

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

Progress Report No. 12

December 1998 - February 1999

1. Project Co-ordination Unit

1.1 Project Co-ordinator and Scientific Liaison Officer

1.1.1 Introduction

In spite of the seasonal break there has been satisfactory progress in most project areas. Of particular note was the meeting of the recently appointed Training Liaison Officers from the four countries who met at a workshop in Bujumbura to define their roles and plan future activities. Work on the refurbishment of the CRH station has made further progress, although, the security situation in eastern DR Congo remains tense

The three regional facilitators for Sediments, Biodiversity and Fishing Practices special studies are making a notable impact on improving organisation, planning and communication across the region and within their special study areas. Unfortunately, as indicated in the last progress report John Dorr, the Fishing Practice facilitator decided to leave the project and his last day in post was 15 January 1999. Every effort is being made to find a replacement of similar calibre as soon as possible.

We still await the full report of the Mid-Term Evaluation mission. An executive summary has been received. However, given some of the radical recommendations made in the report, the need to receive the full report for circulation and then consideration by the Steering Committee is urgent.

1.1.2 General summary

Thanks to the moderately improved security situation in DRC, project personnel made the first visit to Uvira, on 16 December 1998, since the uprisings and insecurities of July 1998. We were happy to find that the Centre de Recherche en Hydrobiologie (CRH) Uvira sustained no damages and that LTBP equipment donated to the centre, including a vehicle, dive equipment, compressor and microscope which remain in good condition. Rehabilitation of CRH was suspended during the crisis, though the materials purchased for the renovation remained stock-piled in the Centre.

Rehabilitation of the Centre de Recherche en Hydrobiologie-Uvira recommenced in January. The old electrical installations were stripped and new fixtures, outlets and sockets were installed. The work has been approved by an independent contractor and the renovations of the CRH plumbing systems, along with some woodwork and masonry will begin in March 1999.

A Training Strategy workshop was held in Bujumbura on 25-29 January 1999 for Training and Communications Liaison Officers. In addition to the Training and Communications Liaison Officers and Environmental Education specialists, the LTBP facilitators participated as well. The workshop was facilitated by Rachel Roland and Monique Trudel and represented a first step towards implementing in full the Training Strategy developed by the same consultants in 1998. The aim of the workshop was: "to build a dynamic training and communications team with a common vision in order to carry out activities in accordance with achieving the Project's objectives." The workshop achieved its principal objectives and the next activities are already being planned (including an EE workshop in March to be held in Kigoma). Thanks to the enthusiasm of the embryonic TCLO team, we believe that there is a real capacity to achieve effective team work and communications. It is important to note in this context that a regional training and communications officer, as originally envisaged, has not been appointed. Under current circumstances regarding security and ease of travel in the region it is considered most effective for the external consultants to work with the team

of four national training liaison officers that for the time being will subsume the role of a single regional post.

The participants list to the workshop is given below.

NAME/NOM	TITLE/TITRE
Cécile Gakima	Cordinateur National de l'EE et Responsable de la Liaison pour la formation L'INECN Burundi
Assumani Kimanuka	Acting Training Liasion Officer for DRC Animateur/CADIC R.D. Congo
Dr Nshombo Muderhwa	BIOSS Co-ordinator R.D.Congo
Bartholomew Tarimo	National EE Co-ordinator & training liaison Officer National Environmental Management Council, Tanzania.
Kwali Mfuni	National EE Co-ordinator & training liaison Officer. Environmental Council of Zambia
Munshimbwe Chitalu	Asst. National Co-ordinator and Socio-Economics Co-ordinator. Environmental Council of Zambia
Monique Trudel	Conseillere Education & Communication Environnementale
Rachel Roland	Senior Lecturer: Development Training and Education
Olivier Drieu	Regional Facilitator (Sediments)
Richard Paley	Regional Facilitator (Biodiversity)
Kelly West	Scientific Liaison Officer

A full report of the meeting can be found on the web site.

On 22 February 1999 a dive course began in Kigoma to reinforce the capacity of the existing BIOSS teams. Two members from each of the riparian countries are being trained to dive in this event. This course will be followed by an intensive taxonomy training course and a survey of Mahale Mountains National Park by the four riparian BIOSS teams.

The SLO completed a comprehensive guide to the molluscs of Lake Tanganyika, including a dichotomous key and revised taxonomy. The key will be field-tested by the BIOSS teams during the Mahale Mountains National Park Survey next month and will be published as a project technical document to aid the long-term BIOSS monitoring program.

The development of the project GIS is progressing well and a consultancy visit to the region is planned for April as a first step to locating the system and its future development in the region. Information about the GIS, its structure and development plus some of the maps are available on the web site. The web site also contains the first issue of the LTBP_GIS Newsletter, reproduced here at Appendix 1 together with the home page of the GIS/RS Centre.

Thanks are due to those of you who have sent comments on the web site and wherever possible these will be incorporated. Of particular concern regarding improvements is the

need to make the site and its information readily accessible to our francophone colleagues and work is underway on this.

Jerod Clabaugh, the project technical officer who developed the site is no longer with the project full time but he will continue to work on a part-time basis to ensure that the web site is kept up to date and assist with production of the project newsletter. And while on this topic I should like to take the opportunity to thank Jerod on behalf of the project for his hard work and dedication in this endeavour.

