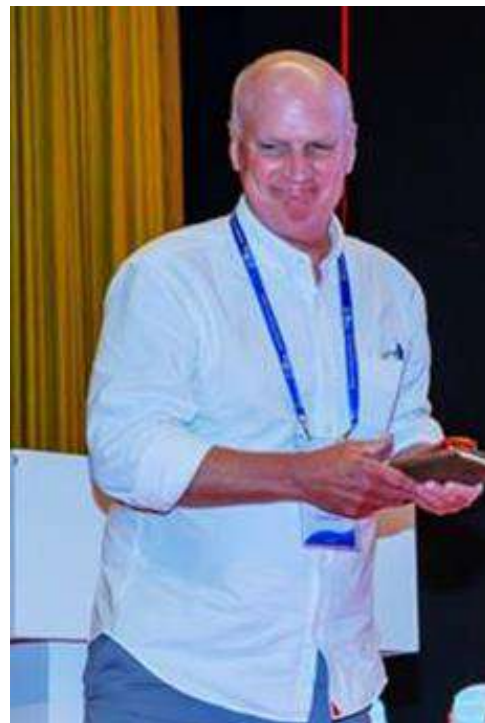


Figure 4. Jack Jones leaves the podium after receiving thanks for his long standing service with SIL. In 2016 he received the Einar Naumann - August Thienemann Medal – the highest honor that can be bestowed internationally for outstanding scientific contributions to limnology – for his research on reservoir limnology and outstanding contributions to SIL. Jones oversaw the time-consuming transition of the conference proceedings (*Internationale Vereinigung für Theoretische und Angewandte Limnologie: Verhandlungen*) to a regular quarterly scientific publication, *Inland Waters*. Jones was the inaugural Editor-in-Chief of *Inland Waters* and ceded that role to David Hamilton at the Nanjing meeting.

Awardees comments on receiving the Naumann-Thienemann award

John P. Smol

Thank you very much for this honour. And I wish to extend my congratulations to my friend and colleague, Lars Tranvik, for also receiving this award.

Winning the Naumann-Thienemann Medal is very important to me, as SIL is very important to me. I became a member of SIL when I was 21 years old – and I have been a continuous SIL member until this day. This organization, bringing together international limnologists, has played a key role in fostering many collaborations.

I am also very pleased that my sub-discipline of limnology, namely paleolimnology, is also (indirectly) being honoured. I have always self-identified myself first as a limnologist, but one that uses lake sediments to extend our data sets back in time, where I believe many answers lay hidden. For many of the early years in my career, I often felt most limnologists believed paleolimnology was some odd and curious off-shoot of limnology, and certainly not mainstream. I can recall my earliest SIL meetings where the paleolimnology session was invariably held in one tiny room, often on the last afternoon, where the few paleolimnologists at the SIL meeting would essentially “talk to each other”, and almost no one else. It is very gratifying to see how this is changed. Now paleolimnological approaches are seamlessly blended into a large number of studies, and often (like at this conference) one of the keynotes is on paleolimnology. A lot has happened since I was 21 years old, it seems.

At times like this, I have to reflect on how lucky I have been in many ways. As the son of a war refugee and a political defector, I had the plain blind luck of being born in Canada, a country that defines itself more by the people they allow in, rather than who they keep out. A country that allowed me to pursue my interests, without interference, and a country blessed with thousands and thousands of lakes.

I think we limnologists have an important job to do. It is now clear that science and evidence-based policy are under attack in many countries. If we, as scientists, don't take the lead in effectively engaging the public and policymakers, the resulting “information vacuum” can easily be filled by vested interest groups, while we, as scientists, continue to quietly work in our laboratories and field sites, with the comfortable excuse that “this is not my fight”. Well I strongly believe “this is our fight”.

I have many individuals to thank. Various professors, such as Jacob Kalff at McGill University, who first taught me about limnology, and role models, like David Schindler, who showed by example that you should endeavour to do great science but that you also have the responsibility to make the results of your science known to policymakers, politicians and the general public.

I would also like to thank Brian Cumming, who nominated me for this medal. Brian is co-director of our lab - the Paleoecological Environmental Assessment and Research Lab (PEARL) at Queen's University. Brian is a former student, and is now the Head of my department. So basically, Brian is now my boss! It is a good example I use to tell my students: be nice to people on the way up, as you will probably see them on the way down again! Of course, the real credit for this medal goes to an amazing group of current and past students, post-doctoral fellows, and staff. Over 100 very successful graduates have passed through my lab thus far, and I hope many more still will. It is their hard work and ideas that I have benefitted from. Their successes remain my proudest achievement. It convinces me daily that the future for limnology is very bright.

Lars Tranvik

It is overwhelming to receive this award, and the celebration that it represents of the science and the precious nature of inland waters. I would like to thank those who nominated me and those who judged the nomination reasonable, and of course most all of those who were involved in the work that lead to this award – to get here is very much a team effort, and I think the medal celebrates also the rest of the team. I will get back to them.



The Aneboda Field Station, Southern Sweden, founded by Einar Naumann

There are many excellent limnologists who deserve a medal like this, and I am humbled when I see the list of previous awardees. Still, I want to share with you here one specific reason why I fit in – I not only did my first lab experiments at the Max-Planck-Institute of Limnology in Plön, Germany, previously headed by August Thienemann as an institute of the Kaiser- Wilhelm-Gesellschaft. I also worked literally in the footsteps of Einar Naumann, spending a lot of time at the small field station in the forests of southern Sweden, at Aneboda (see photo), which Einar Naumann founded, and getting my samples from the lakes he first described.

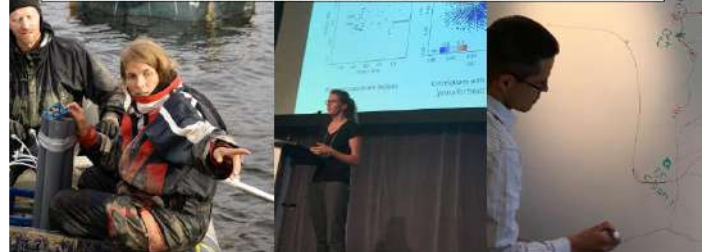
But the real key persons are those I had the privilege to work with. Research is really a team effort. I cannot list them all - no one mentioned, no one forgotten. But in general, I had great company in the early years in Lund, Plön, during research stays and postdocs in Rhode Island and Oregon, and for the last almost 20 years at Uppsala University. There are so many individuals who have inspired and collaborated in different ways – thanks to all students, postdocs, visitors, and colleagues! Success in science depends not only on individuals *per se*, but maybe to an even greater extent on the interactions between them in groups. My thanks to the various big and small groups I have had the luck to be part of! The limnology department in Uppsala is a fantastic group – this is what it looks like right now (upper left). An example of other groups that have been highly productive and a lot of fun is the “CoW, the Color of Water project”, contributors in the lower photo, which focused on the increase in colored dissolved organic matter in

boreal waters. The international group that pioneered the current paradigm of the inland water contribution to the global carbon cycle, nick-named “Wetzel’s Pretzels” has been very inspiring to me and made important progress.

Again thanks so much to everyone involved - to get a prize like this you need a lot of help from others, and I certainly did.



Thanks to students, postdocs, collaborators, and many others – the real key persons!



Thanks to the limno department in Uppsala, and various project groups!



Minutes of meetings held at the 34th SIL Congress, Nanjing, China 2018 Venue: Nanjing International Expo Convention Center

I. Pre-Congress strategic-planning retreat, 18-19 August –
see separate report

**II. First meeting of the Executive Committee and National
Representatives (International Committee)** – 19 August
(Sunday), 14:30 – 17:00

Participants (27)

Executive board & SIL Officers: President, Yves Prairie; General
Secretary-Treasurer, Tamar Zohary; Outgoing Vice-Presidents:
David Livingstone and Sally MacIntyre; New VP: Martin Kainz;
Student/Early Career representative, Lestyn Woolway.
Observers: Past IW Editor, Jack Jones; Website manager,
Veronica Nava; New Business Manager, Genevieve Leclerc.

Participated electronically: New VP: Jeremy Piggott

National Representatives: Gea-Jae Joo (S Korea), Piet Spaak
(Switzerland), Anne-Marie Venteva (Finland), Age Molversmyiz
(Norway), Xiufeng Zhang (China), Yuchun Wang (China), Lars
Tranvik (Sweden), Luciana Barbosa (Brazil), Marc Schellenberg
(New Zealand), Cerbin Slawomir (on behalf of Ryszard Goldyn,
Poland), Felix Picazo (Spain), Miquel Luerling (Netherlands),
Elisabeth Meyer (Germany), Sudeep Chandra (USA), Ilia
Ostrovsky (Israel).

Invited as observer: Eilise Norris (T&F rep.), Yanli Gao (T&F
marketing officer in China).

Apologized: President Elect, Thomas Mehner; VP from
developing Countries, Ines O'Farrell;

Copies of the agenda and financial statements (2016/17 and
2017/18) were distributed to participants.

- The President greeted the National Representatives and SIL officers, and introduced and welcomed the new board members and other new SIL officers (Genevieve Leclerc who is replacing Denise Johnson as business manager, David Hamilton who is replacing Jack Jones as EiC for *Inland Waters*)
- The President outlined the Agenda
- **Report on SIL activities:** The General Secretary-Treasurer reported on SIL activities since the 2016 congress in Torino. Five major objectives guided those activities:

Objective (1) Recruit a young generation of SIL members.

Measures taken: Annual membership dues of only USD 10 or 5/yr for students, and 50% discount for early career scientists; two student/early career representatives added to the SIL board; 2nd student competition; student website manager; Wetzel Travel Fund Awards to students and early career scientists; Tonolli Research Awards for students from developing countries.

Objective (2) Make SIL Proceedings and Communication

available on-line. This major task was completed, 90 years of limnological studies previously unavailable are now on-line with free access to SIL members.

Objective (3) Improve SIL's financial status. The change of

publisher from FBA to Taylor & Francis saves SIL about USD 50,000/yr, i.e. a huge saving. Starting with SIL2018 in Nanjing, SIL Congresses will generate revenue for the society. China is paying SIL USD 30 per congress participant. A Memorandum of Understanding was signed between SIL and Korea, the host of the 2020 SIL Congress, which legally specifies the financial and organizational relationship between SIL and the congress hosts.

Objective (4) Support SIL's Working Groups. Measures taken:

starting with China 2018, a time-slot was made at the congress for meetings of Working Groups. A plenary slot was added during the 2nd General Assembly for reports on WG activities.

