



No.30 October 1997

NEWSLETTER

INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION

— For Better Lake Management —

This Newsletter is also available in Japanese.



Lake Lácar - host lake of the 7th World Lake Conference

Our lives are full of choices. Some of those choices are innocuous - what football team to support, what colour shirt to wear to work. Others are more profound - to have children or not to have children, how to bring our children up in an ever-changing world and what sort of legacy to leave to those children. The choices we make have a deep impact on both the society we live in and the environment we are surrounded by.

What, you may ask, has this got to do with the World Lake Conference? Fresh water is the natural resource on which human life, global food security and the health of ecosystems depend. This most valuable and fundamental resource is being undermined all over the world. Some may argue that

the existence of Agenda 21 is proof of a willingness to act, but sustainable solutions are not being implemented. The 7th International Conference on Lakes Conservation and Management - Lácar '97, seeks to provide a forum for, and to stimulate discussions on, economic and social uses of lake environments and on suitable management approaches to ensure sustainability. The keyword being "sustainability".

The 7th World Lake Conference will be held in the small and beautiful city of San Martín de los Andes in Argentina, which celebrates its centenary in 1998. Participants at the conference will include managers, decision makers, experts from international organizations, governmental agencies and citizens' movements.

Session topics will deal with issues of sustainability with plenty of scope for discussion of local, regional and international experiences. The host lake, as such, Lácar itself has, in the past, seen its fair share of degradation due to rising economic demands and local representatives will no doubt have much to offer on the subject.

There is an ancient Asian proverb that says something like 'we are not owners of the world we live in, but are merely guardians of it for our children'. The legacy we leave to them will be very much dependent on finding sustainable solutions to the manifest problems surrounding us. The World Lake Conferences have played a significant part in trying to provide those solutions over the years - we have great hopes for Lácar '97.

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Bureau Meeting

Professors Jørgensen, Kira, Matsui and Williams, in addition to ILEC staff, participated in the Bureau meeting held on 14 May 1997, at ILEC's offices in Shiga, Japan. The forthcoming 7th International Conference on Lakes Conservation and Management (see front page) was obviously the main topic of discussion. It was agreed to have a 2 to 3 day workshop before the conference and have a general meeting of the Scientific Committee just after the Conference. All scientific members will be encouraged to present a paper at the conference.

The location of the 8th conference was also discussed as Copenhagen City Council has expressed its willingness to host the next lake conference in 1999. All Scientific Committee members have been requested to approve ILEC's acceptance of this invitation. Agreement was reached on the matter of seeking support for a continuation of the guideline book series and to investigate the possibility of Blackwell taking over the sale of the already published volumes and the publication and sale of the coming volumes.

Stronger cooperation with IETC was expressed as desirable by all participants, and the chairman emphasized that the resources that ILEC has in the expertise of the Scientific Committee should be utilized more by ILEC through cooperation with IETC, but also in context with other projects.

Update Request

In the collaboration for promotion of environmental conservation of the lakes of the world, ILEC and the United Nations Environment Programme (UNEP) prepared a Data Book of World Lake Environments in three volumes (Volume 1: Asia and Oceania, 2: Africa and Europe, 3: Americas). With inputs from ILEC Scientific Committee members, many other scientists and researchers of the world and governmental and non-governmental agencies, the Data Book provides the most reliable information for lake environment conservation in the world.

However, such information must be updated and new information should be added for the Data Book to remain *the* most reliable information source. In this connection, ILEC would greatly appreciate our readers' collaboration for the revision of the Data Book by providing additional and/or latest information of the lakes covered by it. Information on the lakes that are not covered would also be greatly appreciated.

The names of those who have provided assistance for the update will be duly acknowledged in the anticipated revised editions. Regretfully, due to financial constraints, no honorarium will be paid.

You can easily check the current contents of the Data Book through the Internet at <http://www.biwa.or.jp/ilec/>. For more information, please contact ILEC via email or by post.