After some delay six candidates were interviewed for the post of Assistant to the National Co-ordinator (Tanzania). The National Co-ordinator plus 3 senior government officials and the PC made up the interview panel. A first choice candidate was sent for official approval, although, this has yet to be received.

The SLO spent one day at NRI and one day at MRAG in early January to discuss work programs, budgetary issues and facilitator recruitments before going on leave. The PC visited Lusaka on project business.

2. Strategic Action Plan

2.1.1 General

Following the Transboundary Diagnostic Analysis (TDA) workshop in Lusaka, (November 1998), a preliminary draft of the TDA was prepared and distributed for internal comments in December. Following initial feedback, this document has been revised and distributed for more general comments.

The document is now being translated into French and will be distributed to NCs as soon as possible.

2.1.2 Timetable for Action

As a result of discussions held at the November TDA meeting, the TAC Planning team proposed a revised schedule of activities, to allow for the incorporation of concepts from the draft legal convention within the draft SAP.

The basic timetable still stands. However, further modifications may be expected stemming from the conclusions of the Mid-term Evaluation.

The Preliminary TDA report has been presented to the National Co-ordinators for internal consultation. The TDA will then be presented at the next scheduled Steering Committee Meeting for their endorsement. This is now expected for April/May 1999.

The conclusions of the TDA, combined with the principles incorporated in the Convention, will then be developed into a draft SAP by the TAC/SAP Planning Team at a workshop that has been provisionally scheduled for June 1999.

Preliminary conclusions from the special studies will be fed into the draft TDA from November 1998 and the final project TDA and SAP will be prepared at a workshop linked to the proposed State of the Lake Conference, provisionally scheduled for March 2000.

2.1.3 Goals for the Next Quarter

The conclusions of the TAC/SAP Planning Team and the TDA report and matrix will be presented to the Steering Committee meeting scheduled for April/May 1999. It is expected that the Tri-Partite Review, a review of the conclusions of the MTE and the fourth SC meeting will be held back to back over a four day period.

3. Reports of Special Study groups

3.1 Progress Report: December 1998 – February 1999 for "Biodiversity" Special Study and "Conservation Activities"

3.1.1 Overall Summary of Progress

In both Zambia and Burundi the main effort of the BIOSS was directed towards completing the coarse scale habitat mapping of their respective coastlines using the manta tow technique. The Burundian team mapped a further 80 km covering the coastline from Magara to Nyanza Lac. This to all intents and purposes completes the process for Burundi, since mapping the remaining 5 to 10 km of lakeshore up to the Tanzanian border is currently precluded by security considerations. Simultaneously, the team conducted some gill netting in Bujumbura Bay order to obtain samples for identification and enhancement of the LTBP Bujumbura reference collection.

The Zambians mapped a further 100 km of shoreline from Cape Chaitika to Chipwa at the border with Tanzania. There remains only 50 km to map, stretching from the Chaitika north-west to the border with DRC. The Zambian team also continued its programme of quarterly joint surveys with the Pollution and Sedimentation special studies as well as conducting gill net/underwater surveys at Chisala, Chikonde, Kalambo, Lunzua and Cape Kapembwa.

A degree of improvement in the security situation enabled the DR Congo team to extend the range of their sampling work to include sites at Luhanga and Pemba 12 and 27 km south of Uvira respectively. These two locations were extensively sampled by Japanese research teams from the mid 1980s to the early 1990s, providing a body of data concerning species distribution and in some cases a measure of relative abundance. Two expeditions were made to each site in December, during which habitat profiles and fish censuses, both underwater and using gill nets, were conducted. The BIOSS team is in the process of finalising its report on the current status of these sites, which will incorporate comparison with the historical data from the previous surveys. However, owing to the continued instability in DRC it is still not possible to use project vehicles to carry out sampling outside Uvira. The costs of arranging alternative transport are significant and therefore further sampling of these locations, without continued improvement in the situation, is uncertain.

In Tanzania, suitable candidates for dive training have been identified and have begun learning the skills necessary to carry out underwater surveys. It is therefore anticipated that the Tanzanian BIOSS team will shortly be fully functional. The dive course now running includes two participants from each of four riparian countries, the intention being to strengthen the BIOSS teams and afford them a measure of sustainability for the future.

During this period the review and testing of sampling protocols by the BIOSS teams was completed. Comments were collated and submitted to the BIOSS co-ordinator in UK. Progress was also made in the development of the BIOSS Literature Database. Mr Robert Kumana, who has advanced French/English translating skills, was recruited to assist in the management of the system. In close contact with Dr Ntakimazi he will review the scientific literature in the LTBP library in Bujumbura and enter the relevant information into the database. This information will act as a reference source for the regional BIOSS teams and also be incorporated into LTBP's TANGIS database.

The next quarter will see the completion of the dive and taxonomic training courses. As a result BIOSS will have a pool of regional divers properly equipped with the necessary

skills to conduct underwater surveys. These skills will be employed and enhanced during the surveys of Mahale National Park in Tanzania and Nsumbu National Park in Zambia, providing a solid foundation for the remainder of the BLOSS workplan. Furthermore, the near completion of the mapping of the Zambian and Burundian shorelines provides a basis for the final selection monitoring sites in those countries. It is hoped that the Tanzanian team can commence the process in the next quarter. As already mentioned, future activities in Congo will be largely dictated by developments in the security situation.

