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NEWSLETTER

INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION

— For Better Lake Management —

This Newsletter is also available in Japanese.

5TH GENERAL MEETING OF ILEC SCIENTIFIC COMMITTEE

Members of ILEC Scientific Committee have met in Otsu, Japan, for the 5th General Meeting on June 22-24, 1992. Fourteen members, 3 former Members and 6 observers participated in the General Meeting which was held at Lake Biwa Research Institute.

1. New officers for this term (April 1992 to March 1995) were elected.

Chairperson	T. Kira
Vice Chairpersons	R. A. Vollenweider
	Sanga Sabhasri
Secretary	S. Matsui
Regular Bureau Members	S. E. Joergensen
	J. G. Tundisi

2. Three Working Groups were organized. Each group focused upon (i) Environmental Education, (ii) Guideline Books and (iii) Data Collection, respectively.
3. ILEC's activities since the last General Meeting (May 1991) were reported. It included ILEC's new role as the official supporting foundation for the UNEP International Environmental Technology Centre, Shiga, and Ing. Bauer's report on the Earth Summit.
4. "Strategies for lake ecosystems beyond 2000" was approved as the theme of the 5th World Lake Conference which will be held in Stresa, Italy, in May 1993.
5. New ILEC / UNEP joint projects for 1992 / 93 and beyond were elaborated and the new direction was discussed.
6. ILEC's collaboration with GEMS / Water was discussed, which included the build-up of data base for socio-economic information.
7. The meeting agreed that the 6th World Lake Conference will be held in Ibaraki (near Tokyo, Japan) in 1995 and the 7th World Lake Conference will be held in Argentina in 1997.

MEMBERS OF THE SCIENTIFIC COMMITTEE, ILEC FOUNDATION (1992—1995)

1. Regular Members

Tatuo Kira (Chairperson)	Director, Lake Biwa Research Institute	Japan
R. A. Vollenweider (Vice-Chairperson)	Emeritus Senior Scientist, National Water Research Institute	Canada
Sanga Sabhasri (Vice-Chairperson)	Chairman, Executive Board, The National Research Council of Thailand	Thailand
N. B. Ayibotele	Director, Water Resources Research Institute	Ghana
R. de Bernardi	Director, Instituto Italiano di Idrobiologia (CNR)	Italy
A. T. J. Calcagno	Member of Argentine Institute for Water Resources	Argentina
S. Evteev	Special Representative for the Executive Director	UNEP
Jin Xiangcan	Deputy Director, Water Environmental Institute, Chinese Research Academy of Environmental Sciences	China
S. E. Joergensen	Professor, The Royal Danish School of Pharmacy	Denmark
S. Kaul	Joint Director, Indian Ministry of Environment and Forests	India
C. H. D. Magadza	Director, University Lake Kariba Research Station, University of Zimbabwe	Zimbabwe
S. Matsui (Secretary)	Professor, Kyoto University	Japan
M. Meybeck	Professor, University of Pierre et Marie Curie	France
J. Salaanki	Professor, Balaton Limnological Research Institute	Hungary
J. G. Tundisi	Professor, University of São Paulo	Brazil
R. G. Wetzel	Professor, The University of Alabama	U. S. A
W. D. Williams	Professor, University of Adelaide	Australia

2. Ex-officio Members

T. Goda	Professor, Setsunan University and Vice Director General of ILEC Foundation	Japan
M. Hashimoto	President, Overseas Environmental Cooperation Center and Vice Director General of ILEC Foundation	Japan

UNCED and Simultaneous Events at Rio '92

The United Nations Conference on Environment and Development was held in Rio de Janeiro between 3-13 June 1992.

ILEC was registered at the UNCED as an international NGO and was represented by Prof. S. Matsui and Ing. C. E. Bauer, who attended many meetings, round table discussions and ceremonies as observers during their stays in Rio. During the first week of the conference Mr. K. Yamazaki, Director-General of the ILEC Foundation, Prof. J. Tundisi (ILEC Scientific Committee) and Mr. Kawaguchi (ILEC Secretariat) were also in Rio de Janeiro developing different activities as representatives of ILEC. They distributed several hundred printed copies of two papers prepared by ILEC. The first, "World Lakes and Reservoirs in Environmental Crisis", was written for the United Nations Earth Summit '92 contained an "Agenda Proposal for their Improvements". The second one was a leaflet on general information about the new "UNEP International Environmental Technology Centre" and supporting foundations in Otsu (International Lake Environment Committee) and Osaka (Global Environment Centre)

During Japan Day, which was held on June 4 to highlight Japan's role in the Global Community, a variety of reports on "Japan's Experiences of Environmental Pollution and its Efforts for Global Environment and Development" were given including one by Mr. Yamazaki on ILEC's activities.

