

RESEARCH FOR THE MANAGEMENT
OF THE FISHERIES ON LAKE
TANGANYIKA

GCP/RAF/271/FIN-TD/28(En)

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December 1994

REPORT ON THE FIRST FISHERIES STATISTICAL COORDINATORS
MEETING FOR LAKE TANGANYIKA
12-13.12.1994, BUJUMBURA (BURUNDI)

by
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FINNISH INTERNATIONAL DEVELOPMENT AGENCY

FOOD AND AGRICULTURE ORGANIZATION
OF THE UNITED NATIONS

Bujumbura, December 1994

The conclusions and recommendations given in this and other reports in the Research for the Management of the Fisheries on Lake Tanganyika Project series are those considered appropriate at the time of preparation. They may be modified in the light of further knowledge gained at subsequent stages of the Project. The designations employed and the presentation of material in this publication do not imply the expression of any opinion on the part of FAO or FINNIDA concerning the legal status of any country, territory, city or area, or concerning the determination of its frontiers or boundaries.

PREFACE

The Research for the Management of the Fisheries on Lake Tanganyika project (Lake Tanganyika Research) became fully operational in January 1992. It is executed by the Food and Agriculture Organization of the United Nations (FAO) and funded by the Finnish International Development Agency (FINNIDA) and the Arab Gulf Programme for United Nations Development Organizations (AGFUND).

This project aims at the determination of the biological basis for fish production on Lake Tanganyika, in order to permit the formulation of a coherent lake-wide fisheries management policy for the four riparian States (Burundi, Tanzania, Zaïre and Zambia).

Particular attention will be also given to the reinforcement of the skills and physical facilities of the fisheries research units in all four beneficiary countries as well as to the build-up of effective coordination mechanisms to ensure full collaboration between the Governments concerned.

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* a series of **technical documents (GCP/RAF/271/FIN-TD)** related to meetings, missions and research organized by the project; and

* a series of **manuals and field guides (GCP/RAF/271/FIN-FM)** related to training and field work activities conducted in the framework of the project.

For both series, reference is further made to the document number (**01**), and the language in which the document is issued: English (**En**) and/or French (**Fr**).

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1. INTRODUCTION

The project "Research for the Management of the Fisheries on Lake Tanganyika" (LTR) organized the First Meeting of the Fisheries Statistics Coordinators for Lake Tanganyika in Bujumbura, Burundi, from 12 to 13 December 1994, following the recommendations formulated during the First Workshop on the Coordination and Standardization of Fisheries Statistics for Lake Tanganyika, organized by LTR in Bujumbura from 26 to 30 July 1993 (Coenen, 1993). The recommendations of this Workshop were presented and approved during the Second Joint Meeting of the LTR Committees which was held in Lusaka, Zambia from 14 to 15 October 1993 (Hanek & Coenen, 1993) and the Sixth Session of the CIFA Sub-Committee for Lake Tanganyika, also held in Lusaka from 18 to 19 October 1993 (FAO, 1994).

2. PROCEEDINGS OF THE MEETING

Administrative matters

1. On Monday morning 12.12.1994, after their arrival at the LTR headquarters in Bujumbura, the meeting participants (see Annex 1) from the four riparian countries, sharing Lake Tanganyika, first dealt with administrative matters (payment DSA, airticket reconfirmation, etc.).

Opening of the meeting

2. The chairman of the meeting, LTR's biostatistician, before opening the meeting officially, welcomed all participants on behalf of the project and explained in brief the main objectives of the meeting, the latter being a follow up on the recommendations formulated during the First Workshop on the Coordination and Standardization of Fisheries Statistics for Lake Tanganyika, held in Bujumbura in July 1993 (Coenen, 1993)

Adoption of the agenda

3. The final agenda for the meeting was adopted as shown in Annex 2.

Introduction concerning the simultaneous Frame Survey

4. LTR's biostatistician gave an introduction on the objectives and overall operational aspects of the planned simultaneous frame survey (FS) for Lake Tanganyika and proposed a standardized FS form.

