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LTR LAKEWIDE SOCIO-ECONOMIC SURVEY, 1997: DEMOCRATIC REPUBLIC OF CONGO

by

E. Bosma, P. Paffen, N. Mulimbwa, G. Kitungana, C. Nyiringabi, A. Kwibe, C. Bulambo, E. Mukirania, and I. Mbilize

(Edited by: J. E. Reynolds)

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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 (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, Democratic Republic of Congo, 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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TABLE 0F CONTENTS

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The LTR Project Coordinator, Dr. George Hanek, deserves a special vote of thanks for his backstopping efforts, which have made the whole survey exercise possible.

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INTRODUCTION

This document has been prepared as a preliminary report on the 1997 LTR socio-economic (SEC) survey of the Democratic Republic of Congo (DRC) sector of Lake Tanganyika. It should be read in conjunction with LTR/TD 65 (Reynolds and Paffen 1997a) and LTR/TD 66 (Reynolds and Paffen 1997b), which provide background details on the planning, training, and other preparatory activities that laid the groundwork for the survey exercise lakewide. Particular reference should be made to LTR/TD 66, which gives a description of survey methods and sampling strategies, and includes, as annexes: a) specimen copies of the three data collection forms used by the national field teams (Form 1: -- general community features; Form 2: individual fishers; and Form 3: individual processors and traders); b) enumerator guides for questionnaire administration; c) additional instructions prepared for survey team supervisors; d) sampling tables used for initial selection of sites and respondents, together with a map of survey areas; and e) example printouts of data coding and entry sheets.

Reference should also be made to the earlier socio-economic study of the small-scale fisheries conducted within the northern DRC portion of Lake Tanganyika under the auspices of the UNDP/FAO Regional Project for Inland Fisheries Planning (IFIP) in 1991 (Leendertse and Mambona Wa Bazolana 1992). About 6 years have passed since the IFIP study was completed, and it therefore represents a kind of benchmark against which findings of the present investigations may be compared and contrasted.

All of the national sector reports (Zambia -- TD67; Tanzania -- TD68; DRC -- TD69; and Burundi --TD7O) follow a standard format. A description of team preparations is presented in Section 1, along with an itinerary of site visits and a brief account of fieldwork experiences. Section 2 summarises findings generated from preliminary analysis of the Form 1 data set on basic characteristics of sample landing sites. Sections 3 and 4 report on preliminary analyses of the data sets on individual respondents, fishers and processors/traders respectively. Concluding remarks are given in Section 5, and References Cited appear as Section 6. Additional statistical tables used to construct graphical presentations of survey findings for the fisher and post-harvest sample groups are found in Annexes 1 and 2. In order to expedite the reporting process, standard transitional and descriptive phrasings and table and figure formattings have been used wherever possible, taking into account the peculiarities of each of the national data sets.

1. SURVEY BACKGROUND, PREPARATIONS, AND FIELDWORK

A combined training workshop was held in Bujumbura during the first week of July 1997 for members of the national survey teams formed to carry out LTR SEC investigations of the Burundi and DRC sectors of Lake Tanganyika. Workshop participants were familiarised with the survey strategy and questionnaires and received 'hands-on' experience through practice site visit and interview sessions organised at Kadjaga/Gatumba in the vicinity of Bujumbura.

Survey fieldwork along the DRC shoreline ran intermittently from 11 July to 1 August, 1997. The enumerator team was composed of research officers of the Hydrological Research Centre (Centre de Recherche en Hydrobiologie --CRH) in Uvira, including Messrs. Kitungano, Nyiringabi, Kwibe, Bulambo, Mukirania, and Mbilize, all working under the supervision of Mr. Mulimbwa. LTR provided a rented, fully equipped canoe which was used throughout the mission to transport the team from village to village. Other essentials including fuel supply, safety and camping equipment, and food were also provided by the project. Survey visits commenced with the northernmost sample villages along the Sud Kivu shoreline close to the border with Burundi, and worked south through the sample villages in Shaba Province (see map, Fig. 1.1).

A total of 21 sample survey sites (9 in Sud Kivu, 12 in Shaba) were chosen in advance through a process of stratified random selection (Reynolds and Paffen 1997b). However, the field team was only able to visit 8 of these sites due to civil unrest then prevailing in the DRC. When the team arrived in Athenée (Kalemie District, Shaba Province), it was learned that the local authorities had 'closed the lake' due to insecurity in the area. Several days of waiting in Kalemie brought no improvements in the situation, and the team had no options but to cut the survey short and return to Uvira. Table 1.1 summarises the villages visited and the number of respondents interviewed. The field team conducted 189 interviews in all. Data coding and entry work was carried out at LTR Headquarters in Bujumbura.

