RESEARCH FOR THE MANAGEMENT OF THE FISHERIES ON LAKE TANGANYIKA

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FRAME SURVEY RESULTS FOR LAKE TANGANYIKA, BURUNDI (28—31. 10. 1992) AND COMPARISON WITH PAST SURVEYS

by
E.J. COENEN

FINNISH INTERNATIONAL DEVELOPMENT AGENCY

FOOD AND AGRICULTURE ORGANIZATION OF THE UNITED NATIONS

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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 (FAQ) 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.

Prof. O.V. LINDQVIST
Project Scientific Coordinator

Dr. George HANEK
Project Coordinator

LAKE TANGANYIKA RESEARCH
FAO
B.P. 1250
BUJUMBURA
BURUNDI

Telex: FOODAGRI BDI 5092

Tel.: (257) 229760

Fax.: (257) 229761

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1. INTRODUCTION

After the closure of the FAO/UNDP Project BDI/90/002 “Fisheries Statistics and Information” around mid–1992, data collection, processing, analysis and especially reporting of frame and catch assessment surveys for the Burundian waters of Lake Tanganyika became problematic, due to lack of national funding and to several other reasons.

In an effort to assist the Statistical Unit of the Burundi Fisheries Department to continue the execution of regular Frame Surveys (FS) on Lake Tanganyika, the LTR regional Project, FAO/FINNIDA GCP/RAF/271/FIN “Research for the Management of the Fisheries on Lake Tanganyika”, partly funded the execution of a ground-approach FS. This FS was originally planned to be executed by the Burundi Fisheries Department at the end of September 1992, to coincide with an lake wide aerial FS executed by LTR (Hanek et *al.*, 1993; Coenen *et al.*, 1993). However, because of a meningitis epidemic prevailing at that time, movements of recorders along the lake shore were prohibited for several weeks. Therefore, the FS was done about a month later, from 28 to
31.10.1992.

This report describes in detail the results of the 10.92 ground–approach FS and compares them with earlier Frame Surveys including the aerial FS done one month earlier.

2. METHODOLOGY

FS forms used were those designed by the BDI/90/002 Project “Fisheries Statistics and Information” (see Annex 1). FS data were collected from 28 to 31.10.1992 by the 16 recorders residing at 16 out of 37 active landing sites and the 5 assistant– biologists from the Fisheries Department’s Statistical Unit, the latter playing a supervisory role for the whole FS execution and surveying all other landing sites.

The LTR Project contributed about 150.000 Burundi Francs (at that time, 1 US$ = 212 FBi) for night allowances, transport costs, etc. of the recorders. Recently, LTR assisted the Statistical Unit with a same amount to buy all kinds of stationary for the Unit (printing paper, disks, printing ribbons, file folders, etc.), mainly to enable the Unit to continue its work of fisheries data computer entry and processing and to store and file all original survey data properly.

3. FRAME SURVEY RESULTS

The coastline of Lake Tanganyika in Burundi is 159 km long and represents 9 % of its total coastline length (Hanek et *al.*, 1993). It is divided into 3 strata (having a shoreline of 51, 46 and 62 km long, respectively) and 3 administrative provinces (Bujumbura, Bururi and Makamba). FS results and subtotals arepresented for strata and sometimes for provinces as well

because their respective geographical borders do not coincide.

3.1 Number, size distribution and density of fish landing sites

During the FS, 37 active fish landing sites were recorded (see Figure 1), including a new one in stratum II, Kiyonja. Compared to earlier Frame Surveys, 6 landing sites were found to be inactive: Katumba–Kibero, Kabezi and Kirasa in stratum I; Shanga and Nyacijima in stratum II; and Gatete in stratum III.

The size distribution of the 37 active fish landing sites, measured in number of active fishing units, is the following:

Landing sites with 1–10 active units:	18 or 49 %
Landing sites with 11–30 active units:	8 or 22 %
Landing sites with 31–50 active units:	4 or 11 %
Landing sites with 51–80 active units:	5 or 14 %
Landing sites with > 81 active units:	2 or 5 %

Per 10 km of shoreline, the average density of active fish landing sites was

Stratum I :	2.5 sites/10 km
Stratum II :	2.4 sites/10 km
Stratum III :	2.1 sites/10 km
Total average:	2.3 sites/10 km or 1 every 4.3 km.

3.2 Number, type and density of fishing units

Table 1 presents a summary of the survey results for each active fish landing site and for the different types of fishing units of the artisanal fishery on Lake Tanganyika in Burundi, per stratum and per province. A distinction was made between active (including units actively fishing during the survey and inactive units not fishing during the survey but still regularly fishing) and broken, irreparable fishing units, not participating anymore in fishing. Active units enumerated were: catamarans (lift net fishery); apollos (bigger lift net units than catamarans, in use since 1990); traditional single pirogues (operating lines, beach seines, gill nets, lusengas, traps, etc.); lampboat units assisting in the light attraction using lift net fishery; and assisting units (mainly fish collecting or fish unit towing boats). During the FS, neither the number and distribution of transport boats nor the 14 semi–industrial units were recorded.

A total of 1248 units was enumerated of which 260 or 21 % were irreparably broken and thus not active in the artisanal fishery. The lift net fishery is operated by 604 active catamaran units and 67 apollo units, the latter being far more numerous in southern stratum III. The traditional artisanal fishery is operated by 298 wooden pirogues, mainly concentrated in northern stratum I. The average density of active fishing units per km of shoreline was:

Stratum I : 6.8 units/km
Stratum II : 6.4 units/km
Stratum III : 5.6 units/km

Total average: 6.2 units/km or 1 every 161 meters.

3.3 Fishing unit characteristics

During the FS, the active fishing units of 29 (or 78 %) out of 37 landing sites were surveyed for different characteristics. They are presented below for the 3 main types of fishing units.

3.3.1 Pirogues (traditional fishery)

At 26 active landing sites, 219 (or 73 %) out of a total of 298 pirogues (single wooden planked or monoxyl boats) were surveyed for different characteristics (see Table 2). The traditional, mostly subsistence fishing done with pirogues, is largely concentrated in stratum I where also the average age of the pirogues is the highest, 40 months or almost 4.5 years. This is almost double the average age of pirogues used in the other two strata (about 2 years) and increases the overall average age for a pirogue to 34 months or almost 3 years.