Finalization of country statements

5. During the rest of the morning, the country participants finalized their country statements.

Presentation of country views on the planned simultaneous FS

6. In the afternoon, each country presented its views on different aspects of the simultaneous FS (proposed timing, personnel and logistics involved, available national budget, requested financial LTR input, FS form, ways of analysis/reporting of FS results, etc.).
7. In Zambia, the FS will be executed by the LTR/DOF Mpulungu station. Two teams of two recorders each and one supervisor will visit all landing sites within one week, using two survey boats. Since there is no national budget, except for the travel expenses of the supervisor, LTR will have to provide almost the total budget, estimated at less than 1000 US \$ (based on the costs of the combined Frame and Catch Assessment Survey, carried out by LTR/DOF Mpulungu in June/July 1994).
8. In Tanzania, the FS will be executed within 10 days by 45 beach recorders residing in 19 recording stations along the Tanzanian coast, comprising two Regions, Kigoma and Rukwa. The beach recorder(s) of each recording station will cover his (their) section of the shoreline moving from one landing site to another using the available means (by foot, bicycle, water transport). The survey will be supervised in each Region by a fisheries officer from the Fisheries Division headquarters in Dar es Salaam. The total estimated budget amounts to about 2000 US \$, to be provided by LTR, and covers per diem, travel costs and miscellaneous expenses.
9. In Burundi, the FS will be carried out within 3 to 4 days by 2 recorders and 1 supervisor from the Fisheries Department headquarters in Bujumbura, moving from one landing site to another by car (most landing sites are accessible by road). Water transport can be hired to reach a few remote landings. The total estimated budget will not exceed 680 US \$.
10. In Zaire, the execution of the FS will be the most difficult and most expensive. The only possible solution is to use a big transport boat (to be able to carry enough fuel/oil to cover the complete shoreline in Zaire) to do the survey within a month. The scientific survey team will be composed of two researchers from the CRH station in Uvira, complemented by a technician responsible for the camping logistics. The survey boat will be operated by 5 members of crew. The "Centre de Recherche en Hydrobiologie" (CRH) will provide all camping equipment and an additional Zodiac inflatable boat with outboard engine to reach inaccessible landing sites. The total estimated budget amounts to about 7100 US \$ (including the rent of the transport boat with crew, per diem, 2400 liters of fuel, 60 liters of oil, etc.) and will have to be provided fully by LTR.

Adoption on simultaneous FS timing and operational strategy

11. At the request of Zaïre, it was agreed that the FS execution will start after 22.02.1995. The final FS form to be used was agreed upon as presented in Annex 3a.
12. It was agreed that each country would analyse its own FS data, using Excel and/or Lotus spreadsheets, as soon as possible. The preparation of country FS reports was encouraged and recommended. The overall FS reporting would be done by LTR.
13. The overall requested financial input requested from LTR amounts to about 10800 US \$. LTR's biostatistician agreed to finalize and distribute the FS standardized form and updated manual as soon as possible and to prepare a filled in example FS form for the FS recorders. Detailed shore line maps to indicate the exact location of each landing site will also be distributed to the respective country FS supervisors.

General discussion on Lake Tanganyika fisheries statistics

14. On Tuesday morning 13.12.94, as an introduction to the general discussion on Lake Tanganyika fisheries statistics, LTR's biostatistician presented an overview of Past and recent trends in total catch, fishing effort, catch per unit of effort (CPUE), species composition and its fluctuations, etc. for the fisheries of Lake Tanganyika.
15. Each country then assessed its fisheries statistics situation for Lake Tanganyika and proposed some recommendations to improve the situation.
16. For Zambia, the major problems were: budgetary constraints; some misunderstanding at the level of the Provincial Officer who did not release any money thinking that LTR would finance all ongoing national surveys for Lake Tanganyika; and communication/data flow problems between the lake stations, the provincial office and the fisheries statistics headquarters in Chilanga. It was remarked that a clear distinction should be kept between ongoing national surveys (for which funding is national) and assistance given by projects (extra funding to assist in ongoing survey work and organize supplementary surveys/research). Therefore, it was strongly recommended that national funds for 1995 should be secured. It was also observed that the number of artisanal seines in the Zambian part of Lake Tanganyika has been increasing.
17. For Tanzania, the situation up to 1992 was satisfactory. However, since 1993, when also a new fisheries statistical system was introduced, the problems started: limited budget not allowing adequate supervision; part of the trained people retired without, most of the time, having them replaced; reduction in the total number of civil servants;

and the following redistribution of the remaining staff to other duty stations. For the Lake Tanganyika fisheries statistics, not all 1993 data have been sent yet to the statistics headquarters in Dar es Salaam (only 10 months for Kigoma Region and 6 months for Rukwa Region); the new system, asking for complete enumeration of fishing units at the fish landing sites, was not always followed by the beach recorders: too often the enumeration was incomplete, resulting in serious underestimates of catch and effort; therefore, in order to obtain reliable total catch/effort estimates for 1993, a different estimation system (e.g. like the one used before) might have to be used. The major recommendation is that, in order to improve the situation, the budget allocated for fisheries statistics should increase drastically.

