

## BACK-TO-OFFICE-REPORT

### **Pollution Control and other measures to Protect Biodiversity in Lake Tanganyika (RAF/92/G32). Special Study: 'Sediment Discharge and Its Consequences'**

#### **Draft back to office report for visit by G. Patterson to Burundi and Zambia 5-28 November 1998**

#### **Separate copies**

A. Menz (PCU)  
B. Blake (NRI)  
O. Drieu (Seds facilitator)  
K. West (PCU)  
C E Troy (NRMD Dept. Office)  
J. Rogers (NRI)  
T. Bailey-Watts (IFE)  
V. Cowan (MRAG)  
J. Clabaugh (PCU)

### **1. BACKGROUND**

Short Terms of Reference for the trip were as follows:

To visit Burundi to meet with Drieu and visit various institutions concerned with Seds study (including teams from Democratic Republic of Congo) to discuss work plans and assist with enabling this work.

To travel to Mpulungu (possibly via Kigoma) to do similar.

Visit Lusaka to participate in the TDA meeting and then possibly home via Dar.

Whilst in Lusaka it would be possible to have discussions with other project participants attending the TDA meeting.

It was not possible to visit Mpulungu or Dar because of transport problems - this was not seen as critical

### **2. ITINERARY**

5-6 November London to Nairobi  
6 November Nairobi to Burundi  
20-21 November to Lusaka for TDA meeting  
27-28 November Lusaka to London

### **3. BRIEF SUMMARY OF VISIT**

This will be very brief and for the record - most action points have been dealt with:

3.1 CRH - outcome of visit in Appendix 1. All points of action have been followed up to enable this work to proceed

3.2 Series of meetings with DGGM and IGEBU are summarised in Appendix 2. Again all action points have been followed up and this has gone forward to the PCU as the basis of an agreement with DGGM and IGEBU.

3.3 Concerning the registration of Robert Sinyinza as M.Sc. student at University of Zambia (with Henry Sichingabula as supervisor). There has been a proposal that this may happen and there was general willingness that this should take place. Two sticking points remain:

- At what point in the calendar can the University of Zambia register a student - can this be at any time for a research student.

- Permission needs to be sought from the Department of Fisheries - Mr Mwape agreed to raise this with his training officer. The result of this is unknown

3.4 Discussions were held with Dr Nkotagu of the University of Dar es Salaam regarding the extension of his contract and remaining objectives of this work. These matters have been subsequently agreed with a view to his completion on June 31 1999.

3.5 Evariste Nzeyimana at the University of Burundi Department of Chemistry was visited and work is progressing well. A visit by Goeyens and Brion of the University of Brussels is anticipated in January 1999.

3.6 GP participated in sampling programmes of DGGM/IGEBU.

3.7 GP attended the TDA and made inputs to the meeting - further inputs will be made to the TDA document now being circulated.

3.8 GP met and had a number of discussions with the UNDP mid-term review team.

#### 4. FURTHER ACTION POINTS

4.1 Drieu to follow up on matters relating to the registration of Sinyinza (perhaps in consultation with Dr Irvine who has agreed supervisory input) listed in point 3.3 above.

4.2 It is noted that in Burundi particularly there would be a greater effort to encouraging greater contact between the different participants in the Seds study (and the others too). Drieu and West ought to consider holding a meeting within the country where the participants can get together, the wider objectives of the whole project re-enforced and efforts made to harmonise sampling made.

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#### APPENDIX 1

Meeting with the Sedimentation study team from CRH, Democratic Republic of Congo, - 11 & 13 Nov. 1998

##### **Present at meeting:**

Nshombo (CRH)  
Kakogozo (CRH)  
Tshibangu (CRH)  
Patterson (LTBP)  
Drieu (LTBP)

Discussion was carried out in order to make progress on the initiation of activities for the sedimentation special study at CRH. It was noted that for the time being, the personal security of the CRH personnel was paramount and this should be the primary consideration when planning field activities. A secondary consideration would be the fact that equipment currently sent to CRH would be at risk and therefore major equipment items (that it would not be possible to replace) would not be shipped in to the country until it was deemed safe to do so.

Discussion was based on a letter sent to Kakogozo at CRH on 28 April 1998 which suggested 3 stages required to proceed programme for the special study.