ILEC's Fund Raising Activities

ILEC is a public foundation whose activities are funded to a considerable extent by the interest from

capital donated by companies, groups and individuals. Many support groups have been started to help finance ILEC's ever widening activities.

Shiga Bank, the largest local bank in Shiga Prefecture where ILEC's office is located, is participating in the "Save Water Save Lakes" campaign by operating an account through which depositors donate 3% of the interest they receive on fixed term deposits to ILEC. Depositors number already closes to fourteen thousands.

Another revenue raising project is the "ILEC Card". This is an international credit card with Visa, Mastercard and JCB affiliation from which ILEC receives 0.5% of all transactions made with the card. The first card was issued in August 1992, and by the end of November the number of card holders had risen to 1500.

The highlight of ILEC's summer activities was once again the "Lake Aid" festival. As in previous years the ILEC presence at the festival was considerable and donations collected on the day totaled some 570,000 Japanese yen (C. A. US$4,400).

The UNEP / IETC (International Environment Technology Centre of United Nations Environment Programme) opened this autumn and ILEC has been appointed the official supporting foundation for UNEP / IETC in Shiga. The financial commitment to run such an organization successfully is considerable and ILEC is seeking the cooperation of companies affiliated to the Kansai Economic Association, the Federation of Economic Organization and local companies in Shiga. ILEC is also looking for contributions from overseas. Readers who would like to contribute should send donations to ILEC at the address given on the back of this newsletter.

Guideline Book Vol. 4

Guidelines of Lake Management Vol. 4 : Toxic Substances Management in Lakes and Reservoirs, edited by Saburo Matsui, published by UNEP and ILEC. 1992. 170pp.

The 4th volume of the Guidelines series on lake management entitled "Toxic Substances Management in Lakes and Reservoirs" was published by ILEC and UNEP in June 1992.

The following extract from the introductory chapter of the book written by the editor Professor Saburo Matsui outlines the scope of this particular edition.

Toxic management of lakes and reservoirs is aimed at the protection of human health and aquatic life from impacts caused by the release of toxic substances to surface waters. Lakes and reservoirs hold important freshwater ecosystems of the globe, in which a great number of species, including human beings, interact with each other. Special care must be taken when releasing toxicants into lakes and reservoirs because of the unique physical and chemical characteristics of confined water. Toxic substances are retained longer in both water and sediments than in flowing surface water, which increases the risk of exposure of toxicants in terms of concentration and duration to both aquatic organisms and humans who depend on drinking water and food from lakes and reservoirs.

This Guideline Book covers basic concepts of aquatic ecotoxicology, case studies of the Great Lakes and practical experiences developed for toxic substances management in the Ruhr River basin, Germany. After the introduction the next three chapters introduce basic concepts for readers who are not familiar with ecotoxicology. Chapter 2 describes general principles of toxicology which focuses on ecotoxicology on aquatic life with an emphasis on the uniqueness of the ecosystem of lakes and reservoirs. Chapter 3 describes the movement of toxic substances through bioaccumulation and deals with the important chemical factors involved in bioconcentration and bioaccumulation. The ecological structure of biomagnification is also emphasized and the Minamata and Itai-itai diseases are briefly introduced. Chapter 4 focuses on modeling of lake ecotoxicology, relating toxicant movement in lake ecosystems quantitatively so that readers can understand basic concepts of toxic management in terms of mass balance.

The remaining chapters deal with specific groups of toxic substances. Chapter 5 describes heavy metal and other inorganic toxic substances, in which the sources, movement and sinks of representative heavy metals and other inorganic substances are introduced with important points for their management. Chapter 6 describes organic pesticides in aquatic environments—the Great Lakes studies in which detailed information on pollution from many prominent pesticides is clearly summarized with an emphasis on the importance of atmospheric migration of those pesticides over entire lakes. Chapter 7 describes other organic toxic substances with an overview of various organic pollutants in terms of sources, storage, transportation, use, fate, properties, and prevention policies are presented with an emphasis on common problems faced by developing countries with examples of PAHs.

