Lakeside

Vol. 1 No.1: Spring 1998

The Quarterly Newsletter of the
Lake Tanganyika Biodiversity Project
UNDP/GEF/RAF/92/G32

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'Pollution Control & Other Measures to Protect Biodiversity in Lake Tanganyika' -
'Lutte Contre la Pollution et Autres Mesures Destinées à Préserver la Diversité Biologique du Lac Tanganyika'

UNDP/GEF/RAF/92/G32

Editorial

Dear Reader,

*Welcome to the first edition of "**Lakeside**", the newsletter of the Lake Tanganyika Biodiversity Project. Owing to the ever increasing number and scope of project activities now in progress, we felt the time was ripe for a newsletter to keep everyone who is involved or interested as up to date as possible with the work being done by the project.*

The project has encountered a number of difficulties in implementation - some would say more than its fair share! There have, of course, been the normal complications of implementing a project where the riparian member nations speak two different languages, where three of the member nations have their capitals (with the collaborating ministries and communications and economic infrastructure) located far from the resource of interest, i.e. The Lake, and where a wide range of institutions are involved with the project in each country. In addition the project has had to tend with the civil conflict which swept the former Zaïre, by the UN 'Phase III' security rating which until recently prohibited work along the Burundian coast, and by the embargo against Burundi.

In spite of these difficulties, project activities are well underway in all four riparian member countries. Some recent project highlights include: the 12-week dive training and underwater research methods course in Kigoma which graduated fully-certified divers from each of the four riparian countries who are beginning to study the aquatic life of Lake Tanganyika's Parks and other areas of interest. In January, the sedimentation special study sponsored a second cruise to collect cores of sediment from the heavily impacted and relatively pristine catchments along the Burundian and Tanzanian coasts. The multinational team with participants from all four riparian countries, collected these cores to assess the effect that humans have had upon sedimentation rates in the lake basin. In February, lawyers and policy makers from the four riparian countries met in Lusaka to begin the vital process of drafting the legal agreement to be signed by the four riparian countries so as to assure a common level of measures to safeguard the lake. In addition to these multinational, co-operative events, the biodiversity, sedimentation, pollution, fishing practices and socio-economic work programs are being started or are well underway in the individual countries.

As we mentioned at the start, this newsletter has been created to keep you, the scientist, policy-maker, government official, collaborating NGO, riparian community member, or Tanganyika enthusiast, informed of project activities and project progress. As we were anxious to complete this first edition and publicise our presence, most of the articles were contributed by the Project Coordination Unit (PCU) or special studies coordinators. However, as LTBP is a project for Tanganyika's riparian countries, driven by nationals from those countries, we intend that future editions will consist largely of contributions from African project members. We encourage you to volunteer contributions to the PCU and to co-operate when the PCU may solicit contributions from you.

We look forward to working with you,

-Andy Menz
Project Coordinator

This Newsletter is published by the Project Coordination Unit of the Lake Tanganyika Biodiversity Project
UNDP/GEF/RAF/92/G32
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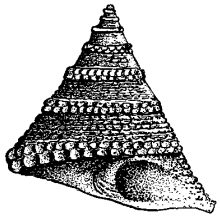
Why Lake Tanganyika?

by Kelly West

Though the riparian communities must have admired Lake Tanganyika's beauty and depended upon it for freshwater, protein (from a fish-based diet), and regional transportation for centuries, the rest of the world first heard news of Lake Tanganyika when Richard Burton and John Speke set eyes upon it, on 13 February 1858. After travelling from Zanzibar eight months by boat and by foot, and facing desertion by most of their porters, disastrous weather, attacks from hostile tribes, shortage of money, exhaustion, malaria, loss of an expedition member to crocodiles, and ill health, Speke being temporarily blinded and Burton rendered mute and unable to eat owing to abcesses in his mouth, Burton, setting eyes upon the lake, wrote in his diary, "Nothing, in sooth, could be more picturesque than this first view of the Tanganyika Lake, as it lay in the lap of the mountains, basking in the gorgeous tropical sunshine...Forgetting toils, dangers, and the doubtfulness of return, I felt willing to endure double what I had endured."