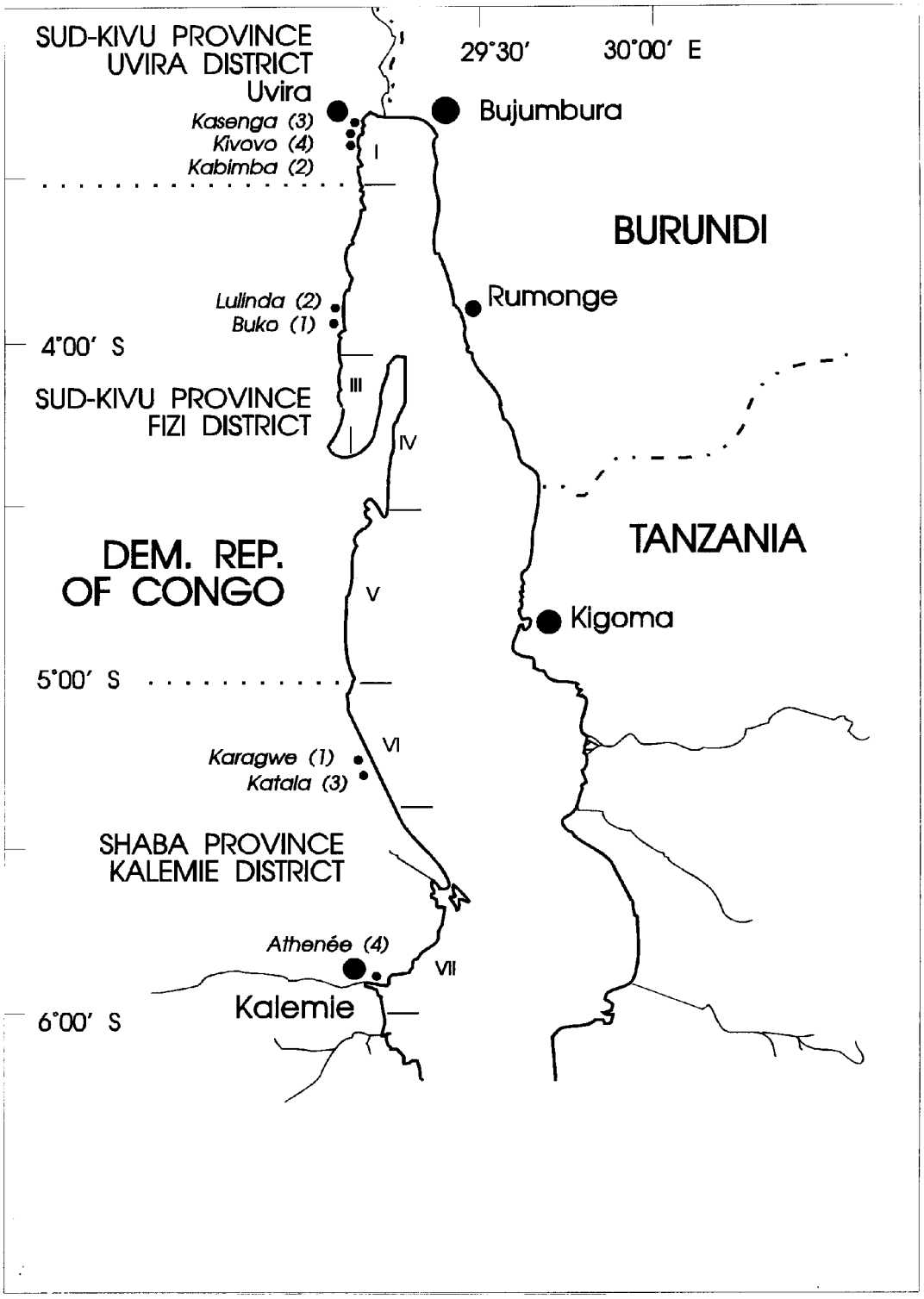


Fig. 1.1 **Lake Tanganyika, West Shore.** Map showing DRC Areas I - V in Sud Kivu Province and Areas VI - VII in Shaba Province. Class codes for sites chosen for SEC survey in July 1997 appear in parentheses behind the village names.

Table 1.1 Field team itinerary and respondents interviewed per sample village.

Start Date	Site Name	Area	Class	Form 1 (Village)	Form 2 (Fishers)						Form 3 (Post-harvest)		
					Artisanal			Traditional					
					Owner	Crew	Tot.	Owner	Crew	Tot.	Fem.	Male	Tot.
SUD-KIVU													
11.07.97	**Kasenga**	I	3	1	6	12	18	0	2	2	5	10	15
16.07.97	**Kivovo**	I	4	1	6	9	15	5	1	6	16	4	20
18.07.97	**Kabimba**	I	4	1	4	3	7	1	0	1	3	1	4
20.07.97	**Lulinda**	II	2	1	2	8	10	0	0	0	3	5	8
21.07.97	**Buko**	II	1	1	3	2	5	1	1	2	2	4	6
SHABA													
22.07.97	**Karagwe**	VI	1	1	3	5	8	0	0	0	0	4	4
23.07.97	**Katala**	VI	3	1	2	1	3	0	0	0	2	7	9
25.07.97	**Athenée**	VII	4	1	6	6	12	8	2	10	15	1	16
	TOTALS			**8**	**32**	**46**	**78**	**15**	**6**	**21**	**46**	**36**	**82**

2. LOCAL FISHING VILLAGE/LANDING SITES: BASIC FEATURES

2.1 Population and Settlement

Population features of the sample sites monitored during the survey in Sud-Kivu and Shaba Provinces are arrayed in Table 2.1. Sites are listed for each province in ascending order by total population size as reported on Form 1. Figures represent estimates given by village leaders for grand total of inhabitants, total adult males, total adult females, and total children (those below 18 years of age). They should therefore be regarded as indicative only. Estimated total populations vary from a low of around 200 at Athenée in Shaba Province (Area 7 -- see map, Figure 1.1) to a high of almost 6,700 inhabitants at Kasenga in Sud-Kivu (Area 1). The gender structure of village populations, calculated as a percentage of total adult population reported, shows a slight majority of women in 6 out of the 8 sites.

Four of the sites register a decrease in overall population size compared with the situation five years ago (Table 2.2). In each of these cases 'security problems' are given as reasons for this change. Three sites register an increase in population from five years ago, attributable to 'birthrate' in one case, and 'inmigration' (either to seek fishing opportunities or for unspecified reasons) in the other two cases.

2.2 Access and Transportation Links

Data on sample landing site access to the national road network are displayed in Table 2.3. All but two villages have access overland to major administrative and commercial centres in their respective districts, and all save one have regular water transport services.

Table 2.1 Estimated population figures, DRC survey sites.*

Site name	Area No.	Class	Tot. Pop.	Tot. Male	% Male (Ad. Pop)	Tot. Fem	% Fem (Ad. Pop)	Tot. Chdr	% Chdr (Tot.Pop)
A. SUD KIVU									
1) Buko	II	1	241	53	0.45	65	0.55	123	0.51
2) Lulinda	II	2	578	137	0.52	129	0.48	312	0.54
3) Kivovo	I	4	1628	415	0.51	400	0.49	813	0.50
4) Kabimba	I	4	1965	446	0.45	541	0.55	978	0.50
5) Kasenga	I	3	6676	1120	0.48	1213	0.52	4343	0.65
B. SHABA									
1) Athenée	VII	4	196	44	0.47	49	0.53	103	0.53
2) Karagwe	VI	1	207	46	0.48	49	0.52	112	0.54
3) Katala	VI	3	302	66	0.48	71	0.52	165	0.55

* Listed in ascending order of estimated population size.

Table 2.2 Reasons cited for change in population size over previous five years, DRC survey sites.*

Site name	Area No.	Class	Tot.Pop.	Growth from 5 yrs ago	Reason
A. SUD KIVU					
1) Buko	II	1	241	More	Natural pop. increase (birth)
2) Lulinda	II	2	578	Less	'Security problem'
3) Kivovo	I	4	1628	Less	'Security problem'
4) Kabimba	I	4		About same	--
5) Kasenga	I	3	6676	Less	'Security problem'
B. SHABA					
1) Athenée	VII	4	196	Less	'Security problem'
2) Karagwe	VI	1	207	More	In-migration
3) Katala	VI	3	302	More	'Fishing'

* Listed in ascending order of estimated population size.

2.3 Basic Facilities Inventory

The inventory of key facilities and services conducted by the survey team at each sample location, also shown in Table 2.3, reveals that the Sud-Kivu sites are fairly well served with basic retailing services, but not with fuel and gear/equipment supply/service agents. In Shaba, Athenée, close to the large regional centre of Kalemie, is catered for by numerous retail and service agents. The other two Shaba sites have very poor basic service inventories. For the 8 Sud-Kivu and Shaba sites overall, there are 6 with primary schools, 3 with medical facilities, 2 with electricity service, and 2 with protected water supplies. No telephone/radio call services, post offices, or banks are registered for any of the locations. None of the sites are staffed with Fisheries Department extension personnel,

but all report active local fisher committees.