EE Mission

The 2nd Training Course on Environmental Education was held from July 28-30 at Chiang Mai in Thailand. The course was organized with cooperation between Chiang Mai University, Shiga University and ILEC. Financial support was provided by the Japan Fund for Global Environment. Some 35 participants, mainly science teachers of elementary and secondary schools in Thailand, attended the course.

Lecturers from four universities, those of Shiga University in Japan, the University of the Philippines, and Prince of Songkla University in Pattani and Chiangmai University, Thailand, provided the classes throughout the course. The program was composed of lectures on environmental education, water sampling near the river, field activities to obtain knowledge of biodiversity, site visits to waste treatment facilities, outdoor nature games and curriculum development.

This Training Course was a part of ILEC's Pilot Project of "Environmental Education in Developing Countries". One of the goals of this project was to help teachers in schools to develop methods and teaching materials that were pertinent to environmental education. It is hoped that the lessons learned from the first and second course will be useful to those who attended them, but more importantly to the end beneficiaries - the students themselves.



Lake Kawaguchi (Japan) with Mount Fuji in the background - taken from the Data Book

Profile on Professor C.H.D. Magadza ILEC Scientific Committee Member

Professor Christopher H. D. Magadza has been a member of the ILEC Scientific Committee since 1986, and was recently a Keynote Speaker at the 6th World Lake Conference at Tsukuba, Japan.

Professor Magadza is an employee of the University of Zimbabwe, where he is Director of the university's Lake Kariba Research Station. The Station undertakes work on the ecology and management of impoundments, particularly Lake Kariba. The Station also serves as a training institute for postgraduate students



Professor C.H.D. Magadza

at the University of Zimbabwe and hosts students from other parts of the world especially Europe and North America. The Station also runs in-service training courses in water resources and environmental management.

Professor Magadza's current research interests are in the ecology and management of inland waters, which he has maintained since his training days in New Zealand where he undertook a comprehensive study of the eutrophication of the Waikato River. Since then he has worked on the limnology of African lakes in central Southern Africa, notably Lake Bangweulu, Lake Chivero, Lake Kariba, Lake Kafue and other water bodies. His main thrust has been the use of plankton communities in characterising lakes. This work has resulted in several significant publications.

As Director of the Lake Kariba Research

Station, Professor Magadza has been the initiator of a number of training courses for middle and senior management staff in water resources, which have been conducted at the Research Station.

Prior to developing an interest in aquatic sciences Professor Magadza worked on applied entomological projects, particularly in Zambia where he was one of the team that tested and refined the use of Endosulfan for the control of the tsetse-fly, *Glossina morsitans* which transmits trypanosomiasis.

In recent years Prof. Magadza has been involved in the assessment of the impacts of global climatic change, where he has contributed to the study of climate change impacts on ecosystems and water resources, and contributed in the preparatory work for Agenda 21.

Professor Magadza is a member of several civic and professional associations. He is a founder member of the African Academy of Sciences, of which he is a former vice president, and the Research Council of Zimbabwe. He is also founder member and Chairman of the Zimbabwe Man and Biosphere Committee. He is involved in the natural resources conservation of Zimbabwe as a long-standing member of the Natural Resources Board of Zimbabwe, the Water Pollution Advisory Board and other advisory committees.

He has served on a number of international advisory groups, such as the advisory committee to UNEP on Biodiversity and the Scientific Advisory committee of WCIRP.

Among Professor Magadza's publications is a children's storybook designed to teach conservation through children's stories. He has also published a layman's guide to conservation aimed at the both civic authorities and peasant farmers.

As an academician Professor Magadza has been invited to be an examiner at several Universities in five countries of Southern and Eastern Africa.