18. For Burundi, concerning the artisanal fisheries, since October 1993 (when, due to a putsch, the political turmoil and general insecurity started) there are some problems of insecurity at certain landings sites making fisheries statistical data collection very difficult; at certain landing sites, the recorders left; the task of supervision became hardly impossible, etc. The result is that fisheries statistical data from the artisanal fisheries are often incomplete and unreliable. Although the beach recorders are paid by the Government, a national budget to cover all operational costs is lacking. Therefore, the support of LTR is very needed. Regarding the industrial fishery, the problems already started before October 1993: the exploitation costs and taxes to be paid are getting too high and the Catch per Unit of Effort (CPUE is decreasing since several years. As a result, several industrial units do not break even any more and pull out of the fisheries business: the number of operational industrial units has decreased drastically, a tendency even amplified by the insecure political situation, from 12 units in 1993 (Coenen & Nikomeze, 1994) down to 4 units in 1994 (belonging to 3 shipowners). The collection of industrial fisheries statistics is going on, without major problems, at the central market of Bujumbura, where industrial catches are supposed to arrive. Major recommendations included: the need for an adequate national budget, for ongoing training of beach recorders and for an improved exchange of data, experiences, etc. between the 4 riparian countries.
19. For Zaire, the situation did not change: due to the continuous lack of any budget, no sound system of data collection nor beach recorders are in place. Budget proposals were submitted, but the obtention of any real budget in the near future is not at all sure. A first round table for the constitution of an income fund for the fisheries sector has already taken place to discuss the modalities on how to constitute such a fund using taxes collected within the fisheries sector, money generated by fishing licenses and taxes collected from companies exporting aquarium fishes. The major recommendation was

that all concerned ministries should allocate adequate funds for the proper development and monitoring of the fisheries sector in Zaïre.

Assessment of standardized annual FS and CAS result outputs

20. After these presentations by the 4 countries, the meeting assessed for each country the follow up of the submission of the standardized annual frame and catch assessment result outputs for Lake Tanganyika, as agreed during the First Workshop on the Coordination and Standardization of Fisheries Statistics for Lake Tanganyika, held in Bujumbura from 26 to 30 July 1993 (Coenen, 1993):

- Burundi: FS 1992 and CAS 1992-1993 submitted;
- Tanzania: FS 1992 and CAS 1992 submitted;
- Zambia: FS 1992 and CAS 1992 submitted;
- Zaïre: nothing submitted (no FS nor CAS done).

The submitted result outputs are presented in Annex 4a-g. The reasons and problems for the non submission of certain annual FS and CAS data are: part of the 1993 data were not yet analyzed (e.g. Tanzania); missing FS data for certain countries, only to be completed by the results of the two lake wide aerial FS done by LTR in 1992 and 1993 (Hanek et al., 1993); CAS data are non existent for Zambia for the year 1993 (except for some data of stratum 1 in the Nsumbu area) and for Zaïre for the years 1992 and 1993. The overall assessment regarding the submission of standardized FS and CAS result outputs was that the present situation is not very bright which means that a considerable improvement is necessary. The latter can only be made possible if adequate national budgets are provided to carry out continuous and reliable fisheries statistical surveys on Lake Tanganyika.

Formulation of specific and general recommendations

21. The country delegations were then given the time to formulate and prepare a number of specific and general recommendations regarding the improvement of the fisheries statistics situation for Lake Tanganyika.

Any other matters

22. It was proposed and agreed to have the next meeting of the fisheries statistics coordinators for Lake Tanganyika after the execution of and the data analysis and reporting regarding the simultaneous FS in 1995.

Preparation of recommendations by secretariat

23. In the afternoon, the meeting secretariat typed, translated in both the working languages and printed all the proposed recommendations for submission to and adoption by the meeting.

Adoption of the meeting recommendations

24. The meeting then adopted the specific (country) and general recommendations as presented below (25-29):

25. Specific recommendations for BURUNDI:

- Adequate means should be secured in order to provide beach recorders with a permanent training regarding the collection of fisheries statistics through the organization of workshops and seminars.

- It is recommended to increase and avail the national budget in order to reinforce more the system of fisheries statistical data collection.

26. Specific recommendations for ZAÏRE:

- It is highly recommended that the Ministry of Environment, which is responsible for the fisheries sector, and all other ministries, involved in the elaboration and execution of the national budget, avail soonest the necessary funds to the fisheries sector in order to enable the follow up, the coordination and the promotion of the necessary actions for, in particular, the development and the management of the fisheries on Lake Tanganyika and, in general, for all the waterbodies of the country.

27. Specific recommendations for TANZANIA:

- So as to sustain the fisheries statistical system currently in use, there is need for the Government to provide an adequate budget.

- Since a greater part of the shores of Lake Tanganyika are inaccessible by road, the only alternative is water transport. There is therefore need for the two regions bordering Lake Tanganyika (Kigoma and Rukwa) to be provided with a boat each equipped with outboard engines so as to ease communication and proper supervision of data collection.

28. Specific recommendations for ZAMBIA:

- In light of limited LTR funds for statistics, the Department, through the province, should avail funds for statistics.

- Specifically, the situation may improve by conducting regular meetings between Mpulungu, Nsumbu, Nsama, Kasama, the Provincial Office and Chilanga at least twice a year to set research priorities.