Lake Tanganyika generated considerable scientific interest back in Europe, even though it did not prove to be the source of the Nile that Burton and Speke were seeking. During their visit to the lake, Speke made the first scientific collection of Tanganyikan fauna, empty shells gathered from the beach at Ujiji, and sent these collections back to the British Museum. These shells caught the attention of the scientific community for quite unlike most freshwater shells, the Tanganyikan shells, with their heavy armor and sculpture, were nearly indistinguishable from the shells of marine species. Further exploration of the lake and notably the discovery of jellyfish, sardines, and heavily-armored, marine-like crustaceans, in addition to the mollusks, served to strengthen the link between the Tanganyikan and marine faunas. Several authors, led by J.E.S. Moore, considered the presence of these marine-like species in Lake Tanganyika as evidence that in historic times, Tanganyika had once been connected to the sea. The possible marine origins and affinities of the Tanganyikan faunas was the subject of considerable scientific debate in the late 1880s and early 1900s, with more than 75 papers written on this subject.

With our current geologic models for the African Rift, however, these hypotheses of marine origins of the Tanganyikan faunas have been discredited. It is now generally accepted that the proto Lukuga-Lualaba Rivers and Malagarasi Rivers were previously connected in an ancient river system. Continental rifting in the region subsequently cross-cut this system and formed the nested set of basins that is Lake Tanganyika. Lake Tanganyika was probably colonized by multiple immigrations from the former river system.



Unlike most modern lakes which were formed by glaciers within the last 12,000 years, Lake Tanganyika, at about 12 million years in age, is geologically long-lived. During this long period of isolation, the immigrants which invaded proto-Lake Tanganyika have produced some spectacular evolutionary productions. Many of the African Great Lakes host numerous species of cichlid fish, but in addition to its 185+ cichlid fish species, Lake Tanganyika hosts more than 70 snail species, more than 70 ostracod species, 12 endemic crab species, 16 copepod species, 9 species of leeches and 7 species of sponges. In fact Lake Tanganyika, with more than 1,300 species of plants and animals, at least 500 of which are found only in the Tanganyika basin, is the richest freshwater ecosystem in the world.

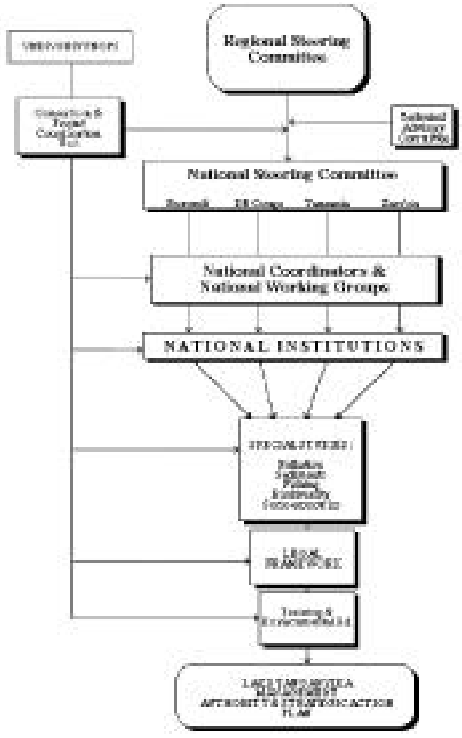
Understanding, protecting and managing these valuable resources are the goals of this project.

Kelly West is Scientific Liaison Officer for the Lake Tanganyika Biodiversity Project.

Pollution Control and Other Measures to Protect Biodiversity in Lake Tanganyika

by Andrew Menz

Popularly known as the "Lake Tanganyika Biodiversity Project" this project has its origin at The First International Conference on the Conservation and Biodiversity of Lake Tanganyika held in Bujumbura on 11-13 March 1991. At this meeting a large group of scientists from the four riparian states of Burundi, D.R. Congo, Tanzania and Zambia and their international colleagues identified and expressed concern at the increasing threats to the lake's unique and economically important resources. The lake is vulnerable to pollution because of its natural characteristics, and there are presently few efforts to conserve its biodiversity. The most immediate threats to the lake environment and biota are pollution from excess loads of sediment and nutrients caused by erosion in the watershed, industrial and urban pollution including boat discharges, and intensive fishing with inappropriate methods. These problems and their effects are increasing, and others such as oil exploration and transportation on the lake cause concern. It was recognised therefore that immediate attention was required to assess and control pollution and protect biodiversity. Subsequently, steps were taken to attract the interest of international



funding agencies in order to secure funding for a regional project to address the problems identified.