3.1.2 Chronology of Activities

- December: Detailed surveys of Pemba and Luhanga carried out by Congolese team.
- December: Zambians test draft Standing Instructions on habitat and fish census techniques in the area of Cape Kapembwa and Chaitika. And manta tow from Cape Chaitika to Musende.
- December: Burundians together with Congolese test the draft Standing Instructions on mollusc censusing. Burundian team maps lakeshore from Magara south to Rumonge.
- December: Mr R. Kumana recruited to extract data from sources in the LTBP library Bujumbura and enter it into the BLOSS Literature Database.
- January: Burundians start mapping of area from Rumonge to Nyanza Lac (completed in February)
- January: Zambian team conducts gill net surveys at Chisala, Chikonde, Kalambo and Lunzua and underwater surveys at Cape Kapembwa.
- January: MRAG meet with Dr West to discuss BLOSS progress and budgetary matters.
- January: Dr West introduces the BLOSS literature database developed at MRAG to researchers at the University of Amsterdam who work on Lake Tanganyika. MRAG to supply these researchers with a copy of the database and include this group in the network of people contributing and using this information as a management tool.
- January: Dr West, Richard Paley and BLOSS teams send comments on literature database to MRAG. MRAG to update database and documentation in light of these comments.
- January: MRAG sends BLOSS database developed to support the field programme to the lake for testing. Teams to be trained by Mr Paley after Mahele survey and provide feed back to MRAG Ltd if modification needed.
- February: Zambians carry out quarterly sampling in conjunction with other special study teams and complete the mapping of shoreline east of Mpulungu to Tanzanian border.
- February: Dive training course commences(22nd February - 7th March). Two candidates participating from each riparian country as well as an assistant instructor from the Burundian and Zambian teams respectively.
- Dec-Feb: Contributors to BLOSS Standing Orders document return comments on first draft to MRAG Ltd. Revision in light of these comments begun.
- Dec-Feb: Proposals for discrete research projects investigated with international consultants (projects: macro-invertebrates as biotic indicators and shrimp ecology/taxonomy)
- Dec-Feb: Plans for taxonomic training (9th March-16th March) and Mahele survey (17th March-7th April) finalised. BLOSS equipment needs identified and ordered.

3.1.3 Staffing Schedule

3.1.3.1 Burundi

Dr Gaspard NTAKIMAZI, Burundian Co-ordinator
 Robert KUMANA, Responsable de la Base de donnees.

3.1.3.2 DR Congo

Dr Muderhwa NSHOMBO, Directeur Général, C.R.H. – Uvira

Regional Dive Team:

Tanzania	Robert	WAKAFUMB E	TAFIRI	– Kigoma	BSAC-sport
Zambia	Charles	LUKWESA	DoF	– Mpulungu	BSAC-sport
	Maybin	MWENDA	DoF	– Mpulungu	BSAC-sport
	Reuben	SHAPOLA	DoF	– Mpulungu	BSAC-sport
Congo	Constantin	AMUNDALA	CRH	– Uvira	BSAC-sport
	Alexis	BASHONGA	CRH	– Uvira	BSAC-sport
	Patrick	BUDA	CRH	– Uvira	BSAC-sport
	Donatien	MUZUMANI	CRH	– Uvira	BSAC-sport
Burundi	Libére	NDAYISENG A	LTBP	– Bujumbura	BSAC-sport
	Félix	NICAYENZI	DEPP	– Bujumbura	BSAC-sport
	Albéric	RUGIRABIRO RI	IECN	– Bujumbura	BSAC-sport
	Bernard	SINUNGUKA	Univ. Bu	– Bujumbura	BSAC-sport

Regional Dive Trainees

Burundi	Celestin	BIGIRIMANA	Kamnyosha Secondary School		
	Terence	HAKIZIMAN A	Cibitoka Secondary School		
Congo	Byeragi	BAHANE	CRH	– Uvira	
	Igundji	WATUNA	CRH	– Uvira	
Tanzania	Robert	KAYANDA	TAFIRI	– Kigoma	
	Bakari	MNAYA	TANAPA	– Gombe	
Zambia	Robert	SINYINZA	DoF	– Mpulungu	
	Isaac	ZULU	DoF	– Mpulungu	

3.1.3.3 International

Dr Ian Payne, MRAG Ltd, BIOSS Director
 Dr Eddie Allison, MRAG Ltd, BIOSS Co-ordinator
 Vicki Cowan, MRAG Ltd, BIOSS Management
 Richard Paley MRAG Ltd, BIOSS Facilitator
 John Pearce, Simon Holden, MRAG Ltd, BIOSS IT specialists

3.1.3.4 BIOSS Consultants

Dr Kelly West (SLO, LTBP)
 Christian Furrer (Diving Instructor)

3.1.4 Main Objectives for the Next Quarter

- Completion of dive training.
- Training course in taxonomic identification skills to be conducted in Kigoma during March.
- Survey of Mahale National Park (Tanzania) and Nsumbu National Park (Zambia) by regional dive team.
- Introduction of the survey database to BIOSS teams.
- Commencement of selection of long-term monitoring sites in all riparian countries.
- Mr Paley to return to UK and brief MRAG in the mid-term break of his 18 month contract
- Plans for the remainder of Mr Paley's time on the lake, including final reporting etc. confirmed.
- Revisions of literature database completed and MRAG to issue next version to lakeside team and international collaborators

- Standing orders document revised, including first drafts of sections on data analysis and monitoring programme.