- For the improvement of data flow between Mpulungu, Nsumbu, Mbala and Chilanga, it is suggested that the Mpulungu Research Officer I/C in Mpulungu should collect and disseminate all data sets.

- It is recommended that two permanent beach recorders be stationed at Kasasa and at Kachese landing sites to collect catch and effort statistics on daily basis.

29. GENERAL RECOMMENDATIONS:

- The meeting recognized the importance of training in statistics and computer data handling. The last training was in 1984 by M.G.P. Bazigos. It is suggested that the project organizes another (follow up) training as soon as possible.

- It is recommended that the project initiates study tours of the fisheries statistics coordinators as a form of sharpening their statistical skills and information exchange.

- Taking into account that national budgets are insufficient, it is requested that LTR continues with its technical support, with its financing of frame surveys and with its contribution to the improvement of the fisheries statistics for Lake Tanganyika.

- The meeting recognized the poorer Performance in statistics for all the four countries and recommended that a regional project proposal aimed at strengthening statistics in all four countries be formulated by the CIFA Sub-Committee for Lake Tanganyika.

- It is recommended that the Governments follow up the recommendations of the First Workshop on the Coordination and Standardization of Fisheries Statistics for Lake Tanganyika which took place in July 1993.

Closure of the meeting

30. The Chairman then closed the meeting, thanking all participants for their effective participation and expressing the wish that the respective countries would take action soonest to enable the improvement of the collection of fisheries statistics on Lake Tanganyika. These statistics, collected year by year, are indeed a most valuable tool to follow trends in the evolution of the fisheries resource and form the basis for any proper monitoring and/or management plan development. The head of the Burundi delegation, in the name of the host country, thanked LTR for organizing this meeting and all participants for the job well done during their stay in Burundi. He expressed the wish that LTR would continue and, if possible, even strengthen its efforts for the regional coordination and assistance to the fisheries statistics for Lake Tanganyika. Finally, he wished all participants a safe journey back to their home countries.

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Annex 1:

**FIRST FISHERIES STATISTICS COORDINATORS MEETING
FOR LAKE TANGANYIKA
12-13.12.1994, BUJUMBURA (BURUNDI)**

LIST OF PARTICIPANTS

BURUNDI

M. S. Bambara	Fisheries Statistics Coordinator	Minister de l'Agriculture et de l'Elevage Département des Eaux, Pêche et Pisciculture B.P. 1850 Bujumbura, Burundi
M. E. Nikomeze	Fisheries Statistics Assistant- Biologist	Ministère de l'Agriculture et de l'Elevage Département des Eaux, Pêche et Pisciculture B.P. 1850 Bujumbura, Burundi

TANZANIA

Ms. E. Lyimo	Fisheries Statistics Coordinator	Ministry of Tourism, Natural Resources and Environment Fisheries Division P.O. Box 2462 Dar es Salaam, Tanzania
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ZAMBIA

Mr. J. Lupikisha	Fisheries Statistics Coordinator	Ministry of Agriculture, Food and Fisheries Department of Fisheries Fisheries Research Division P.O. Box 350100 Chilanga, Zambia
Mr. L.M. Mwape	Fisheries Research Officer I/C Mpulungu	Ministry of Agriculture, Food and Fisheries Department of Fisheries P.O. Box 55 Mpulungu, Zambia

ZAÏRE

Mr. Kisalima Katsongo	Fisheries Statistics Coordinator	Ministère de l'Environnement Conservation de la Nature et Tourisme - SENADEP B.P. 16096 Kinshasa, Zaïre
Mr. Mambona Wa Bazolana	Researcher in Fisheries Statistics	Ministère de la Recherche Scientifique et Technologie Centre de Recherche en Hydrobiologie (CRH), Uvira, Zaïre C/O B.P. 254 Bujumbura, Burundi

SECRETARIAT

Mr. E. Coenen	Biostatistician	Lake Tanganyika Research B.P. 1250 Bujumbura, Burundi
Ms. B. Baricako	Secretary	Lake Tanganyika Research B.P. 1250 Bujumbura, Burundi

Annex 2:

FIRST FISHERIES STATISTICAL COORDINATORS MEETING FOR LAKE TANGANYIKA 12-13.12.1994, BUJUMBURA (BURUNDI)

AGENDA

Monday 12.12.94

- Morning : Arrival of participants

 Administrative matters

 Opening of the Meeting

 Adoption of the Agenda

 Introduction to overall objective and operational aspects of the planned simultaneous Frame Survey for Lake Tanganyika

 Finalisation of countries statements

- Afternoon : views of participating countries on overall aspects of planned Frame Survey
 - timing
 - personnel and logistics involved
 - available national budget/requested input LTR
 - proposed frame survey form
 - proposed way of analysis and presentation of the survey data/results
 - etc.
 Adoption of final frame survey timing and operational strategy

Tuesday 13.12.94

- Morning : General discussion on Lake Tanganyika fisheries statistics

 Standardized annual frame and catch assessment result outputs for Lake Tanganyika:
 - evaluation per country

- follow up
- etc.