1997 Biwako Prize for Ecology

The Biwako Prize for Ecology was established in 1991 by Shiga Prefectural Government for the purpose of contributing to the progress of studies on the aquatic environment in the field of ecology in East and Southeast Asia. Brief profiles of the two winners of this year's prize are given below. The prize ceremony will be held at the Lake Biwa Museum on 6 November 1997. For more information on the prize and for details on applications for nominations for next year's prize contact the ILEC Secretariat or visit the ILEC web-site:

<http://www.biwa.or.jp/ilec/prize/e-index.htm>

Dr. Chen-Tung Arthur Chen

Professor, Institute of Marine Geology and Chemistry, National Sun Yat-Sen University

As Taiwan's leading scientist in the field of marine chemistry and limnology, Dr. Chen-Tung Arthur Chen is acknowledged as one of the world's top five researchers in the field of "increase of atmospheric CO² and its effects". He has compiled the research results on 140 lakes in Taiwan into a book which is now used as a textbook for research into lakes in Taiwan. His contributions to the understanding of global environmental problems are highly evaluated internationally from both academic and social viewpoints.

Dr. Takeo Hama

Researcher, Institute for Hydrospheric-Atmospheric Sciences, Nagoya University

Dr. Takeo Hama has focused his research on the cycle of matter for ecosystems in lakes and oceans. The cycle of matter on the earth is one of the important functions of the global ecosystem. His major achievements are in the research of developing organism production and his research methods have been utilized by many scientists both in Japan and abroad. In the future, Dr. Hama is expected to investigate the overall cycle of matter in greater detail by clarifying the organic molecular movement.

NETWORKING SUSTAINABLE MANAGEMENT and CONSERVATION of LAKES - *Sinan Erer and Gönül Mihladiz*

Partnerships and networking are the magic words of the world agenda to describe what sustainable management requires. The background to the acquaintance of Turkey with ILEC is a very efficient process to represent a good example of this.

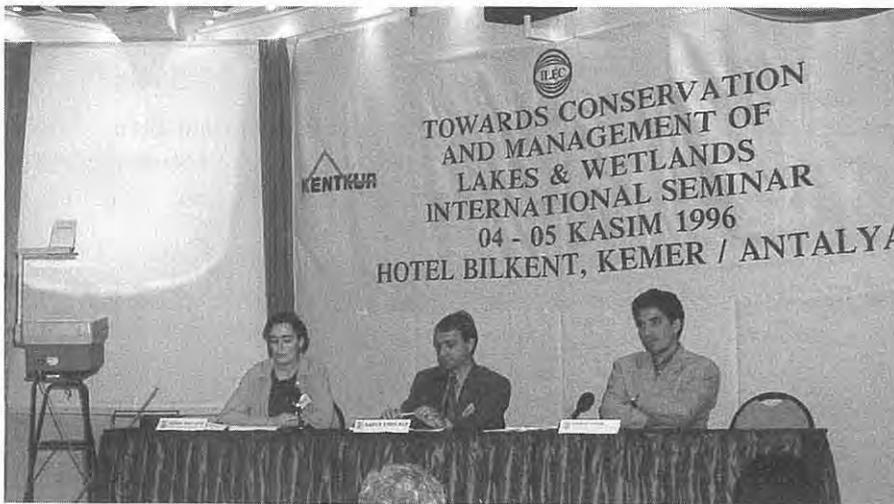
The starting event was the Golbasi Conferences that took place under the auspices of the President of Turkey and was the first time comprehensive concern for domestic lake environments was given international recognition through the par-

delivered by a member of the ILEC Secretariat further bolstering the reputation of the Golbasi Conference in 1996.

Cooperation between an environmental consulting group and ILEC resulted in the Workshop on Turkish Lakes and Wetlands with the theme "Towards Conservation and Management", which took place in Kemer, Antalya on 4-5 November 1996. The workshop's success was reflected in the enthusiasm of the participants who put their endeavours in establishing a management

there is a need for a particular organisational structure for lake management, that will attain co-ordination between pertinent institutions and organisations, providing an environment of exchange and dissemination of information, and will promote formulation of integrated projects on conserving and improving lakes and lake environment. The networking of experts and organisations started, which led to the idea of establishing a local committee of ILEC that will serve in Turkey, that can be extended to a region defined by Central Asian and Caucasian countries.