3.1.5 BLOSS Facilitator: Summary of Activities

- 1-4 Dec Visit to Mpulungu station. Field testing of profile and fish census techniques with Zambian team
- 6 - 28 Dec Visit to Bujumbura station. Review and field testing of Mollusc census techniques with SLO, Burundi and Congo teams. Submission of team comments on Standing Instructions to BLOSS Co-ordinator. Visit to CRH Uvira -discussions with BLOSS teams, inspection of nearby sampling sites. Interviews with potential dive candidates from Burundi and Congo. Submission of BLOSS programme for first half of 1999 for approval by BLOSS Co-ordinator and PCU.
- 29Dec-21Jan Kigoma station. Preparations for dive and taxonomic training and Mahale Survey. Meeting with Warden in Charge, Mahale National Park. Requests for replacement dive and survey equipment sent to UK. Assistance to SEDSS facilitator during his visit to Kigoma 17-21 January.
- 23 - 30 Jan Bujumbura. Participated in Training and Communications Workshop.
- 31Jan-22Feb Kigoma. Further preparation for BLOSS programme, including visit to Mahale National Park 8 -11 January. Issue of administrative instruction for BLOSS activities from February to April.
- 22 - 28 Feb Kigoma. First week of dive training course.

3.2 Progress Report: December 1998 – February 1999 for Fishing Practices Special Study

3.2.1 Overall Summary of Progress

Activities surrounding the departure of the FPSS facilitator, Dr Dorr, were the main foci of this quarter. During his last month with the project, Dr Dorr continued to refine the work plan and document his recommendations for its implementation. Dr Dorr briefed MRAG in London at the end of his contract: this was comprehensive and leaves FPSS in a good state to continue if a replacement facilitator is in post quickly. The work plan still needs to be assessed against the regional budget: this is highlighted as a critical first job for the new facilitator. Therefore, no additional FPSS field activities can be implemented until the facilitator is in post and this process has taken place.

MRAG identified two potential candidates from the initial list of applicants for the position: one regional and one international. The international candidate made himself available during Dr Dorr's final briefing at MRAG which was very valuable and should speed the hand-over process if this candidate is acceptable in the region. The PCU has informed each of the National co-ordinators of Dr Dorr's departure and sought agreement to the proposal of matching the two candidates as a team. This process is still in place as the quarter closes.

The FPSS team in Tanzania continues with its regular monitoring and recently submitted two reports covering activities in October and December, 1998. This is a significant achievement as the team had lost the skills of Mrs Marwa (formerly FPSS co-ordinator) who had previously taken the lead in report writing in English.

Technical reports submitted to MRAG by international consultants and the FPSS teams (Tanzania and Zambia) during the course of the SS have required editing and compilation. This has unfortunately held up their distribution. However, this editing work has now largely been done and production/distribution of the reports is underway.

3.2.2 Chronology of Activities

- December: Dr Dorr refines work plan and develops recommendations for FPSS implementation
- January: Dr Dorr briefs MRAG in London at end of contract. Potential candidate to replace Dr Dorr present at this briefing.
- Dec-Feb: MRAG and PCU develop plan to replace Dr Dorr and consult National Co-ordinators.
- Dec-Feb: Technical reports for FPSS reviewed, consolidated and produced ready for distribution.
- Dec-Feb; Tanzanian team continue regular monitoring.
- Jan-Feb: MRAG and NRI review FPSS budget

3.2.3 Staffing Schedule

Regional team

Tanzanian Team

Mr Omari Kashushu (TAFIRI, Kigoma)

Mr Hamza Maboche (Community Development)

Zambian Team

Mr Joseph Chimanga (DoF, Mpulungu)

Mr Whiteford Chumba (DoF, Mpulungu)

Mr Charles Lukwesa (DoF, Mpulungu)

Mr Isaac Zulu (DoF, Mpulungu)
Mr Khalfan Kaweme (DoF, Mpulungu)

Burundian Team (proposed)

M. Antoine Kiyuku

+ a representative from the Departement des Eaux, Peche et Pisciculture (DEPP)

+ one other representative if the level-of-work justifies

Congolese Team (proposed)

Representative from Centre for Hydrobiological Research

+ a representative from the Secteur Peche du Service de l'Environnement (SPSE)

International team

Dr Ian Payne, MRAG Ltd, FPSS Director

Dr John Dorr, MRAG Ltd, FPSS Regional Facilitator

Ms Vicki Cowan, MRAG Ltd, FPSS Management

Dr E Allison, MRAG Ltd, FPSS consultant

Dr Rosemary Lowe-McConnell Specialist advisor

Dr George Coulter Specialist advisor

3.2.4 Main Outputs and Achievements

- Successful conclusion to the end of Dr Dorr's contract with the project documentation and plans well advanced.
- Current members of FPSS team in Tanzania produce their first report to MRAG in English
- Plan to replace Dr Dorr developed and proposed to regional counterparts
- International candidate in proposed team familiar with documentation and involved in Dr Dorr's final briefing.
- Technical FPSS reports revised and compiled for distribution