Formulation of general and specific recommendations

Any other matters

- Afternoon :
 - Secretariat: preparation of draft on the proposed recommendations
 - Adoption of report on the recommendations
 - Closure of the meeting

Annex 3a: Adopted FS form.

LAKE TANGANYIKA - SIMULTANEOUS FRAME SURVEY 95

Name recorder(s):

Country: Recording station:

Region/Stratum: Date: .../.../1995

Name fishing village: District:

Name landing site surveyed: Code map:

Number of active fishermen: Permanent/Temporal landing site:

If temporal landing site, indicate period of occupation:

Name site to left: Name site to right:

Total active and non-active, broken boats at landing site: (1)

Gear boats and vessels of broken boats at landing																											
Nr	Boats present at landing				F	A	TYPE						NUMBER OF FISHING GEARS											HP			
	Fishing	Transport	Lamp carriers	Auxiliary			Number of fishermen	State (Active-Broken)	Wooden canoe	Metal canoe	Fibreglass canoe	Dugout (monoxyl)	Catamaran	Trimaran	Industrial Unit	Nr. Lamps	Nr. normal liftnet	Nr. apollo liftnet	Nr. beach seine	Nr. gill nets	Nr. scoopnet/lusenga	Nr. longlines	Nr. traps	Nr. artis. seines (chiromila)	Nr. purse seines	Nr. hand lines	Nr. other fishing gear
1																											
2																											
3																											
4																											
5																											
6																											
7																											
8																											
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9																											
0																											
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3																											
4																											
5																											

Number of boats out for fishing or other purpose: (2)

..... out for fishing

..... out for transport

..... moved to landing site.....

.....

Number and origin of visiting boats:

..... from

..... from

REMARKS:

.....

.....

.....

.....

.....

.....

.....

Annex 3b: MANUAL TO COMPLETE SIMULTANEOUS FS FORM

Recording station: only applies for Tanzanian recorders;

Name fishing village: record the name of the fishing village to which this fish landing site belongs (the name can be identical; one fishing village can have more fish landing sites, etc.);

Code map: indicate on detailed map, using code number, the localization of landing site to survey;

Total number of active fishermen: to be asked at landing site;

Permanent or temporal landing site: indicate P or T and, in case of T, indicate months of temporal occupation;

Name landing site left/right: when at landing site to be surveyed, face the lake and ask name (and distance) of nearest landing site at your left and at your right (= extra verification in order not to skip a landing site);

Total number of active and broken boats (1): ask and indicate active + broken = total number (e.g. 25A + 3B = 28 Total);

Verification of characteristics of each boat present at landing site: use one line for each boat to check and fill in its characteristics on use, number of active fishermen, active or not, etc. as shown in the example on next page; when you reach the 10th boat, add a '1' in front of the zero, idem for 11, 12, 13, etc. (like this you can use an extra blank FS form in case you have to check more than 35 boats at a bigger landing site).

- indicate with X the use of each boat;
- indicate if boat is active or broken (not active) with code A or B;
- indicate with X the type of boat;
- verify type of fishing gears and indicate the number for each gear in the appropriate box;
- if motorized, give number of HP outboard/inboard engine power;
- each auxiliary boat, e.g. assisting an industrial fishing unit, occupies a separate line (see example);

Number of boats out for fishing or other purpose (2):

- indicate total number of boats out for fishing or other purpose and detail this number by purpose of absence;

IMPORTANT ! 1 1 EXTRA VERIFICATION

Quickly make the sum of the number of boats checked on the beach and the absentee boats (2): the sum should be (more or less) equal to the number of boats indicated in (1) !!! If the sum is very different from (1), then the answers given in (1) and/or (2) are not correct and should be verified again !!!

- Total number and origin of visiting boats: detail this number by specifying the origin of the visiting boats.

Annex 3c: Example FS form.

LAKE TANGANYIKA - SIMULTANEOUS FRAME SURVEY 95

Name recorder(s): E. NIKOMEZE

Country: BURUNDI

Recording station: ---

J.-M. TUMBA

Region/Stratum: MAKAMBA

Date: 25/2/1995

Name fishing village: KARONDA

District: ---

Name landing site surveyed: KARONDA

Code map: 27

Number of active fishermen: 42

Permanent/Temporal landing site: T

If temporal landing site, indicate period of occupation: FEBRUARY - MAY

Name site to left: KIEWENA

Name site to right: RUMONGE

Total active and non-active, broken boats at landing site: 12 A + 3 B = 15 (1)