None of the surveyed pirogues is using an outboard engine for their movements. Instead they use paddles to reach the inshore fishing grounds.

A variety of traditional fishing methods are encountered:

- the most popular one is gill netting using the passive method (dormant gill netting or placing mostly the nets in the evening and lifting it in the morning) or the active method (by tapping on the water, fish is driven into an encircling gill net). Passive and active gill netting is respectively done by 35 and 22 % of the total number of pirogues;
- the use of single fishing lines is the second most important one together with beach seining (both methods are used by 12 % each of the total number of pirogues). The use of fishing lines is most abundant in stratum I and especially in Kadjaga. Beach seines are most abundant in stratum I (and especially on sandy beaches around Bujumbura) and in the southern part of stratum III (Mvugo, Nyanza–Lac and Kabonga);
- next follow the lusenga dip nets, used by 11 % of the pirogues, and almost solely operated in 3 fishing villages around Bujumbura. Pirogues using lusengas have 1 to 2 lamps (standard, Anchor or Drum type) to attract fish at night;
- more rare is the use of mosquito gaze nets to catch clupeid fry by light attraction (5 %) and traps (4 %), both only operated in 2 villages around Bujumbura in stratum I, Kanyosha and Katumba respectively.

Pirogues are normally operated by 1 of 2 fishermen according to the fishing method. However, the averages in Table 2 are inflated up to 3 to 4 fishermen per pirogue because a beach seine unit, using only one pirogue, can be operated by 6 to 10 fishermen.

3.3.2 Catamaran (artisanal liftnet fishery)

Table 3 presents in detail the characteristics for 423 or 70 % (out of a total of 604 active catamarans) wooden catamarans, surveyed at 22 landing sites. Catamaran liftnet fishing activities are evenly distributed along the Burundi shoreline, with several high concentrations at major landing sites where often drying facilities for drying the clupeids are available.

The average age of the wooden catamarans is 27 months or a bit more than 2 years. The overall percentage of catamarans equipped with an outboard engine is 43 % with the lowest concentration in stratum I (31 %) and the highest in stratum II (56 %) with a maximum motorization level of 93 % in Rumonge. The average age of outboard engines is 18 months or 1.5 years with an increasing average age from stratum I to stratum III (13, 15 and 25 months respectively).

A total of 2866 fishing pressure lamps to attract the fish are used by the 423 liftnet operating wooden catamarans surveyed which gives an average of 7 fishing lamps per unit, on the average composed of 5 Anchor pressure lamps and 2 Standard lamps.

The wooden catamarans are in general operated by 4 to 6 fishermen with an overall average of 5 per unit.

During the FS, also 4 catamaran units “en bois lamell~— colTh” (glued wooden strips) were surveyed, 2 in Nyamugari (stratum I) and 2 in Rumonge (stratum II). No metal catamaran units were observed.

3.3.3 Apollos (artisanal liftnet fishery)

Since 1990 (Bellemans, 1991c), larger artisanal liftnet units, composed as a catamaran but with the two boats more spaced, with larger nets (average surface of 850 m^2 compared to 325 m^2 for catamarans; Bellemans, 1992b), more light power, etc. made their first appearance in Burundi. Their catches are much higher and often equal those of the more expensive to operate semi-industrial units. Table 4 gives the details of the characteristics of 62 (or 93 %) out of 67 units surveyed at 9 landing places.

Apollo units are most abundant in the most southern stratum III (67 %), and become less numerous when going north: 24 % in stratum II and 9 % in stratum I.

The average age of the wooden apollo units is 27 months (the same as for catamarans). Except for a few non motorized apollos at Mvugo landing (probably they are towed to and from the fishing grounds by other boats), almost all the apollos (89 %) are motorized. The overall average age of the outboard engines is 23 months or almost 2 years and for stratum I to III it is respectively 15, 31 and 20 months.

The 62 apollo units surveyed use a total of 514 fishing lamps, with an average of 8.3 lamps per unit (compared to 6.8 for catamarans). The relative composition of lamp types for apollos is almost similar to the one for catamarans except for the fact that almost half of the apollo units also use a more powerful and more expensive Drum lamp. Drum lamps are also used by the semi-industrial fishing units and have a light power of 20000 25000 candles each, compared to 5000 candles for the common pressure lamps (Bellemans, 1992b). On the average, one apollo unit is equipped with 2.5 standard lamps, 5.5 Anchor lamps and
0.5 Drum lamps.

Apollo units are operated by 6 to 10 fishermen with an overall average of 8 fishermen (compared to 5 for a catamaran) The distinction between catamaran and apollo units is however not always that obvious (Bellemans, 1992b). More and more intermediary units exists, catamarans being more and more equipped like real apollos (bigger nets, longer poles, more lamps, etc.).

3.4 Prices of fishing inputs and amenities available at landing sites

Tables 5 and 6 show the results on the survey of prices of fishing inputs (fuel, petrol, fishing lamps, fishing gear, engines, etc.) and available amenities (fuel station, outboard mechanic shop, boat building shed, fishing equipment shop) at 34 different landing sites. At the bottom of the table, the average price per item, minimum and maximum prices recorded for each item and the standard deviation of recorded prices are presented. The rate of exchange at the time of the survey was 212 Burundi Francs for 1 US Dollar.

Standard deviations of prices for certain items vary a lot, especially for fishing gears and boats which are locally constructed. The reason for this is that, for example, the material used, the length and mesh size of gill nets, beach seines and other fishing gears are not uniform.

Out of 34 landing sites surveyed, 19 of them (with at least 8 active boats) possess one or more amenities for fishermen. For stratum I, they are mostly concentrated around Bujumbura; for stratum II they are quite evenly distributed; and for stratum III they are mostly centered around Nyanza—Lac.

4. COMPARISON WITH PAST FRAME SURVEYS AND CONCLUSIONS

Before the above described FS of October 1922, and apart from the aerial FS done by LTR in September 1994, several frame surveys of the Burundi part of Lake Tanganyika were done in recent years by the FAO/UNDP Project BDI/90/002 “Fisheries Statistics and Information”:

- 20-22.12.91: ground approach FS (Bellemans, 1992a);
- 10–12.06.91: ground approach FS (Bellemans, 1991b);
- 10-12.12.90: ground approach FS (Bellemans, 1991a).