3.2.5 Main Objectives for the Next Quarter

- FPSS facilitator appointed and operational on the lake
- FPSS work plan revised by MRAG and new facilitator in light of remaining time and resources

3.3 Progress Report: December 1998 – February 1999 for Legal and Institutional Component

3.3.1 Summary of Progress

With confirmation that the budget has been agreed, progress in this quarter has mostly been planning inputs and timing for legal consultants. A draft timetable has been proposed and discussed with PCU to check potential clashes with other project activities. The next step is to check the dates with each of the country teams. The proposed timing is as follows: Anglophone workshop, end August 1999; Francophone workshop, beg September 1999; regional workshop early November 1999. Unfortunately the time take to finalise the budget has delayed the delivery date for the draft agreement for regional consultation until August 1999. However, this still is within the time boundary to ensure overlap with the Strategic Action Plan development.

Links between the legal and institutional component and the fisheries management plan being developed by LTR have progressed in this quarter. The papers from the legal workshop have been distributed to various consultants working with LTR and an informal exchange of progress has been initiated. LTR documents have been circulated to LTBP's international consultants.

3.3.2 Chronology of Activities

- Dec-Jan : Continuation of discussions on the financial implications of the work plan
 Jan : papers distributed
 Feb : Budget agreed, terms of reference for legal consultants agreed. Letter to regional counterparts updating them on progress prepared.

3.3.3 Current Staffing Schedule

Regional Lawyers and Policy makers

See previous quarterly reports for institutions of all regional participants listed below.

Burundi M. Jean Bechmans Manirakiza (NC) M. Benoit Bihamiriza Ir. Roger Kanyaru Ir. Etienne Kayengeyenge Prof. Didace Nimpagaritse M. Damien Nindorera	DR Congo Mr. Amule Pascal Mady (NC) Dr. Lunpungu Kalanbay Mr. Ndembe Kumbu Mme. Gode Mbombo-Mangani M. Ngamani Mbusu Dr. Muderhwa Nshombo
Tanzania Mr. Rawson Piniel Yonazi (NC) Mr. Peter Kambona Chisara Ms. Verdiana Macha Ms. Alicia Bosensera Magabe Mr. Andy Ackim Mwandembwa	Zambia Mr. James Simoko Phiri (NC) Mr. Hangoma Gordon Mudenda Mr. Aven Muvwende Mrs Chanda J. Lubasi Punabantu Mr. Davy Siame

International

Dr Ian Payne, MRAG Ltd, Component Director Mr Cormac Cullinan, MRAG Ltd (Legal Specialist, Anglophone) Mr Stephen Hodgson, MRAG Ltd (Legal Specialist, Francophone) Ms Caroline Blatch (Legal Specialist, Francophone) Ms Vicki Cowan, Component Manager
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3.3.4 Main Outputs and Achievements

- Planning of remainder of work programme cleared initially with international consultants and PCU.
- Process of consultation with regional counterparts initiated.

3.3.5 Main Objectives Next Quarter

- Details of workshops confirmed (dates, delegates, location).
- Drafting of agreement begun and arrangements for translation made.

3.4 Progress Report: December 1998 – February 1999 for Special Study on Sediment Discharge and Its Consequences

3.4.1 Overall Summary of Progress

This report was jointly prepared by the special study facilitator Olivier Drieu (OD) and the special study co-ordinator, G. Patterson (GP).

The main objectives for this quarter were given in the previous quarterly report as follows:

- Maintain the data flow and reporting schedule from operational monitoring programmes. If further information is required regarding personnel or institutions please refer to quarterly report number 10.
- The Sedimentation study workplan (GP) will be updated to reflect recent changes and comments from the UNDP mid-term review team.
- Irvine (University of Dublin) to travel to Mpulungu in early January 1999 to work with Department of Fisheries staff on impacts of sediments on biota.
- Brion and L. Goeyens (VUB) will travel to Burundi in early January 1999 to work with Dr E Nzeyimana at the Department of Chemistry, University of Burundi (OD to be present in Burundi during that time).
- OD will liaise with Dr J Dorr and R Paley and Dr K West to formulate a better collaboration between the Special Studies and plan for possible joint trips for all the sampling programs in the region.
- GP aims to produce a document/questionnaire to aim to establish protocols for reporting and data deposition for all active participants in the special study in order to ensure the quality and value of outputs from the special study and their co-ordination with the reporting structure of the final strategic plan (deferred from previous quarter).

Overall progress on these activities throughout the quarter was satisfactory. More detail is provided in below.

3.4.2 Chronology of Activities

This section lists one-off activities and does not take account of ongoing activities such as workplan development and continuous field monitoring activities.

7 Dec. : GP completed BTOR from trip to region carried out in November 1999.

15 & 18 Dec. : OD met Dr Sichingabula at University of Zambia (meeting and work in the labs, visit to Mazabuka)

4 Jan. 99 : OD completed the compilation of a draft of a report for Stage 1 on behalf of the SedSS team at CRH, Uvira, D R Congo and submitted to GP

8 – 15 Jan : Brion and L. Goeyens (VUB, Belgium) travelled to Bujumbura and worked with Dr E Nzeyimana at the Department of Chemistry, University of Burundi on impacts of sediments on the nitrogen cycling in Lake Tanganyika (BTOR available).