Asian Wetland Symposium

The symposium on Asian wetland toward wise use of them was held from 15 to 19 October 1992 at Lake Biwa Research Institute located in Otsu, Shiga on 15th-17th and Kushiro Citizens Cultural Hall, Kushiro City, Hokkaido on 19th. It brought together 270 participants from 25 countries. The five-day symposium was organized by five Japanese governmental and non-governmental bodies ; Environment Agency, Hokkaido Prefectural Government, Shiga Prefectural Government, ILEC, Ramsar Centre Japan, and Regional Promotion Committee for the Ramsar Kushiro Conference. The Ramsar Convention Bureau, ADB, IUCN, WWF, AWB, JWRB, were among co-sponsors.

The report on this symposium containing related laws and guidelines will be published and distributed at the 1993 Kushiro Meeting of the Ramsar Convention.

Based upon presentations and discussions at four sessions ("Wise Use of Wetlands and Necessary Legislations", "Management and Monitoring of Ramsar Sites", "International Cooperation on Financing and Research"and "Touristic Use of Wetlands"). The following recommendations were adopted at the closing of the symposium.

Recommendations (excerpt)

Wetlands are amongst the most valuable natural ecosystems in Asia, bringing benefits to millions of people each year. These estuaries, flood-plains, freshwater marshes, rivers, lakes and peatlands play an intimate role in our daily lives, helping to purify our water supplies, absorb flood waters, provide much of the fish we eat and support a rich diversity of species. Asia's large population has derived much of its sustenance from wetlands, and in the future will continue to draw upon these. But wetlands are being lost and degraded rapidly in Asia, as well as in other regions, and many people are paying the cost, some with an increased cost of living, and some with their lives.

If wetlands are to be managed sustainably, partnerships are required on local, national, regional and international levels, bringing together people from the many disciplines required for an effective integrated approach to management. Attention needs to be given to the conservation problems of both the wetland site itself, and the catchment basin which provides the water upon which the wetland depends.

If recognition of this need, the Asian Wetland Symposium calls for urgent action to be taken, specifically in the following major areas, to maintain and wisely use Asia's wetland resources.

1. Awareness

   Many Asian people live in close association with wetlands. Yet they will only support wetland conservation if they understand fully the value of wetlands and the role that these can play in their daily lives. To address this problem, six major steps should be taken.
2. Institutional Capacity and Training

   If the challenge of wise use is to be met effectively, our societies need to provide appropriate national institutions with the capacity required. This certainly means increased funding, but also the requisite number of well-motivated, knowledgeable and skilled staff. To this end, the five issues should be merited special attention.
3. Wetland Monitoring

   If public awareness and government support are to be harnessed effectively, and wetland conservation efforts are to be directed at the highest priorities, the

status and threats to wetland need to be monitored closely. To achieve this, five major actions should be taken.

4. Consensus Building

The wetland conservation challenge needs to be taken up by all levels of society. Government agencies, NGOs, grass-root community groups, academic institutions and industries, all need to join forces.To facilitate the formation of this broad-based coalition, the three actions should be taken.

5. Policy and Legislation

Many states in the Asian region have not developed national wetland policies and national conservation strategies, which are urgently needed to provide the basis for laws for the conservation of wetlands and for their wise use. To this end, the six actions should be taken.

6. International Cooperation

In the Asian region, exchange of information, joint reseach actions and assistance from one country to another, also for local action, are needed. Action is also to be further developed in bilateral cooperation for the conservation of shared wetlands and their catchment areas. To this end, the four actions should be taken.

7. Development Assistance and Wetland Conservation

The thirteen actions should be taken in order to minimize the impacts of development assistance projects ; to increase the levels of fund allocation to environmentally-sound projects in wetlands ; and finally to ensure adequate involvement of NGOs and community groups in the decision-making processes.

8. Eco-Tourism

One mentioned of creating public awareness of wetlands, of promoting scientific knowledge and of generating revenue is to encourage ecosystem. Yet there is a danger that an influx of tourists may have a severe impact on the wetland resource and on local people living there. To this end, the four issues need to be addressed.

Finally, recognizing the role played by the Ramsar Convention in conservation and wise use of wetland resources,

The Asian Wetland Symposium

Calls for more effective implementation of the Convention and in particular ;

(1) for designation of new Ramsar sites in Japan and other Asian countries, and more effective legislative conservation and management measures at sites,

(2) for wider application of the wise concept, notably through adoption of natural wise use policies with appropriate legislasive support, and

(3) for broader adoption of initiatives promoting international cooperation in the field of wetland conservation, relating to shared species, shared wetland systems and development assistances.