Funding was eventually secured through the UNDP/ Global Environmental Facility (GEF) which at the 1992 Rio environmental summit meeting, was endorsed as a mechanism for financing activities which generate global environmental benefits. The GEF operates in four theme areas: Climate Change, Ozone Depletion, International Waters, and Biodiversity and was thus a natural source of funding for the current project. Although originally conceived as primarily a biodiversity project, it corresponds to GEF interests in both biodiversity and international waters. In terms of the new GEF operational programmes it corresponds to a "freshwater ecosystem" (biodiversity) programme, a "water body based programme" (international waters), and since many of the problems in the lake are associated with sedimentation from land runoff, it is considered to be an "integrated land and water multiple focal area" programme.

By February 1995 a Project Document had been signed by all riparian countries, the funding agency UNDP/GEF and the executing agency United Nations Office for Project Services (UNOPS). In August of 1995, UNOPS selected a consortium comprising the Natural Resources Institute, the Marine Resource Assessment Group and the Institute of Freshwater Ecology, all based in the UK as the Primary Implementing Subcontractor.

This 5 year, 10 million US dollar, project aims to improve understanding of the ecosystem function and effects of stresses on the lake system; to take action on all measures necessary to maintain the health and biodiversity of the ecosystem and to co-ordinate the efforts of the four countries to control pollution and to prevent the loss of the exceptional diversity of Lake Tanganyika.

The ultimate objective of the project as stated in the Project Document is:

"to demonstrate an effective regional approach to control pollution and to prevent the loss of the exceptional diversity of Lake Tanganyika's international waters. For this purpose, the development objective which has to be met is the creation of the capacity in the four participating countries to manage the lake on a regional basis as a sound and sustainable environment."

More specifically, the project aims to:

- establish a regional long term management programme for pollution control, conservation and maintenance of biodiversity in Lake Tanganyika.
- formulate a regional legal framework for co-operative management of the lake environment.
- establish a programme of environmental education and training for Lake Tanganyika and its basin.
- establish tested mechanisms for regional co-ordination in conservation management of the Lake Tanganyika basin.
- produce a comprehensive strategic plan for long-term application to be based upon the results of a series of special studies aimed at improving the understanding of the lake as a whole.
- implement sustainable activities within the Lake Tanganyika Strategic Plan and incorporated environ mental management proposals.

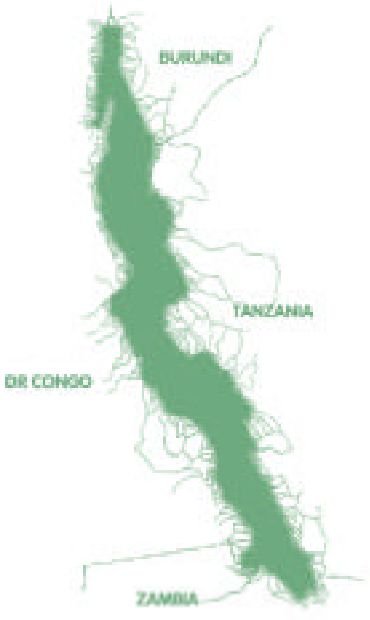
These objectives are being achieved through establishing a regional framework for co-operation, including endeavours to develop a legal agreement for lake management; investigating pollution including sources, effects and control; and

LEAD AGENCIES AND NATIONAL COORDINATORS

Lead agency in **Burundi**	Institute for the Environment and Conservation of Nature
National Coordinator	Jean-Berchmans MANIRAKIZA - Director General, INECN
Lead agency in **D.R. Congo**	Dept. for Management of Renewable Natural Resources.
National Coordinator	Mady AMULE - Director, GRNR
Lead agency in **Tanzania**	Division of Environment, Office of Vice-President
National Coordinator	Rawson YONAZI - Snr Environmental Officer
Lead agency in **Zambia**	Environmental Council for Zambia
National Coordinator	James S. PHIRI - Director, ECZ

investigating biodiversity and conservation measures leading to the setting up of protected areas as underwater parks. Project activities are implemented by government environmental ministries and agencies, and sectoral departments as a major objective to strengthen national capabilities and community participation. The scope of participation is broad and involves numerous institutions at all levels reflecting the need not only to study the lake itself but to take account of the enormous catchment area of the lake where, human activities influence the quantity and quality of the water that runs into the lake.