3. LOCAL FISHERS: KEY SOCIO-ECONOMIC INDICATORS AND VIEWS

3.1 Fisher Sample Composition

A breakdown of the 99 fisher respondents interviewed by the DRC field team, as shown in Table 3.1, indicates that a substantial majority (79%) are associated with 'artisanal' gear kits. These most frequently comprise standard lift nets; beach seines rank a distant second in frequency and a few 'Apollo' lift net units are represented as well. 'Traditional' gear kits around the lake as a whole include handlines, longlines, gillnets, and lusenga (scoop) nets. Just over 20% of the DRC fisher respondents are associated with traditional gear, in the form of either handlines or gillnets.'

Table 3.1 Sample fishing unit respondents by main gear type, DRC

Main gear type	Fisher respondents per type	
	No.	%
'Traditional'		
Hand lines	10	10.1
Long line	0	0.0
Gillnets	11	11.1
Lusenga nets	0	0.0
Sub-total	21	21.2
'Artisanal'		
Lift net	53	53.5
Apollo	5	5.1
Day beach seine	20	20.2
Sub-total	78	78.8
Report cases	99	100.0

Fishing units may operate with one or more work boats, distinguished according to function performed. For survey purposes, 'fishing boats' were defined as those which carry the main gear of fishing units (never more than one boat per unit). As indicated in Table 3.2, the DRC sample units typically operate with catamarans (doubled-up planked canoes), which account for nearly 60% of all craft enumerated. Single hull planked canoe fishing boats are only about half as frequent, and dugout canoes were counted in about 12% of the sample cases. 'Light boats' -- special craft that carry lamps for night fishing operations -- were not encountered at any of the DRC survey sites. However, in two cases unit fishing operations were being carried out with the help of extra 'auxiliary' boats.

Table 2.3 Access/transportation links and basic facilities inventory of DRC survey sites, July/August 1997*

Site name	Site No.	Area No.	Class	Tot.Pop.	Tot.H/holds	Tot. Buildings	Type road access	Reg. road transp. service?	Reg. water transp. service?	Type water transport	Mkt Vendors	Shops/ Kiosks	Bar/ Restr.	Fuel service	Gear/ Equip Supply/ Service	Water supply	Electricity	Hospital/ Clinic	Primary school	Second. school	Mobile cinema	Telephone	Post office	Bank	Fisheries staff	Fish committee	Nearest Basic Service/ Supply Centre (kms)
SUD KIVU																											
Buko	5	2	1	241	27	65	Murram	Yes	Yes	Water taxi	1	0	1	0	0	Stream	No	No	0	0	No	No	No	No	No	Yes	18
Lulinda	4	2	2	578	72	167	Dirt track	Yes	Yes	Water taxi	2	0	1	0	0	Stream	No	No	1	1	No	No	No	No	No	Yes	70
Kivovo	2	1	4	1628	263	599	Murram	Yes	Yes	Water taxi	0	1	0	0	0	Stream	Yes	No	1	1	Yes	No	No	No	No	Yes	4
Kabimba	3	1	2	1965	314	694	Murram	Yes	Yes	Water taxi	1	3	2	0	1	Lake	No	Yes	2	1	No	No	No	No	No	Yes	8
Kasenga	1	1	3	6676	408	602	Paved	No	No	DNA	2	8	11	1	1	Piped	Yes	Yes	4	3	Yes	No	No	No	No	Yes	5
SHABA																											
Athénée	8	7	4	196	20	37	Dirt track	Yes	Yes	Steamer	2	22	12	2	5	Piped	No	Yes	3	2	No	No	No	No	Yes	Yes	2
Karagwe	7	6	1	207	34	60	None/ Path	Yes	Yes	Water taxi	0	0	0	0	0	Stream	No	No	1	0	No	No	No	No	No	Yes	20
Katala	6	6	3	302	43	48	N.D.	No	Yes	Water taxi	0	0	0	0	0	Stream	No	No	0	0	No	No	No	No	No	Yes	80

* N.D. = No data; DNA = Does not apply.

Table 3.2 *Sample fishing units by craft type, DRC*

Smallcraft type	Fishing boat (Main gear -- 1/ unit)		Cases of associated boats: Light boat		Cases of associated boats: Auxiliary boat	
	No.	%	No.	%	No.	%
Dugout canoe	12	12.1	0	0.0	0	0.0
Planked canoe	28	28.3	0	0.0	2	100.0
Catamaran	59	59.6	0	0.0	0	0.0
Report cases	99	100.0	0	0.0	2	100.0

Avg. No. Boats/ Artisanal unit = 1.03
Avg. No. Boats/ Traditional unit = 1.00

The sample population for the DRC can further be broken down in terms of the different roles played by respondents within their respective fishing units. Functional categories consist of those who are:

- 'Owners' Owners of main gear operated who do not directly participate in fishing trips.
- 'Owner/Operators' Owners of main gear operated who directly participate in fishing trips.
- 'Operator/Captains' Operators who do not own the main gear but who act as fishing leaders or captains.
- 'Crew/labourers' Operators who do not own the main gear (e.g. net setters and pullers).
- Light/auxiliary boat Owners or operators of auxiliary light boats for owners/operators night fishing operations.

On this basis, the composition of the DRC sample respondent population sorts out as follows:

Table 3.3 **Respondents by fisher category, DRC**

Category	Artisanal		Traditional		Combined	
	No.	%	No.	%	No.	%
Owner	23	29.5	2	9.5	25	25.3
Owner/Operator	9	11.5	13	61.9	22	22.2
Operator/Captain	17	21.8	3	14.3	20	20.2
Crew/labourers*	25	32.1	2	9.5	27	27.3
Auxiliary boat owners/operators	4	5.1	1	4.8	5	5.1
Report cases	78	100.0	21	100.0	99	100.0
Missing cases	0	--	0	--	0	--

* Avg. No. Crew/fishing unit = 6 Artisanal 2 Traditional

In order to facilitate data presentation in the following sections, these categories have been simplified into three basic respondent types: a) artisanal owners; b) artisanal crew; and c) traditional fishers (including 15 owners and 6 crew). Auxiliary boat owners/operators are classified as crew as they do not own the main gear operated by the unit with which they are associated.