Objective (5) Re-structure SIL for the future. This was initiated in a pre-congress retreat, and will continue intensively in the following 6 months.

• **Financial statements:** The General Secretary-Treasurer presented the annual financial statements for the fiscal years 2016-17 and 2017-18 (Appendix 1), explained them and answered questions. Major changes of SIL finances resulted from the change of publisher, from FBA (not-for-profit small publisher) to T&F (commercial). Past income from library members and from page charges have stopped, but so did the huge annual cost of publishing the journal with FBA, averaging ~ USD 70,000/yr. The current income is from royalties (30% of all income from IW) and an annual sum of USD 10,500 towards costs of the editorial office. There are no publication costs. Remaining costs are those of the copyeditor and an increased honorarium to the editor. After all questions regarding the financial statements were answered, the president proposed a motion to approve them. The statements were approved with no opposition.

• **The Role of National Representatives:** The General Secretary-Treasurer explained the roles and expectations from National Representatives. Including promoting membership of students and early career scientists in their countries, and running the first stage of SIL student competitions in their countries.

• **Strategic Planning:** The President reported on the strategic planning sessions. He announced the creation of 5 new committees: Revenue Generation & partnerships, Communications, Education, Membership, and an overall committee for strategic planning. He invited the NRs to volunteer to serve on those committees.

• **Organization of future SIL Congresses:** The president reported on changes to congress organization in the future. Unlike the past tradition in which congress organization was solely by the host country, starting in China and into the future, the organization of SIL congresses will be based on collaboration between the hosts and SIL board members and representatives, on both the scientific program and the finances. To Achieve this objective SIL (1) has drafted a Memorandum of Understanding (MoU) to be signed between

SIL and host country before finalizing it as host; (2) is preparing a Congress Guidelines Manual to assist future hosts and ensure they know what SIL is expecting; (3) SIL will purchase and apply software for abstract submission, to be used in all its future congresses.

• **Bidding for future congresses:** The President explained that starting in 2024, the bidding process for hosting a SIL Congress will be formalized in a way that will ensure that congress venues match the needs and strategic plans of the society.

• **Changes to Statutes:** The President presented proposed changes to Statutes, to be voted on at the second meeting of the International committee. Two types of changes were proposed: (1) technical changes to wording, to match those appearing in our website and changes that have already taken place de-facto. These changes include changing the name “Ordinary member” to “Regular member” (4 places); deleting “Associate Members” (i.e. libraries) from the membership categories – as this category is now extinct; annual dues are payable by 1 January (rather than 1 February) each year. (2) a proposed change to the way we make changes to the Statutes, to allow on-line voting between congresses. Hence, Item IX. Amendments §22 is proposed to be replaced by §22-24 as follows:

Word Original § 22. Any proposed alteration to these statutes shall be distributed to the membership in writing (by email or on paper) four weeks or more prior to a Congress. A majority of two-thirds of those voting is required to alter the statutes.

Revised § 22-§ 24 [new text is underlined]

§ 22. Any proposed alteration to these statutes shall be initiated by the Executive Board. Proposed amendments shall be distributed to the membership in writing (by email or on paper) four weeks or more prior to a General Assembly held at a Congress or to a scheduled electronic vote.

§ 23. The notice of voting must contain the date for voting and include the text of the proposed amendment as well as the complete current Statutes. A majority of two-thirds of those voting is required to alter the statutes.

§ 24. Voting on Statutes amendment will take place at the General Assembly of the Congress or electronically if required in between Congresses. Members will vote for approval or rejection. Each voting member may cast one vote either for "Approval" of the draft for new Statutes, or "Rejection" of the draft.

III. Opening Ceremony – 19 August (Sunday), 17:00 – 18:30

A series of welcome speeches by Zhengwen Liu, the chair of the organizing committee for SIL2018, followed by 3 other speakers. Those short speeches were followed by artistic performances of traditional Chinese style: music, dance, customs and backdrop scenes. The audience was greatly impressed. A welcome reception followed.

IV. 1st General Assembly meeting and Presidential address – 1 August (Monday), 08:30-09:45

- **Welcome:** The audience was welcomed by Zhengwen Liu, Chair of the local organizing committee, and Yves Prairie, President of SIL.
- **Necrology list:** Yves Prairie read the necrology list (16 names).
- **General Secretary Report** – same as in Int'l Comm meeting.
- **Neumann-Thienemann medals, 'De Limnologia optime merito':** Yves Prairie awarded the Neumann-Thienemann medals to the recipients for 2018: **John Smol** (Canada), **Lars Tranvik** (Sweden). John Smol spoke for 5 min to acknowledge the contribution of his students and colleagues. Lars Tranvik announced the campaign he is running on World Scientists' Warning to Humanity: A Second Notice" on the likely implications of Climate Change and invited SIL members to join.
- **Baldi and Kilham Award lecturers** for 2018 were announced: **Sally MacIntyre** and **Richard Robarts**, respectively.
- **Recognition of outstanding services for SIL:** Each of the following was invited to the stage and given a gift as a token of SIL's appreciation for their long-term work:

Denise Johnson – For being SIL's business administrator since Wetzel's times in 2003 till 2018, when she was replaced by Genevieve Leclerc.

Jack Jones – For being the Editor-in-Chief for Inland Waters 2011-2018, as well as Editor for the last volume of the SIL Communications (2010).

Gordon Goldsborough (in his absence) – For being SIL's first and only webmaster till 2017, when he was replaced by Veronica Nava.

- **Proposed changes to Statutes:** presented again.
- **A Silent Auction** that will take place during the society dinner was announced, with all earnings going to the Wetzel Fund to support student travel to SIL congresses.
- **Presidential address:** the president reflected on the changing role of scientific societies in limnology and other sciences. Although SIL remains the most international of limnological societies, membership in SIL, as in many other societies, has been declining (at a rate of about 4%) but has remained more stable in the past 5 years due in particular to the increase in student membership. Occidental countries show the steepest decline while several countries in Asia are showing a significant increase (e.g. China, Korea). The president also expressed his concerns about the increasing separation between "theoretical" and "applied" limnology. The president also stressed the need to reach out to new segments of the community interested in limnological knowledge.

V. Executive Committee (present and newly elected members) – originally scheduled for 19 August (Sunday), 12:30 – 14:25.

But its time and venue didn't appear in the printed program, so board members didn't arrive, and the meeting was re-scheduled and held on **Tuesday 21 August during lunch**.

President: All SIL Officers present at the first meeting of the International Committee + Thomas Mehner Marieke Frassl. The President welcomed and congratulated the newly elected board members. The President outlined the Agenda for the Meeting. Points addressed were:

Information:

- Changes of SIL personnel: executive board members, website manager, journal EiC.
- Report on the new committees created as a result of the retreat: 1. Education, 2. Membership, 3. Communication, 4. Revenue Generation and partnerships.

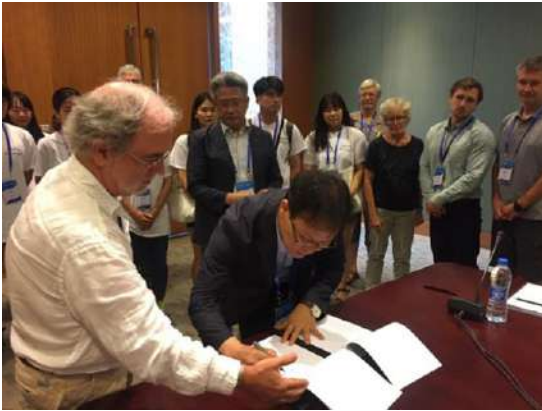


Photo: signing a MoU between SIL and Korea, regarding the 2020 SIL Congress in Korea.

- The Impact Factor for Inland Water has declined from 1.99 in 2016 to 1.66 in 2017 according to the Web of Science metric (using a 2-year window), but has continued to increase when computed using the equivalent Scopus metric (using a 3-year window).

Formal signature of MoU with Korea. We made a ceremony of this event, with the Koreans entering our meeting, exchange of gifts, photos taken, and signing the contract by Yves, Tamar and Gea-Jae-Joo.

Governance:

- Need to elect a **new Student Representative**, as Camilla Capelli has stepped down. A call for nominations will be released after the congress.
- **Team of current board members** – 2 or 3 years? To be discussed
- **Moral and legal responsibilities of SIL Executive board members:** These were outlined (Appendix 2)
- **Membership fee** – it was agreed that now is a bad timing to increase membership fee. Decisions could be made after the strategic planning is further advanced.

VI. Meeting of the Editorial Board of *Inland Waters* – 20 August (Monday), 16:40 – 19:00

See separate meeting report

VII. Meetings of the SIL Working Groups – 20 August (Monday), 16:40 – 19:00 (in parallel with the meeting of the Editorial Board for IW).

Five SIL Working Groups held meetings: Lake Restoration,

Plankton Ecology Group (PEG), Lake Physics, Ecohydrology, Dryland limnology.

VIII. 2nd Meeting of the International Committee – 22 August (Wednesday), 16:40 – 19:00.

- Agenda for meeting presented and approved
- Yves Prairie presented the finalized motions for changes to Statutes, to be voted on at the 2nd general assembly
- Yves reported on the signing of the MoU with Korea, for the 2020 Congress
- Yves reported on the finalization of the plan to hold SIL 2022 in Berlin

IX. 2nd General Assembly and Closing Ceremony – Thursday 23 August 2018, 16:40 – 18:40

- **Statutes** – Proposed changes to the SIL Statutes were summarized. A motion to accept the revised Statutes was proposed and seconded, and passed without dissent. The amended statutes were then uploaded to the SIL website.
- Preliminary information on the congress – 642 participants from 40 countries, 256 from countries other than China.
- Report on decision from Editorial Board meeting regarding a fast-track option for paper submission by Ph.D. students who are SIL members.

• **Reports from SIL Working Groups**

- (1) Lake restoration (M. Lurling)
- (2) Plankton Ecology Group (PEG) (A. Ger)
- (3) Lake physics (S. MacIntyre, M. Frassl)

- Invitation to the 35th SIL Congress in Gwangju, South Korea 2020 by organizer, Gea-Jae Joo – convinced the audience that his team is doing its best to have a successful congress, that is also affordable to students and early career scientists.

- Invitation to the 36th SIL Congress in Berlin, Germany 2022.

- Ceremony of giving prizes to the winners of the 2nd SIL Student Competition – ran by Judith Padisak, Chair of the Student Competition Committee.