3 Dec. 98 - 9 January 99. Emma Msaky returned to Tanzania for vacation. Returning to University of Arizona to complete work on pollen analysis of sediment cores.

15 – 22 Jan : Nkotagu of University of Dar es Salaam travelled to Kigoma to carrying out work in Gombe National Park and on Luiche river

15 – 29 Jan : Irvine (University of Dublin) travelled to Mpulungu, Zambia and worked with Department of Fisheries staff on impacts of sediments on biota (BTOR available). OD met Dr Irvine briefly before touring the region.

18 – 22 January : Follow-up visit by OD to Kigoma station, Tanzania (work with Dr Nkotagu on Luiche river and field trip to Gombe National Park with Mr Mpyalimi)

25 – 29 Jan : OD attended the Training and Communications workshop in Bujumbura, Burundi.

23 Jan – 13 Feb. . Follow-up visit by OD of GP's visit in the region in November 1998 (Bujumbura and Uvira stations) (various meetings with SedSS teams in Burundi (DGGM – IGEBU, University of Burundi), Letter of Agreement between the Project and DGGM – IGEBU was signed during this visit, Stage 2 of work programme with SedSS team at CRH, Uvira was initiated)(BTOR of the visit is available in French).

8 – 13 Feb. : Mr Sinyinza travelled to Lusaka to work with Dr Sichingabula in UNZA labs (BTOR available).

3.4.3 Staffing Schedule

A summary of all of the staff involved in the Sediments Special study was given in quarterly report number 10. There have been few significant changes since then (below)

Tanzania : a technician from Kigoma Water Department is in the process of being engaged by the Project for a 5 month period to carry out intensive discharge measurements on Luiche river.

D R C : the SedSS team at CRH, Uvira is : Kagogozo (lead National of the Sedimentation Special Study), Mwenyemali, Kahindo, Mrs Mujinga.

3.4.4 Main Outputs and Achievements

Final report from C. O'Reilly (University of Arizona) received in February 1999 on 'Benthic Algal Productivity in Lake Tanganyika and the Effects of Catchment Deforestation'

University of Arizona (Cohen) produced a quarterly report for the period October to December 1998 for the work analysing the lake cores. Mrs Msaky of the Tanzanian Petroleum Corp. is doing the pollen analysis for this work and as produced three further monthly summary reports during the period.

A major document/questionnaire outlining the SedSS plans to completion was produced by GP. A final meeting of all those scientists involved will be held though exact dates and location are not yet decided - this depends both on regional security and availability of participants.

LARST reports (Kigoma) were produced for each of the three months of the quarter.

Zambia : Dr Sichingabula continued his work monitoring Zambian rivers. A quarterly report is in preparation and should be available early in the next quarter. SedSS team at Department of Fisheries, Mpulungu continue their work on suspended matters and

granulometry analysis and impacts of sediments on biota. A report called 'Brief general overview of sedimentation activities carried out by Dept. of Fisheries, Mpulungu, Zambia' is a summary of activities from May to December 1998.

Burundi : DGGM - IGEBU teams and Dr E Nzeyimana, University of Burundi continued their work program, some slight modifications were made by OD in order to improve collaboration and harmonisation within the study and between the 3 teams and also between the other SS. A meeting for this purposes was organised by OD on 8 Feb. in Bujumbura (Report of the meeting is available in French). DGGM and IGEBU produced a second quarterly report (the first one for Stage 2) during this period. The letter of agreement between the Project and the 2 institutions (DGGM- IGEBU) was signed on 9 February. The 5 hydrometric stations have not been installed yet as the equipment arrived on 11 February at the Bujumbura station but this work is planned to be completed by end of March by IGEBU. Gauge readers for the stations will then be recruited and trained by IGEBU technicians as soon as the installation of the stations begins.

Tanzania : Nkotagu of University of Dar es Salaam produced a quarterly report on his work on the rivers of Gombe region. Data of rainfall are now collected at 4 locations in the 2 catchments.

DR Congo : The draft of the report for Stage 1 on behalf of the SedSS team at CRH, Uvira was completed (the final version will incorporate the methodology proposed by Dr Robert Duck). As the security situation around Uvira has improved slightly, OD met the team at the CRH, Uvira and some basis equipment was shipped to Uvira station in order to start monitoring rivers.

3.4.5 Main Objectives for the next quarter

Dr Sichingabula (UNZA) to travel to Mpulungu for the monitoring of Zambian rivers (mid-March)

Erik Verhayen (Royal Belgian Institute of Natural Sciences) to travel to the Lake in April-May for 4 to 5 weeks to work on Impact of sediments on biota

Dr Nkotagu (University of Dar es Salaam) to travel to Kigoma region for the monitoring of the 2 Gombe region catchments and of the Luiche river

M Sebahene to organise regular meetings with the 3 SedSS teams in Burundi (DGGM – IGEBU – University of Burundi). This initiative was suggested by himself, cf. OD's BTOR Burundi – DR Congo

IGEBU team to install 5 hydrometric stations on the Burundian rivers and to recruit and train gauge readers

OD to implement workplan produced by Dr Irvine for SedSS in Zambia.

OD to supervise closely SedSS team at Department of Fisheries, Mpulungu during Mr Sinyinza's training course in Tanzania.