3.2 Fisher Respondent Background Characteristics

3.2.1 Gender, age, and formal education

All respondents in the DRC fisher sample are male. Characteristics in terms of age and formal education attained are displayed in Tables 3.4 and 3.5 respectively. Traditional fishers and artisanal owners tend to be older (majority >30 years) than artisanal crew members (majority <30 years). Levels of formal education attainment are relatively high, with most fishers in all categories reporting possession of a primary school certificate. Incidence of reported possession of any secondary school certificate is rather low, with the highest rate being recorded amongst artisanal owners (23%).

Table 3.4 Age structure of sample respondents by type of fishery and fisher category, DRC

Age range (Yrs)	Artisanal				Traditional	
	Owner		Crew		(Owner +Crew)	
	%	Cum%	%	Cum%	%	Cum%
<15	0.0	0.0	0.0	0.0	0.0	0.0
15 - 18	0.0	0.0	11.1	11.1	9.5	9.5
19 - 21	3.1	3.1	13.3	24.4	4.8	14.3
22 - 25	9.4	12.5	20.0	44.4	14.3	28.6
26 - 29	3.1	15.6	17.8	62.2	4.8	33.4
30 - 39	15.6	31.3	28.9	91.1	14.3	47.7
40 - 49	37.5	68.8	4.4	95.6	47.6	95.3
50 - 59	18.8	87.5	2.2	97.8	0.0	95.3
≥ 60	12.5	100.0	2.2	100.0	4.8	100.0
Total %	100.0	100.0	100.0	100.0	100.0	100.0
Report cases (N = 99)	32		45		21	
Missing cases	0		0		0	

Table 3.5 **Formal education certificate level of sample respondents by type of fishery and fisher category, DRC**

Primary School Certificate	Artisanal Owner	Artisanal Crew	Traditional (Owner+Crew)
'No' %	45.2	36.4	33.3
'Yes' %	54.8	63.6	66.6
Total %	100.0	100.0	100.0
Report cases (n = 96)	31	44	21
Missing cases	1	2	0
Secondary School Certificate			
'No' %	77.4	86.4	81.0
'Yes' %	22.6	13.6	19.0
Total %	100.0	100.0	100.0
Report cases (n = 96)	31	44	21
Missing cases	1	2	0

3.2.2 Marital Status and Dependents

Data pertaining to respondent marital status and dependents are presented in Tables 3.6 and 3.7. Substantial majorities (>60%) of fisher respondents in all categories report being married and bearing responsibility for the welfare of one or more dependents. Incidence of both unmarried status and nil dependents is somewhat higher amongst artisanal crew as compared to artisanal owners -- a state of affairs that seems to tally with the relatively younger age composition of the crew group.

Table 3.6 **Marital status of sample respondents by type of fishery and fisher category, DRC**

Marital status	Artisanal Owner	Artisanal Crew	Traditional (Owner+Crew)
'Not married' %	6.3	36.4	10.0
'Married' %	93.8	63.6	90.0
Total %	100.0	100.0	100.0
Report cases (n = 96)	32	44	20
Missing cases	0	2	1

Table 3.7 **Dependents reported by sample respondents by type of fishery and fisher category, DRC**

Any dependents	Artisanal Owner	Artisanal Crew	Traditional (Owner+Crew)
'No' %	6.3	37.0	19.0
'Yes' %	93.8	63.0	81.0
Total %	100.0	100.0	100.0
Report cases (N = 99)	32	46	21

3.2.3 Place of birth and reasons for migration

Reference to Table 3.8 shows that virtually all traditional fishers were born at their respective current landing site bases. Just over half of artisanal owners report having this native born status, whilst most artisanal crew (58%) report having originated from elsewhere. Of those respondents born elsewhere, 'return to original family place' (place of parents' birth) is by far the most common reason cited for migration to sample landing sites, as indicated in Table 3.9.

Table 3.8 Reported place of birth, sample respondents by type of fishery and fisher category, DRC

Place of birth	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
At site/vicinity %	53.1	42.2	81.0
Within 50 km %	18.8	24.4	9.5
Beyond 50 km %	28.1	33.3	9.5
Total %	100.0	100.0	100.0
Report cases (n = 98)	32	45	21
Missing cases	0	1	0

Table 3.9 Reported reason for migration to site, sample respondents by type of fishery and fisher category, DRC

Reason for migration	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Original family place' %	66.7	76.2	50.0
'With family/ relatives' %	8.3	0.0	0.0
'For fishing/ fish trading' %	8.3	9.5	25.0
'For farming' %	0.0	9.5	0.0
'For better conditions' %	0.0	4.8	0.0
'For security reasons/ refugee' %	8.3	0.0	0.0
'Other' %	8.3	0.0	25.0
Total %	100.0	100.0	100.0
Tot. cases 'Not born here' (n = 45)	15	26	4
Missing cases	3	5	0

3.3 Fishing Enterprise and Income Status

Almost all of the DRC artisanal and traditional fisher respondents report that they are engaged in fishing on a 'full-time' basis, in the sense that it is the activity that takes up most working time per month (Table 3.10). Artisanal owners score highest for reported 'part-time' involvement in fishing, with a rate of around 13%.

Artisanal crew as a group have less of a work history in fishing (majority less than 10 years' experience) than do artisanal owners or traditional fishers (Table 3.11).

Data on secondary employment and estimated income were not systematically collected during the DRC sector survey.[2] Data on reported possession of real property are fairly complete and seem to indicate that land freehold is common only amongst the artisanal owner group of fishers. Around two-thirds of these owners claim possession of at least some land, regardless of size, as compared with about 28% of artisanal crew and 26% of traditional fishers (Table 3.12).

Table 3.10 Extent participation in fishing, sample respondents by type of fishery and fisher category, DRC

Participation	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
Full time %	87.5	91.1	95.2
Part time %	12.5	8.9	4.8
Total %	100.0	100.0	100.0
Report cases (N = 98)	32	45	21
Missing cases	0	1	0

Table 3.11 Years involvement in fishing, sample respondents by type of fishery and fisher category, DRC

Year range	Artisanal				Traditional	
	Owner		Crew		(Owner+Crew)	
	%	Cum%	%	Cum%	%	Cum%
<1	0.0	0.0	9.3	9.3	0.0	0.0
1 - 2	3.6	3.6	4.7	14.0	0.0	0.0
3 - 5	10.7	14.3	16.3	30.2	5.3	5.3
6 - 10	25.0	39.3	30.2	60.5	21.1	26.4
>10	60.7	100.0	39.5	100.0	73.6	100.0
Total %	100.0	100.0	100.0	100.0	100.0	100.0
Report cases (n = 90)	28		43		19	
Missing cases	4		3		2	

[2] Information on secondary employment contains many missing cases. Income figures are not reported because reliable estimates were extremely difficult to gather owing to the highly unstable state of the national currency during the fieldwork period.