• **2nd Student competition certificates:** were given by Judit Padisak, Chair of the Student Competition Committee, to the 3 winners: first place - **Matthew Guzzo** (Canada), second place: **Ralf Aben** (Netherlands), third place: **Clay Prater** (Canada). Judit Padisak also thanked the members of the evaluation committee and invited those present in the audience to the podium.

• Reflections on the SIL Congress – by Ralf Aben and Clay Prater.

• Closing remarks by Zhengwen Liu

Tamar Zohary, General Secretary

26 October 2018

Appendix 1: Financial Sheets for 2016/7; 2017/8 – available from the SIL treasurer upon request.

Appendix 2 : Moral and legal responsibilities of board members

Members of Executive Boards of non-profit organizations have moral and legal responsibilities and obligations, that are not specific to SIL. These include:

Expectations from individuals serving on non-profit boards

- Assist the board in carrying out its fiduciary responsibilities, such as reviewing the organization’s annual financial statements.
- Attend all board and committee meetings and functions, such as special events.
- Be informed about the organization’s mission, services, policies, and programs.
- Review agenda and supporting materials prior to board and committee meetings.
- Serve on committees or task forces and offer to take on special assignments.
- Inform others about the organization and act as ambassador in all professional activities.
- Keep up-to-date on developments in the organization’s field.
- Follow conflict-of-interest and confidentiality policies.

Basic responsibilities of non-profit boards

- Determine mission and purpose
- Select the chief executive or director
- Support and evaluate the chief executive or director
- Ensure effective planning
- Monitor, and strengthen programs and services
- Ensure adequate financial resources
- Protect assets and provide proper financial oversight
- Build a competent organization
- Ensure legal, financial and ethical integrity
- Enhance the organization’s public standing

LEGAL responsibilities of non-profit boards

Duty of Care - describes the level of competence that is expected of a board member when making decisions.

Duty of Loyalty - a standard of faithfulness; a board member must give undivided allegiance when making decisions affecting the organization.

Duty of Obedience - requires board members to be faithful to the organization’s mission. They are not permitted to act in a way that is inconsistent with the central goals of the organization.

Tamar Zohary, General Secretary/Treasurer,
tamarz@ocean.org.il

SIL between congresses – report from the General Secretary

Dear SIL members,

If you ever wonder: ‘what is SIL doing for me’, here is a summary of SIL activities between the 2016 and 2018 congresses, based on 5 objectives defined in Torino 2016.

Objective 1: recruit a young generation of SIL members. To address this SIL annual dues for students were reduced to USD10/year (5/yr from students from developing countries) and a 50% discount was given to early career members. Two student/early career members were added to the SIL board (Iestyn Woolway from Ireland; Camilla Capelli from Italy). The

second student competition was held, with its winner, Matthew Guzzo from Canada giving a plenary at the congress in Nanjing and 2nd and 3rd places, Ralf Aben from The Netherlands and Clay Prater from Canada, providing their perspectives at the closing ceremony. An extremely capable student was chosen as the new website manager (Veronica Nava from Italy). SIL now appears on Facebook, thanks to Maciej Bartosiewicz. SIL has changed from triennial to biennial congresses, to give students a chance to participate in at least one congress during their studies. The students awards committee led by Vice President Sally MacIntyre gave eight student travel awards from the Wetzel Fund, and 6 study awards to students from developing countries from the Tonolli Fund. These diverse activities led to a substantial increase in the proportion of SIL members that are students, from <5 % in 2011 to 35 % in 2018. Similarly, the proportion of students that participated in the 2018 congress in China was 37%, very similar to the 2016 congress in Italy (36%), and a huge improvement compared with previous congresses.

Objective 2: Make SIL Proceedings and Communications available on-line. This big task was completed successfully, for the first time limnological studies and data from 1922 till 2010 are freely available on-line to all SIL members. Free access is via the SIL website, members page, <https://limnology.org/members/> after logging-in as a member and clicking on the *Inland Waters* icon on that page.

Objective 3: Improve SIL's financial status: With the declining membership, especially of long-term members that retire, SIL's revenues have declined dramatically. It became essential to reduce our largest cost, the publication of *Inland Waters*. By changing the publisher to a commercial one USD 50,000 are saved annually, and SIL members can publish their papers for free. In addition, it was understood that from now on SIL Congresses must become a source of income to the society. To facilitate that, a Memorandum of Understanding, prepared by Genevieve Leclerc, was signed with the organizers of the 2020 congress in Korea (and will be signed with all future congress organizers) stipulating the financial relationship with SIL.

Objective 4: Support SIL's working groups: A time slot and rooms at the congress were allocated for holding meetings of the SIL Working Groups. Each group was further allocated 10 min of

plenary time to report on its activities. The PEG (plankton ecology group) led by Lisette de Senerpont Domis and Ali Ger, the Physical Limnology group led by Sally MacIntyre, the ecohydrology group led by Małgorzata Godlewska, and the Lake Restoration group led by Miguel Luerling and Bryan Spear - took advantage and met. A fifth group, on Dryland Limnology, led by Luciana Barbosa, was created. Working groups are invited to publish their research results in *Inland Waters*. This support will continue in the future.

Objective 5: Strategic planning for the future: A two-day pre-congress retreat was led by Genevieve Leclerc with the participation of 22 SIL board members and invited students/early career members, to re-think and plan a strategy for the future. Five committees were made to guide SIL into a new era of communication, revenue generation, and membership. See David Hamilton's article for more details.

As you can now tell, SIL is making major efforts to become more relevant and attractive as a learned society, with a particular focus on the younger generation of limnologists. **Join us at the next SIL Congress in Gwangju (Republic of Korea) from August 23 - 28, 2020.**

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Can't wait to go back: Reflections of early career scientists on the SIL 2018 Congress

The 2018 SIL Congress in Nanjing was a great experience for us. From beginning to end, we learned a lot and met so many enthusiastic limnologists dedicated to sharing ideas and continuing to build a unique and forward-looking society. To start, we had a beautiful opening ceremony, with music played on traditional Chinese instruments. The conference environment was open and collegial from the extremely helpful conference volunteers all the way up to the more established scientists and society leadership. The organization committee did a wonderful job of putting together diverse plenary talks and general sessions that explored emerging limnological ideas and highlighted water quality issues across the world. Ideas from these sessions spilled over into productive conversations over dinner and breaks, which will no doubt lead to future collaborations and scientific insights.

We learned a lot about the history of the society throughout the congress, but the two things that particularly stood out to us are SIL's continued commitments to growing the field of limnology by investing in research in developing countries and in fostering the growth of early career researchers. We heard many talks highlighting ongoing research efforts between SIL members and local scientists tackling diverse fundamental and applied limnological issues across borders. The congress also encouraged the involvement of junior researchers by welcoming their participation in SIL working groups, raising travel money for students by organizing an auction, and by pulling back the curtain on the publication process by inviting students to speak with the journal editors.

SIL and its members, however, face the challenge of adapting the society to a changing world in order to stay relevant for current and future generations of limnologists. We think that visibility plays a key role here. SIL and its members need to spread awareness among (young) limnologist about the existence of the society. This involves SIL being active on social media about their activities, but also simply spreading the word by SIL's members: tell your colleagues about SIL and why they should become a member. The latter is a second thing of major

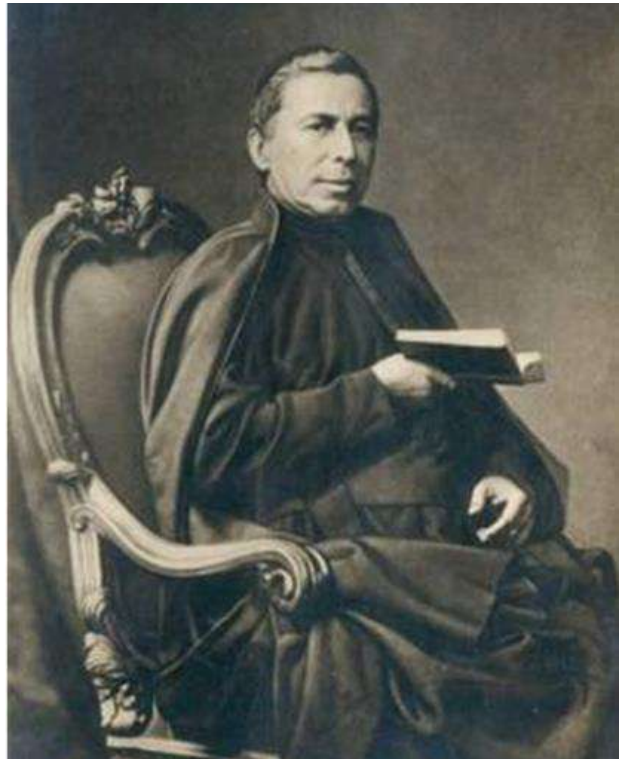
importance. It should be very clear for limnologists what the benefits are of becoming a SIL member. If SIL and its members work on these issues, we believe the society will grow and have a bright future ahead of it.

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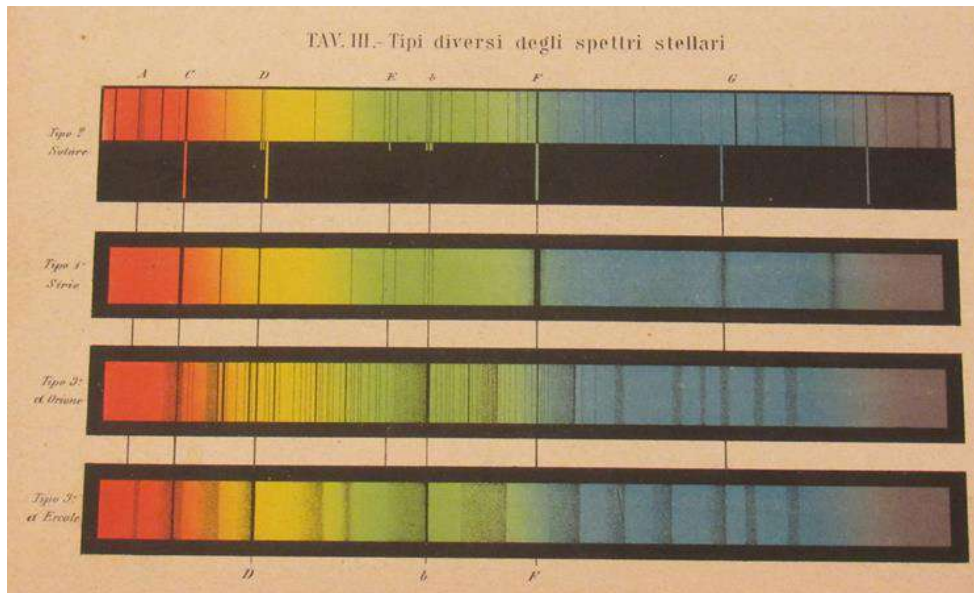
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Fr. Angelo Secchi, S.J. and the Voyage of the *Immacolata Concezione*, Vatican Observatory



Fr. Angelo Secchi, S.J.