Nr	Boats present at landing				F	A	TYPE							NUMBER OF FISHING GEARS												HP		
	Fishing	Transport	Lamp carriers	Auxiliary			Number of fishermen	State (Active-Broken)	Wooden canoe	Metal canoe	Fibreglass canoe	Dugout (monoxyl)	Catamaran	Trinaran	Industrial Unit	Nr. Lamps	Nr. normal liftnet	Nr. apollo liftnet	Nr. beach seine	Nr. gill nets	Nr. scoopnet/lusenga	Nr. longlines	Nr. traps	Nr. artis. seines (chirimila)	Nr. purse seines	Nr. hand lines	Nr. other fishing gear	HP outboard
1	X				5	A					X			6	1					1							15	
2		X				A	X																				40	
3	X	X			1	A	X																				25	
4	X					B				X																		
5	X					B				X																		
6	X				20	A							X										1				75	
7	X		X		1	A		X						9										1				
8	X			X	1	A	X																					
9		X				B	X																					
10	X					A						X		8		1											15	
11	X					A					X			5	1													
12	X				2	A	X										7		1	2				1				
3																												
4																												
5																												
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4																												
5																												

Number of boats out for fishing or other purpose: 3 (2)

1 out for fishing

1 out for transport

1 moved to landing site NYANZA - LAC

Number and origin of visiting boats: 2

2 CATAMARANS from MAGARA

from

REMARKS:

12 BOATS SURVEYED

+ 3 BOATS OUT (2)

= 15 TOTAL (1)

OK

Annex 4a:

STANDARDIZED FRAME SURVEY RESULT OUTPUT FOR LAKE TANGANYIKA

YEAR: 1992

Country : BURUNDI

Prepared by: E. COENEN, LTR

Date FS : 28 - 31.10.92

Approved by: S. BAMBARA, BFD

Total number of landing sites : 37
Total number of active fishermen : 4600*
Total number of active fishing units : 982 (1)

* total number of industrial units : 13 (2)
* total number of artisanal units : 969 (3)

- total number of trimarans : - (4)
- total number of catamarans : 604 (5)
- total number of appollos : 67 (6)
- total number of dugouts :) (7)
- total number of single planked units :) 298** (8)
- total number of single fiberglass units : - (9)
- total number of other type (specify) : - (10)

(1=2+3; 4+5+6+7+8+9+10=3)

Total number of transport boats : ?
Total number of auxiliary boats : 19

(auxiliary boat = e.g. lampboat)

Total number of outboard engines : 319*
Total number of inboard engines : 13

Total number of fishing gear per type :

* Industrial fishing :

- industrial purse seine net ('senne tournante industr.') : 13

* Artisanal fishing :

- chiromila ('senne tournante artisanale') : -
- liftnet ('carrelet') : 671
- gillnet ('filet maillant') : ?
- beach seine ('senne de plage') : 36*
- scoop net ('époussette') : 33*
- trap ('nasse') : ?
- handline ('ligne') : ?
- hookline ('palangre') : ?
- other ('autre'), specify : : -

REMARKS/OBSERVATIONS :

Details of the above 1992 Frame Survey are reported in COENEN (1994), GCP/RAF/271/FIN - TD/18 (En): 28p.

* estimates based on partial counts during the survey.

** represents total number of dugouts plus single planked units.

Annex 4b:

**STANDARDIZED CATCH ASSESSMENT SURVEY RESULT OUTPUT
FOR LAKE TANGANYIKA**

YEAR: 1992

Country : BURUNDI

Prepared by: E.COENEN, LTR

Date CAS : 22.12.91-08.01.93

Approved by: S.BAMBARA, BFD

Total annual catch (all species) : 25183 tons (1)
Total annual catch by species(group) :

- Clupeids (<u>Stolothrissa t./Limnothrissa m.</u>)	: 17261	tons (2)
- <u>Lates (Lates) spp.</u> (3 species)	: 91	tons (3)
- <u>Lates (Luciolates) stappersii</u>	: 7358	tons (4)
- <u>Tilapia spp.</u>	: -	tons (5)
- Others	: 473	tons (6)

(1=2+3+4+5+6)

Total annual catch <u>industrial fishing</u>	: 1091	tons (7)
Total annual catch <u>artisanal fishing</u>	: 24092	tons (8)

- total annual catch liftnet fishery	: 23424	tons (9)
- total annual catch gillnet fishery	: -	tons (10)
- total annual catch beach seine fishery	: -	tons (11)

- total annual catch for other types of artisanal fishery, if data available :

- total traditional	: 668	tons (12)
-	: -	tons (13)
-	: -	tons (14)

(1=7+8; 9+10+11+12+13+14=8)

Average catch per unit of effort (CPUE) for each type of fishing, keeping in mind that the *unit of effort* is defined as the *fishing effort performed by one fishing unit per night (or per day, depending on when the fishing trip takes place)* :

* CPUE for industrial fishing : 296.8 kg/night

* CPUE for artisanal fishing :

- liftnet fishery	: 157.0	kg/night
- gillnet fishery	: -	kg/night
- beach seine fishery	: -	kg/night
- total traditional	: 16.4	kg/night
- catamaran liftnet	: 148.3	kg/night
- apollo liftnet	: 315.2	kg/night

REMARKS/OBSERVATIONS :

Frame Survey done by Burundi Fisheries Department (BFD) and LTR in October 1992 (see Frame Survey sheet for 1992).
Burundi was also included in lake-wide aerial Frame Survey done by LTR from 29.09 - 03.10.92.