Table 3.12 Reported ownership of land, sample respondents by type of fishery and fisher category, DRC

Any land ownership?	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
No %	34.4	72.2	73.7
Yes %	65.6	27.8	26.3
Total %	100.0	100.0	100.0
Report cases (n = 87)	32	36	19
Missing cases	0	10	2

3.4 Fisher Opinions/Views on Sector Problems and Prospects

The last segment of fisher interview sessions dealt with a series of questions intended to elicit evaluative information pertaining to shared resource use, management, and occupational outlooks. Results are discussed below under five question group headings, viz.: 'personal circumstances and preferences;' 'state of resources and use rights;' 'possible regulations on access, gear, and methods;' 'role of government and fisheries authorities;' and 'obstacles to occupational success.'

3.4.1 Personal circumstances and preferences

DRC sample fishers are mostly in favour of continued involvement in fishing work (Table 3.13). A very strong group commitment (≥90%) is evident amongst artisanal owners and traditional fishers. Majority sentiment amongst artisanal crew members also favours continued involvement, though with a much slimmer margin (ca. 55% 'yes' versus 45% 'no'). Respondent fishers at the same time are mostly inclined to remain at their present operational bases (Table 3.14), though once again the resolve of artisanal crew appears to be far less solid than that of the other two groups.

Table 3.13 Stated preference for continuing in fishing occupation, sample respondents by type of fishery and fisher category, DRC

Preference to continue?	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Yes' %	93.7	54.5	90.0
'No' %	6.3	45.5	10.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 97)	32	44	21
Missing cases	0	2	0

Table 3.14 Stated preference for staying in present location, sample respondents by type of fishery and fisher category, DRC

Preference to stay?	Artisanal Owner	Artisanal Crew	Traditional (Owner+Crew)
'Yes' %	71.0	51.2	81.0
'No' %	25.8	46.5	19.0
'No opinion' %	3.2	2.3	0.0
Total %	100.0	100.0	100.0
Report cases (n = 95)	31	43	21
Missing cases	1	3	0

Future commitment to occupation amongst DRC sample fishers is not strongly evident in their stated use preferences for a hypothetical one year's worth of saved earnings. Family welfare, business, and farming investments take precedence over fishing gear/equipment themes in 'wish lists' mentioned by fishers, as evident in Table 3.15.

Table 3.15 Stated preferences for use of one year's savings, sample respondents by type of fishery and fisher category, DRC

First Stated Use Preference	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
Fishing gear %	29.0	20.0	28.6
Fishing lamps %	0.0	0.0	0.0
Boat %	3.2	0.0	0.0
O/B Engine %	3.2	0.0	0.0
Invest processing/trading %	0.0	0.0	0.0
Invest farming %	3.2	2.2	4.8
Invest business/shop %	6.5	40.0	28.6
Family welfare purposes %	54.8	37.8	38.0
Other %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 97)	31	45	21
Missing cases	1	1	0

Second Stated Use Preference	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
Fishing gear %	10.3	17.9	11.1
Fishing lamps %	0.0	0.0	0.0
Boat %	0.0	0.0	0.0
O/B Engine %	3.4	5.1	5.6
Invest processing/trading %	0.0	0.0	0.0
Invest farming %	10.3	12.8	27.8
Invest business/shop %	20.7	17.9	22.2
Family welfare purposes %	55.2	46.2	33.3
Other %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 86)	29	39	18
No second mention	1	6	3
Missing cases	1	1	0

Table 3.15 (Cont.)

Third Stated Use Preference	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
Fishing gear %	0.0	3.7	23.1
Fishing lamps %	0.0	0.0	0.0
Boat %	0.0	0.0	7.7
O/B Engine %	0.0	3.7	0.0
Invest processing/trading %	0.0	0.0	0.0
Invest farming %	25.0	3.7	30.8
Invest business/shop %	45.0	18.5	23.1
Family welfare purposes %	30.0	70.4	15.3
Other %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 60)	20	27	13
No third mention	10	18	8
Missing cases	1	1	0

3.4.2 State of resources & use rights

Perceived state of commercial fish stocks

DRC artisanal and traditional fishers share very negative perceptions of recent catch trends in the lake (Table 3.1 6)[3], but are far less certain as a group about what the immediate future holds in store (Table 3.17). Many fishers choose not to venture an opinion on future trends, including a slight majority of artisanal crew members and large (>40%) minorities of artisanal owners and traditional operators.

Table 3.16 View of catches compared to when first started fishing, sample respondents by type of fishery and fisher category, DRC

Change from when first started?	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Increase' %	6.3	9.1	5.3
'Decrease' %	84.4	86.4	84.2
'Similar' %	9.3	0.0	10.5
'No opinion' %	0.00	4.5	0.0
Total %	100.0	100.0	100.0
Report cases (n = 95)	32	44	19
Missing cases	0	2	2

[3] Information collected on fisher respondents reasons for thinking that catches have declined in recent years contains many missing cases and is therefore not tabulated.

Table 3.17 View of catches anticipated in for next five years, sample respondents by type of fishery and fisher category, DRC

Change anticipated?	Artisanal Owner	Artisanal Crew	Traditional (Owner+Crew)
'Increase' %	31.3	31.8	26.3
'Decrease' %	15.6	15.9	26.3
'Similar' %	9.4	2.3	5.3
'No opinion' %	43.8	52.3	42.1
Total %	100.0	100.0	100.0
Report cases (n = 96)	32	45	19
Missing cases	0	1	2

Views on resource use rights

Prevailing negative perceptions of recent catch trends in Lake Tanganyika and widespread uncertainty about future trends amongst DRC sample fishers appear to be matched by a reluctance to endorse a policy of unlimited access to the lake's fish resources. Most fishers object to the view that 'everybody should be allowed to fish everywhere' (Fig. 3. 1)[4]. Traditional fishers by a considerable majority (>60%) disagree with the idea that people should be allowed to fish outside of their immediate administrative districts (Fig. 3.2), and by an even stronger majority (almost 80%) with the idea that people should be allowed to fish outside of their own country (Fig. 3.3). Most artisanal owners (>60%) agree that people should be allowed to fish outside of their own districts, whereas artisanal crew are divided on the matter. Majorities in both artisanal categories disagree that people should be allowed to fish outside of their own countries.

Response to the proposition that there will 'always be enough fish for everybody' further tests views of resource abundance. On this measure, DRC sample fishers generally are quite pessimistic (Fig. 3.4) -- a result that once again is consistent with the general sentiment in favour of resource access limitations.

[4]See Annex 1 for data tables on which Section 3 figures are based.

Fig. 3.1 'Allow everyone to fish everywhere.'