In the light of the fact that Kahindo and Nwenyemali (CRH) have started some sampling work and that archive data has been compiled this satisfies much of the progress required of Stage 1. All that currently remains is that this work is compiled into a report including methods and basic equipment requirements for Stage 2.

Some aspects of this Stage 2 programme were discussed and are listed below:

- < It will begin with monitoring work on three rivers close to CRH.

- < Basic equipment required would be : balance, filtration apparatus, GFC filters, pump, thermometer, hand lens, compass, sample bags, sampling bottles and tape measure. Many of these items are already available in Burundi for CRH and only need to be put together for collection. Other items (compass, tape measure and hand lens) will be ordered by Patterson for immediate shipping to Bujumbura (for onward shipping).
- < The team suggested that if possible a set of sampling protocols should be provided for at least the measurement of suspended load in rivers (the basic hydrology is known). G. Patterson will discuss with various other scientists on the project with a view to providing these protocols - this may demand additional equipment to that listed above.
- < It was decided that work on the lake itself was not safe at this stage and will be considered as part of the Stage 3 programme. Methods for sampling and assessing sediments in the lake already exist (Standing Instructions of SedsSS team, Mpulungu) requiring grab sampler and sieves for partitioning dried samples.

#### Action Points

It was noted that Kakogozo is no longer a member of staff of CRH. His continued role as head of the sedimentation study for DRC is supported by the head of CRH (Nshombo). Nshombo to write to the project in this respect to confirm this. Project then to begin negotiations with Kakogozo who will require some kind of direct contractual arrangement with the project for his input. The project notes that this may not be possible if it has major financial implications.

Patterson to procure additional equipment and ensure that the requirements for Stage 2 are available for collection from Bujumbura as soon as possible.

Kakogozo to compile Stage 1 report (including archive data, current sampling programme and proposed Stage 2 programme) as soon as possible, and no later than end of December 1998.

Patterson to contact consultants to prepare basic standing orders for preliminary work.

J. Clabaugh to ensure that the following items are set aside from the current order for equipment destined for Burundi

Tape measure  
Compass  
4 x hand lens

Plus the following items which should be removed from the order of equipment for the CRH lab. And currently stored in Bujumbura.

Balance top pan (0.01 g) A&D EK200G  
Hand Vacuum pump (zinc alloy)  
Filtration funnel conical. Stainless steel  
Support bed (sintered glass) for above filter funnel  
1 thermo-insulated box  
1 brass thermometer case  
1 thermometer to fit above  
500 ml bottles 5 packs of 10 bottles  
1 pair of forceps  
1 pack of GF/C filters - 45 mm diameter  
1 1 litre side-arm filter (buchner) flask  
1 roll of aluminium foil  
1 box of assorted polythene bags  
Selection of tubing (cut from the greater stock)  
Sieves 1 x 200 mm mesh, 1 x 63 µm mesh  
Top and lid for sieves

These items should be held at the Department of Fisheries until such time as Dr Nshombo of CRH deems it is appropriate to carry them to Uvira for work to commence.

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## APPENDIX 2

### Co-operation programme between LTBP, DGGM and IGEBU

Meeting with DGGM 11 November 1998

Present:

M. Sebahene (DGGM)  
T. Songore (DGGM)  
G. Patterson (LTBP)  
O. Drieu (LTBP)

Followed by meeting on 13 November 1998

Present:

M. Sebahene (DGGM)  
T. Songore (DGGM)  
G. Patterson (LTBP)

### Introduction

The objective of these meetings was to resolve all outstanding issues to allow DGGM/IGEBU to proceed to a letter of agreement to ensure that work for Stage 2 of the programme of co-operation between DGGM, IGEBU and LTBP proceeds to the end of the special study phase. The Stage 1 report of IGEBU and DGGM outlines a one year work programme (1 October 1998 – 1 October 1999).

It is noted that DGGM has been mandated to discuss on matters related to this study on behalf of IGEBU. DGGM agree to transmit results of this meeting and the agreement to IGEBU.