Although no frame surveys were done between 1980 to 1988, Bellemans (1991b) tried to reconstruct the evolution (as of the early sixties) of the different components of the fishing fleet operating in the Burundi waters of Lake Tanganyika. Combined with the 1992 FS results, the evolution of the fishing fleet in Burundi can be summarized as follows:

- the number of pirogues (traditional fishing) decreased steadily from more than 1500 units in the mid-sixties to less than 1000 units in the seventies and down to about 250-300 units in the mid-eighties; after an increase to about 400 units during the second half of the eighties, their number declined again to about 300 units during the early nineties; average catch per night (CPUE) of these units can be estimated at about 25 kg;

- the decline in the number of pirogues was compensated by a steady increase in the number of catamarans (liftnet fishery) throughout the sixties and seventies up to a maximum number of about 750 units in 1978; since 1980, the number of catamarans has been fluctuating around 600; average CPUE of these units probably increased throughout the years (bigger nets, better fishing lamps, etc.) from 100 to 145 kg/night.

- the decline in the number of semi-industrial units, from 22 units during the period 1976-81 down to 14 units in 1992, was largely compensated by the appearance of apollos (liftnet units catching almost as much as semi-industrial units) in 1990; their number quickly increased from 3 units in 1990 up to 63 units in 1992; average CPUE for apollos has been estimated to be about 330 kg/night.

In general, a rough estimate of fishing effort (based on the fishing power or CPUE of different types of fishing units) in the Burundi waters of Lake Tanganyika shows that fishing effort since the mid-sixties has increased up to now by about 80 % while the corresponding total catch only increased by about 50 %.

Table 7 presents a comparison between some interesting characteristics from the 12.90 and 10.92 Frame Surveys. Note the decrease in the number of pirogues (traditional fishery) and the increasing aging of the remaining pirogues; the increase in the use of dormant gill nets and lusengas and the disappearance of longlines used by the traditional fishery; the increase and corresponding decrease of respectively the number of apollos and catamarans (artisanal fishery), the continuing renewal of their boat units and their increasing motorization to reach further and more productive fishing grounds.

A comparison between the 10.92 ground approach FS and the 9.92 aerial FS (after converting the catamaran and apollo units to each 2 pirogue units) shows that - if we assume that the composition of the fishing fleet did not change during September 1992 - the aerial FS covered 88 % of the number of units covered

by the ground FS. This can be explained by the fact that a number of units, hidden under trees, in swamps and reed, and a number of fishing units, fishing far offshore (and out of sight), could not be counted.

In 1993, apart from the May 1993 LTR aerial FS (results being analyzed), no ground approach FS was done for the Burundi fishery on Lake Tanganyika, mainly due to lack of national funds. LTR will probably assist the four riparian countries of Lake Tanganyika in February 1995 to execute a simultaneous ground approach FS for the whole of the Lake, to be supplemented by an LTR executed aerial FS. Although several riparian have or are implementing a computerized system for the analysis of Catch Assessment Survey (CAS) data, the importance of executing regular Frame Surveys (FS) seems to be underestimated. Fisheries Departments should since long have a recurrent annual budget for the preferably annually to be executed Frame Survey and the continuous Catch Assessment Survey. Moreover, what is the use of having a sophisticated and computerized GAS analyzing setup if essential frame data of the fishery are lacking to perform good catch estimates. Too often, old (2—3 years) frame data are used to obtain wrong catch estimates (especially in the case of dynamic fisheries).

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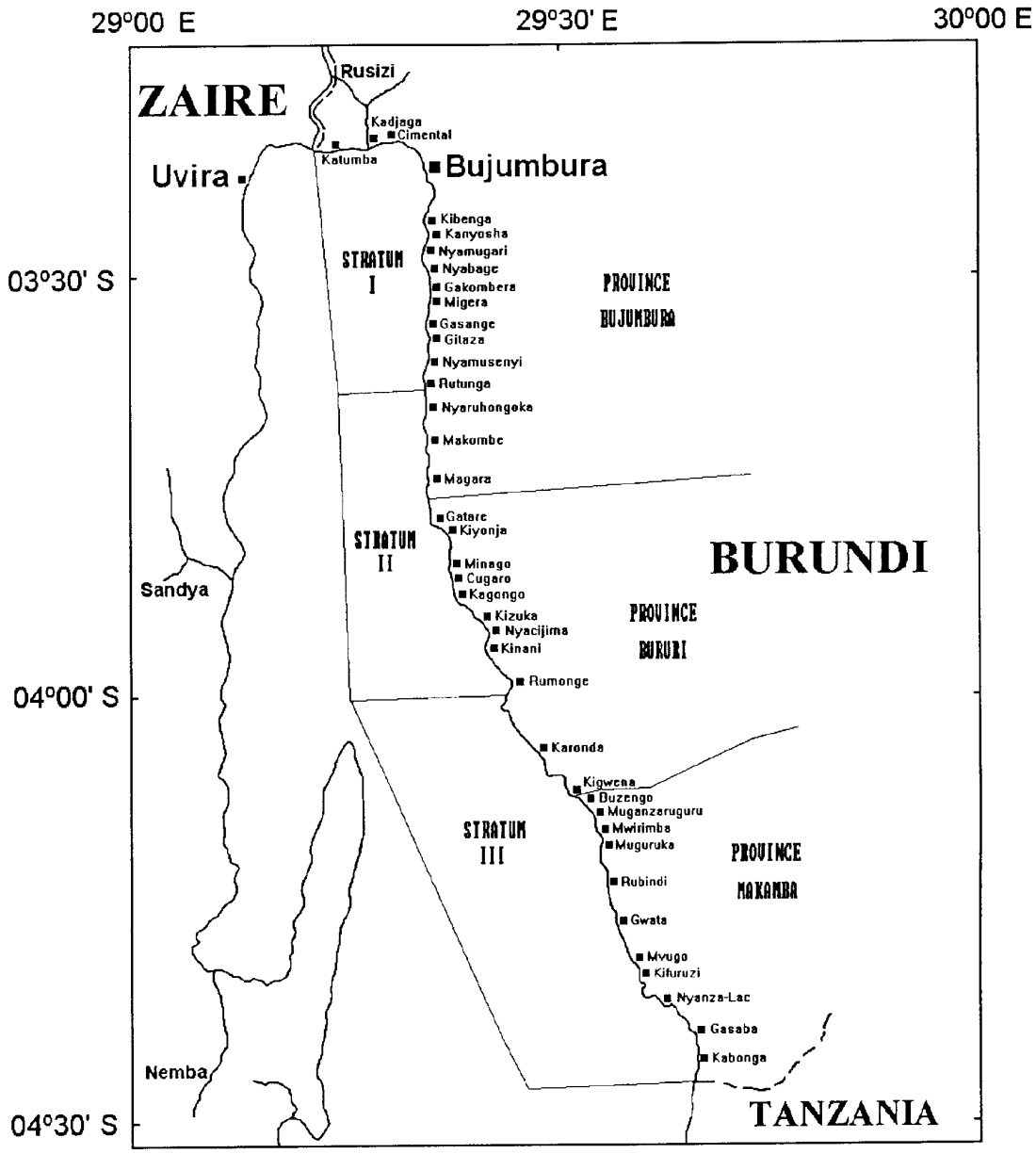

