Preface

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During the past decades ancient lakes such as lakes Baikal, Tanganyika, Malawi, Biwa, and Ohrid have become important model systems for the study of evolutionary patterns and processes. Research covers several scientific disciplines ranging from geology, paleontology, molecular phylogenetics and systematics, evolutionary biology to behavior, and biological conservation. The first international workshop on “Speciation in Ancient Lakes (SIAL)” was held in Belgium in 1993 (Martens et al., 1994), and it was then decided to establish SIAL as an international organization for stimulating interactions among scientists working on different lake systems (see <http://www.sial-online.org>). Owing to the wide scope of participating scientists the name of the organization was changed to “Species in Ancient Lakes.” For

consistency, the regular meetings of SIAL are continued to be referred to as “Speciation in Ancient Lakes” (Albrecht & Wilke, 2008).

Since then, SIAL regularly organizes international meetings at institutions with a visible history of ancient lake research, often directly located at an ancient lake. The meetings serve as an important platform for sharing scientific information, to discuss new research approaches and projects, and enable students and young scientists to interact with world experts in ancient lake research. In this tradition, the fifth SIAL meeting took place in September 2009 at one of the world’s renowned ancient lakes—Lake Ohrid—jointly organized by the Hydrobiological Institute in Ohrid (Macedonia) and the Justus Liebig University in Giessen (Germany). Lake Ohrid is between 2 and 5 million years old and harbors approximately 1,200 native species. With 212 known endemic species, the lake is one of the most diverse lakes in the world, considering its small surface area of only 358 km² (Albrecht & Wilke, 2008).

Of course, SIAL5 did not only focus on Lake Ohrid but on a variety ancient lakes and even palaeo lakes. A total of 86 oral presentations and posters were presented at SIAL5. While the abstracts were published in the journal *Review* published by the HBI Ohrid (Albrecht et al., 2009), selected full-length papers are subject of the present special issue “Speciation in ancient lakes”. These papers cover several lakes (such as lakes Ohrid, Baikal, Tanganyika, and Malawi), taxonomic groups (such as ostracods,

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molluscs, and cichlid fishes), and scientific approaches (ranging from deep-drilling to niche analyses and molecular dating).

This special issue contains ten contributions. Cohen (2010, this issue) reviews the state of the art of scientific drilling in ancient lakes and evaluates its importance in the context of biological evolution by outlining the value of lake history reconstructions and fossil records. The use of stable isotopes composition signatures in endemic molluscs of the Dinaride (paleo-) lake system is promoted by Harzhauser et al. (2011, this issue). Mollusc biodiversity and biogeography in a less recognized ancient lake system on the Balkans—lakes Prespa and Mikri Prespa—were studied by Albrecht et al. (2011, this issue). Genetic and morphological differentiation was investigated in Lake Ohrid pyrgulinid gastropods (Schreiber et al., 2011, this issue), and resource partitioning addressed in Lake Baikal gastropods by studying diet, stable isotopes and radula morphology (Sitnikova et al., 2011, this issue). The still rare approach of comparing molecular phylogenies of species flocks in different ancient lakes, in this case Lake Baikal and Lake Tanganyika ostracodes, was taken by Schön and Martens (2011, this issue). The diet of the Nile perch in Lake Victoria after the resurgence of haplochromine cichlids was investigated by Kishe-Machumu et al. (2011, this issue). A behavioral study on a Lake Tanganyika cichlid fish was conducted by Steinwender et al. (2011, this issue). Finally, two studies focused on patterns and processes of speciation in Lake Tanganyika cichlid fishes (Koch et al., 2011, this issue; Spreitzer et al., 2011, this issue).

The editors hope that SIAL5 and the papers presented in this special issue will increase the awareness of the great significance of the relatively few ancient lakes in the human society in general and the international scientific community in particular, and stimulate further research on ancient lakes, ultimately leading to a better understanding of their past, present, and future.

Last but not least, we would like to thank the members of the organizing committee of SIAL5 for their dedicated work. The members of the Hydrobiological Institute in Ohrid are gratefully acknowledged for their support and hospitality. The next meeting, SIAL6, will take place in Bogor, Indonesia, in August 2012 and the editors are looking forward to a

new opportunity for scientific exchange and fruitful discussions in another ancient lake location.

The Guest Editors

References

- Albrecht, C. & T. Wilke, 2008. Ancient lake Ohrid: biodiversity and evolution. *Hydrobiologia* 615: 103–140.
- Albrecht, C., G. Kostoski, S. Trajanovski & T. Wilke (eds), 2009. Abstracts of the International Symposium Speciation in Ancient Lakes, SIAL 5, Ohrid, 7–11 Sept, 2009. Review—HBI Ohrid 42: 150 pp.
- Albrecht, C., T. Hauffe, K. Schreiber & T. Wilke, 2011. Mollusc biodiversity in a European ancient lake system: lakes Prespa and Mikri Prespa in the Balkans. *Hydrobiologia*. doi:10.1007/s10750-011-0830-1.
- Cohen, A., 2010. Scientific drilling and biological evolution in ancient lakes: lessons learned and recommendations for the future. *Hydrobiologia*. doi:10.1007/s10750-010-0546-7.
- Harzhauser, M., O. Mandic, C. Latal & A. Kern, 2011. Stable isotope composition of the Miocene Dinaride Lake System deduced from its endemic mollusc fauna. *Hydrobiologia*. doi:10.1007/s10750-011-0618-3.
- Kishe-Machumu, M. A., F. Witte, J. H. Wanink & E. F. B. Katunzi, 2011. The diet of Nile perch, *Lates niloticus* (L.) after resurgence of haplochromine cichlids in the Mwanza Gulf of Lake Victoria. *Hydrobiologia*. doi:10.1007/s10750-011-0822-1.
- Koch, M., A. J. Wilson, M. Kerschbaumer, T. Wiedl & C. Sturmbauer, 2011. Additive genetic variance of quantitative traits in natural and pond-bred populations of the Lake Tanganyika cichlid *Tropheus moorii*. *Hydrobiologia*. doi:10.1007/s10750-011-0785-2.
- Martens, K., B. Goddeeris & G. Coulter (eds), 1994. Speciation in Ancient Lakes. *Archiv für Hydrobiologie* 44: 508 pp.
- Schön, I. & K. Martens, 2011. Molecular analyses of ostracod flocks from Lake Baikal and Lake Tanganyika. *Hydrobiologia*. doi:10.1007/s10750-011-0935-6.
- Schreiber, K., T. Hauffe, C. Albrecht & T. Wilke, 2011. The role of barriers and gradients in differentiation processes of pyrgulinid microgastropods of Lake Ohrid. *Hydrobiologia*. doi:10.1007/s10750-011-0864-4.
- Sitnikova, T., S. I. Kiyashko, N. Maximova, G. V. Pomazkina, P. Roepstorff, E. Wada & E. Michel, 2011. Resource partitioning in endemic species of Baikal gastropods indicated by gut contents, stable isotopes and radular morphology. *Hydrobiologia*. doi:10.1007/s10750-011-0685-5.
- Spreitzer, M. L. S. Mautner, L. Makasa & C. Sturmbauer, 2011. Genetic and morphological population differentiation in the rock-dwelling and specialized shrimp-feeding cichlid fish species *Altolamprologus compressiceps* from Lake Tanganyika, East Africa. *Hydrobiologia*. doi:10.1007/s10750-011-0698-0.
- Steinwender, B., S. Koblmüller & K. M. Sefc, 2011. Concordant female mate preferences in the cichlid fish *Tropheus moorii*. *Hydrobiologia*. doi:10.1007/s10750-011-0766-5.