As the first step of the process of institutionalisation, a Scientific Committee has been formed by 5 members that represent various organisations. The committee members, with a view towards sustaining the enthusiasm from the workshop, selected 5 pilot projects to start with. The committee started with site visits to a wetland and a dam reservoir, to make a preliminary survey for project preparation. Endeavours of the participating groups are continuing with volunteer work, though sustainability of the networking process requires a well-organised structure, which can best pave its way through the light of experience and expertise that ILEC has been disseminating worldwide.



An International Workshop in Turkey

ticipation of two ILEC experts, Prof. Jørgensen in the first conference and Dr. Nielsen in the second. A speech was also

system on lakes and wetlands.

All discussions came to a consensus that

18th International Symposium of the North American Lake Management Society - 11-13 November 1998

The Alberta Lake Management Society (ALMS) will host the 18th International Symposium of the North American Lake Management Society (NALMS).

The symposium, **Cooperative Lake and Watershed Management: Linking Communities, Industry and Government**, provides an excellent forum to discuss the benefits and challenges of developing management solutions which involve all stakeholder groups. Fiscal reality of the 1990s has meant that individual groups and agencies can no longer afford to pursue programs in isola-

tion. The symposium will feature examples where communities, academia, industry and all levels of government have worked together to effectively manage lakes and watersheds.

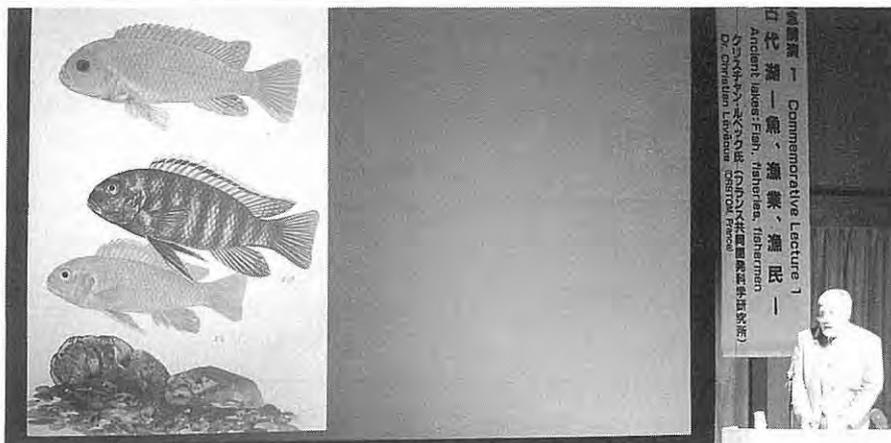
Plenary presentations will be given by world-renowned scientists including ILEC Scientific Committee Professor Jose Tundisi, President, National Research Council of Brazil, Professor David Schindler of the University of Alberta, Professor John Melack of the University of California, Santa Barbara, and Bob Hecky of the Canada Centre for Inland Waters.

Preliminary symposium session topics include case studies in cooperative lake and watershed management; and riparian management in agricultural areas. For a complete list of topics and more information on this symposium readers should contact:

Alberta Lake Management Society
c/o Department of Biological Sciences
University of Alberta
Edmonton, Alberta, CANADA T6G 2E9
Tel: 1-403-492-1294
or visit the ALMS web site at:
www.biology.ualberta.ca/alms/home.htm

ICAL '97 International Conference on Ancient Lakes:

Their Biological and Cultural Diversities - Yukiko Kada, Lake Biwa Museum



Keynote speech by Dr. C. Lévêque

As the main event commemorating the museum's opening, the "International Conference on Ancient Lakes" (ICAL '97) was held at the Lake Biwa Museum from 21-28th June, 1997. The purpose of ICAL '97 was twofold. First, to present a forum for the exchange of scientific and historical knowledge on the present status of ancient lakes, from both biological and cultural perspectives. The second objective was to search for ways to conserve the biota and habitats of these lakes, which have become endangered and threatened by the rapid social and environmental changes taking place throughout the world.