Fr. Angelo Secchi, S.J. (pronounced SEK-kie) may be the most famous scientist you have never heard of. He is considered a pioneer in the field of astrophysics, and his scientific contributions cover fields as widely varied as stellar spectroscopy, solar physics, terrestrial magnetism, meteorology, and oceanography. One of his long-lasting contributions in an unexpected niche is the development of a technique for measuring the clarity of ocean water, which today is widely used not only in open seas, but also in bodies of fresh water. This year marks the 200th anniversary of Angelo Secchi's birth in Reggio Emilia, Italy. He entered the Jesuit order in Rome at age 16, and his formators recognized his aptitude for science and



Examples of stellar types and their spectra in Secchi's classification scheme.

encouraged him in that direction. He was ordained a priest in 1847. Due to political unrest in Rome at the time, he spent a couple years abroad, first at Stonyhurst College in England, and then at Georgetown University in Washington, DC. During this brief sojourn, he broadened his horizons and was exposed to new ways of thinking.

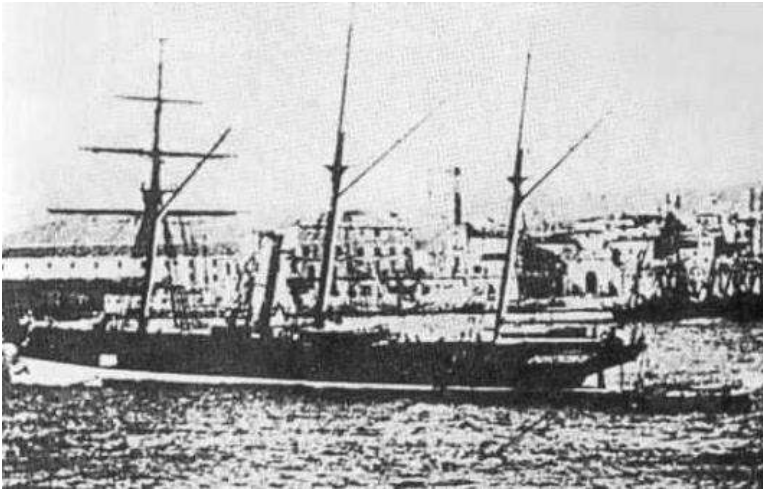
In 1849, he returned to Rome, where he was asked to become director of the Roman College observatory, despite his scientific training in physics and not in astronomy. He found the existing

facility poorly suited to contemporary needs, and constructed a new observatory atop the church of St Ignatius, adjacent to the Roman College, and commissioned new instruments including a Merz equatorial refractor (one of the best telescopes of the day)

At the time, astronomy was concerned only with measuring positions, brightnesses, and proper motions of stars and other celestial objects, but he took his physics training and applied it to astronomical phenomena. Secchi, aware of developments by scientists such as Kirchoff in understanding the spectra produced when light emitted by various chemicals is broken up into its rainbow of colors, adapted astronomical instruments for stellar spectroscopy. He classified several thousand stars based on their spectral signatures, and even attempted to identify the chemical elements present in these signatures. The classification work by Secchi formed the foundation upon which astronomers at the Harvard Observatory later developed the classification system we use today.

Secchi also studied solar physics and solar phenomena, with considerable contributions to our understanding of sunspots, prominences, and solar activity. During an eclipse in 1860 he collaborated with Warren de la Rue of the Royal Society of London to photograph solar prominences and compare the results. At the time, some thought that prominences were an optical illusion or caused by atmospheric phenomena on Earth. But observations made 250 miles apart came up with the same result, confirming that solar prominences are actually features of the Sun. Secchi also made spectrographic studies of solar prominences. He published his ground-breaking studies on solar phenomena in 1870 in a book entitled *Le Soleil*.

Secchi's areas of scientific interest varied widely; he had an innate curiosity about the world and sought to apply physical principles to everything. He built an electromagnetism facility to measure variations in the Earth's magnetic field. He developed meteorological instruments to measure changes in atmospheric conditions and predict storms and set up one of the first networks of weather stations, a precursor to the development of national weather services. He contributed to geodesy, which is



The *Immacolata Concezione*

the measurement of the shape of the Earth and the precise positioning of various locations on it. One of the more unexpected and long-lasting contributions that Secchi made was in the field of oceanography; namely, in the measurement of the clarity of ocean water.

Prior to Secchi's work, there had been several attempts by other scientists to study the clarity of seawater. Often, this involved retrieving a sample in a clear glass container and examining it by eye. A few expeditions had experimented with lowering brightly painted objects into the water until they were no longer visible, but there were no standards by which to compare or interpret the results of these experiments. A call was put forth to try to systematize these measurements.

In 1865, Commander Alexander Cialdi invited Angelo Secchi to accompany him on the *Immacolata Concezione*, a corvette of the Pontifical Navy (at a time when the Papacy still had a small navy), with the idea to develop techniques for measuring water clarity. Secchi readily accepted, and applied his considerable intellect to the problem. He developed a plan of study to systematically control for several variables that may affect the results that one obtains from measuring clarity by immersion of bright disks into the water. These variables include the size and color of the disk, the brightness of the Sun (i.e. the presence or absence of clouds), the angle of the Sun (i.e. the time of day), the viewing angle, distance, and eyesight of the viewer, whether the disk was in shadow or bright sunlight, the sea depth, and the quantity of plankton in the water.

The experiments were conducted in the Mediterranean several miles off the Italian coast, and lasted from 20 April until the start of June of 1865. He used disks of varying sizes up to 3.7 meters (12.2 feet) in diameter. From these experiments, he determined the optimal parameters for the use of a disk to measure water clarity, and ways to interpret the results. In subsequent years, the white disk became standard equipment for such studies, and the relevant measure of the depth of visibility became known as the Secchi depth. The disk idea was also adapted for fresh water, with a design of alternating white and black segments developed by George Whipple in 1899. He and the founder of the field of limnology, François-Alphonse Forel, named the disk in Secchi's honor, and even today the simple instrument is known as a Secchi disk.

When Italian forces conquered Rome in 1870, they confiscated all of the properties of the Catholic Church, including the Roman College and the church of St. Ignatius, where Secchi's observatory resided. In his day, he was very well respected among scientists and the public in general, and so the Italian government permitted him to continue directing the Roman College Observatory, but without funding. When he died in 1878, the government confiscated all of his scientific equipment and distributed it to State-run observatories. Anti-clerical sentiment in Italy was at a peak at this time, and as a result his scientific contributions were largely ignored or forgotten after his death.



A Secchi Disk. (Credit: Lakes of Missouri Volunteer Program / University of Missouri)

Today, however, Secchi's memory is resurfacing. His name and legacy lives on not only in the Secchi disk and the Secchi depth, but elsewhere as well. There are craters on the Moon and on Mars that are named in his honor, as well as the asteroid 4705 Secchi. In honor of Angelo Secchi's contributions to solar physics, there is an instrument package on the pair of STEREO solar observatory satellites that is named "Sun-Earth Connection Coronal and Heliospheric Investigation" (SECCHI). In his hometown of Reggio Emilia, there is a street named after him as well as a high school (Istituto Tecnico Statale per Geometri Angelo Secchi). In addition to those things that bear his name, his legacy continues in the numerous contributions he made to science that form the foundation upon which several fields of research developed.

(There is a nice video a Secchi disk being used in fresh water, posted by the Lakes of Missouri Volunteer Program, on Youtube at <https://www.youtube.com/watch?v=6NUx98EcHA>)

Reference (in Italian): *Angelo Secchi: L'avventura scientifica del Collegio Romano*. Edited by Aldo Altamore and Sabino Maffeo. (Foligno: Quater edizioni, 2012), 326 pp.

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Research at Lake Tovel: past, present and future

Located in the Brenta Mountains (Trentino, Italy), Lake Tovel (46.26137N, 10.94934E; 1178 m above sea level) enjoys a high conservation status, as part of the Adamello Brenta Natural Park and conferred by the RAMSAR Convention and UNESCO (part of the World Heritage site *The Brenta Dolomites*). Irrespective of this institutional awareness of the environmental value of the lake and its valley, Tovel has always been dear to Italian limnologists including Edgardo Baldi (Baldi Lecture at SIL Congresses) who dedicated several years of intensive study to the lake (Baldi 1941). The notoriety of Tovel was tied to the bright red blooms that often appeared in late summer, and caused by the dinoflagellate *Tovellia sanguinea* (formally *Glenodinium sanguineum*) (Moestrup et al. 2006). Baldi's study (1941) was one of the first to document vertical migration of dinoflagellates. The last intense bloom of

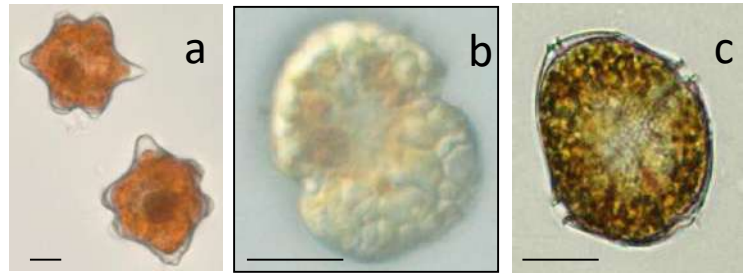


Figure 1. Some Lake Tovel dinoflagellates (scale bar 10 μ m): (a) *Tovellia sanguinea* – resting cysts, (b) *Borghiella dodgei* - vegetative cell, and (c) *Peridinium aciculiferum* - vegetative cell.

T. sanguinea (Fig. 1) occurred in 1964, and the beginning and end of this phenomenon has been related to changes in land use and livestock management in the lake's catchment (Borghi et al. 2006).