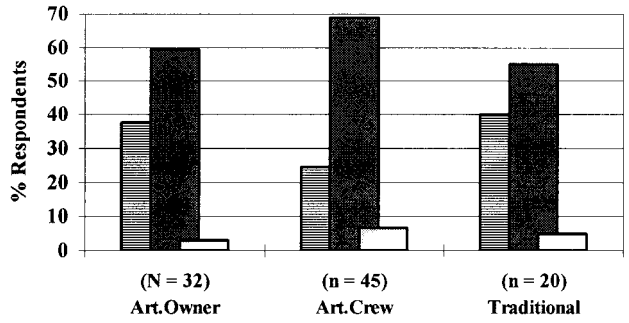


Fig. 3.2 'Allow people to fish outside own district.'

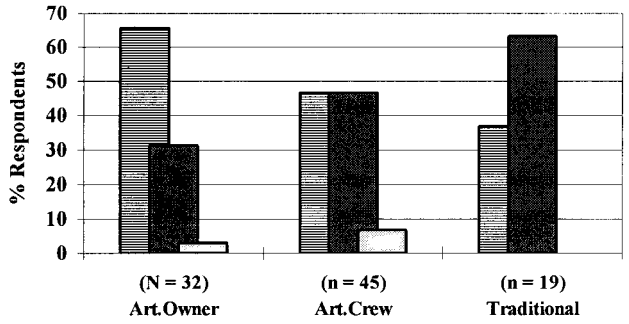


Fig. 3.3 'Allow people to fish outside own country.'

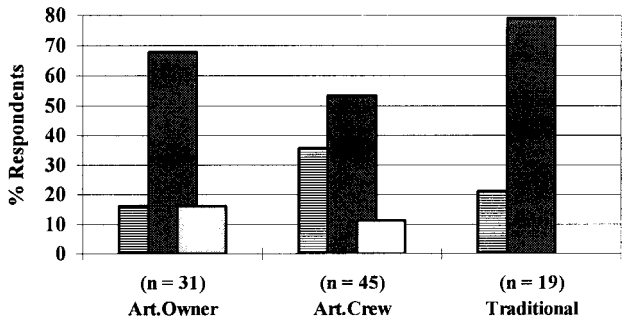
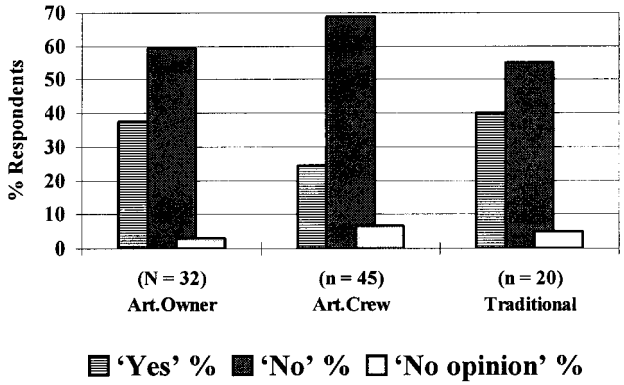


FIGURE LEGEND

'Yes' % 'No' % 'No opinion' %

Fig. 3.4 'Always enough fish for everybody in future.'



3.4.3Possible regulations on access, gear, and methods

Data on fisher sample respondents' views on various possible measures to regulate access to or the use of certain gear or methods in Lake Tanganyika's fishery are presented in the next series of figures (Figs. 3.5 - 3.19). Somewhat surprisingly, given DRC fishers' doubts about resource abundance and their disinclination to allow open access to all and sundry, results show that substantial majorities oppose virtually all such measures. Thus, disagreement is registered at a rate of at least 70% with regard to any provision for: a) closed fishing seasons (Fig. 3.5) or closed areas (Fig. 3.6); b) restriction on numbers of fishers (Fig. 3.7); c) restriction on mesh sizes generally (Fig. 3.8) or specifically for gillnets (Fig. 3.9), beach seines (Fig. 3.10), and lift nets (Fig. 3.11); d) prohibition on lift nets (Fig. 3.17); and e) prohibition on 'active' gillnetting (scaring fish into nets by loud striking on the surface of the water-- Fig. 3.18).

Even stronger disagreement, i.e. at a 90% or greater rate, is registered with regard to any provision for: a) restriction on time or place of beach seine operations (Fig. 3.14); outright prohibition of beach seines (Fig. *3.15);* and c) restriction on time or place of lift net operations (Fig. 3.16).

Only on the question of industrial gear does DRC respondent fisher opinion appear to be less unified (Figs. 3.12 - 3.13). Although most artisanal crew and traditional fishers are against any prohibition or other time or place restrictions being imposed on industrial operations, artisanal owners are divided in their views. Exactly half of the owners are in favour of restricting such fishing, and slightly more than half are for banning it outright.

Fig. 3.5 'Closed fishing seasons/times.'

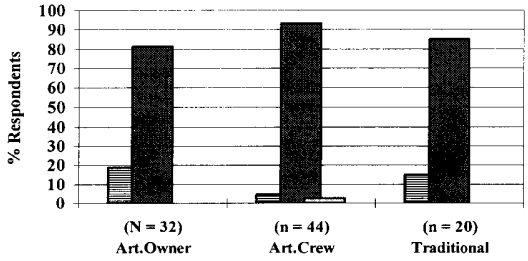


Fig. 3.6 'Closed fishing areas/places.'

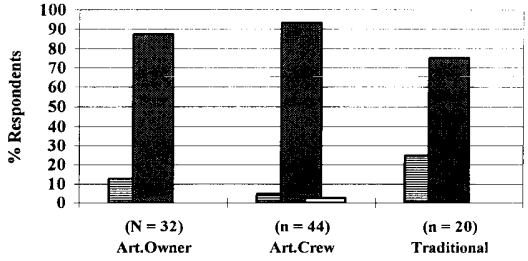


FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

Fig. 3.7 'Restriction on number of fishers.'

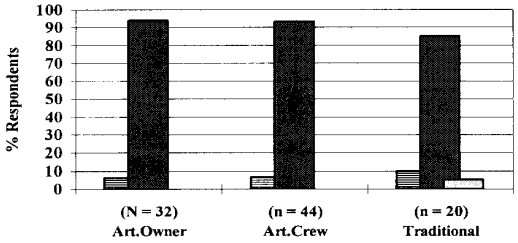


Fig. 3.8 'Restriction on mesh sizes.'

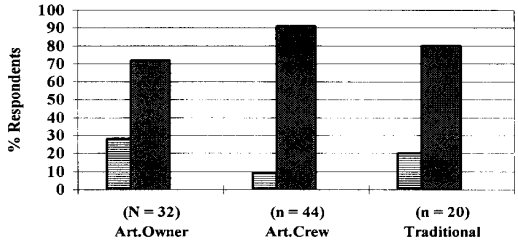


Fig. 3.9 'Restriction on gillnet mesh size.'

