

RAF/92/G32 - POLLUTION CONTROL AND OTHER MEASURES TO PROTECT BIODIVERSITY IN LAKE TANGANYIKA

BTO report of mission to Tanzania, Zaïre and Zambia - 8 August to 3 September 1996 - Tony Bailey-Watts

This mission assessed all resources in institutions in the LT region that could potentially contribute to those aspects of the Special Studies on 'Pollution in International Waters and its Effects on Biodiversity', 'Sediment Pollution and its Impacts on Biodiversity' and 'Biodiversity' *per se*. The Terms of Reference for the visit are available, and a comprehensive report of the mission's business and has been drafted. A major feature throughout the mission was the close collaboration between the 6 members i.e. myself (TBW) and Chris Foxall (CF, University of East Anglia) comprising the 'Pollution' team, Graeme Patterson (GP, NRI) and Rob Duck (RD, University of Dundee) making up the 'Sediment' team and Eddy Allison (EA, University of East Anglia) and Phillipe Petit (PP, Toulouse) representing the 'Biodiversity' group. For example, all 6 visited Tanzania, but in order to also cover the other two countries adequately, i.e. to take account of pollution, sediment and biodiversity issues, only EA and PP visited both of these; CF and GP went to Zambia but not Zaire, while TBW and RD went to Zaire but not Zambia. As such, my observations will commonly mirror those reported in the BTO's of the other members of the mission. **Table 1** indicates the visits made by me.

Thursday 8.8.96: Depart home 1400h; arrived Dar 1130h **Friday 9.8.96.** With CF, prepared for meeting of group in p.m., and that of the group with the PCU in Dar the next day.

Saturday 10.8.96: Meeting, Andy Menz (Office, British Council, Dar) a.m. Covered the following aspects: requests previously made by the group and sent to the PCU to arrange; itinerary and constraints; funding allocation between Special Studies; preparation of a 'questionnaire'/'*aide memoire* for institutional visits; training and environmental education; establishing a 'permanent' presence of e.g. IFE, UEA in the region to enhance successful completion of tasks: the need for most of the 'field operatives' to be trained in all aspects of the sample collection and treatment. Also learnt that (i) National co-ordinators would not be coming on our 'tours', and (ii) there is little information on NGO's at this stage.

Action: future missions must send ToR and full details of what they require of the PCU, to the PCU as early as possible.

Absence of National Co-ordinators and equivalent local 'connected' personnel hampered considerably our progress during this mission. This shortcoming must be addressed for future visits.

Sunday 11.8.96: Discussions with group on prospects and sense of all 6 going to all 3 countries led to the decision to 'split' in order to visit all sites intended - see above.

Monday 12.8.96: All 6 off to Kigoma 0430h. Brief stop Tabora (photos plane and notice re-'no photos!'). Preliminary re-scheduling of activities based at Kigoma, Uvira (mainly Centre de la Recherche Hydrobiologique) and Zambia (probably, Lusaka and Kinshasa).

Photography was possible because I received permission from an official first!

Tuesday 13.8.96: With CF and RD to the Regional Water Department - discussed various water resource and quality issues with the Regional Water Engineer, Hydrologist and Analytical Chemical groups. **Action for the Special Study co-ordinators: this outfit needs and deserves strengthening and involvement in the project particularly in the areas of river flow gauging and aspects of suspended sediment chemistry. On the purely chemical side it is likely that the KRWD is appropriate only for very basic raw (lake) water analyses (e.g. clarity, temperature and other probe-facilitated measurements); however, links with (and possible periodic 'secondment' of KWRD personnel to) the nearby TAFIRI laboratory should be explored.**

Met briefly with Nshombo Muderhwa (Scientific Director of CRH, Uvira) who was to prove so helpful in smoothing out potential delays when we left Uvira following our visit to CRH - see below. Discussed with Dr John Craig - the FAO FINNIDA (LTR) statistician - issues stemming from the LTR's results. John's statistical analyses have been hampered by the fact that he was not in charge of data collection; thus ignorant of sampling details.

Action for the Special Study co-ordinators: ensure that all field operatives, analysts, microscopists etc., take great care over (i) their duties/activities generally, and (ii) in their

reports, the identity of e.g. units (P or PO₄P?) and sampling strategies (single or duplicate samples?).