Fig 1. Location of fish landing sites on Lake Tanganyika shore, Burundi (FS 10.92)

Table 1: Summary of the 10.92 FS results per fishing village and type of fishing unit.

DATE	FISH.VILL.	STR.	PROVINCE	CT	CATAM.	CT	APOLL.	PIR	PIROG.	PIR	LAMPB.	ASS.UN.	TOTAL	DENS
				ACT.	BROKEN	TOT.	ACT.	ACT.	BROKEN	TOT.	ACT.	ACT.	ACTUNIT	10 KM
29/10/92	Katumba G.	I	Bujumbura					29	2	31			29	
28/10/92	Kadjaga	I	Bujumbura	22	16	38		34	5	39			56	
30/10/92	Cimental	I	Bujumbura	1		1		46	15	61			47	
28/10/92	Kibenga	I	Bujumbura	2		2		15	7	22			17	
29/10/92	Kanyosha	I	Bujumbura	24	2	26		21	4	25			45	
28/10/92	Nyamugari	I	Bujumbura	66	3	69	1	5		5			72	
31/10/92	Nyabage	I	Bujumbura					1	3	4			1	
31/10/92	Gakombera	I	Bujumbura					1	3	4			1	
31/10/92	Migera	I	Bujumbura	12		12		5	7	12			17	
31/10/92	Gasange	I	Bujumbura	2		2		2	2	4			4	
31/10/92	Kitaza	I	Bujumbura	37		37	1	5	13	18			43	
31/10/92	Nyamusenyi	I	Bujumbura					1		1			1	
28/10/92	Rutunga	I	Bujumbura	9	1	10		5	1	6	1		15	
29/10/92	Nyaruhugoka	II	Bujumbura	2		2		2		2			4	
28/10/92	Makombe	II	Bujumbura	2		2		4		4			6	
28/10/92	Magara	II	Bujumbura	62	10	72	4	20	13	33		4	90	
29/10/92	Gatare	II	Bururi	1		1		3	1	4			4	
29/10/92	Kiyonja	II	Bururi	1		1		2		2			3	
29/10/92	Minago	II	Bururi	12	4	16							12	
29/10/92	Cugaro	II	Bururi					1	4	5			1	
31/10/92	Kagongo	II	Bururi	65	8	73	3	2	4	6	1	1	72	
30/10/92	Kizuka	II	Bururi	8	3	11							8	
30/10/92	Nyacijima	II	Bururi		4	4			2	2			0	
30/10/92	Kinani	II	Bururi	24	2	26		4		4			28	
29/10/92	Rumonge	II	Bururi	40	3	43	13	12	5	17	1		66	
29/10/92	Karonda	III	Bururi	21	3	24		7		7	1		29	
31/10/92	Kigwena	III	Bururi	5	1	6		4		4			9	
31/10/92	Buzengo	III	Makamba	1		1							1	
30/10/92	Muganzaruguru	III	Makamba					10	3	13			10	
30/10/92	Mwirimba	III	Makamba					1		1			1	
29/10/92	Muguruka	III	Makamba	38	8	46	3	12	6	18	3	2	58	
29/10/92	Rubindi	III	Makamba	5		5		4	3	7	1		10	
29/10/92	Gwata	III	Makamba					2	3	5			2	
28/10/92	Mvugo	III	Makamba	98	25	123	33	7	9	16			138	
29/10/92	Gifuruzi	III	Makamba	4	4	8	3		6	6			7	
28/10/92	Nyanza-Lac	III	Makamba	13	4	17	1	15	15	30			29	
29/10/92	Gasaba	III	Makamba	1		1		1	12	13			2	
28/10/92	Kabonga	III	Makamba	26	5	31	5	15	6	21	2	2	50	
		I		**175**	**22**	**197**	**2**	**170**	**62**	**232**	**1**	**0**	**348**	**6.82**
		II		**217**	**34**	**251**	**20**	**50**	**29**	**79**	**2**	**5**	**294**	**6.39**
		III		**212**	**50**	**262**	**45**	**78**	**63**	**141**	**7**	**4**	**346**	**5.58**
			Bujumbura	**241**	**32**	**273**	**6**	**196**	**75**	**271**	**1**	**4**	**448**	
			Bururi	**177**	**28**	**205**	**16**	**35**	**16**	**51**	**3**	**1**	**232**	
			Makamba	**186**	**46**	**232**	**45**	**67**	**63**	**130**	**6**	**4**	**308**	
			TOTAL	**604**	**106**	**710**	**67**	**298**	**154**	**452**	**10**	**9**	**988**	**6.21**

Abbr.: Fish.Vill. = Fishing Village; Str. = Stratum; CT or Catam. = Catamaran; Act. = Active; Apoll. = Apollo; Pir or Pirog. = Pirogue; Tot. = Total; Lampb. = Lampboat; Ass.Un. = Assisting Unit; Dens = Density per

Table 2: Characteristics of the pirogues surveyed during the 10.92 FS.