GP and OD to formulate plans for a windup meeting and reporting format for the Special Study.

3.5 Progress Report: December 1998 – February 1999 for Special Study on Pollution and its Effects on Biodiversity.

3.5.1 Overall summary of progress

The Pollution Special Study (PSS) continues to maintain its focus on **'ascertaining the nature and (where possible) the extent of pollution on biodiversity, and develop the human and equipment resources that will allow the work to be sustained after the end of this particular Project'**.

This report is taken from contributions from Dr Francis Chale in Kigoma, communications from Mr Mwape and Mr Makassa in Mpulungu, and further reports and sets of data from Mr Gabriel Hakizimana (PSS Co-ordinator in Burundi) and his team in Bujumbura. Generally good progress has been maintained in the areas that the PSS Co-ordinator has stressed from the outset i.e. the provision of sound data on aspects of water quality; our findings and interpretations are likely to contribute to later debates on the choosing of areas worthy of 'reserve' status or the siting of water intake and effluent discharge pipes. Work on eutrophication and related limnological aspects have been maintained along the lines summarised in previous reports. However, thanks in large part to the efforts of Dr Chale and Mr Hakizimana and their teams, the PSS is also continuing to obtain information in addition, on the sources and levels of the other types of pollutants e. g. pesticides and heavy metals.

Concerns expressed in the previous report over the state of the PSS budget, and the consequences regarding a regional 'facilitator' appointment for this Special Study have not been resolved; but a good (bi-lingual) candidate is available should the appointment opportunity arise. However, this is due in large part to the considerable length of time that the PSS Co-ordinator took to produce his updated Work Plan. I am pleased to report that the new Plan (for the year 1999) was submitted on 15 January to Dr Menz and Dr West, and NRI personnel.

3.5.2 Brief chronology of activities and visits

There have been no consortium management meetings (normally held in NRI, Chatham) during this quarter. The PCU, NRI and IFE have been attending to a list of mainly reagents and other consumable items, and some analytical equipment requested by Mr Hakizimana. Dr Chale has made further visits to the Eastern and Southern Africa Minerals Development Centre (ESAMDC) in Dar es Salaam, to analyse his samples of fish tissue. A major advance in analytical work in the Kigoma laboratory concerns the simple but crucial provision of a 4-cm spectrophotometric cell holder: this now enables the team to measure levels of phosphorus down to 1 mg l^{-1} - in contrast to the previous minimum level of 2.5 mg l^{-1} .

3.5.3 Current staffing schedule

The staff complement is the same as that outlined in the previous report:

In Burundi: Mr Hakizimana, Mrs Aline Irimbere (INECN), Ms Consolata Musanisoni and Mr Wilondja Kamalebo.

In Congo: Dr Tshibangu (PSS Co-ordinator in Congo) and Mukungilwa Kamalebo; two other appointments are still to be made.

In Tanzania: Dr Chale (PSS Co-ordinator in Tanzania) and Ms Lyoba, D (50% of her time), Messrs Lyoba, Mfilinge, Muhoza (90%), Tegulilwa, Kadula (80%), Wakafumbe (75%).

In Zambia: in Mpulungu: Messrs Makassa and Zulu; and Chimanga, Chombe, Kaweme, Lukwesa, Mwape, Syapila (50%). Messrs Sinyinza, Shapola and others contributing to the Biodiversity and Sediment Pollution Special Studies are associated with the PSS for the purposes of synchronising sampling activities.

3.5.4 Main objectives for next quarter

Until the PCU and NRI project leaders have decided on the PSS budgetary issues, and taken account of the proposals in the Work Plan, the main objectives remain little altered from those stated in the previous quarterly report i.e.

1. To progress plans for the visits of selected regional staff to UK.
2. To supply literature to the regional laboratories.
3. To schedule the ideal total of 11 consultant visits to the region - mainly for continued 'on-the-job' training but also workshops on field sampling practices Analytical Quality Control (AQC), micro-algal population density and species diversity estimation AQC, and data analysis and interpretation.

Otherwise, the objective is mainly to continue obtaining data and information on the situations regarding heavy metals, pesticides and hydrocarbons at selected sites and in selected materials in Lake Tanganyika.

3.6 Progress report: December 1998 – February 1999 for Socio-economics and Environmental Education components

3.6.1 Overall summary of progress

A number of relevant points are worth drawing attention to in respect to these and associated project areas.

- For some time now there has been an intensive search for a regional Socio-Economic/EE coordinator/facilitator. A good candidate was found, although, he was not available until late 1999, however, his skills and experience were such that the wait was considered worthwhile. Unfortunately he withdrew at the last minute and a suitable replacement has not yet been identified.
- Nevertheless, as this coincided with the mid-term evaluation no final decision will now be taken on the recruitment until recommendations of the mid-term review have been seen and assessed.
- One issue that has been apparent for some time is the confusion which sometimes occurs from having the Socio economic studies and Environment Education activities as a single project activities area.
- Following the meeting of the Training Liaison Officers (who are also the EE coordinators), in Bujumbura. EE will be more closely linked with training rather than Socio-economics, although, it will maintain a distinct identity. Nevertheless, work in the field may well be combined to make more efficient use of resources. Therefore, in future, EE, SE and Training will all be reported on separately.