John supplied lists of staff stationed at the four main LTR laboratories - and commented on the worthiness of some of these people. Virtually all of these were involved in the now defunct 'Programme of Basic Monitoring by Nationals' at Kigoma, Bujumbura, Kalemie, Moba, Uvira, Karonda and Mpulungu i.e. including the 4 main centres that I intend to resource during the first ('training') year of practical work.

Action for the Special Study co-ordinators: capitalise fully on LTR's experience with, and knowledge of nationals that we are likely to appoint to the LTBPP; check that *c.v.s.* 'tally' with the persons presenting themselves.

Wednesday 14.8.96:

With CF on 'final' schedule and activities for the rest of the mission: Kigoma to Uvira and return (overall resource assessment); TBW (with EHA, RWD and PP) from Kigoma *via* offshore Malagarasi delta to Mahale Mountains National Park (un-impacted area including lake sector) and return; visits to Gombe, Ujiji etc., report writing; plus assessment of TAFIRI-FAO FINNIDA re- 'lower organism' biodiversity and associated pollution assessments.

Met Dr H Kawanabe (Director General, Lake Biwa Museum, Japan) and Dr Tetsu Sato (Minami-izu-Marine Ecology Laboratory, Japan); discussed interests in biodiversity.

Not sure that a lot of common ground exists here.

With EA, PP, RD and Bertha, departed on '*Mwongozo*' *ca* 2300h from Kigoma for Uvira.

Warning, anyone travelling on this and many other craft on the lake: the sanitary arrangements are quite disgusting - so be prepared.

Thursday 15.8.96: Arrived Uvira *ca* 0900h (tow-net sample taken as boat slowed on approach to harbour). Disembarking and attending to customs and health certificate checks took some 4 hours, however.

Warning for all: take plenty of water/juice on such trips, as immigration not exactly accommodating in this respect; more importantly, have records of inoculations etc at the ready, including some evidence that you have had a cholera jab - even if you have not!

Into beach-side hotel ('Guest House') approximately 150m from CRH. Lunch, and quick tour of CRH plus audience with staff to avail of ToR of our visit/s. Left at around 1730h (way after official 'closing-time'). Discussions continued with senior staff of CRH in evening.

Friday 16.8.96: Main discussions and resource assessments carried out in a.m. Open forum until 1300h - on the GEF project components that I am coordinating.

Action for Special Study co-ordinators - assuming the security situation in Zaire improves: this institution must be viewed as a prime 'contender' for the fullest involvement possible in the LTBPP; but avoid the mistakes of previous programmes which failed to provide 'consumables' such as fixatives/preservatives, filter papers, reagents, batteries, spares and replacement parts for various equipment items; other examples are basics including power generators, and water stills.

Note: very little in the way of phones or facsimile here, but a mobile phone is available a few kilometres into Uvira town at a charge of 9\$US per minute or part of a minute for UK.

Saturday 17.8.96: Return Kigoma departing from guest house at 0730h, boarding the filthy and rather Spartan 'm/v *Buhati*' at 0900h. Photos and samples (mainly for P analysis) at 4 points between Uvira to Burton's Bay (Ubwari), and then Kigoma Port Bay. 'Facilities' pretty 'basic' e.g. no bunk or bed available - and little space on deck even to stretch out.

Action for all: take plenty of drink and food on such a 'voyage', and take a 'mat' or such like to lie on, and a warm jumper etc, as none of this group at least, had anticipated how cold it can get from not long after sunset and right through the night.

'Mused' on incredible challenge presented by this project; developing a sustainable programme of scientific study on a system characterised by organism abundances and ion concentrations near the limit of detectability! Also, we must achieve as wide a scope of activities as possible from the outset - to establish

which studies, measurements and activities are the most appropriate to maintain in the long-term i.e. post-GEF.

Sunday 18.8.96: Arrived Kigoma *ca* 0130h but didn't disembark until 0900h - >24 hours after leaving Uvira! Immigration a slow process, and eventually had each to stump up 50\$US as our visas (organised by NRI) were 'single-, not 'multiple-entry'. Also some talk of all this being avoided if we had made our first entry into Zaire at Kinshasa!

Action for NRI: ensure that such difficulties over visas are avoided in the future.

Further 'tweaking' of ideas re- the strategies most appropriate for carrying out this project. '*Echo*' apparently fit and ready (safety aspects included) for departure at *ca* 1200h on 19.8.96 (but see below).