(if new FS data available for this year, add FS summary in annex)

Annex 4c:

**STANDARDIZED CATCH ASSESSMENT SURVEY RESULT OUTPUT
FOR LAKE TANGANYIKA**

YEAR: 1993

Country : BURUNDI

Prepared by: E.COENEN, LTR

Date CAS : 09.01 - 28.12.93

Approved by: S.BAMBARA, BFD

Total annual catch (all species) : 15565 tons (1)
Total annual catch by species(group) :

- Clupeids (<u>Stolothrissa t./Limnothrissa m.</u>)	: 10425	tons (2)
- <u>Lates (Lates) spp.</u> (3 species)	: 36	tons (3)
- <u>Lates (Luciolates) stappersii</u>	: 4920	tons (4)
- <u>Tilapia spp.</u>	: -	tons (5)
- Others	: 184	tons (6)

(1=2+3+4+5+6)

Total annual catch <u>industrial fishing</u>	: 462	tons (7)
Total annual catch <u>artisanal fishing</u>	: 15103	tons (8)

- total annual catch liftnet fishery	: 14808	tons (9)
- total annual catch gillnet fishery	: -	tons (10)
- total annual catch beach seine fishery	: -	tons (11)

- total annual catch for other types of artisanal fishery, if data available :

- total traditional	: 295	tons (12)
-	: -	tons (13)
-	: -	tons (14)

(1=7+8; 9+10+11+12+13+14=8)

Average catch per unit of effort (CPUE) for each type of fishing, keeping in mind that the unit of effort is defined as the fishing effort performed by one fishing unit per night (or per day, depending on when the fishing trip takes place) :

* CPUE for industrial fishing : 150 kg/night

* CPUE for artisanal fishing :

- liftnet fishery	: 138	kg/night
- gillnet fishery	: -	kg/night
- beach seine fishery	: -	kg/night
- total traditional	: 15	kg/night
- catamaran liftnet	: 122	kg/night
- apollo liftnet	: 300	kg/night

REMARKS/OBSERVATIONS :

No Frame Survey done in 1993 by Burundi Fisheries Department (BFD).
Lake-wide aerial Frame Survey of Lake Tanganyika done by LTR in May 1993 (report in preparation).

(if new FS data available for this year, add FS summary in annex)

Annex 4d :

STANDARDIZED FRAME SURVEY RESULT OUTPUT FOR LAKE TANGANYIKA

YEAR: 1992

Country : TANZANIA

Prepared by: E. LYIMO

Date FS : December 1992

Approved by: T. MAEMBE

Total number of landing sites : 86
Total number of active fishermen : 8784
Total number of active fishing units : 2937 (1)

* total number of industrial units : - (2)
* total number of artisanal units : 2937 (3)

- total number of trimarans : - (4)
- total number of catamarans : 691 (5)
- total number of appollos : - (6)
- total number of dugouts : 52 (7)
- total number of single planked units : 2094 (8)
- total number of single fiberglass units : - (9)
- total number of other type (specify) : - (10)

(1=2+3; 4+5+6+7+8+9+10=3)

Total number of transport boats : 92
Total number of auxiliary boats : 1

(auxiliary boat = e.g. lampboat)

Total number of outboard engines :
Total number of inboard engines :

Total number of fishing gear per type :

* Industrial fishing :

- industrial purse seine net ('senne tournante industr.') : -

* Artisanal fishing :

- chiromila ('senne tournante artisanale') : -
- liftnet ('carrelet') : 691
- gillnet ('filet maillant') : 1424
- beach seine ('senne de plage') : 618
- scoop net ('épuiquette') : 257
- trap ('nasse') : -
- handline ('ligne') : -
- hookline ('palangre') : 505
- other ('autre'), specify : : -

REMARKS/OBSERVATIONS :

(-) : No data available.....
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Annex 4e: Proposed form for:

**STANDARDIZED CATCH ASSESSMENT SURVEY RESULT OUTPUT
FOR LAKE TANGANYIKA**

YEAR: 1992

Country : TANZANIA

Prepared by: E. LYIMO

Date CAS : JAN.-DEC. 1992

Approved by: T. MAEMBE

Total annual catch (all species) : 80525.1 tons (1)