FISH.VILL.	STR.	PROV.	PNR	PAGE	AVAGE	PST	PANC	PDR	PLUS	PLIN	PPGN	PAGN	PBS	PTR	PMOS	PFM	AVFM
Katumba G.	I	Bujumbura	14	912	65	0	0	0	0	2	1	3	0	8	0	20	1
Kadjaga	I	Bujumbura	34	1578	46	0	2	0	2	16	12	3	1	0	0	58	2
Cimental	I	Bujumbura	38	1379	36	3	10	0	13	1	20	1	3	0	0	85	2
Kibenga	I	Bujumbura	13	446	34	0	5	0	5	0	3	5	0	0	0	31	2
Kanyosha	I	Bujumbura	21	590	28	8	0	1	0	0	5	4	2	0	10	61	3
Nyamugari	I	Bujumbura	6	137	23	0	4	0	0	0	2	2	2	0	0	18	3
Nyabage	I	Bujumbura	1	0	0	0	0	0	0	0	0	1	0	0	0	3	3
Migera	I	Bujumbura	5	324	65	0	0	2	1	1	2	0	1	0	0	11	2
Gasange	I	Bujumbura	2	42	21	0	0	0	0	0	1	1	0	0	0	5	3
Kitaza	I	Bujumbura	1	8	8	0	0	0	0	0	0	0	1	0	0	4	4
Nyamusenyi	I	Bujumbura	1	24	24	0	0	0	0	0	0	1	0	0	0	3	3
Nyaruhugoka	II	Bujumbura	1	18	18	0	0	0	0	0	1	0	0	0	0	2	2
Makombe	II	Bujumbura	4	81	20	0	0	0	0	2	1	1	0	0	0	7	2
Magara	II	Bujumbura	6	174	29	0	0	0	0	2	2	2	0	0	0	13	2
Gatare	II	Bururi	3	64	21	0	0	0	0	0	1	2	0	0	0	8	3
Kiyonja	II	Bururi	2	42	21	0	0	0	0	0	0	2	0	0	0	6	3
Kinani	II	Bururi	4	107	27	0	0	0	0	0	2	1	1	0	0	13	3
Rumonge	II	Bururi	10	214	21	0	0	0	0	0	4	4	2	0	0	38	4
Karonda	III	Bururi	7	133	19	0	0	0	0	0	5	2	0	0	0	18	3
Kigwena	III	Bururi	4	35	9	0	0	0	0	0	4	0	0	0	0	8	2
Muganzaruguru	III	Makamba	7	138	20	0	0	0	0	0	4	2	1	0	0	24	3
Gwata	III	Makamba	2	43	22	0	0	0	0	0	2	0	0	0	0	4	2
Mvugo	III	Makamba	7	188	27	0	1	0	1	1	1	2	2	0	0	25	4
Nyanza-Lac	III	Makamba	15	436	29	0	1	0	1	0	2	7	5	0	0	68	5
Gasaba	III	Makamba	1	36	36	0	0	0	0	0	0	1	0	0	0	3	3
Kabonga	III	Makamba	10	246	25	0	0	0	0	1	2	2	5	0	0	49	5
TOTAL	**I**		**136**	**5440**	**40**	**11**	**21**	**3**	**21**	**20**	**46**	**21**	**10**	**8**	**10**	**299**	**2**
TOTAL	**II**		**30**	**700**	**23**	**0**	**0**	**0**	**0**	**4**	**11**	**12**	**3**	**0**	**0**	**87**	**3**
TOTAL	**III**		**53**	**1255**	**24**	**0**	**2**	**0**	**2**	**2**	**20**	**16**	**13**	**0**	**0**	**199**	**4**
GRAND TOTAL			**219**	**7395**	**34**	**11**	**23**	**3**	**23**	**26**	**77**	**49**	**26**	**8**	**10**	**585**	**3**

Abbrev.: P = Pirogue; NR = Number of; AGE = Total Age; AV = Average; ST,ANC,DR = Fishing lamps of Standard, Anchor, Drum type; LUS = Lusenga; LIN = Line; PGN,AGN = Passive,Active Gill Nets; BS = Beach Seine; TR = Trap; MOS = Mosquito Net; FM = Fishermen.

Table 3: Characteristics of the wooden catamarans surveyed during the 10.92 FS.