Monday 19.8.96: Final preparations for trip to Mahale. Planned to depart Kigoma at *ca* 1400h on the '*Echo*', but a literally last-minute emergency (lost fishermen) resulted in our lending the boat to TAFIRI. Brief glimpse of the vessel at that point did not fill one with the greatest confidence - and events over the next few days proved that these feelings were fully justified. Eventually set off the next day.

Note for all: considerable delays can occur as a result of the most unexpected reasons; nevertheless, the present mission felt that preparations relating to the project vessels (such as 'sea' worthiness, and safety aspects) should have been put in train well in advance of our visits - even before the ToR of this particular mission had been submitted.

Tuesday 20.8.96: depart Kigoma 0800h. 'Bottomed' at 0930h *ca* 1km off the Malagarasi mouth. Photos and (in some cases) samples of submerged and emergent macrophytes, sand and mud deposits, and seine-netting.

Note for all: shallow- draught (25-cm) vessels are needed for such work - to transport equipment over long distances. The general lack of (i) care with the vessels, (ii) skill in manoeuvring in confined spaces, and (iii) general boat and seamanship witnessed by this mission shows that personnel taken on by LTBPP for manning both small craft and the larger vessels, must be carefully chosen and trained as appropriate.

Completed the 12-hour plus, journey to Mahale: magnificent for the scenery, but frightening considering that (i) guard-rails were more or less useless, (ii) buoyancy aids, not life-jackets as requested, were available, (iii) what an appalling 'image' the '*Echo*' presented (producing oil/soot slicks and belching black smoke) and (iv) lack of communication facilities.

Note for PCU: The '*Echo*' needs a thorough looking over with the view to complete refurbishment of the superstructure, engine room and facilities that can be reasonably expected on a craft that is to act literally as a 'flagship' for the LTBPP - its 'permanent' staff, as well as visiting scientists, technicians and various interested parties including dignitaries.

Wednesday 21.8.96: Profitable discussions with Mahale staff.

LTBPP should capitalise on the enthusiasm of this outfit, and the special opportunities presented for studying the essentially pristine - but obviously remote - environments here.

Return to Kigoma took *ca* 10 hours. Belching fumes continued to advertise the poor 'image'! Otherwise, no major mishaps, in spite of anchoring in bay at 2000h to check on arrival of '*Liembe*', wait

Thursday 22.8.96:..... until approx. 0130h for this, and (all in the dark), transfer EA and PP *via* the '*Zodiac*' to the boat at about 0215h, return to '*Echo*' and resume journey to Kigoma at 0300h; 'docked' there 0930h. Tiredness accruing from such a trip, was exacerbated by concerns over the lack of a working radio/telephone, the poor safety equipment, and the generally poor 'lake-worthiness' of the '*Echo*'.

These shortcomings must be attended to by means of a complete overhaul and refurbishment of the '*Echo*' - if this is deemed worthwhile - and further training of the crew in boatmanship and general on-board practice.

Friday 23.8.96: Worked on mission report.

Saturday 24.8.96: With RWD: discussions on all aspects of the project, but especially those highlighted by the experiences during the mission so far; these included the '*Echo*'; project liaison, the public perception/'image' of the LTBPP, and our Special Studies strategies and logistics. Drafted 'Contents' for the mission report.

Take copious notes at all junctures, and write these up a.s.a.p.

Sunday 25.8.96: Discussions with John and Hilary Craig re- the above. Otherwise progress with the 'mission report'.

Take every opportunity to discuss issues with those people already experienced in working in the region.

Rest of day on BTO report and 'diary'.

Monday 26.8.96: Progress mission report. Evening meal with Alan Montgomery (British High Commissioner to Tanzania) and his daughter Justine, and Sally-Anne (Manager, Kitwe Chimpanzee Sanctuary) at 'Aqua Lodge', Kigoma. General discussions on the LTBPP, Special Studies and conservation.

Tuesday 27.8.96: Progress mission report, and collation and editing of others' contributions.

Wednesday 28.8.96: Progress mission report. Complete institutional resource assessment at the TAFIRI/LTR centre, with special reference to facilities for assessing the biodiversity of phytoplankton and attached algal assemblages, zooplankton etc (i.e. organisms 'below fish'). Discussions with Els Bosma and staff at LTR and TAFIRI station on zooplankton and nekton analysis and the generation, analysis and graphical presentation of size frequency information.