This colourful story is not the only historical aspect that makes Lake Tovel unique. Lake Tovel originated as a glacial cirque lake, but a massive landslide in the Middle Ages damned its outflow. The scars and debris from this landslide are still visible today. Now the lake, with its large deep basin and a small shallow basin, has a maximum depth of 38 m and a surface area of 39 ha. Inflow to the lake is mainly through upwelling of underground springs in the small basin. These springs drain the Pozzol aquifer that is in turn fed by snowmelt from the Brenta Dolomites. This hydrological setting leads to a low water residence time and marked water level fluctuations of up to several meters (Fig. 2), with the small basin drying out in winter and rapidly filling up in spring. Together, these factors result in a cold and clear oligotrophic lake.

Apart from several historical works on Lake Tovel from the late 1800s to the 1950s, modern limnological studies were undertaken by the research institute Fondazione Edmund Mach (FEM) in the 1970s and have been continuous since 1995. This extensive dataset permitted the accreditation of Lake Tovel as a Long-Term Ecological Research site (LTER_EU_IT_090; <https://data.lter-europe.net/deims/search/all/tovel>) in 2012. The lake is also part of the GLEON network (www.gleon.org). In 2009, a central lake platform was installed with a thermistor chain providing high frequency (HF) measurements; since then the platform has been equipped with other HF sensors. HF data give us the opportunity to investigate environmental processes at lower temporal scales than traditional limnological sampling and will help to better understand ecological processes. Despite



Figure 2. Lake Tovel: Low water level in spring.

Lake Tovel always being ice covered from December to April, the platform is active all year round and the availability of under-ice HF data gives us new insights into its winter limnology (Fig. 3). In this regard, we highlighted the challenges in understanding the biological and physical factors that influence oxygen in ice-covered lakes and showed how water movement and snow influence under-ice oxygen dynamics (Obertegger et al. 2017).

Apart from sensor-based studies, another aspect of our research focuses on the plankton community with *in situ* and *in vitro* studies. The phytoplankton of Lake Tovel includes many cold stenotherms (Hansen & Flaim 2007; Cellamare et al. 2016), and a few of these algae, particularly dinoflagellates, have been isolated and cultured. An autecological study defined the ecological niche of the dinoflagellate *Borghiella dodgei* (Fig. 1), closely linked to low water temperature, high irradiance and nitrogen concentrations (Flaim et al. 2010). Experiments on *Peridinium aciculiferum* (Fig. 1) showed that its fatty acid composition, and therefore its nutritional value for consumers, changes significantly with even small increases in temperature (Flaim et al. 2014). Since Baldi's 1941 study, Lake Tovel has been considered a rotifer lake due to the high abundance of rotifers compared to crustaceans. Specifically rotifers are favoured by low water residence time while crustaceans thrive with high water residence time (Obertegger et al 2009). Diel vertical migration (Obertegger et al 2008) and functional diversity of rotifers (Obertegger & Flaim 2015) in Lake Tovel are tightly linked to the influence of ultraviolet radiation. The rotifer *Keratella cochlearis* (~120 µm long) can travel 10 m in one day

(Obertegger et al 2008). A complete list of scientific publications related to Tovel can be found at the dedicated webpage (<https://lter-tovel.fmach.it>).

Tovel's hydrology, with high flow in spring and low flow in summer and winter, and consequently its biology is heavily dependent on snow from the Brenta Mountains. Climate models predict significant modifications in winter precipitation, and Lake Tovel is an ideal study system to investigate and document future changes.

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Figure 3. Getting ready for a winter ice sampling.

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Loa River, north of Chile: a “non-typical” river in Chile



Fig. 1. High zone in Loa river.

Loa river is located in Antofagasta region, in the Atacama desert, which is the most arid site of the world. This river does not have typical East-West direction of Chilean rivers, because it is originated in Andes mountains (Fig. 1), and its course has south direction until Calama town, for continue to West, and turn at north until Quillagua village, and finally turn at West towards Pacific Ocean. This river was originally the northern boundary of Chile before 1810 (Pumarino, 1978; Niemeyer & Cereceda, 1984; De los Ríos et al., 2010).



This river, receive as tributaries in high zones the rivers San Pedro and Salado, that simultaneously received many small tributary rivers that are the support for numerous aborigine people from prehispanic periods, and in its middle zone it is the Salvador river (Fig. 2; Niemeyer & Cereceda, 1984). This river has numerous human interventions during the last 100 years, mainly water extraction for towns and mining activities, currently there are two former semi-destroyed reservoirs (Sloman and Santa Fe, Fig. 3) from the period of Chilean nitrate mining before 1929, and currently Conchi reservoir (De los Ríos et al., 2010).

There are no published limnological studies about Loa River, there are only single species records, mainly fishes (Silva, 1985) and crustaceans (González, 2003; De los Rios-Escalante & Mardones, 2013). The first ecological study was described by De los Ríos et al., 2010, who described the crustacean fauna in different zones, where it found mainly cladocerans, ostracods and amphipods. According to Dyer (2000a,b), in low zones of Loa River there are native silver sides (*Basilichthys microlepidotus*) and northern Chilean river prawn (*Cryphiops camentarius*), whereas in high zones, there are introduced rainbow (*Oncorhynchus mykiss*) and brown trouts (*Salmo trutta*), that predate mainly on microcrustaceans and mollusks (Silva et al., 1985; De los Rios-Escalante & Mardones, 2013).



Fig. 3. Sloman reservoir

In this context, Loa river, has numerous endemic fauna, that requires conservation, because it is endangered due to habitat reduction, human pollution and species introduction, specifically salmonids, and poeciliids (*Gambusia affinis*) fishes, that originally were introduced as biological control against mosquitoes, but they are very active predators on native invertebrates (De los Ríos et al., 2010). This river also, is important for support subsistence agriculture of aborigine people of mountains, that use their hydric resources for sustain their towns. In this context, it is necessary many efforts for understand on an multi-disciplinary view point the structure and functioning of Loa River.

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New locality records for *Mesocyclops Sars, 1914* and *Thermocyclops Kiefer, 1927* in Luzon and Mindanao Islands, Philippines

Four species of Cyclopidae Copepoda (*Mesocyclops thermocyclopoides*, *Thermocyclops crassus*, *T. decipiens*, *T. taihokuensi*, *Eucyclops* sp. and cyclopoid copepodites were observed from the 32 freshwater habitats using the old deposited samples in the UST-ZRC (collected 2006-2013) from Luzon and Mindanao islands. The study reveals that among other recorded cyclopoids in the archipelago, most freshwater bodies in Luzon and Mindanao contain *M. thermocyclopoides*, *T. crassus*, *T. decipiens*, and *T. taihokuensis*. These microcrustaceans are the major source of carbon of fishes in lakes, thus we cannot exclude the possibility of the widespread of these animals is due to intensive aquaculture activities and co-introduction of fishes in freshwater bodies in Luzon and Mindanao. Such occurrences in Philippine freshwaters also indicate the capability of these animals to thrive in varying physico-chemical water conditions.

The results of this study contributed much needed information on the cyclopoids occurrences and distribution through a thorough analysis of copepod samples from 32 freshwater bodies (Figure 1), adding new locality records, thus raising the known Philippine records from 99 (from published materials) to 131 freshwater bodies. This is a continued step and effort to undertaking the action of maintaining the cyclopoid distributional record in Philippine freshwaters and further sustenance of the biodiversity study in the country.

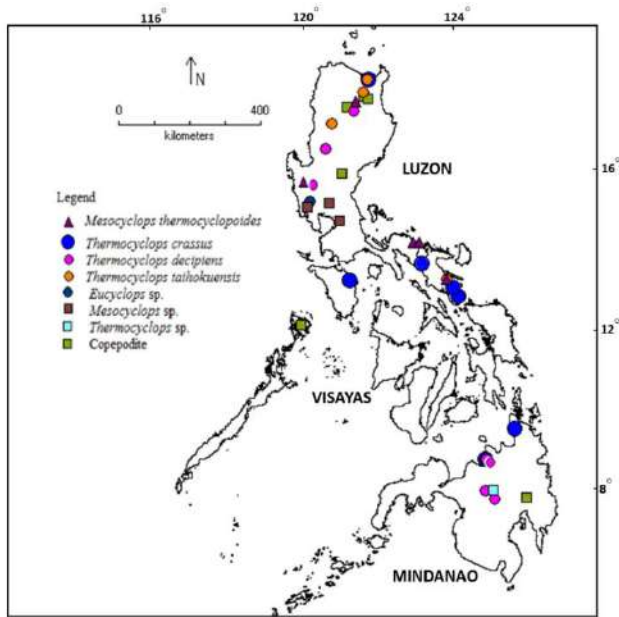


Figure 1. Distribution map of cyclopoids in Luzon and Mindanao Islands, Philippines, observed in this study



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Working Group: Limnology of Drylands

Chair: Prof. Dr. Luciana Gomes Barbosa (Brazil)

Professor of Ecology and Limnology at the University of Paraíba,
Department of Plant Technology and Environmental Sciences

The International Network of Limnology of Drylands (INLD Working Group) was created to promote discussions and research actions in freshwater ecosystems of dryland regions worldwide. The major aim of this network is to increase the understanding of the functioning and conservation patterns of aquatic ecosystems in these areas, using the aquatic

biodiversity (multi-taxon approach) as a bioindicator of climate change and anthropogenic disturbances. The INLD approaches include the effects of multiple stressors and prolonged droughts on the functioning of temporary and intermittent aquatic ecosystems from drylands, especially regarding the loss of species diversity and ecosystem services (Figure 1).

The INLD proposal was presented for the first time by Prof. Dr. Luciana Gomes Barbosa during the First Symposium on Limnology of the Brazilian Semi-Arid, held in Areia (Paraíba, Brazil) in 2016 (Figure 2). After her presentation, a discussion to strengthen the proposal has arisen due to the relevance and vulnerability of the aquatic ecosystems that are present in dryland regions. At the end of that year, the International Limnology Association (SIL) formalized the INLD with the creation of the Working Group “Limnology of Drylands”. Since then, activities to disseminate and consolidate the international cooperation have been carried out. In 2017, the first official special session of the INLD entitled “The International Network of Limnology of Drylands (INLD): perspectives on theoretical advances” was held in Rio de Janeiro (Brazil), with work presentations and discussions about the research topics to be studied by the working group. The advances of this network are evidenced through the growing submission of multinational cooperation projects, the organization of special sessions, and the elaboration of articles in international partnerships, among other activities. Among the scientific production, a special volume of the journal *Inland Waters* is being edited, with extensive collaboration on an international scale.