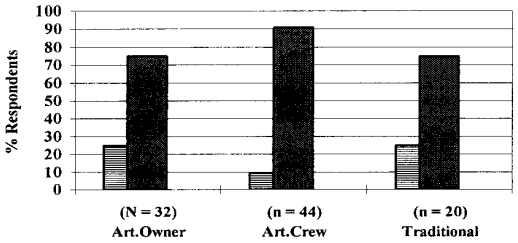


Fig. 3.10 'Restriction on beach seine mesh size.'

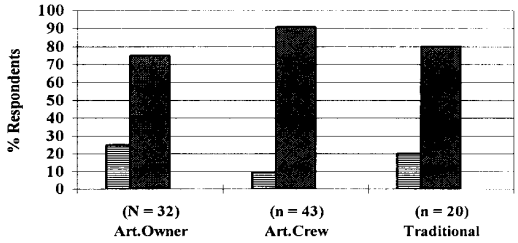


Fig. 3.11 'Restriction on lift net mesh size.'

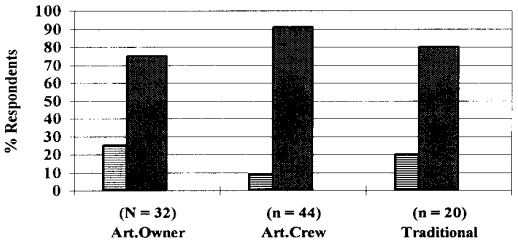


Fig. 3.12 'Restriction on industrial gear.'

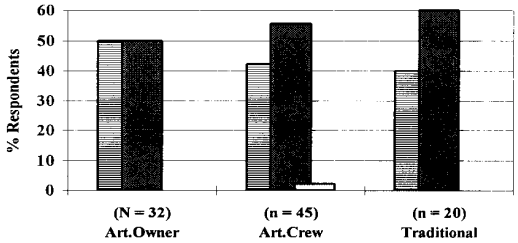


FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

Fig. 3.13 'Prohibition on industrial gear.'

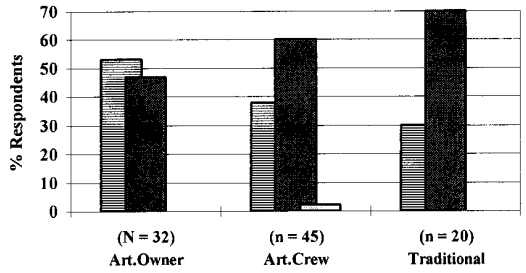


Fig. 3.14 'Restriction on beach seines.'

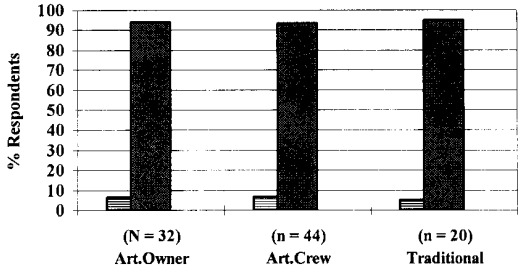


Fig. 3.15 'Prohibition on beach seines.'

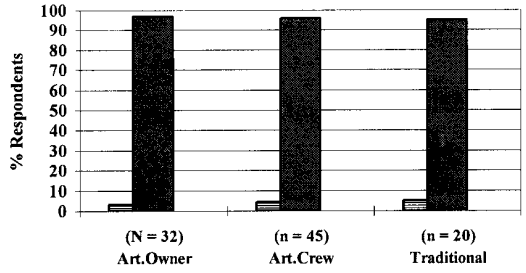


Fig. 3.16 'Restriction on lift nets.'

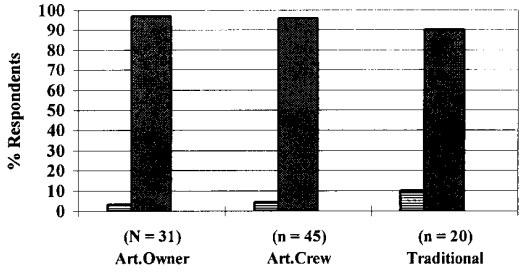


Fig. 3.17 'Prohibition on lift nets.'

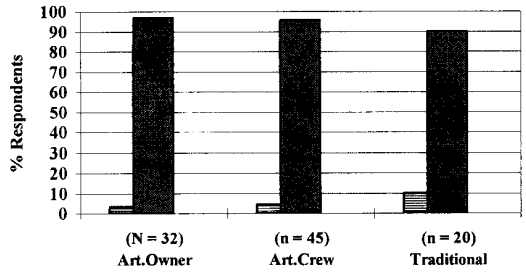


Fig. 3.18 'Prohibition on "katuli" fishing.'

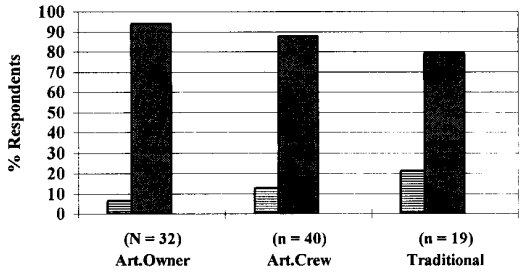


FIGURE LEGEND

▤ 'Agree' % ■ 'Disagree' % □ 'No opinion' %

3.4.4 Role of government and fisheries anthorities

Questions of possible effort and gear regulation naturally give rise to a further set of issues bearing on which agencies or parties should be responsible for elaborating management mechanisms, publicising them, and encouraging compliance to them. Despite their general rejection of possible control measures, as just reviewed above, DRC fishers on the whole do not seem opposed to the idea of regulation *per se.* Significantly, there is strong majority opinion in favour of the idea that 'fishing rules should only be decided by the Government,' (Fig. 3.19). Advocates of this

'top-down' approach are unanimous in justifying their position on the grounds that the state is best equipped to discharge such decision making tasks and has the responsibility to do so (Table 3.18).

Fig. 3.19 'Rules only to be decided by government.'