TBW to send reprints on these aspects.

Evening with Danielle and Perrot Mannini's and friends. Contacted VSO personnel - with considerable experience of living and working in the region.

Maintain contact with these people.

Thursday 29.8.96: Considerable 'upgrading' and expansion of the mission report.

Friday 30.8.96: Fly back to Dar *via* Tabora

Saturday 31.8.96: Shopping. Discussions with the re-assembled team including CF, EHA and GP returned from Zambia.

Sunday 1.9.96: Further exchange of experiences with CF; re-designed mission report 'Contents' list; reported all progress to AM. Evening at High Commissioner's residence' for the Jane Goodall Foundation; brief discussion with JG over the LTBPP, pollution and biodiversity, and the possibility of establishing an underwater reserve at Gombe; JG very enthusiastic over the possible link with us, and her 'Roots and 'Shoots' scheme with our plans relating to environmental education and training. Met Victoria Strickland (Second Secretary, Political and Information, British High Commission in Dar, who is also keen to help with ODA and BC links re- training and environmental education,

Maintain contact with Mr Dattomax G M Sellanyika (Warden of Gombe), and Miss Strickland over these aspects.

Monday 2.9.96: Meetings at Tanzanian Ministry of Water, and the Lake Victoria Environmental Management Programme (LVEMP).

Maintain frequent contact with the MoW over water resource measurements and provision of data. Similarly, with LVEMP on all aspects over the co-ordination of another multinational, large African lake project.

Further discussions on sampling strategies

Tuesday 3.9.96: Meetings at University of Dar es Salaam, Departments of Botany, Chemistry, Civil Engineering, Geology and Zoology.

Relatively few aspects noted here that suggest much with regard to potential collaboration with, or contribution to, the Pollution Special Study.

Evening round-up meeting of group in Dar before departure for UK.

ADDITIONAL RECOMMENDATIONS WITH A GENERAL BEARING ON THE PROJECT:

1. Every effort must be made to 'advertise' the project, and eradicate the present very poor image that it appears to have attracted so far.

At the time of this mission, many people seemed to be either unaware of the project, or aware of it but not impressed with it. The Kigoma centre comprising the TAFIRI/LTR/Regional Fisheries 'compound' - and the SLO's residence IF (which is debatable) this is to continue as a 'project' facility - must start advertising the project's presence and aims immediately. This could be achieved by erecting sign boards, producing fact sheets and 'fliers', hosting groups for seminars, discussion groups etc. Even before the other centres such as Mpulungu and (social unrest permitting) Uvira and Bujumbura are officially taken on by the project, every effort should be made to maintain frequent contact with as many institutions (including small NGOs and cooperatives and local communities) as possible. This would help maintain the morale and expectations of the people we met, even if we are unable to do much on the practical front for a while. Already, some staff with considerable experience relevant to our needs have sought work elsewhere. It should be borne in mind that some 3 months have already elapsed since this mission was in Africa. In this connection, the general limnological workshop proposed by CF and myself, must be arranged as quickly as possible. As a 'high profile' project facility, the RV *'Echo'* must be tidied up; at present it comprises a filthy and one of the most polluting vessels that we saw.

2. Safety precautions must be markedly improved in connection with the project vessels - and the RV *'Echo'* in particular.

It is essential that in addition to improving considerably on the reliability of this vessel, all aspects of its safety must be attended to.

3. At least where European nationals require to travel between the lake countries, they should be accompanied by a National Co-ordinator or a similarly high ranking person, and be issued with e.g. UN documentation to ease passage at customs, immigration desks etc.

4. The experience of this mission, suggests that while the SLO's residence is a good place to work at the computer, for example, it is not suitable as regards other aspects of accommodation.

The present mission, and the visit made in November 1995, found that the nearby 'Railway Hotel' is reasonably comfortable, inexpensive, and a generally good place to work at one's 'laptop' for example.

5. To ensure the success of the LTBPP as a whole, and that of individual Special Studies, it is essential firstly, that a person with considerable practical knowledge and experience in African projects (preferably in the fisheries/freshwater biological area), be placed permanently in each lake country. Secondly, the Pollution Special Study views as crucial, the appointment of 2 UK graduates in limnology to Africa also on a more or less permanent basis - this assuming that the funding to place the present Special Study Co-ordinator and Consultant is out of the question.