Ancient lakes are defined as long-lived lakes with a relatively stable development of physical parameters; features which have produced conditions favourable to high biological speciation. Although ancient lakes are few in number, many of the largest lakes in the world belong to this elite group. Among them, lakes Baikal, Biwa, Malawi, Tanganyika, Titicaca, and Victoria are of particular importance in having high biodiversity and high endemism.

Over 250 persons from 22 countries attended the conference, at which over 100 oral presentations and 50 poster presentations were given. Following the 8 days of discussion, the following key points and trends were identified.

- Ancient lakes are unique and integrated heritages of the world. As noted at the Rio Convention on Biodiversity 1992, the con-

servation of biodiversity is of fundamental importance for the integrity of natural ecosystems of ancient lakes and for future human well-being.

- Humans have developed indigenous cultures around the lakeshores. These cultures have co-evolved with each lake's biota, and this process has resulted in strong connections between cultural and biological diversities.

- In addition to a suite of common threats faced by all, each ancient lake is presently suffering from its own unique problems. Included among these are the introduction of exotic species, the deterioration of water quality, loss of biodiversity, and threats to indigenous lakeshore cultures.

- It was found that local people are often intimately familiar with the lake's environment and biota. Developing and collating inventories of local peoples' knowledge is thus paramount in promoting a better association between lakes and humans while conserving the biological and cultural diversities of the lakes.

The conference proceedings are now under preparation and will be published in the near future. In addition to performing independent studies of lakes, the Lake Biwa Museum is eager to coordinate with ILEC regarding research, communication and training activities on the above themes, and also actively encourages collaborative projects with researchers and institutions worldwide.

Monitoring Activities

Dr. Marcos Gomes Nogueira, Associate Professor of the São Paulo State University, is engaged in environmental monitoring of Jurumirim Reservoir in São Paulo State, Brazil, with a focus on the distribution of phytoplankton. Many huge dams like this were constructed in South America for power generation and water supply, but the environmental impacts of them have been controversial. Environmental monitoring of these dams, therefore, is very important to minimize such impacts.

However, not just financial resources but also environmental monitoring equipment is not sufficiently available in countries such as Brazil. In addition, the devices developed in industrialized countries are not necessarily suitable for use in developing countries and in tropical and subtropical regions. It is for these reasons that ILEC recently started a "Development of Monitoring Devices for Tropical Lakes" project to encourage environmental monitoring of lakes and reservoirs in developing countries, particularly those in tropical and subtropical regions.

The Japan Environmental Technology Association and leading manufactures of environmental devices in Japan like Horiba (manufacturer of the U-10), Central Kagaku and TOA Electronics have offered cooperation for the project. A field mission to Argentina to test some new devices will take place this month (October 1997).

Dr. Nogueira is an alumnus of the JICA/ILEC Training Course on Lake Environment Conservation, and the environmental monitoring activities he is engaged in were first initiated by Prof. Jose Tundisi, Member of the ILEC Scientific Committee. Dr. Tundisi has been an environmental activist for a long time pointing out the potential environmental impacts of the huge dams, but was appointed by the current Brazilian administration as President of the National Council for Scientific and Technical Development which has formal and informal power for environmental conservation within the Government.

LAKES OF THE WORLD

Overview of Indonesian Lakes by Pasi Lehmusluoto

In Indonesia there are more than 500 natural lakes, mainly volcanic crater and caldera lakes, tectonic, flood plain and solution lakes, and about 100 reservoirs. The natural lakes constitute a collection from small to great, shallow to deep, fresh to salt and from unproductive to productive lakes. The major lakes are located in Sumatra, Bali, Sulawesi and Irian Jaya, but a few are found also in Java, Kalimantan, Lombok and Flores.