3.6.2 Brief chronology of activities and visits

25/1/99 – 30/1/99 Environmental Education co-ordinators took part in workshop in Bujumbura on their role as Training and Communications Liaison Officers.

22/2/99 – 3/3/99 Zambia: Socio-economic co-ordinator made a familiarisation trip to Mpulungu area to assess current situation especially with respect to village conservation and Development Committees.

3.6.3 Current staffing schedule

Burundi

Cecile **Gakima**, (I'INECN Environmental Education Co-ordinator and Training and Communications Liaison Officer.

DR Congo

Assumani **Kimanuka**, (CADIC) Acting, Environmental Education Co-ordinator and Training and Communications Liaison Officer.

Tanzania

Bartholomew **Tarimo**, (NEMC) Environmental Education Co-ordinator and Training and Communications Liaison Officer.

Claude **Mong'ong'o** (IRA) socio-economic coordinator.

Zambia

Munshimbwe **Chitalu** (ECZ) Socio-economic co-ordinator
Kwali **Mfuni** (ECZ) Environmental Education Coordinator.

3.6.4 Main objectives for next quarter

- Workshop to develop plans for Environmental Education Activities. March, in Kigoma.
- Drawing up of regional work programme for future SE activities subsequent to review of Mid-term Evaluation mission report.

3.7 Progress Report: December 1998 – February 1999 for GIS and database management.

3.7.1 Overall Summary of Progress

The main stage of GIS development (programming, initial data collection and documentation) has now come to an end. The TANGIS Arcview interface allowing users to look at data, and with extra tools for analysis, is now in place. There are over 360 digital and non-digital datasets catalogued in the metadatabase, over 100 of which can be accessed directly through the TANGIS interface. The metadatabase interface is available in both English and French and catalogues in French and English exist and English versions are on the web. Protocols have been written and tools created to allow easy maintenance of the database and metadatabase.

Our next stage in the project is to ease the GIS into the region through several stages of implementation. This will be achieved through relinking with the GIS community, training project counterparts and installing the GIS system alongside the web site.

Our main programming and procedural achievements in this quarter:

- Simple programmes to allow backup and archiving of data have been established.
- The short and long catalogues have been updated and placed on the web. We intend to update this every 3 months until the metadatabase is installed in the region later this year.
- Some tools have been created to allow users to search metadatabase by location (by district, country, catchment and within a distance of a named settlement).
- New web pages have been added, which now make the GIS section the largest in the LTBP web site. The new pages include tips on the forms of data that are readable by the GIS package, and a page allowing you to download a copy of ArcExplorer - a simple free GIS browser to look at geographic datasets that can be downloaded onto your own PC.
- The first edition of the GIS newsletter was published in February, containing information on new datasets, asking for data, programming tools and links to useful websites. This can be found on the web site.
- NRI responded to the Draft Trans-boundary Diagnostic Analysis (TDA) with a list of suggestions of datasets that might be useful to the project. Alan Mills and Kelly West are trying to locate some of these datasets and more progress will be made on this in the next quarter.

NRI have searched for new datasets requested by the special studies.

- The study areas for the lake have been commented on by all parties and the final datasets updated by NRI are now available on request.
- A simple bathymetric map has been digitised of the lake.
- The sediments SSG have been interpolating their results in various case study areas using a software package called Surfer. These data have been catalogued and a digital simple summary map has been created to show the locations of these analyses.
- The vegetation map of Tanzania was finally received by NRI and is now being catalogued. This is a vital and high quality piece of information, containing detailed vegetation classifications at 1:250 000 scale for the whole catchment in Tanzania.
- A complete set of 1:50 000 paper maps of Burundi were received from Kelly West and have now been catalogued and added to the project archive.

3.7.2 Chronology of Activities

December - update of study area datasets.

December - creation of datasets showing locations of existing survey department maps in Zambia, Tanzania and Burundi.

January - Simple bathymetric map of lake digitised

January - Method for routinely translating metadata from English to French created.

January - Procedures for archiving, newsletter and web site uploading created.

Newsletter prepared, new datasets catalogued and put on web site.

January - Sediments SSG Surfer maps catalogued

February - TANGIS manual written, Tanzanian Land cover datasets received and catalogued

3.7.3 Staffing Schedule

UK (NRI)

Alan Mills, Geographer; GIS developer

Anne Jackson, Data liaison officer

Valerie Obsomer, GIS technician

3.7.4 Main Outputs and Achievements

1. Integration of vegetation maps of Tanzania into GIS
2. Production of newsletter template and first edition published on web.
3. Protocols for data entry, standards and data management produced.
4. Response to draft TDA for datasets

3.7.5 Main Objectives for the next quarter

1. Alan Mills (AM) to visit region for two weeks to update GIS capability and establish location for TANGIS database. AM to review training requirements for GIS in region, to look at integration of datasets in region and review the role of the LARST station in Tanzania.
2. Training materials to be prepared for courses.
3. Second newsletter to be produced.
4. Encourage the web site to be translated into French, then to include French version of data catalogues.
5. AM to respond to Mid-term evaluation report recommendations regarding GIS and remote sensing.
6. Production of a small atlas of maps for the project outputs so far.
Produce a definitive list of databases/datasets needed to be maintained for sustainability of project Strategic Action Plan in discussion with project counterparts

Appendix 1.

LTBP/GIS website home page and Newsletter.