During 2018, the INLD performed several international activities. Among these, there was a special session on “Ecology and Management of Temporary Freshwater Systems” in the XIX Conference of the Iberian Association of Limnology, held in Coimbra (Portugal) from 24-29 June. This session was a partnership between the INLD and the SMIRES-Science and Management of Intermittent Rivers and Ephemeral Streams COST Action (Figure 3) and had approximately 22 papers presented. Also during this year, the first official meeting of the Working Group “Limnology of Drylands” was held in Nanjing, China. The meeting had the participation of colleagues from Italy, Germany, Russia, and Australia. Among the main discussion subjects were the theoretical topics to be studied by

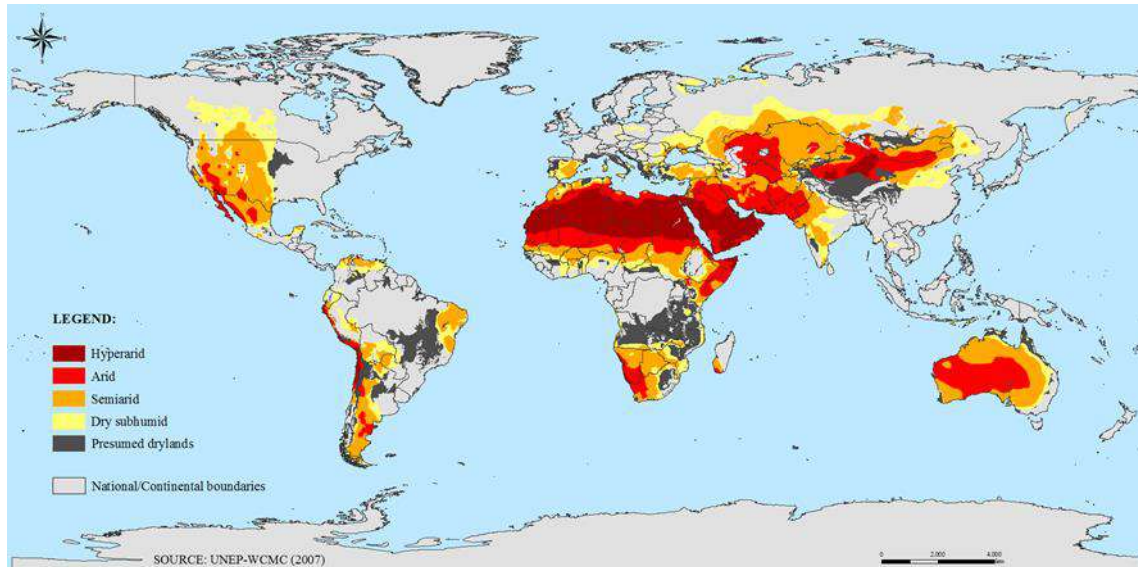


Figure 1. Geographic distribution and expected increase in dryland land surface cover around the world (modified from UNEP-WCMC, 2007).

INLD, as well as the simplification of a protocol for application in aquatic ecosystems on a global scale.

Currently, the INLD is constantly expanding with discussions and the increasing engagement of researchers from all continents with dryland regions, i.e. Australia, Africa, Asia, Europe, and America. Our future challenges include the expansion of international cooperation actions through meetings and special sessions at international events and advancing discussions on the application of protocols for database creation, which can contribute to the conservation and further understanding of the effects of climate change and anthropogenic actions on dryland regions worldwide.

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Website: <http://www.inld.pro.br/>

SIL Working Group: <http://limnology.org/members/sil-working-groups/>

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Luciana Gomes Barbosa, lgomesbarbosa@gmail.com



Figure 2. The first presentation of INLD (Paraíba, Brazil). (a) Limnologists of the Northeast of Brazil (Paraíba, Brazil); (b) Presentation of the proposal of INLD by Prof. Dra. Luciana Gomes Barbosa (Paraíba, Brazil); (c) Discussion about the INLD proposal with the Prof. Dr Raoul Henry.



Figure 3. Special session “Ecology and management of Temporary Freshwater Systems” will be held in Coimbra, Portugal (“XIX Conference of the Iberian Association of Limnology”). (a) Dr. Eduardo Antonio Morales Luizaga (Evora University, Portugal). (b) XIX Conference of the Iberian Association of Limnology (c) Dra Carla Rezende (Federal University of Ceara, Brazil).

Connecting Research and Education for Collaborative Action on the African Great Lakes

During the 2018 International Society of Limnology (ISL) conference in Nanjing, China, a collaboration formed between global freshwater scientists . . . a collaboration that needs to continue and strengthen. The Nanjing Institute of Geography and Limnology, along with members from the Tanzania Fisheries Research Institute and the African Center for Aquatic Research and Education (ACARE), hosted a special session titled Monitoring and Management of the African Great Lakes. The collaboration stems from the growing urgency and necessity to address increasing issues that threaten these important African Great Lakes.

ACARE is a newly formed organization creating a vast network of freshwater experts globally to coordinate research and research efforts on the African Great Lakes and helping to facilitate and train the next generation of freshwater experts with a world class, hands on academic programs.

The African Great Lakes (considered here as Lakes Albert, Edward, Kivu, Malawi/Nyasa/Niassa, Tanganyika, Turkana, and Victoria) are vital for many reasons, not least for their biological integrity, and of course as providers of notable economic benefits and ecosystem services to their surrounding communities. Millions of people depend on their rich resources, such as fisheries, drinking water, and energy production. They are important as climate sentinels and in studying evolutionary biology. The Rift Valley lakes, the largest subset of the African Great Lakes, contain ancient depths and the longest sediment records of watershed, climate, and ecosystem changes.

While daunting issues threaten the health of the lakes, fresh ideas and practices for protecting these water bodies are on the rise. Because collaboration is key to managing and protecting these lakes, ACARE, a nonprofit organization, is focusing on building partnerships to improve the health of this vital ecosystem through education and capacity building, and collaborative research.

With a network of academic institutions, field stations, and research institutes in Africa, North America, Europe, and Asia, ACARE aims to facilitate the increase in capacity of Africa's next generation of freshwater experts through courses and experiential education on the African Great Lakes. To do this, ACARE will tap into the vast, existing networks of academic exchange programs to train freshwater experts. Additionally, ACARE will help facilitate the experiential aspect of training students by ensuring they are exposed to on-the-ground research at institutes on the lakes. Through this process, we hope that the next generation of experts will have well rounded knowledge and skills to conduct meaningful future research, positively influence policies and management, and teach future generations.

Besides education, ACARE and its partners plan to address the issue of the nature of disparate research approached on the lakes. From a scientific standpoint, this is important because a critical gap in long-term data obscures the assessment of trends and patterns related to lake health. To understand the next steps toward healthier lakes, entities that care about the lakes must bring together research to improve understanding of the ecosystem.

Collaborative research networks constitute the basis for international understanding and ACARE realizes that research today is about networks to share data and ideas, rather than an isolated approach. Researchers, scientists, managers, politicians, and academics need to come together and unify the search for solutions to the biggest freshwater challenges.



This approach will identify critical information that can answer the key questions about these lakes and the challenges they face. ACARE will facilitate a strong global community of experts to collaborate and address issues that threaten the African Great Lakes and their watersheds. This will take the form of lake committees. Each African Great Lake will have a lake committee consisting of experts from research institutes, universities, and other relevant organizations and entities. Lake committees will allow experts to collaborate and:

- Harmonize and prioritize research objectives through discussions of progress and challenges on each lake
- Guide regional and global research efforts to increase stability and consistency of research focus
- Provide regular research updates, discussion, and create new approaches to scientific inquiry, management, and policy making
- Exchange scientific data and research approaches to foster collaboration and enhance outcomes
- Increase research opportunities and linkages through combined efforts
- Enhance local institution involvement to build regional leadership

Collaboration will allow:

- Increased opportunities for global research partnerships
- Enhanced accumulation of research & financial resources
- Creation of consistent, credible, comparable long-term data
- Increased certainty of research impact

Collaboration will create strength in science, and in academic and political influence to make positive changes in freshwater policy and management.

Ultimately, ACARE aims to have a perpetual system among stakeholders that enables entities on the African Great Lakes to

have a mechanism of communication and collaboration as needed. To do this, ACARE is on a path to become the connective system for people to get research and projects done on the African Great Lakes collaboratively to advance the big picture vision for ecosystem and community health. The benefits of such a system will connect diverse stakeholders together, making new conversations and solutions possible.

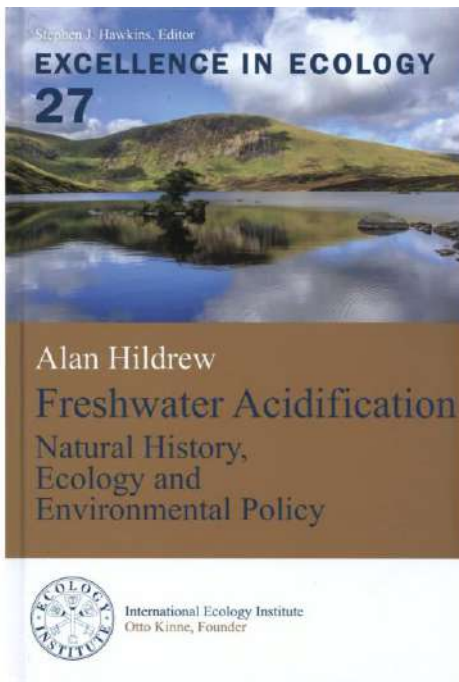
Day to day, ACARE staff is keeping an ear to the ground to hear ideas and build relationships to aid its mission, and part of this happens through information exchanges at international conferences. Participants at SIL 2018 recommended that basic, consistent, and long-term data be collected on each of the African Great Lakes, which sparked the idea to create an African Great Lakes observing system that would collect baseline data around each of the AGL, an important idea under consideration.

Building momentum around this topic, Dr. Richard Robarts' keynote address during the conference "Limnology and the Future of African Inland Waters" called for a pan-African institute, which ACARE is poised to help facilitate. Robarts and Dr. Tamar Zohary's paper, currently in press, "Limnology and the future of African Inland Waters" (Robarts & Zohary) states that:

We propose that a Pan African Water Institute be formed in partnership with exciting new initiatives, such as the African Centre for Aquatic Research and Education (ACARE), with support of international (e.g., SIL) and participation of local limnological and other water-focused organizations. Such an entity would provide communication and coordination between regional water initiatives and government authorities. It would advocate for the implementation of sound recommendations and help ensure they were not ignored by local and national authorities. Several international conferences on African water have recommended such an umbrella organization – it is now time to implement it.