In the tropical belt such a diversity of lakes in one country is rare. The major lakes were not studied nationwide prior to the Indonesian-Finnish Expedition Indodanau in 1991-1995, a systematic survey of 38 lakes from Sumatra to Irian Jaya. In 1928-1929 the Sunda Expedition visited only Sumatra, Java and Bali. No long-term data are available to follow the development of the state of the lakes.

than 8,000 measurements of 39 variables have already been made to document the present state.

With the equipment developed, the measurements of water temperatures and oxy-

About the Author

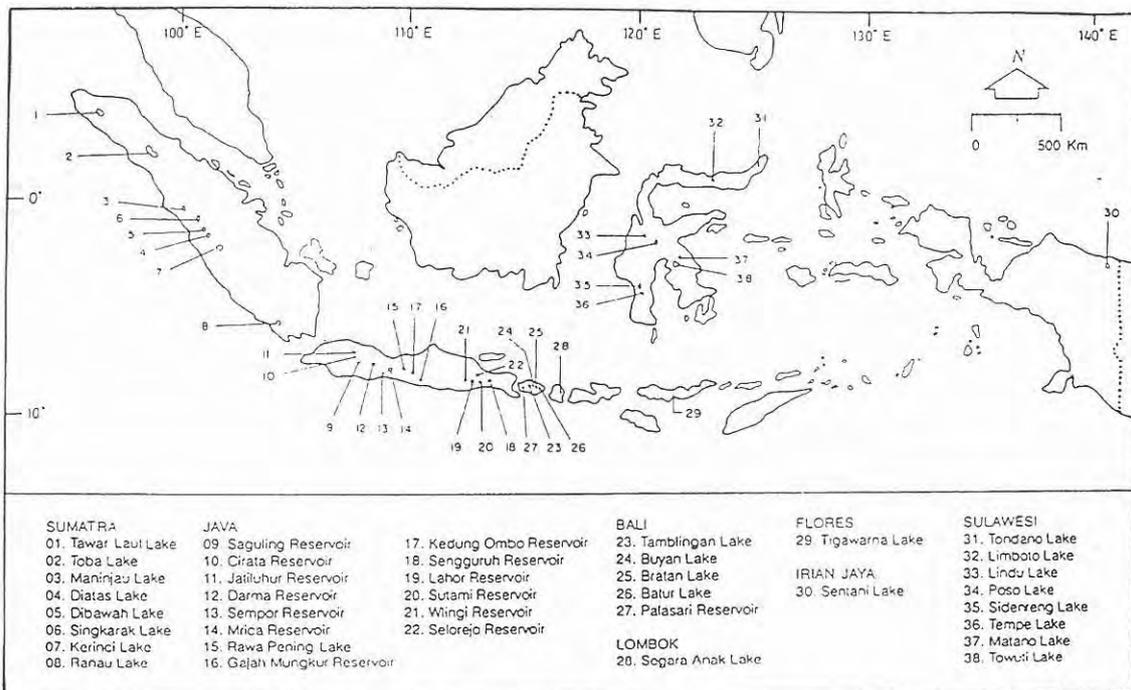
Limnologist Pasi Lehmusluoto is the Project Coordinator of the Indonesian-Finnish Expedition Indodanau lake project and has participated in the development of the Indonesian lake water resources since 1974.

gen concentrations can be made direct *in situ* down to the depth of 500 m, and sampling is possible from the surface to 500 m. The equipment are applicable in dug-out canoes and larger vessels. During the expedition many of the lakes were studied for the first time down to their greater depths.

depths of the lakes vary from the 1.5 m Tempe flood plain lake at its shallowest to the 590 m Matano fault lake, both in Sulawesi. Lake Matano is the seventh and Toba with its depth of 529 m the ninth deepest lake in the world. The only lake in Indonesia having a cryptodepression is Lake Matano, the deepest parts being 208 m below sea level.