FISH.VILL.	STR.	PROVINCE	CNR	CAGE	AVAG	MOT	M%	MAGE	MAVAG	CST	STAV	CANC	ANAV	CDR	DRAV	CTL	TLAV	CFM	AVFM
Kadjaga	I	Bujumbura	22	1388	63	3	14			9	0.4	122	5.5	0	0.0	131	6.0	110	5
Cimental	I	Bujumbura	1	24	24	0	0			1	1.0	5	5.0	0	0.0	6	6.0	5	5
Kanyosha	I	Bujumbura	24	527	22	8	33	119	15	29	1.2	101	4.2	6	0.3	136	5.7	104	4
Nyamugari	I	Bujumbura	64	1348	21	27	42	508	19	165	2.6	296	4.6	0	0.0	461	7.2	351	5
Migera	I	Bujumbura	12	220	18	1	8	9	9	12	1.0	58	4.8	0	0.0	70	5.8	65	5
Gasange	I	Bujumbura	2	60	30	0	0			3	1.5	10	5.0	0	0.0	13	6.5	11	6
Kitaza	I	Bujumbura	32	886	28	10	31			52	1.6	180	5.6	3	0.1	235	7.3	174	5
Rutunga	I	Bujumbura	4	96	24	1	25			7	1.8	21	5.3	0	0.0	28	7.0	19	5
Nyaruhugoka	II	Bujumbura	1	12	12	0	0			4	4.0	2	2.0	0	0.0	6	6.0	4	4
Makombe	II	Bujumbura	2	66	33	0	0			3	1.5	10	5.0	0	0.0	13	6.5	10	5
Magara	II	Bujumbura	27	629	23	11	41			50	1.9	123	4.6	2	0.1	175	6.5	118	4
Gatare	II	Bururi	1	25	25	0	0			2	2.0	4	4.0	0	0.0	6	6.0	5	5
Kiyonja	II	Bururi	1	16	16	0	0			2	2.0	4	4.0	0	0.0	6	6.0	4	4
Kagongo	II	Bururi	32	532	17	16	50	215	13	57	1.8	190	5.9	0	0.0	247	7.7	167	5
Kinani	II	Bururi	24	563	23	11	46	131	12	34	1.4	135	5.6	0	0.0	169	7.0	96	4
Rumonge	II	Bururi	29	677	23	27	93	628	23	41	1.4	167	5.8	0	0.0	208	7.2	117	4
Karonda	III	Bururi	17	840	49	5	29	199	40	21	1.2	104	6.1	0	0.0	125	7.4	66	4
Kigwena	III	Bururi	5	162	32	1	20			5	1.0	41	8.2	0	0.0	46	9.2	21	4
Mvugo	III	Makamba	80	2000	25	38	48	824	22	120	1.5	378	4.7	15	0.2	513	6.4	417	5
Gifuruzi	III	Makamba	4	94	24	3	75	78	26	4	1.0	22	5.5	2	0.5	28	7.0	23	6
Nyanza-Lac	III	Makamba	13	336	26	7	54	131	19	21	1.6	63	4.8	3	0.2	87	6.7	69	5
Kabonga	III	Makamba	26	753	29	14	54	477	34	31	1.2	115	4.4	11	0.4	157	6.0	129	5
TOTAL	**I**		**161**	**4549**	**28**	**50**	**31**	**636**	**13**	**278**	**1.7**	**793**	**4.9**	**9**	**0.1**	**1080**	**6.7**	**839**	**5**
TOTAL	**II**		**117**	**2520**	**22**	**65**	**56**	**974**	**15**	**193**	**1.6**	**635**	**5.4**	**2**	**0.0**	**830**	**7.1**	**521**	**4**
TOTAL	**III**		**145**	**4185**	**29**	**68**	**47**	**1709**	**25**	**202**	**1.4**	**723**	**5.0**	**31**	**0.2**	**956**	**6.6**	**725**	**5**
GR. TOTAL			**423**	**11254**	**27**	**183**	**43**	**3319**	**18**	**673**	**1.6**	**2151**	**5.1**	**42**	**0.1**	**2866**	**6.8**	**2085**	**5**

Abbreviations: C = Catamaran; NR = Number; AGE = Total Age; AV = Average; MOT or M = Outboard Engine; M% = %Motorisation; ST,ANC,DR = Standard, Anchor, Drum Lamps; TL = Total Lamps; FM = Fishermen.

Table 4: Characteristics of the apollo units surveyed during the 10.92 FS.

FISH.VILL.	STR.	PROVINCE	APNR	APAGE	AVAGE	MOT	M%	MAGE	AVAGE	AST	STAV	AANC	ANAV	ADR	DRAV	ATL	TLAV	AFM	FMAV
Nyamugari	I	Bujumbura	1	31	31	1	100	30	30	4	4.0	8	8.0	0	0.0	12	12.0	8	8
Kitaza	I	Bujumbura	1	9	9	1	100			4	4.0	3	3.0	0	0.0	7	7.0	8	8
Magara	II	Bujumbura	4	75	19	4	100	75	19	16	4.0	16	4.0	2	0.5	34	8.5	27	7
Kagongo	II	Bururi	3	44	15	3	100	58	19	7	2.3	24	8.0	0	0.0	31	10.3	22	7
Rumonge	II	Bururi	11	411	37	11	100	421	38	26	2.4	88	8.0	1	0.1	115	10.5	69	6
Mvugo	III	Makamba	33	898	27	26	79	656	20	80	2.4	147	4.5	17	0.5	244	7.4	277	8
Gifuruzi	III	Makamba	3	38	13	3	100	38	13	2	0.7	19	6.3	2	0.7	23	7.7	23	8
Nyanza-Lac	III	Makamba	1	26	26	1	100	16	16	8	8.0	2	2.0	0	0.0	10	10.0	8	8
Kabonga	III	Makamba	5	144	29	5	100	128	26	10	2.0	26	5.2	2	0.4	38	7.6	38	8
TOTAL	**I**		**2**	**40**	**20**	**2**	**100**	**30**	**15**	**8**	**4.0**	**11**	**5.5**	**0**	**0.0**	**19**	**9.5**	**16**	**8**
TOTAL	**II**		**18**	**530**	**29**	**18**	**100**	**554**	**31**	**49**	**2.7**	**128**	**7.1**	**3**	**0.2**	**180**	**10.0**	**118**	**7**
TOTAL	**III**		**42**	**1106**	**26**	**35**	**83**	**838**	**20**	**100**	**2.4**	**194**	**4.6**	**21**	**0.5**	**315**	**7.5**	**346**	**8**
GRAND TOT.			**62**	**1676**	**27**	**55**	**89**	**1422**	**23**	**157**	**2.5**	**333**	**5.4**	**24**	**0.4**	**514**	**8.3**	**480**	**8**

Abbreviations: AP or A = Apollo; NR = Number; AGE = Total Age; AV = Average; MOT or M = Outboard Engine; M% = %Motorisation; ST,ANC,DR = Standard, Anchor,Drum Lamps; TL = Total Lamps; FM = Fishermen.

Table 5: Results of the 10.92 FS on the prices of fishing inputs at different landing sites.