The operational structure of the project is outlined in the figure (far left). At the highest level is the Project Steering Committee (SC) comprising a small group of senior civil servants, principally from the lead agencies for the project in each country (see Box). The Steering Committee is responsible for overall project direction and decision-making on matters of policy. Supporting the SC is a Regional Technical Advisory Committee A recent project review recommended the formation of National Steering Committees, to bring together senior reps from other Ministries in each country that have an important role in the project in order to enhance ownership and awareness at this level. Supporting the NSCs are the National Working Groups, (NWG). These comprise approximately 10 members drawn from all the major stakeholder groups and institutions and provides a forum for exchange of information, resolving technical and implementation issues and latterly for the development of the Strategic Action Plan for the lake which will be the major output of the project as it will define and establish the process by which all future management interventions will be prioritised and co-ordinated. As the project proceeds it is hoped to involve both NGOs and the private sector as important stakeholders in the lake's resources and their management.



Lake Tanganyika Catchment Area

The special study investigations are largely carried out from a number of lake shore bases. These have been established in Bujumbura in Burundi, Kigoma in Tanzania and Mpulungu in Zambia , a further base will be established at Uvira in D.R. Congo. The role of the Consortium is to help the riparian states achieve the project objectives through providing methodological advice, coordination and facilitation services to local institutions who are responsible for carrying out the agreed work plan. Throughout there is a strong emphasis on training and institutional capacity building.

The Project Coordination Unit, based in Dar es Salaam, is the principal regional focal point for the co-ordination of all project activities. It is intended to administer and facilitate project operations in the region and, most importantly, to act as a link and information conduit between countries, institutions and other related projects.

Finally it should be stressed that GEF support is intended to be a catalyst to a continuing process - the problems facing Lake Tanganyika and its basin cannot be resolved through a single, time-bound intervention such as this project. The current GEF project must, therefore, be seen as the first step in a long process of developing regional capacity to provide sustained and effective environmental management and will therefore aim to identify mechanisms through which appropriate activities may continue into the future. The project must ensure that any processes and mechanisms established are financially and socially, as well as environmentally, sustainable. This will require (through the Preliminary Strategic Planning process) establishing mechanisms for early prioritisation of major existing and potential threats to the integrity of the lake and formulating viable strategies for future co-ordinated management.

Andrew Menz is Project Coordinator for the Lake Tanganyika Biodiversity Project.

The Kirando Socio-economics Survey

by Steve Evison

During the last few weeks of August, a multi-disciplin ary team worked in and around the village of Kirando (Rukwa Region of Tanzania), looking at the fishing practices in the area, socio-economics and environmental impacts of terrestrial land use practices on the aquatic system. This survey was the seventh survey of its kind to be carried out by the project, previous surveys having been already carried out in other areas of the Tanzanian and Zambian coastal areas of Lake Tanganyika. These surveys are designed to give a clearer picture of how people live and consequently how they affect the

The long boat journey to Kirando, Tanzania

environment. This is the first stage in developing appropriate project plans to sustain the environment and the lake's biodiversity through methods appropriate to the area and its people, trying to ensure that any restrictions do not impact negatively on the people, such that there are always alternatives, local beneficiaries and most importantly a local acceptance and motivation for the change. This will obviously link very closely with the environmental education component of the project and in fact, in many ways, they will all continue concurrently.

We were fortunate enough to be joined by a number of key people from the area including the Division Secretary, the Division Agricultural Extension Officer, Community Development Officer, Fisheries Officer and a local women's representative. These people joined us as part of the team during our time in the village and also returned to Kigoma to help with the compilation of a detailed report of our findings. The final step was to return with them to debrief at the Regional Office in Sumbawanga before they returned back to their usual work. This is a very important part of the project in that we are involving local people in the issues and the development of appropriate plans. We hope that through this involvement and training that their awareness of the issues will be raised and they will become key local contacts and facilitators for the project in the future.