The idea of a Pan African Water Institute aligns with ACARE's mission and vision for healthy water resources in Africa, and ACARE stands ready to support and facilitate this idea. In the meantime, ACARE will continue its focus on the African Great Lakes: the time to take action is now. To learn more about ACARE and support the network that is working toward solutions for the African Great Lakes, go to: <https://www.agl-acare.org/> or contact the Executive Director, Ted Lawrence at ted@agl-acare.org

Book Review



Alan Hildrew, Emeritus Professor of Ecology: Freshwater Acidification, Natural History, Ecology and Environmental Policy No. 27. Publisher: International Ecology Institute, Olderdorf/Luhe, Germany, Otto Kinne (Series) Founder. Introduction, Preface and Acknowledgment by Stephen J. Hawkins. ISBN 978-3-946729-27-3; ISSN 0932-2205.

This hard-copy version of the 193 page book looks as attractive and good-looking as its predecessors that I reviewed or saw. The book has 7 chapters, among these the last chapter has some 17 pages of references to the literature cited, including also a Laudation by late Brian Moss. Brian says about the impact of Alan Hildrew exerted on the understanding of the ecology of the streams and rivers.

Alan Hildrew begins in chapters 1 of the book with an informal account of the pathway he took to the study of stream communities, those that influence by Acidification. In the second chapter (pages 11-30), Alan talks about history and early evidences. The chapter provides a short account of the causes of acidification in lakes in Europe and North America. There were apparently declines of fisheries, in Scandinavia. The first evidence of how acidification affected fish loss was first circumstantial and accepted by only a few countries, including the UK and the United States i.e. prominently those that emitted large amounts of sulphur. There was a progressive increase in acid precipitation in the 1960s in Scandinavia with a resulting damage to forests. In general acid precipitation was considered as cause of

pH often falling below 5, with sulphate as important anion. Particularly the UK was considered to take action to reduce pollution on the neighbouring countries in countries in Europe.

The third chapter (pages 31-70) deals mainly with Ecological damage and its ramifications. In this Chapter Alan reviews the ecological changes that occurred due to acidification based on surveys and field experiments. The ecosystem patterns found were consistent. There was a reduction in diversity as the acidity increased, despite that there were acid-tolerant specialists in all groups. Acid waters may be directly toxic to some biota, including biotic effects via the food web. The reduction in diversity and a bunch of benthic invertebrates in streams has a 'bottom up' effects on birds in the stream side. Such birds are scarce in acidic systems. Absence of specialist grazers in such systems a well-observed effect. Decomposition rates are slow.

In such acidic water bodies. Interestingly, small bodied detritivores, such as stoneflies are conspicuously common whereas large caddis flies and shredders as amphipods are absent. These changes suggest a complex range of indirect 'network' effects, which include the release of the small-bodied stone flies. From completion with larger acid-sensitive sensitive shredders and poor quality detrital food. In general food quality in such waters is poor and food chain is quite short.

Together with the previous chapter the chapter four (pages 71-124) is perhaps most important in contents. It discusses "recovery and non-recovery from acidification". Options for management of acid waters are also considered. Liming was carried out extensively, especially to protect fisheries. However, the recovery of waters was not complete. Afforestation by conifers was found to react with airborne pollutants rather effectively, but ought the effect of trees is considered to decrease when pollution declines. Reduction in acid emissions was found to be the only option to prevent further deterioration sustainably or to reverse past damage. From 1980 onwards, emissions of pollutants, including their deposition have been markedly reduced in both Europe and N. America. Predictions of 'critical loads' of deposits are difficult to assess. Such predictions are based on a variety of geochemical models run in the catchment areas of these water bodies. Chemical recovery of surface waters was well underway, especially in areas of low buffering capacity. They predict chemical recovery

rather well. Nevertheless biological (ecological) recovery was not quite evident. Chemical changes may be interacting with deacidification. Biological interactions can inhibit reversal of ecological damage? This is in accord with 'biotic resistance' hypotheses. Finally, slow recovery of waters is explained by a combination of continued acidic episodes and interactions between resident and recolonising acid sensitive species. This is something, ecologists had not predicted.

Compared with foregoing chapter four, chapter five (125-150) is rather short-- since is 'a glance back at science and policy'. The chapter discusses the role of science in framing environmental policies for the issue of freshwater acidification. The author considers the literature on freshwater has gone through a 'boom and bust' cycle because political attention first grew and three moved on. Environmental concerns have brought down the political agenda more recently, as economies in the west suffered the consequences of global financial crisis. Monitoring net works, including those in the UK, have ceased to exist. The author, Alan Hildrew, suggests that natural history remains crucial to improving our ability to predict and understand such outcomes.

The author mentions about the role of natural history. In the penultimate chapter of the book pages 135-150) he reverts to beginning of his interests in freshwater acidification--caddis larvae, the large and to obvious silken nets they produce. The silk which these caddis larvae produce is quite proteinaceous and costly to produce. Some species that are sedentary cultivate algae on their silken abodes. They recycle nitrogen. Some species feed on methane and methane-oxidising bacteria. Together these species rich in nitrogen and carbon may run the 'food web of a second kind' and annoying o, being relevant in a ecosystem context of nutrient recycling and carbon flow.

With this we have discussed summarily the contents of all chapters. Chapter summaries were very handy for writing this review. All chapters are very well and clearly written and I enjoyed reading them. I recommend freshwater ecologist to read and enjoy the book. Buy a copy if your funds allow. Books from International Ecology Institute are not expensive.

Obituary Dr H.L. Golterman (1928 – 2018)



Dr Han Golterman - Han for all who were privileged to work with him - was a remarkable scientist and a loyal colleague and friend.

During his studies at Amsterdam University, Han Golterman switched from physical chemistry to biochemistry. He came in contact with Professor van Herk, whom he admired for his logical approach to plant physiology, and became his assistant. Already in this period, Han made a start with studying Phosphate Cycles in the Amsterdam Hortus. Shortly after his graduation, he started his research on the cycling of elements in fresh water lakes and obtained his Ph.D. in 1960. At the same time, Golterman was appointed as scientific director of the Nieuwersluis Hydrobiological Institute where he worked together with the first head of the institute Dr. M. F. Emily Nicolai on the development of the newly founded institute, that later became the Limnological Instituut Vijverhof and is at present part of NIOO (*Nederlands Instituut voor Oecologisch Onderzoek* -Netherlands Institute of Ecology).

At a young age, unexpected and unsolicited, he also was given the management responsibility for the institute, next to his scientific responsibility. Between 1961 and 1978, he developed the Limnological Institute to become an authoritative research institute and carried out pioneering research - in particular by Dutch standards - concerning, amongst other places, the Vechtse Plassen and the Tjeukemeer, where he managed to realize the field laboratory Oosterzee.



Dr Han Golterman (standing right) amongst colleagues and host Dr. Livia Pirocchi Tonolli (left) at the 1965 symposium of ten International Biological Programme, Istituto di Idrobiologia, Verbania Palanze, Italy.

Under his leadership, the institute grew and earned international recognition, due to its participation in the International Biological Programme (1967 -1972). The programme brought Han close to some of the best known limnologists abroad, particularly in the United Kingdom: Windermere laboratory in Cumbria and the University of Liverpool. These contacts attracted several graduate students to Nieuwersluis and Tjeukemeer. In this period, as director of the Institute, he not only laid the foundations of research in physical-chemical limnology in the Netherlands, but expanded the scope of limnological research on Dutch lakes (Gulati 1995).

Notwithstanding the successful development, the road was rough and not without difficulties. The work at Nieuwersluis was a very demanding job for the scientist and manager Golterman. Ramesh Gulati, one of his first co-workers, described this challenging period in a special issue of *Hydrobiologia*.

During the turbulent sixties, Han kept his footing. Those years during which the authorities were up for discussion, but also the years of the Club of Rome, and the years when thick stinking layers of foam could be found on the Dutch canals and rivers. As the manager of the Limnological Institute, he played an active part in the swelling public discussion about the impact of the increasing industrialization on the water quality in the Netherlands: the emission from the industries and agriculture caused a huge decline

in water quality and major social problems.

Han was the first one in the Netherlands who addressed the eutrophication as a huge and complex problem for our water system. With his research and debates, he made a valuable contribution to the Dutch legislation on water quality (Blanckstein 2011). The legislation managed to limit the phosphate emission from industries and households, but from the Dutch Ministry of Agriculture there was still denial for decades.

After these challenging times, Han moved from Nieuwersluis to Leiden University and then in 1979 to Arles: the beginning of a new era for the Golterman family. In the Camargue, which Han and his wife Nel had already visited on their honeymoon, Han met Dr. Luc Hoffmann and came to work at the station *biologique de Tour du Vallat*. There, via his association *Leiden-Camargue*, Han Golterman continued to unravel water sediment interactions and Nutrient Cycles.

Besides research and his work for editorial staffs of limnological magazines, he focused on education, which he provided in many places, such as Leiden University, the IHE-Unesco Institute and in many other places in the world. The Camargue was also a place where Han and Nel welcomed a lot of students, Ph.D. students and other colleagues from many different countries.

During his entire career, Han had a great international network of brilliant colleagues, including Dr. Dicky Clymo (Westfield College London, together they published a standard work on chemical analysis methods), Dr. Curt Forsberg (Uppsala Universitet) and Dr. Laura Serrano (Universidad de Sevilla), who became close friends. His international work brought him 2 memberships of honour: from the Fresh Water Biological Association and the Asociación Iberica de Limnología.

Every one of us chemists, biologists, geologists, has beautiful memories of the time we spent with Han in the Camargue. Han and Nel were very hospitable and generous. Limnology led to long-lasting and sometimes very close friendships! Until the very end of his life, Han was truly interested in the people he worked with and cared for.

Working together with Han Golterman was in many aspects formative for the rest of our days. Han inspired confidence, but also stood for his convictions and was very firm in his scientific and all other convictions. Nevertheless, as a true man of science he was always willing to discuss and renounce...if you had the right arguments! Results were leading and he could bring across that message firmly, but with humour, by quoting *Hamlet* for example 'Though this be madness, yet there is method in it...'

In his last published book on nutrient cycles, Han Golterman gives a clue about his 'raison d'être' as a scientist. When he started his career, he was warned by the well-known Dutch microbiologist Kluver that sediment layers are difficult. Kluver therefore advised him not to study them for the first 10 years. At the end of his career, Golterman states that "this is still true to some extent, although our equipment and methods have much improved, So nowadays we can leave behind us the outdated concepts like 'sediment is a sink or source of phosphate'". Han Golterman's studies show us that sediment is an integrated part of lakes and rivers and a large part of sediment phosphate remains bio available (Golterman 2004).