### Background

The principal objective of this piece of work on behalf of the Lake Tanganyika Biodiversity Project is to restore the process of gauging of Burundian Rivers and to gain a clearer understanding of the mineralogy of the suspended material being carried into the lake. The proposal for Stage 2 is outlined in detail in the report produced by DGGM and IGEBU as part of the Stage 1 output of the study. Stage 2 (the implementation phase) has already commenced based on this proposal though details of the proposal

### **Costs for LTBP**

#### 1. PERFORMANCE RELATED ALLOWANCES

Name	Institution	Months	Rate (\$ equivalent)	Total (\$ equivalent)
Sebahene	DGGM	12	150	1800
Nduwayo	IGEBU	12	150	1800
Songore	DGGM	12	150	1800
Ntungumburanye	IGEBU	12	150	1800
Ntirabampa	DGGM	3	125	375
Budugiri	DGGM	12	100	1200
Nsabimana	DGGM	2	100	200
Technician 1	IGEBU	12	100	1200
Technician 2	IGEBU	12	100	1200
<b>TOTAL</b>				<b>11 375</b>

## 2. PER DIEMS

A total fund of \$12,000 maximum available for per diems. This deals with travel of IGEBU team to Bujumbura for 3 days 20 times during the period, travel of DGGM to Gitega for consultation and meal allowance for days in the field. Per diem claims must be submitted to the project office in Bujumbura following the agreed rates of subsistence.

**Total \$12 000**

## 3. FIXED COSTS

3a. Station installation. 6 Stations at FBu 100 000 per station = FBu 600 000

**Total Ca. \$1 290**

3b. Cost for gauge readers. 6 gauge readers for 12 months at FBu 6000 per month = FBu 422 000

**Total Ca. \$899**

3c. Analyses. A total of 300 000 FBu for analysis of water samples at cost of FBu 2210 for Na & K, FBu 1 950 for Ca & Mg and 1 300 FBu for CO<sub>3</sub> and HCO<sub>3</sub>.

**Total Ca. \$680**

3d. \$340 dollars allocated to XRD analyses (6 samples)

**Total \$340**

3e. FBu 700 000 overhead for production of reports and other minor transport and communications requirements of IGEBU and DGGM. This to be managed by DGGM

**Total Ca. \$1 500**

3f. All necessary equipment has been purchased for this work (though some as yet to be delivered)

**Total Ca. \$5 000**

3g. Additionally the project agrees to purchase a computer (including inkjet printer) with Word and Excel for use of DGGM and IGEBU to allow data analysis and report writing.

**Total Ca. \$1 800**

## ACTION POINTS

- Project Co-ordination Unit to agree letter of co-operation between LTBP and DGGM/IGEBU. Basic Terms of Reference are given below
- IGEBU to forward names for 2 technicians to LTBP prior to agreement
- Project to purchase a computer (with Microsoft Word and Excel) and DeskJet printer for the use of DGGM for data analysis and report preparation
- DGGM to produce supplement to Stage 1 report (Section 3 ) outlining current methodology and any changes in site selection or methodology since its completion in June 1998. This will be included in the December 1998 quarterly report.

## TERMS OF REFERENCE FOR STAGE 2 OF THE WORK WITH DGGM AND IGEBU

Detailed methods and sampling sites are given in Section 3 of the Stage 1 Report by DGGM and IGEBU (plus supplement as described in the action points above). These are summarised below:

1. Establish new and reactivate old (where necessary) discharge monitoring stations on 6 of the principal input rivers to the lake.
2. Determine physical (pH, temperature levels, suspended sediment loads, etc.) and chemical (total dissolved load, conductivity, etc.) characteristics of water in these 6 rivers draining into the lake on a regular short-term sampling interval.
3. Determine particle size distributions of bed material sediments transported by the 6 selected Burundian rivers with sampling to be conducted near river mouths.
4. Make mineralogical analysis of bed material sediments of the 6 rivers
5. Make preliminary assessments of the impact of human activities (such as tree cutting) on the hydrological regimes and other related aspects of rivers draining into the lake and liaise with the Project Socio-Economic Study group in this exercise.
6. Make some recommendations for low-level long-term monitoring programme for future sedimentological and hydrological modelling in Burundian part of the Lake Tanganyika basin.
7. To complete this work by October 1999 with a final report issued by December 31 1999. Short quarterly reports should also be submitted to the project with the first due on December 31 1998.