Some of the team has been involved in the past surveys and most are based in Kigoma, working with the government services and local projects. We were therefore able to have a pre-departure meeting to discuss the general form of the survey and discuss appropriate techniques and logistics. In addition to this, it gave the two outside consultants (Dr. Claude Mong'ong'o from Dar es Salaam and myself from the UK) an opportunity to get to know everyone and to assess expertise and appropriate roles. A few days in Kigoma prior to departure also gave time for the compilation of a basic field manual for the survey and future training. The Kigoma part of the team then traveled to the Kirando area on the Liemba ferry which runs up and down the Tanzanian side of Lake Tanganyika.

During our time in the field our work would usually start in the shade of a large Mango or Baobab tree. Here we sat on the benches and chairs until a full meeting had formed. We would introduce ourselves and the project and then discuss issues of importance in the village, usually ending up with analysis of the key problems and gaining some insight into the relative priorities that people placed on them.

At this point we would then split into subject specific teams and assisted by a number of people from the meeting, each team would then start to focus in more detail on their particular subject. This would involve us in a whole variety of activities from walking around the fields and discussing cropping methods and seasonal activities, to interviewing fishermen and even making model maps of the village to discuss land use issues and locations. All of this would help us understand in more detail the situation and the lives of the people. The other aspect of all of this is that we would try to involve groups of people and the discussions that developed would help to give us a better understanding of key issues, points of conflict and consensus and levels of local knowledge. They would also encourage local people to analyse their own situation through the process of discussing among themselves and explaining to us. This is the first step in the project process of raising awareness and building local understanding. On the foundations that we were laying here we hope that the local management and environmental education can develop.

The Village Meeting

During the week we were able spend 3 days in the village of Kirando and to visit a further 4 villages. By the time we had finished the team felt quite confident that they had collected good information about the lives of the people, the place and the key environmental impacts. More importantly, we had sufficient detail to be able to make clear practical proposals based on the needs of the area and the proposal. Probably the most exciting thing of all, however, was the level of discussion and awareness that we had started to raise, and we feel that we now have some firm local partners among those who joined the team, as well as a few others who helped us along the way.

Steve Evison was contracted by the Lake Tanganyika Biodiversity Project for the Kirando PRA.

What is Biodiversity and Why Should We Conserve It?

by Edward Allison

What is Biodiversity? If you asked three people this question, you would probably get three different answers. We are all aware that it refers broadly to the variety of living things: we look at a catch of fish from a gillnet in Lake Tanganyika and we see that it consists of **many species**. Those who know the fishes in the lake soon realise that the same species may look different in the waters off Mpulungu to those off Uvira. These visible, or phenotypic, differences reflect **genetic differences within species**. If you are really curious and decide to look inside the stomachs of some of the fishes then you will see the diversity of small plants and animals that the fishes have been feeding on. And while you are busy with your dissections, an otter may eat some of your catch. The fishes are part of a diverse community of plants and animals that live together in the **various ecosystems** in the lake, competing for food and space to live; eating or being eaten.

Biodiversity can thus be measured at three levels; the genetic, the taxonomic (*e.g.*, species) and the ecological. This does not mean you *need* to measure diversity at all three levels—the levels you choose depend on what you want to do with the information. The question of how much you need to know about biodiversity in order to conserve it is a topic much debated by scientists and resource managers, and will be addressed in a future article. Before we begin to work out the best way to measure biodiversity;

"Do you want to eat only one or two types of fish for the rest of your life?"

however, there is a more fundamental question to be asked: Why is it important to even think about conserving biodiversity?

We know that Lake Tanganyika is a 'biodiversity hotspot'. But if you ask anyone why we should be so concerned with conserving this diversity, again, each of us will have a different answer. Scientists who spend their careers studying the variety of plants and animals—how they evolved and differentiated, their complex ecological relationships—do not seek justification; their scientific interest provides enough reason. But in today's world, where the interests of conservation must be balanced with the need for development, we have to think more carefully about why we should be so concerned with 'Biodiversity'. We must recognise that our scientific interest is a minority one. We need to ask why the rest of society should be so concerned with the loss of diversity.