INTECOL Ⅳ International Wetlands Conference

More than 850 wetland experts from 56 countries gathered at the Ohio State University in the United States from September 13 to 18, 1992, to discuss wetland issues. This was the largest meeting ever held in the world on wetlands and brought together scientists from both developing and developed nations to seek common understanding of the world wetland systems and to set new directions for the 21st century . More than 500 papers were presented in 14 symposia and 30 sessions and panels. ILEC was among conference contributors sponsored the session of "Wetlands : Interactions with Watersheds, Lakes and Riparian Zones"which was pre-sided over by Professor S. E. Joergensen.

Major points to come out of the conference included :

* The future of wetlands has become a global issue in need of global information sharing, cooperation, policy setting, and action ;
* Although less than 6% of the world's land surface is wetland, these wetlands contribute a far greater percentage to the world's overall biological productivity and water resource functions ;

* Wetlands are disappearing at an alarming rate throughout the world. For example in the United States alone wetlands are disappearing at a rate of 200,000 to 400,000 acres per year and in spite of the increased recognition of the importance of wetlands around the world , little progress has been made in halting their destruction ; and
* Wetlands are very important in providing biodiversity and coastal and estuarine wetlands are seriously threatened by global warming and subsequent sea-level rise.

Future directions for the 21st century include, amongst many others, complete inventories for the world's wetlands and training and education for government officials, land owners, engineers, lawyers and biologists on wetland function and value and techniques for management.

There was an overall consensus at the meeting that international cooperation of the sort demonstrated at the conference provided an increase of optimism for stemming future wetlnds loss.

LAKES OF THE WORLD

LAKE OF GUIERS (SENEGAL, WEST—AFRICA)

by Drs. F. X. Cogels / J. Y. Gac (Drstom, Daket, Senegal)

Lake of Guiers is the only lake in Senegal. Located 50 km from the Atlantic coast (latitude 16° 10′ N ; longitude 16°08'W), it is a narrow cavity 50 km long and 7 km wide, situated at 2 meters below sea level. The lake constitutes an important fresh water reserve and is connected to the lower Senegal river in a straight line by the Taoue canal. A system of sluice gates allow control of water exchange between the lake and the river.

The configuration of the lake changes considerably through time and space, under the effects of the river inflows, losses through evaporation and pumping. In its average state, the lake has a depth of 1.5 meters, an area of 225 km^2 and a volume of 350 millions m^3.

The first modifications around lake of Guiers dates from the 1950's. The damming up of the northern region and the closing of the southern and western outflows made it into the largest fresh water reserve in the country, before the building of the dams on the Senegal river. The lake supports several small agricultural installation, which are found all around its periphery. It also provides 10 to 15% of the drinking water of Daker, the capital city (population 2 million), through a 250 km water main. An open air canal project allowing the transfer of 450 milliom m^3.

Since 1985, the Diama dam has modified the hydrology of lake of Guiers. This river dam, located 100 km downstream from the lake, was built to prevent sea water inflow in the lower valley of the Senegal river. The absence of relief previously allowed seawater intrusions up to 250 km inland. The river water would thus become brakish, limitinig the development of irrigated cultivated land . A second dam (Manantail in Mali), built to regulate the floods, is situated 1200 km upstream ; it has been in use since 1987.

The rigion has a Sahelian climate : a rainy season lasting 2 to 3 months, irregular pluviometry of 200—250

mm per year, an average annual temperature of 28°C and a low relative humidity (40%).

The hydrology of the lake is complex and has been drastically modified since 1985 :

—before 1985, hydrology and lake's water level were dependent on the importance and duration of the annual river flood, which in turn was dependent on the pluviometry of the upper basin, itself largely deficitary since 1972. Under the combined effect of insufficient filling, increased pumping for irrigation, and evaporation (2.25 m per yer), the level of the lake in certain years went below the threshold levels below which its exploitation is limited. Extreme conditions were reached in 1984 when the lake was almost completely dried up.

—since 1985, the effects of the Diama dam have been clearly discernible. Water is permanently available in the river, the lake can be filled several times per year, its water levels are more stable and higher, given a reduction of agricultural pumping.

The actual rate of use of river inflows to the lake (for irrigation and drinking water production) is low (about 7%). On the other hand, the losses are due mainly to evaporation (90%). The problem of the quantitative management of this Sahelian ecosystem thus appears clearly.

The physicochemical quality of the water is characterized by yearly evolution of the mineralization of solutions and the establishment of a well defined salinity gradient from north to south. The current total mineralization is on average 270mg / l (7.7 meq / l). Throughout the year, outside of water replenshing periods brought by the river floods, concentration of the annual water concetration gradient is 4.5 currently.

In extreme conditions observed during drought years, before 1985, cholorides reached leveals of 230 mbq / l. Average yearly concentration gradient of lake water was 6.5 then.