FISH.VILL.	PRICE FUEL	PRICE PETROL	PRICE ANCHOR	PRICE DRUM	PRICE 12 MANTLES	PRICE 15 HP	PRICE 25 HP	PRICE 40 HP	PRICE BEACH S.	PRICE LIFTN. 1	PRICE LIFTN. 2	PRICE APOLLO	PRICE GNE	PRICE GND	PRICE LUSENGA	PRICE TRAP	PRICE LINE	PRICE PIR.4M	PRICE PIR.6M	PRICE PIR.8M	PRICE PIR.9M
Katumba G.	135	125											70000	15000		300	1300				
Kadjaga	130	125	5500	11000	600	400000	500000		250000	200000			15000	27000	4500			10000	40000	60000	
Cimental	135	125	5000		600				250000	292000			11000	140000	12000			12000	20500		
Kibenga	135	125	5000		600				200000	210000			150000	50000	7000			15000	20000	25000	27000
Kanyosha	130	125	5500	20000	720	450000	525000	625000	200000	250000	350000	450000	60000	50000	5000			15000	25000	30000	36000
Nyamugari	135	130	4800	40000	720	550000	650000	750000	80000	400000		1120000	15000	30000				25000	28000	70000	100000
Nyabage																		9000			
Migera	135	125	5000	20000	720				70000	150000		450000	27000	20000				12000	30000		50000
Gasange		125	5000		600					90000								12000	25000		
Kitaza	135	125	4700	35000	720	480000	580000	800000	70000	100000	200000	250000						15000	30000	35000	40000
Nyamusenyi																		10000			
Rutunga	135	130	4800	40000	720	500000	600000		120000	150000		350000	40000	30000				8000	10000	15000	20000
Nyaruhugoka	135	130	4800	40000	720					160000			20000	18000				6000	9000	12000	20000
Makombe	135	130	4800	40000	720					200000		350000	18000	40000				8000	10000	12000	20000
Magara	135	125	4800	40000	720	400000	600000	800000	200000	210000	250000	380000	30000	40000	2000			6000	10000	15000	20000
Gatare	135	130	4800	40000	720				200000	290000			30000	60000					8000	12000	20000
Kiyonja		130	4800		720					200000			30000								
Minago	135	125	5000		800				80000	180000		250000						6000	12000	40000	70000
Cugero																					
Kagongo	135	125	5000	47000	800	250000	400000	700000	100000	180000	210000	300000	40000	30000				6000	9000	12000	20000
Kizuka	135	125	4000		700				120000		200000	300000						8000	15000	25000	70000
Nyacijima																					
Kinani	135	125	4500		720	420000	600000	800000	120000	150000		350000	40000	18000				15000	30000	35000	80000
Rumonge	135	125	4000	35000	700	200000	350000	650000	150000	200000		300000	18000	40000				7000	19000	30000	60000
Karonda	135	125	5500		700		550000			110000			25000	40000				6000	20000		
Gwata	135	125	5500		700																
Mvugo	135	125	4800	40000	720	550000	625000	800000	170000	190000	210000	350000	27000	40000				6000	8000	12000	20000
Gituruzi	135	130	4800	60000	720	480000	550000	720000	150000	250000		350000	30000	38000				8000	10000	12000	20000
Nyanza-Lac	135	130	4800	40000	720	550000	750000		110000	150000		350000	15000	30000				8000	10000	12000	20000
Gasaba	135	130	4800	60000	720	550000	750000		70000	175000		350000	25000	35000				6500	8000	12000	20000
Kabonga	135	125	5000	30000	720	550000	650000	800000	120000	150000		350000	15000	30000				5000	8000	12000	20000
AVERAGE	**135**	**127**	**4885**	**37529**	**705**	**452143**	**578667**	**744500**	**141500**	**193208**	**236667**	**388235**	**34136**	**39000**	**6100**	**300**	**1300**	**9780**	**17271**	**24400**	**37650**
MINIMUM	**130**	**125**	**4000**	**11000**	**600**	**200000**	**350000**	**625000**	**70000**	**90000**	**200000**	**250000**	**11000**	**15000**	**2000**	**300**	**1300**	**5000**	**8000**	**12000**	**20000**
MAXIMUM	**135**	**130**	**5500**	**60000**	**800**	**550000**	**750000**	**800000**	**250000**	**400000**	**350000**	**1120000**	**150000**	**140000**	**12000**	**300**	**1300**	**25000**	**40000**	**70000**	**100000**
STDEV	**1**	**2**	**371**	**12590**	**61**	**111850**	**109324**	**67678**	**58784**	**68042**	**58538**	**196285**	**29713**	**25770**	**3748**			**4560**	**9426**	**16919**	**25105**

Abbreviations: BEACH S. = Beach Seine; LIFTN.1 = Liftnet type 1; GNE = Encircling Gill Net; GND = Dormant Gill Net; PIR6M = Pirogue of 6 m length.

Table 6: Results of the 10.92 FS on available amenities.

FISHING VILLAGE	STRATUM NUMBER	FUEL STATION	OUTB. MECHANIC	BOAT BUILD.	FISH.EQ. SHOP
KatumbaG.	I	X	X	X	
Kadjaga	I		X	X	
Cimental	I	X	X	X	
Kibenga	I	X	X	X	
Kanyosha	I	X		X	X
Nyamugari	I	X			
Kitaza	I	X	X	X	
Rutunga	I			X	
Magara	II	X		X	
Minago	II	X		X	X
Kagongo	II	X	X	X	X
Kizuka	II		X	X	X
Kinani	II		X	X	X
Rumonge	II	X	X	X	X
Karonda	III	X	X	X	
Mvugo	III	X	X	X	X
Nyanza-Lac	III	X	X	X	X
Gasaba	III		X		
Kabonga	III	X	X	X	X

Table 7: Comparison between some characteristics of the 12.90 and 10.92 FS.

CHARACTERISTICS	FS1290	FS1092
NR ACTIVE PIROGUES	425	298
NR ACTIVE CATAMARANS	671	604
NR ACTIVE APOLLOS	3	67
NR ACTIVE INDUSTRIAL UNITS	16	14
% BROKEN UNITS	11	21
AVERAGE AGE PIROGUE (MONTHS)	23	34
AVERAGE AGE CATAMARAN (MONTHS)	37	27
% MOTORISATION CATAMARAN	35	43
AVERAGE AGE MOTOR CATAMARAN (MONTHS)	32	18
AVERAGE NR STANDARD LAMPS CATAMARAN	1.4	1.6
AVERAGE NR ANCHOR LAMPS CATAMARAN	5.6	5.1
AVERAGE NR DRUM LAMPS CATAMARAN	0	0.1
AVERAGE NR OF FISHERMEN CATAMARAN	5	5
% DORMANT GILL NETS	26	35
% ENCIRCLING GILL NETS	23	22
% HAND LINES	14	12
% BEACH SEINES	13	12
% LUSENGAS	4	11
% MOSQUITO NETS	3	5
%TRAPS	5	4
% LONGLINES	13	0

DEPARTEMENT DES EAUX
PECHES ET PISCICULTURE

E N Q U E T E C A D R E

(1992)

Formulaire EC_1

Nom de l'enquêteur: _____ _____ Province: _____
Date de l'enquête : 7 /1992 Commune : _____

S U J E T S D' I N F O R M A T I O N .	
1. Identification de la plage	1. Nom de la plage :_____ !_!_!