Do you want to eat only on or two types of fish for the rest of your life? The diversity of fishes in the lake support a diversity of fishing techniques, and the fish markets around the lake allow us a choice of fish species to eat, depending on our budget and our tastes. As I have explained above, the fishes do not live in isolation from other plants and animals in the lake. To ensure that productive and diverse fisheries continue, both for food and ornamental fishes, we need to conserve the ecosystems that support such diverse fish production. Thus, biodiversity is of **direct use** to us. Ornamental fishes bring tourists to Lake Tanganyika, tourists spend money, this is one **indirect use** of biodiversity. None of these benefits, direct or indirect, will accrue to us if the Lake Tanganyika ecosystem collapses through overfishing, sedimentation or pollution.

"The survival of Lake Tanganyika and its biodiversity is very important to many of us around the world—that is one of the reasons for GEF's interests."

What if we lose some, but not all, of the diversity of the lake? Our lake will continue to produce plenty of fish won't it? Ecologists are currently arguing that **ecosystem 'functions'**, such as the ability of Lake Tanganyika to support fish production, are related to biodiversity (including genetic diversity within populations). They argue that if biodiversity is reduced, so too, will fish production be reduced. It is not yet certain how biodiversity and ecosystem function are related and it will probably be some time before definitive relationships are worked out. Given the uncertainty, it is probably wise to be cautious and seek to minimise any losses.

So far I have argued for biodiversity conservation on the basis of its usefulness to us; I have used an economic argument that we would be poorer if biodiversity were reduced. Many feel that the preservation of a species has a value independent of any monetary considerations. Loss of biodiversity would make us poorer in terms of the satisfaction we get from life—from eating diverse foods, from the loss of knowledge about our surroundings. These '**non-use**' arguments may seem irrelevant to those with more immediate troubles, but I remember how, on our trip with the Kigoma Workshop participants to Gombe Stream NP, everyone in that beautiful, diverse forest forgot their concerns for a short time. I also recall those who were snorkeling or diving in the lake for the first time, marveling at the diversity they saw.

If you are still not convinced, you could say that all species are God's creation and so must have a role to play!

The survival of Lake Tanganyika and its biodiversity is very important to many of us around the world—that is one of the reasons for GEF's interests. If you are from the lake shore area, and are not a scientist, then I hope this article has given you some 'food for thought' as to why conserving biodiversity in Lake Tanganyika is relevant to you.

Edward Allison is a Lecturer at the University of East Anglia and is LTBP's Field Team Leader for the Biodiversity Special Study.

LTBP Dive Survey Training

by William Darwall

In July - October of last year, the Biodiversity Special Study (BIOSS) held the first training course in diving and under water survey techniques. The course was held in Kigoma, Tanzania and scientists participated from all four riparian countries. Fifteen individuals successfully completed the course leaving dive survey teams in place in Burundi, Democratic Republic of Congo, and Zambia. Unavoidable circumstances have unfortunately left the Tanzanian team only two strong, but additional team members will be trained in a second course this Spring.

The course was run over a three month period with five weeks of swimming and dive training to BSAC Sport Diver level, four weeks training in a range of underwater survey techniques, and two weeks of field survey. The field surveys, conducted in Gombe Stream National Park and later in Nsumbu National Park for the Zambian team, provided opportunities for the teams to plan, conduct, and analyse results from habitat and biodiversity surveys.

'No Fatalities'

The course proved a great success and the instructors, Will Darwall, Paul Tierney, and Christian Furrer, were most impressed by the determination of all participants, especially those who managed to progress from being only able to swim underwater (in a downwards direction!) to BSAC Sport Diver level. Congratulations to them all! Some members of the course were already able to dive, BUT they benefitted greatly from the additional training in diver rescue techniques and diving theory.