Dr Han Golterman contributed to great progress in limnology, and a better world, as our common interest. We all will remember Dr. Golterman with much gratitude and respect.

Hans Schouffoer MPA

(former member 'equipe limnologique' Association Leiden – Camargue)

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Obituary Prof. Niels De Pauw, Ph.D. 2 May 1944 – 23 May 2018



Niels De Pauw, for many of you a familiar name in the field of hydrobiology and applied aquatic ecology, and long term and dedicated member of the International Society of Limnology (SIL). After a rich and diverse career as researcher, he was appointed as professor at the Ghent University in 1991, and retired in 2007. He was known as a passionate lecturer, carefully preparing his classes and sharpening the critical mindset of his students. He gave courses about basic subjects such as aquatic ecology and water quality assessment, but also innovative courses about sustainable cities, nature based solutions and algae culture were provided both to students at the Ghent University as well as in diverse countries in the world, such as Vietnam, Ethiopia and Ecuador. He felt at home in a changing world, offering insightful concepts that could contribute to sustainable development.

As researcher, he was among the pioneers concerning algae community analysis in the Scheldt river in Belgium and the development of biological monitoring and assessment methods. Several of the methods are still used for instance to report about

the quality of surface water in Belgium in the context of the European Water Framework Directive. He also did share his knowledge with both teachers and researchers in many European as well as developing countries, who often further developed these to local conditions. In this manner his work is further continued all over the planet. A detailed overview of his work can be found in Gulati (2007), a paper that was part of the special issue of Aquatic Ecology dedicated to his career and to celebrate his retirement.

He was extremely diverse in his activities, and in that context his work as editor for Aquatic Ecology, founder and chairman of the Dutch-Flemish Society for Ecology (NecoV) and work as Environmental Impact Assessment expert were definitely among the most impressive. He combined networking with diplomacy, and many colleagues in the field became also good friends.

Last but not least, many readers might also know his spouse Francine Moonen, who often joined him during his travels abroad and was providing charming support at their home during the many visits of colleagues. She was the strong lady at home, who supported his career like a professional coach, while taking care of three children and many grandchildren.

Niels, it was a wonderful time to work for and with you, and I like to thank you both from my side as well as in the name of many colleagues and students who learned a lot from you and cooperated with you.

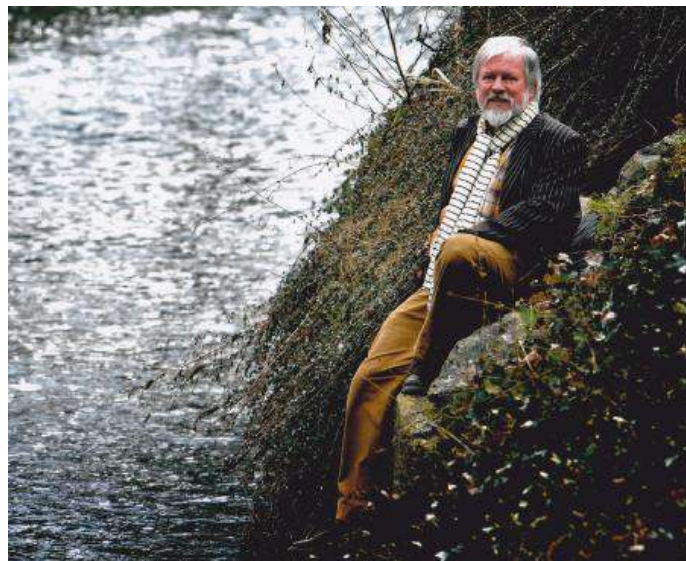
Peter Goethals

Ghent, 22 October 2018

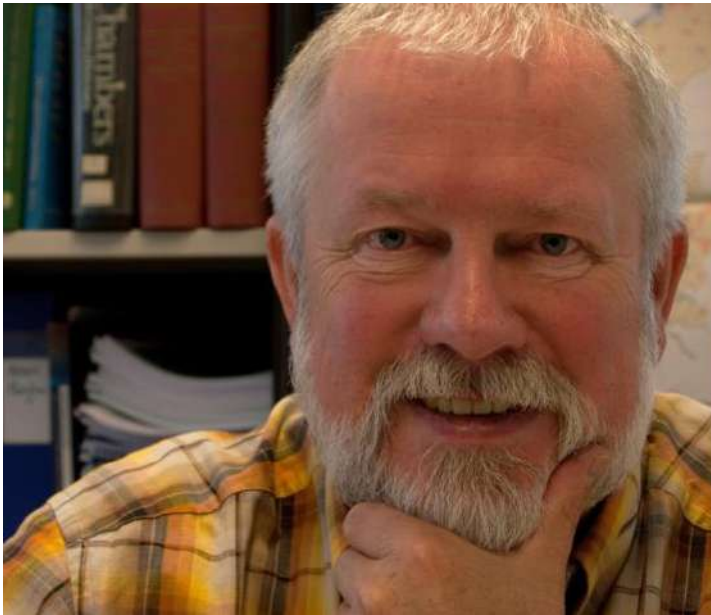
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Harry H. Tolkamp: Retired from his active position at the Limburg Water Authority. Not retired from being active.



From Harry Tolkamp has been active in the field of water management since 1975, when he started his career at the Agricultural University in Wageningen (now Wageningen University), where he also studied for his Masters degree (from 1969 - 1975) and did his Ph.D.-research in aquatic ecology (1976-1979). In this period he also worked and published on biological assessment of running waters, including the European harmonisation of assessment methods. He was a member of the CEC Scientific Working Group on comparability of biological methods (1975 – 1979). Since 1980 he has worked in the province of Limburg on water quality management, doing research and developing management policies. He has been the leader of the department of water quality management of the Limburg Water Pollution Control Authority since 1984. As off 2004 the water quality and water quantity management in Limburg was integrated within the new Regional Water Authorities (also called water boards) and Tolkamp led the Department of Policy, Research and Advice of the Roer en Overmaas Regional Water Authority from 2004 -2010. This department is responsible for quality and quantity monitoring, policy development, international cooperation, flood risk management calculations, implementation of the



international affairs he coordinated the cooperation of the water authority in supporting countries like Vietnam, South Africa and Romania in implementing good water governance. Harry is a member of the Limburg Task Force Water Governance, working on the development of European cross border projects and recently the Project Litter Free Rivers and Streams (LIVES) was granted Interreg funding and will be starting on the reduction of the Plastic Soup originating in the tributaries of the River Meuse.

Harry is a member of Nederlandse Vereniging voor Waterbeheer (NVA), now Koninklijk Nederlands Waternetwerk, KNW; Nederlandse Vereniging voor Ecologie (NVE), now NECOV; Werkgroep Ecologisch Waterbeheer; Koninklijke Landbouwkundige Vereniging (KLV); Studiekring Milieu (KLV); North American Benthological Society (NABS); Society for Freshwater Science; Water Environment Federation (WEF); International Association of Water Quality (IAWQ) now International Water Association (IWA); Freshwater Biological Association (FBA); Societas Internationalis Limnologiae (SIL); Koninklijk Natuurhistorisch Genootschap in Limburg; Heemkunde Vereniging Roerstreek; Stichting Rura; the Dutch chapter of the Select Society of Sanitary Sludge Shovelers; various IAWQ, now IWA- Specialist Groups; SIL Specialist group on River Basin management.

Water Framework Directive, sustainable environmental planning, river basin management planning, etc. In 2010 he left his management position and became Senior Strategic Policy Advisor and Manager International Affairs for the for the board of the water authority. At the same time he started working for KWR Water Research Institute in Nieuwegein as a Senior researcher, working on pharmaceuticals in the water cycle, especially on the use of high affinity substances to remove pharmaceuticals from waste water.

One of the tasks Tolkamp has been handling without pause since 1980 was seeking the cross border management of streams, since 90 % of the catchment area of the streams in Limburg is situated in Germany or Belgium. This means he has been an active member of the various committees between the Netherlands and Germany, Wallonia and Flanders. He was president of the working group Emissions of the ICBM (now IMC). He is president of the Working group A (Water Framework Directive) of the IMC since 2017 and he supports the delegate for the Dutch water authorities in the plenary Meuse Commission.

Harry Tolkamp was the project manager for the Interreg C project FLOOD-WISE from 2010-2012, working on the early implementation of the Floods Directive in 10 European countries with transboundary rivers. As manager of





people and organisations with their surroundings. (www.limburgfestival.nl).

Harry is an honorary member of the Swedish Select Society of Sanitary Sludge Shovelers and he received the Henri Scheltinga Award of the NVA/KNW for his merits for the Society and the stimulating and driving effects of his activities.

During his career Harry has been active as a guest lecturer in the field of aquatic ecology and water management in many academic courses in various Dutch Universities, teaching on the intricacies of water management and good water governance and stimulating students to choose for a career in water management by showing off his own enthusiasm. Water for all and all for water. Water is life.

Harry is still active and you can contact him: +31 (0)6 5237 5690; harry.tolkamp@gmail.com

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He was active in many societies. He was a board member of the WEW from 1978 to 1984 and president of the Working group standardisation of the WEW from 1982 – 1990. He was secretary of the NVA from 1988-1994 and one of the co-founders of the World Water Academy in 1994, the major Dutch training foundation for water related education. He was president of the Dutch 5S-chapter from 2000-2009.

Harry was a co-editor of the *Hydrobiological Bulletin* (now *Aquatic Ecology*) from 1982 – 1990 and member-president of the Editorial Commission of *H₂O*, the official journal of the NVA/KNW from 1999-2010.












Harry was a member of the National Working Party on Sewerage and Water Quality (NWRW: 1982-1989) leading the research on the effects of sewer overflows on water quality.

From 1994 – 2004 he presided the Research commission on Water Quality (later called Water Systems) of the Dutch Foundation for Applied Research on Water Management (STOWA) and he was active as the president of about 25 research projects. (Water quality, ecology, biological assessment, sewer overflows, prioritizing measures, etc).

He is the president of the Royal Natural History Society in Limburg (www.nhgl.nl) since 2009, and recently started a working group on Ephemeroptera, Plecoptera and Trichoptera within this society. Harry is also active in cultural activities like the annual Limburg Festival with very special performances in surprising locations, aiming to connect

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