2.Embarcation opérationnelle (indiquez le nombre)	EMBARCATIONS									
	PECHE ARTISANALE			PECHE COUTUMIERE			PECHE APPOLO		REN-FORT	MANOEU-VRE
Dates Enquête	actif	non actif	hors usage	actif	non actif	hors usage	actif	non actif		
/_ /1992	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
/ /1992	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
/ /1992	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
/ /1992	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

NOTES :
Prix essence : ... Fr.Bu. par litre
Prix pétrole : ... Fr.Bu. par litre
Prix Lampe Anchor : ..... Fr.Bu.
Prix Lampe Drum : ..... Fr.Bu.
Prix Manchons (12 pièces) : ..... Fr.Bu.

Prix Moteur 15 CV : ..... Fr.Bu.
25 CV : ..... Fr.Bu.
40 CV : ..... Fr.Bu.

Prix Senne plage : ..... Fr.Bu.
Prix Carrelet Kamba mbili : ..... Fr.Bu.
Prix Carrelet Kamba tatu : ..... Fr.Bu.
Prix APPOLLO (Kamba sita) : ..... Fr.Bu.

Prix F.M.Encercl. : ..... Fr.Bu.
Prix F.M.Dormant : ..... Fr.Bu.
Prix Lusenga : ..... Fr.Bu.

Prix pirogue 4 m : ..... Fr.Bu.
Prix pirogue 6 m : ..... Fr.Bu.
Prix pirogue 8 m : ..... Fr.Bu.
Prix pirogue 9 m : ..... Fr.Bu.

Notez par une croix la présence ou l'absence de :

Station d'essence : présent |__| Absent |__|
Mécanicien moteur : présent |__| Absent |__|
Constructeur pirogues : présent |__| Absent |__|
Magasin vente engins pêche : présent |__| Absent |__|

RECENSEMENT INDIVIDUEL PAR UNITE DE PECHE DANS LA PLAGE

Explication des sigles à utiliser

Embarcation : P =pirogue coutumière; C =catamaran; R =Renfort; M =Manoeuvre
B = bois; L = lamellé-collé; M = métal
O = opérationnel; H = hors usage

=> âge : mettez l'âge depuis la construction, en mois

Moteur : M = unité avec moteur; SM = unité sans moteur
../.. = mettez la date d'achat du moteur

Lampes : std ..= nombre de lampes standard s'il y en a
anch..= nombre de lampes "ANCHOR" s'il y en a
Drum..= nombre de lampes "DRUM" s'il y en a

=> s'il n'y a pas de lampes, ne rien mettre

Engin : type d'engin le plus souvent utilisé sur l'unité
utilisez les codes suivants :

Car = carrelet	Apo = Apollo
Lig = lignes simpl	Nas = nasses
Pal = palangrotte	Spl = senne de plage
FME = F.mail.encer.	Lus = lusenga
FMD = F.mail.dorma.	Aut = autres
Mou = moustiquaire	

=> âge : mettez l'âge de l'engin en mois

Origine : ..... = indiquez la plage d'origine de l'unité

Nombre de pêcheurs : .... = indiquez le nombre de pêcheurs travaillant sur l'unité

Page 1

Nom de la plage : _____ Date enquête : ..../0./1992

Province : _____ Commune : _____

RECENSEMENT INDIVIDUEL PAR UNITE DE PECHE									
Nr	EMBARCATION âge		MOTEUR âge	LAMPES types			ENGIN	ORIGINE UNITE	NOMBRE PECHEURS
ex	P B O	âge: .38	SM ../..	ST .0	ANCH .2	DRUM .0	LUS	Kadjaga	..2..
1	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
2	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
3	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
4	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
5	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
6	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
7	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
8	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
9	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
10	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
11	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
12	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
13	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
14	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
15	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
16	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
17	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
18	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
19	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
20	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
21	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
22	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
23	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
24	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
25	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
26	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
27	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
28	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
29	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
30	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....

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ex	C B 0	âge: .38	M 08/91	ST .5	ANCH .3	DRUM .0	CAR	Minago	..5..
31	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
32	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
33	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
34	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
35	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
36	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
37	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
38	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
39	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
40	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
41	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
42	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
43	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
44	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
45	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
46	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
47	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
48	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
49	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
50	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
51	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
52	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
53	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
54	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
55	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
56	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
57	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
58	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
59	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
60	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....

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RECENSEMENT INDIVIDUEL PAR UNITE DE PECHE									
Nr	EMBARCATION âge		MOTEUR âge	LAMPES types			ENGIN	ORIGINE UNITE	NOMBRE PECHEURS
ex	M B O	âge: .13	M 08/91	ST .0	ANCH .0	DRUM .0	./.	Minago	..1..
61	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
62	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
63	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
64	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
65	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
66	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
67	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
68	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
69	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
70	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
71	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
72	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
73	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
74	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
75	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
76	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
77	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
78	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
79	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
80	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
81	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
82	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
83	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
84	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
85	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
86	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
87	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
88	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
89	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
90	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....

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RECENSEMENT INDIVIDUEL PAR UNITE DE PECHE									
Nr	EMBARCATION âge		MOTEUR âge	LAMPES types			ENGIN	ORIGINE UNITE	NOMBRE PECHEURS
ex	M B O	âge: .13	M 08/91	ST .0	ANCH .0	DRUM .0	./.	Minago	..1..
91	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
92	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
93	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
94	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
95	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
96	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
97	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
98	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
99	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
100	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
101	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
102	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
103	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
104	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
105	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
106	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
107	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
108	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
109	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
110	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
111	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
112	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
113	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
114	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
115	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
116	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
117	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
118	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
119	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....
120	. . .	âge: ...	.. ../..	ST ..	ANCH ..	DRUM ..	...	.....	.....