Following the dive training, we were able to leave the confines of Kigoma Bay—fortunately before the massive input of diesel oil from TANESCO—and training was initiated in underwater survey techniques. The survey training was divided into 'habitat mapping' and 'fish censusing' with the manta board technique ("water skiing face down") proving very effective and most enjoyable. The teams were able to map the coarse distribution of

The LTBP Dive Survey Team

underwater habitats along the entire 16km of lake shore adjacent to Gombe Stream NP in one day, using the manta board.

Three short survey expeditions were mounted to conduct preliminary surveys in Gombe and Nsumbu NP. The two Gombe surveys were a great success, despite a few dramatic storms and a few worried faces in the boats, and the results will be available shortly in a BIOSS Technical Report. Paul Tierney has just reported back from a successful preliminary survey of Nsumbu with the Zambian team with all body parts still intact despite the large numbers of crocodiles and hippos disrupting the survey. Even Reuben Shapola refused to be towed behind the boat in most areas! The results of this survey will be available shortly as a technical report to LTBP.

A second training course is planned for 1998 and will specifically target training of national park staff for underwater surveying. It is planned that those already trained will join the new trainees in conducting further survey expeditions to national parks bordering the lake. Following this additional training and experience, the teams will be more self-perpetuating with current team members able to help train new recruits as necessary in the future. These teams will be a great asset to future management and should be seen as a regional resource available to all those working on the lake.

Participants in the training course: From Zambia: Charles Lukwesa, Godfrey Milindi, Maybin Mwenda, and Reuben Shapola; From Burundi: Felix Nicayenzi, Libere Ndayisenga, Alberic Rugirabirori, and Bernard Sinunguka; From DR Congo: Constantin Amundula, Alexis Bashonga, Patrick Kukiye Buda, and Donatien Muzumani; From Tanzania: Kimambo Fadhili, Robert Wakafumbe, and Deonatus Chitamwebwa.

William Darwall is a FRONTIER dive instructor and was contracted by LTBP to teach diving and underwater survey techniques.

Sedimentation Cruise

by Andrew Cohen

The Lake Tanganyika Biodiversity Project sponsered a sedimentation research cruise on board the R/V Tanganyika Explorer in January, 1998. This cruise was directed by the University of Arizona, under contract to LTBP. The purpose of the cruise was to collect bathymetric data, sediment cores and water samples as part of an investigation of the long term changes in sedimentation rates resulting from watershed deforestation and subsequent soil erosion, and the effects those changes may have had on the ecology of Lake Tanganyika. The cruise targeted both pristine and heavily impacted catchments. Cruise operations were divided into 3 legs of varying duration, working in both Tanzanian and Burundian waters of the lake. It was a truly international expedition, with participants from all four riparian nations, Malawi, UK, USA, and France. The dates and participant lists for each leg are listed below.

Cruise Team Members

Leg 1 (6-16 Jan, 1998)
Andrew Cohen - University of Arizona
Manuel Palacios Fest - University of Arizona
Jeffrey Houser - University of Wisconsin
James McGill - Embangweni Hospital, Malawi
Emma Msaky - Tanzania Petroleum Development Corporation
Catherine O'Reilly - University of Arizona
Graeme Patterson - LTBP sediment study co-ordinator
Robert Sinyinza - Zambia Dept. of Fisheries
Peter Swarzenski - U.S. Geological Survey
Mutanga Syampila - Zambia Dept. of Fisheries
Dirk Verschuren - University of Ghent

Our team putting in a gravity corer.

Extracting a core for processing and shipment

Leg 2 (19-24 Jan, 1998)
Andrew Cohen - University of Arizona
Manuel Palacios Fest - University of Arizona
David Dettman - University of Arizona
Jeffrey Houser - University of Wisconsin
Kiram Lezzar - Univ. of West Brittany
James McGill - Embangweni Hospital, Malawi
Catherine O'Reilly - University of Arizona
Robert Sinyinza - Zambia Dept. of Fisheries
Mutanga Syampila - Zambia Dept. of Fisheries

Leg 3 (24-28 Jan, 1998)
Manuel Palacios Fest-University of Arizona
Gaspard Bikwemu - University of Burundi
David Dettman - University of Arizona
Jeffrey Houser - University of Wisconsin
Bombi Kakagozo - CRH/Uvira, DR Congo
Kiram Lezzar - Univ. of West Brittany
Louis Nahimana - Univ. of Burundi
Gerard Ntungumburanye - IGEBU, Burundi
Catherine O'Reilly - University of Arizona
Tharcisse Songori - GEOMINES, Burundi
Kelly West - LTBP Scientific Liaison Officer