In addition to the Toba and Dibawah lakes, Maninjau and Ranau are major volcanic lakes in Sumatra. Lake Singkarak is tectonic. Lake Toba is the most important and interesting volcanic lake. It was formed in various stages. The first stage, the huge explosion of the "Batak Tumour", was much stronger than the Krakatau eruption. The volume of Lake Toba is some 240 km³.

The lakes in Java are generally small.



Map of Indonesia with major lakes and reservoirs

Expedition Indodanau includes the major and economically important lakes and reservoirs. Observations are presently made of their physics and chemistry, and of phytoplankton. More

The largest lake is Toba in Northern Sumatra. It is also the greatest crater lake in the world. Its surface area is about 1,130 km². In addition to Toba lake, Lake Towuti in Sulawesi is larger than 500 km². The

Batur, Bratan and Buyan lakes in Bali are important for tourism. The chemical composition of the first two lakes, situated in different calderas only about 30 km apart, differ greatest in Indonesia. The water in Batur is highly salty and in Bratan almost

like distilled water.

In Lombok there is one lake, Segara Anak crater lake. In Flores there are three sulphuric lakes close to each other, Tigawarna lakes. As their names suggest, they are of different colours. One is black or some-



The Tranquil Lake Towuti in Sulawesi, Indonesia (Photo by Pasi Lehmusluoto)

times red, one is green and one is turquoise.

In Kalimantan in the Indonesian part of Borneo, and in Irian Jaya in the Indonesian part of New Guinea, the major lakes are shallowish and swampy, but rather large.

There are only three chains of natural lakes, Dibawah-Singkarak in Sumatra, and Matano-Mahalona-Towuti and Sidenreng-Tempe in Sulawesi in addition to the groups of lakes in Kalimantan and Irian Jaya. The first two chains are formed of fault lakes and the third of flood plain lakes.

The state of the natural lakes in Indonesia is generally good. This is partly due to the fact that the drainage areas are small, and there is little loading from them. The lake chains are more problematic, since population centres, agriculture and industry are causing loading. In addition, their drainage areas are larger. The buffer capacity of the Indonesian lakes against chemical and nutrient loading is relatively weak. In addition to the chemical quality, long residence times are critical.

It is possible, although the annual changes could not be observed during the study, that during the hemispheric winter the hypolimnia of some of the lakes may get oxygen replenishment. At other times this may be occasional.

The surface temperatures varied from 21.4 to 30.8°C. The vertical temperature difference was at its greatest 3.9°C in lakes less than 100 m in depth, and in lakes over 100 m 2.3°C. The smallest vertical difference was 0.2°C in lakes less than 100 m in depth, and 0.4°C in Poso lake at the depth interval of 0-400 m. In Toba lake the smallest difference was 0.85°C at the interval of 0-500 m. The surface temperature in Lake Toba during the hemispheric summer in March 1992 was exactly the same as in April 1929 measured by the Sunda Expedition, but the temperature of the hypolimnion was 0.5°C higher. All the temperatures are altitude dependent.

Some of the deeper lakes are permanently meromictic. Generally the hypolimnia are anoxic, with the exceptions of e.g. Lakes Toba and Batur. In some of the hypolimnia also hydrogen sulphide was found, like in Singkarak and Ranau lakes in Sumatra. The oxygenated layer of Lake Singkarak was only 40-50 m, and the rest of the lake down to the depth of 268 m was anoxic. The epilimnion volume was only 15% of the total volume.

The nutrient concentrations were usually

low. Total nitrogen could generally be measured, but the total phosphorus concentrations were very low and often undetectable. The observations do not fully support nitrogen limitation. The chlorophyll concentrations showed that the lakes were oligotrophic. Only in Lake Kerinci in Central Sumatra the concentration was more than 10 mg m⁻³ and, for example, in the Balinese lakes and shallow Limboto lake in Northern Sulawesi the concentrations were from 3 to 5 mg m⁻³. Also the transparencies indicated the same. The highest transparency of 20 m was in Lake Towuti in Central Sulawesi, and in Lake Toba it varied from 13 to 15 m.