The pH is stable, varying from 7.5 to 8.0 (extreme conditions expected). The average conductivity, year by year, is of 280 micros / m at 25°C but the variation is important according to the station and the period of the year.

Nitrate levels are low, while phosphorus levels are in the order of 30 kgr / m. The study of nutrients has yet to be undertaken.

Since 1985, the more considerable renewing of lake water by river inflow has caused a spectacular decrease in mine :

—algal blooms have been observed since 1989, with high concentrations of Cyanophyceans (Anabaena and Mycrocysits).

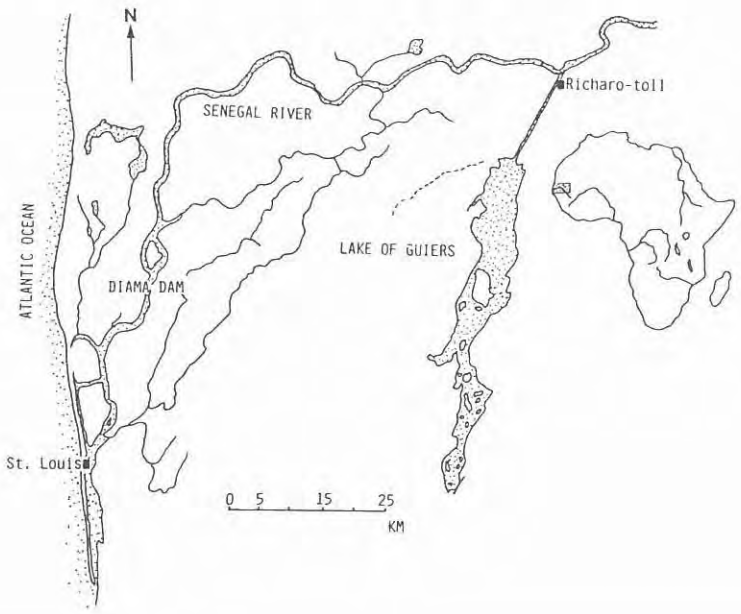
—higher aquatic vegetation is developing, with an invasion of the southern lake region by Pistia stratiotes and rapid developement Typha australis. Other species that were rare or absent before 1985 are now appearing and rapidly proliferating.

—fish fauna is diversifying and seems to be adapting to the new hydrological conditions. The annual fishing potential is estimated at 1600 tons.

We should also mention the appearance and rapid development of intestinal schistomiasis upstream of the Diama dam since 1987. The spread of this disease towards lake of Guiers, where the mollusc that acts as intermediary host is present, is inevitable in the short term.

The Diama dam has had rapid and obvious effects on the hydrology, physico-chemisty and hydrobiology of lake of Guiers. The evolution observed is however too recent for a reliable diagnosis to be established.

The lake of Guiers a Sahelain ecosystem that is fragile and very sensitive to environmental modification. Its important as future source of water for the most populated region of the country maks it necessary to important sound and concerted management practices starting now.



Forthcoming conference

"Stresa '93"

5th International Conference on the Conservation and Management of Lakes

theme : Strategies for lake ecosystems beyond 2000

date : 17 - 21 May 1993

venue : Congress Centre, Pallazo dei Congressi, Stresa,Italy

organizers : Istituto Italiano di Idrobiologia (CNR)
Istituto di Ricerca Sulle Acque (CNR)
International Lake Environment Committee (ILEC)
International Association on Water Quality (IAWQ)

sessions :

1. Scientific basis for managing eutrophication
2. Water quantity and quality in lakes and reservoirs for human uses
3. The fate and effects of in - lake micropollutants
4. Non-point sources control for nutrients
5. Acid rain and effects on aquatic ecosystems on a global scale
6. Scientific findings and their utilization at socio-economic and administrative levels for lake / reservoir management
7. Lakes and environmental education
8. Citizen participation

language : English

deadline for paper : 31 January 1993

2nd Announcement and any other information are available from the Organizing Secretariat.

R. M. Societa di Congressi s. r. l.
Via Ciro Menotti, 11
20129 Milano, ITALY
phone : 02 / 7012638-70126772
fax : 02 / 7382610

CALL FOR ARTICLES

Those who wish to contribute to the ILEC Newsletter are invited to send manuscripts to the secretariat.

ILEC

INTERNATIONAL LAKE ENVIRONMENT COMMITTEE FOUNDATION

Secretariat
3-13-25 Kusatsu, Kusatsu-city, Shiga 525, Japan
Tel : +81-775-67-2155, Fax : +81-775-67-2156

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