Total annual catch by species(group) :

- Clupeids (Stolothrissa t./Limnothrissa m.) : 54021.3 tons (2)
- Lates (Lates) spp. (3 species) : 5631.9 tons (3)
- Lates (Luciolates) stappersii : 14170.0 tons (4)
- Tilapia spp. : 933.0 tons (5)
- Others : 5768.9 tons (6)

(1=2+3+4+5+6)

Total annual catch industrial fishing : - tons (7)

Total annual catch artisanal fishing : 80525.1 tons (8)

- total annual catch liftnet fishery : * tons (9)
- total annual catch gillnet fishery : * tons (10)
- total annual catch beach seine fishery : * tons (11)

- total annual catch for other types of artisanal fishery, if data available :

- : tons (12)
- : tons (13)
- : tons (14)

(1=7+8; 9+10+11+12+13+14=8)

Average catch per unit of effort (CPUE) for each type of fishing, keeping in mind that the unit of effort is defined as the fishing effort performed by one fishing unit per night (or per day, depending on when the fishing trip takes place) :

* CPUE for industrial fishing : - kg/night

* CPUE for artisanal fishing :

- liftnet fishery : 83.5 kg/night
- gillnet fishery : 42.1 kg/night
- beach seine fishery : 90.6 kg/night
- scoopnet fishery : 51.4 kg/night
- line/hook fishery : 60.3 kg/night

REMARKS/OBSERVATIONS :

(-) : no data available; (*) : catch not specified according to gear type.

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Annex 4f : Proposed form for:

STANDARDIZED FRAME SURVEY RESULT OUTPUT FOR LAKE TANGANYIKA

YEAR: 1992

Country : ZAMBIA

Prepared by: J. LUPIKISHA

Date FS : June 1992

Approved by:

Total number of landing sites : 83
 Total number of active fishermen : 841
 Total number of active fishing units : 752 (1)

* total number of industrial units : 24 (2)
 * total number of artisanal units : 728 (3)

- total number of trimarans : - (4)
 - total number of catamarans : 11 (5)
 - total number of appollos : - (6)
 - total number of dugouts : 25 (7)
 - total number of single planked units : 692 (8)
 - total number of single fiberglass units : (9)
 - total number of other type (specify) : - (10)

(1=2+3; 4+5+6+7+8+9+10=3)

Total number of transport boats : 91
 Total number of auxiliary boats : 806

(auxiliary boat = e.g. lampboat)

Total number of outboard engines : 62
 Total number of inboard engines : 24

Total number of fishing gear per type :

* Industrial fishing :

- industrial purse seine net ('senne tournante industr.') : 24

* Artisanal fishing :

- chiromila ('senne tournante artisanale') : 28
 - liftnet ('carrelet') : 15
 - gillnet ('filet maillant') : 3139
 - beach seine ('senne de plage') : 200
 - scoop net ('époussette') : ?
 - trap ('nasse') : 11
 - handline ('ligne') : 438
 - hookline ('palangre') : ?
 - other ('autre'), specify : : -

REMARKS/OBSERVATIONS :

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Annex 4g : Proposed form for:

**STANDARDIZED CATCH ASSESSMENT SURVEY RESULT OUTPUT
FOR LAKE TANGANYIKA**

YEAR: 1992

Country : ZAMBIA

Prepared by: J. LUPIKISHA

Date CAS :

Approved by:

Total annual catch (all species) : 13829 tons (1)

Total annual catch by species(group) :

- Clupeids (*Stolothrissa t./Limnothrissa m.*) : - tons (2)
- Lates (Lates) spp. (3 species) : - tons (3)
- Lates (Luciolates) stappersii : - tons (4)
- Tilapia spp. : - tons (5)
- Others : - tons (6)

(1=2+3+4+5+6)

Total annual catch industrial fishing : 5253 tons (7)

Total annual catch artisanal fishing : 8576 tons (8)

- total annual catch liftnet fishery : - tons (9)
- total annual catch gillnet fishery : 2455 tons (10)
- total annual catch beach seine fishery : - tons (11)

- total annual catch for other types of artisanal fishery, if data available :

- : tons (12)
- : tons (13)
- : tons (14)

(1=7+8; 9+10+11+12+13+14=8)

Average catch per unit of effort (CPUE) for each type of fishing, keeping in mind that the *unit of effort* is defined as the *fishing effort performed by one fishing unit per night (or per day, depending on when the fishing trip takes place)* :

* CPUE for industrial fishing : 1443 kg/night

* CPUE for artisanal fishing :

- liftnet fishery : - kg/night
- gillnet fishery : 28 kg/night
- beach seine fishery : 88 kg/night
- kapenta seine fishery : 106 kg/night
- : kg/night

REMARKS/OBSERVATIONS :

(-): data not available.....
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