Cruise operations, logistics and scientific activities all ran extremely smoothly on this cruise, thanks to the hard work of the many team members involved as well as the excellent crew. The productivity of the cruise can be judged by the fact that our original coring plan was vastly exceeded - successful and timely completion of the planned coring targets during all legs of the cruise allowed us to obtain cores from two additional deltas (the Luiche and Gatorongoro) which were not originally planned for study. Also the number of cores obtained significantly exceeded our expectations. A full cruise report has been completed.

Andrew Cohen is a professor at the University of Arizona. He is contracted by LTBP to supervise the collection and analysis of cores from Lake Tanganyika for the Sedimentation Special Study.

LTBP Field and Laboratory Methods Training Workshop

by Kelly West

From 22 September to 3 October 1997, LTBP's Kigoma station hosted a Field and Laboratory Methods Training Workshop. Twenty-nine participants from Tanzanian and Zambian institutions concerned with fisheries, water resources and national parks attended the workshop.

Morning lectures covered a diverse array of topics, including: Introductions to the Biology and Geology of Lake Tanganyika, 'What is Biodiversity and Why Conserve it?' 'Sediment Discharge and its Consequences,' 'Pollution and its Effect on Biodiversity,' 'The Relationship of Stable Isotopes to Water Provenance and History' and 'Geographical Information Systems as a Tool for Integrating Diverse Data Sets.' In the afternoons, participants dispersed into field and laboratory sessions for biodiversity, sedimentation or pollution. In these practical sessions, participants learned the specific tools necessary for their studies. Biodiversity technicians aquainted themselves with the different techniques for collecting aquatic organisms and practised keying-out their samples and calculating biodiversity indices. The pollution team collected water samples from Kigoma Bay and from Gombe Stream National Park and learned to conduct basic water-quality analyses. The delegates for sedimentation studied the fundamental properties of sediments and practised collecting, sieving, and weighing samples as a precursor to describing sediments and interpreting their history. Dattomax Sellanyika, the Park Warden In Charge at Gombe Stream National Park, hosted the entire workshop delegation for discussions of conservation and a tour of the park.

A. Kirika instructs participants on water analysis techniques

The workshop was organized by Chris Foxall and led by teams of trainers, with Eddie Allison, Roger Bills and Koen Martens leading the Biodiversity module; Rob Duck, Graeme Patterson and Hudson Nkotagu representing the Sedimentation Special Study; and Tony Bailey-Watts, Chris Foxall, and Alex Kirika guiding the Pollution Special Study.

Participants included: D. Chitamwebwa, I. Katonda, E. Kadula, U. Kisisiwe, D. Lyoba, S. Muhoza, G. Bwathondi, O. Kashushu, R. Wakafumbe, C. Mbinduka and M. Kajelelo from TAFIRI; P.

D. Chitamwebwa instructing on biodiversity indices.

Kiliho, T. Mpyalimi and C. Rubabwa from Kigoma Regional Water Department; F. Kimambo, D. Sellanyika, and J. Wakibara from Tanzania National Parks Association; K. Mbwambo of the Tanzania Bureau of Standards;

L. Mwape, K. Kaweme, C. Lukwesa, K. Kaoma, I. Zulu, R. Shapola, G. Milindi, M. Mwenda, and R. Sinyinza from Zambian Department of Fisheries; B. Kasonde of Zambia's Department of Water Affairs; and K. Mununga of Nsumbu National Park in Zambia.

'Lake Tanganyika International Football League'

The workshop concluded with a football match between the Tanzanian and Zambian delegations. Evenly-matched teams with strong performances from both sides resulted in a 1-1 tie.

Thus, the determination of the Tanganyikan International Football Power must await future workshops!

Workshops are currently being planned for the francophone countries. However, the current security situation and early stages of LTBP infrastructure in Burundi and D.R. Congo neccessitate a different workshop design. For the francophone countries, we are planning individual workshops for each special study to take place over the course of the next few months.

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