The sulphate concentrations were usually low. The only exception was Batur lake in Bali, in which the concentrations were from 500 to 650 mg l⁻¹. Heavy metals were not found, except low concentrations of zinc.

Expedition Indodanau provided basic information on the major and economically important Indonesian lakes. Identification of the drainage areas, land use and loading of the drainage areas, hydrology and water balances, echo sounding and volumes, temperature, oxygen and nutrient regimes, mass balances and productivity are examples, among others, of necessary information.

Correction

Careful readers will have noticed an error in the final paragraph of our last edition of "Lakes of the World". For the sake of completeness, we reprint the offending paragraph duly corrected.

The reservoir's main problem is sedimentation, as a result of accelerated soil erosion of the vast plains upstream of the lake during the rainy season. In that area there are several settlements and agricultural activities are carried out. Despite forestation activities in areas around the reservoir, the problem still persists. Due to its configuration, the lake has differentiated trophic conditions. According to its chlorophyll "a" concentrations, it can be considered as oligotrophic-mesotrophic; yet, its total phosphorous concentrations correspond to a higher trophic status.

New Publications

ILEC Guidelines of Lake Management: A Focus on Lakes/Rivers in Environmental Education, edited by S.E. Jørgensen, M. Kawashima and T. Kira. (International Lake Environment Committee, 1997)
ISBN: 4-906356-22-2

ILEC initiated the Environmental Education project in 1989 in Brazil, Denmark and Japan. It was expanded in 1991 to include Argentina, Ghana and Thailand. This guideline book attempts to make a final conclusion of the most important experience that has been gained by the project in the hope that the experiences gained from the project can be utilized by many other schools around the world. The book received funding from the Japan Fund for Global Environment and is available from the ILEC Secretariat.

Medio Ambiente de Los Lagos en Japon (Japanese Lake Environment)

Lagos en el Mundo (Lakes in the World)

The first of these publications gives an overview of Japanese lakes, taking a look at issues such as eutrophication and deteriorating lake environments. The second gives a good grounding on the origin of lakes and their importance to us. Funding for the Spanish editions of these publications was provided by the Nippon Foundation. Available also in English and Japanese, all three publications can be obtained by contacting the ILEC Secretariat at the address given next to the postmark on this page.

Water Quality of Sri Lanka - a review of twelve water bodies, E.I.L. Silva (1996).
ISBN: 955-26-0033-2

A compilation of background information and data for those with an interest in any aspect of aquatic biology in Sri Lanka. Available from: Institute of Fundamental Studies, Hantana Road, Kandy, Sri Lanka.

Forthcoming Events

**SIL Dublin Congress 1998 - "Water of Life".
First Circular**

Theme: "Water of Life". While general sessions will respond to papers offered by members, the committee is keen to have several structured theme sessions preferably linked to keynote speakers. Themes suggested include: Regional limnology, biology of aquatic organisms, limnology of specific water bodies and theoretical limnology and modelling.

9-15 August, 1998
University College, Dublin, Ireland.

Contact: XXVII SIL Congress, UCD Environmental Institute, Richview, Clonskeagh, Dublin 14, Ireland.
email: sil98@ucd.ie

or visit the following web site:
<http://nis.rtc-tallaght.ie/conferences/sil98.home/sil98.html>

Workshop Planned for Asia/Pacific on Adopting, Applying and Operating ESTs

UNEP IETC, in cooperation with the Institute for Environmental Science, Murdoch University, Western Australia, is preparing a training programme on adoption, application and operation of Environmentally Sound Technologies (ESTs).

The programme will be conducted in conjunction with an International Regional Conference on Technology for Wastewater Management from 3-13 December 1997.

For more details on the target audience and training content please contact IETC's Osaka office.

email: cstrohma@unep.or.jp



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