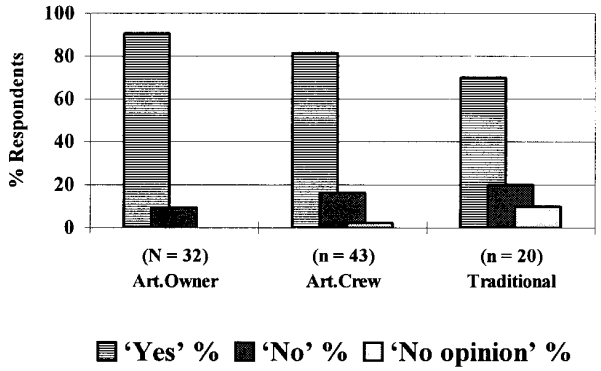


Table 3.18 Reasons cited for why fishing restrictions only to be decided by government, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Power/responsibity of gov't' %	100.0	100.0	100.0
'Gov't has the knowledge' %	0.0	0.0	0.0
' Shared responsibility, gov't + fishers' %	0.0	0.0	0.0
'Power/responsibity of fishers' %	0.0	0.0	0.0
'Fishers have the knowledge'	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 59)	24	25	10
Missing cases	5	10	4

Figures 3.20 to 3.24 show breakdowns of polling results for propositions related to monitoring and enforcement mechanisms. In the survey questionnaire (Form 2), these were subsumed under the general question, 'If rules in the lake are made in future, how do you think they should be kept in force?' DRC sample fishers express very solid support for actions to: a) increase the number of fisheries patrol boats (Fig. 3.20) and fisheries scouts (Fig. 3.21); b) punish fishers (fines, gear confiscation, and /or withdrawal of fishing permit) who violate fisheries regulations (Fig. 3.23); and punish traders and consumers (fines, product confiscation, and/ or withdrawal of trading permit) who violate fisheries regulations Fig. 3.24).

Opinion is strongly against more direct police involvement in fisheries enforcement, however (Fig. 3.22).

Fig. 3.20 'Should be more patrol boats.'

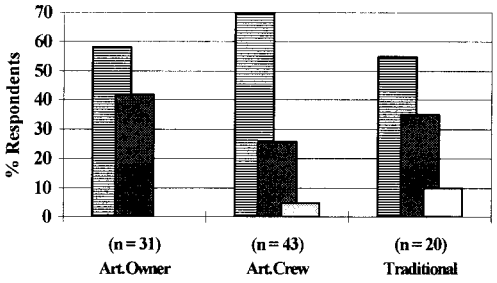


Fig. 3.21 'Should be more fishery scouts.'

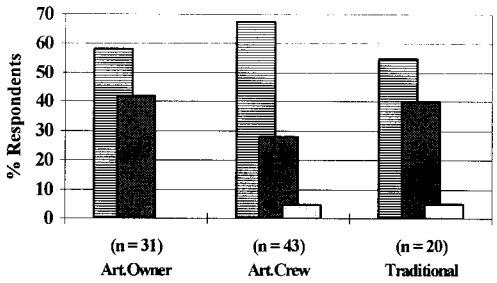


Fig. 3.22 'Involve police more directly in enforcement.'

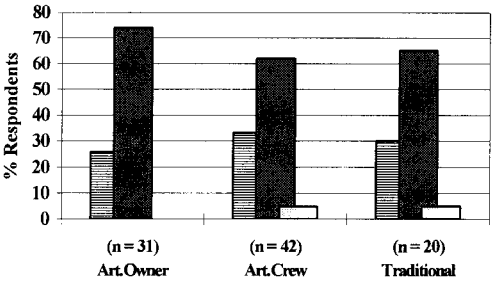


Fig. 3.23 'Should punish offending fishers.'

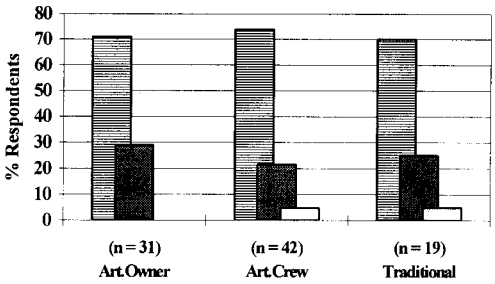


Fig. 3.24 'Should punish offending traders/consumers.'

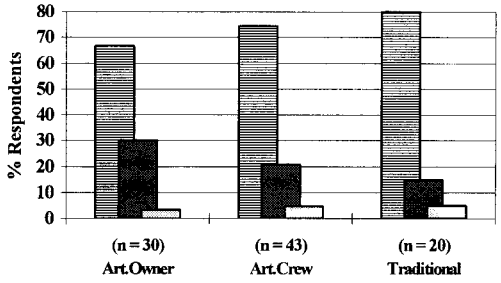


FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

3.4.5 Obstacles to occupational success

The last item covered in the fisher interviews dealt with respondent accounts of their most serious job-related problems. Each individual was asked to list out ‘the three biggest problems you face as a fisher working here around the lake’ in rank order starting with the most serious. The results of this open-ended query are tabulated only for the first and second most serious orders of problems (Tables 3.19 - 3.20), because a sizeable number of respondents did not mention a third order problem. Lack of gear or its inadequate availability is by far the most common obstacle to occupational success mentioned by DRC sample fishers. Security problems (theft, harassment by military personnel, etc.) is the second most common obstacle mentioned.

Table 3.19 Most serious occupational problem cited, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal % Owner	Artisanal % Crew	Traditional % (Owner+Crew)
Lack of security	3.8	10.3	22.2
Low catches/profit	3.8	5.1	0.0
Seasonal fluctuations	0.0	0.0	0.0
Lack of/inadequate gear	84.6	84.6	77.8
Lack of engine/fuel	0.0	0.0	0.0
Lack of/poor processing facilities	0.0	0.0	0.0
Transport/marketing problems	0.0	0.0	0.0
Problems with industrial companies	0.0	0.0	0.0
Lack of /inadequate regulations	0.0	0.0	0.0
Excessive regulations	7.7	0.0	0.0
Excessive fees/taxes/levies	0.0	0.0	0.0
Lack of Gov't aid	0.0	0.0	0.0
Weather conditions	0.0	0.0	0.0
Presence of foreigners	0.0	0.0	0.0
Safety problems/poor working conditions	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 83)	26	39	18
Missing cases	2	4	3

Table 3.20 Second most serious occupational problem cited, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal % Owner	Artisanal % Crew	Traditional % (Owner+Crew)
Lack of security	30.4	24.1	30.8
Low catches/profit	4.3	3.4	0.0
Seasonal fluctuations	4.3	0.0	0.0
Lack of/inadequate gear	39.1	69.0	61.6
Lack of engine/fuel	0.0	0.0	0.0
Lack of/poor processing facilities	0.0	0.0	0.0
Transport/marketing problems	17.4	0.0	0.0
Problems with industrial companies	0.0	0.0	0.0
Lack of /inadequate regulations	0.0	0.0	0.0
Excessive regulations	0.0	3.4	0.0
Excessive fees/taxes/levies	0.0	0.0	0.0
Lack of Gov't aid	4.3	0.0	7.6
Weather conditions	0.0	0.0	0.0
Presence of foreigners	0.0	0.0	0.0
Safety problems/poor working conditions	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 65)	23	29	13
No second problem mentioned	7	12	5
Missing cases	2	4	3

4. LOCAL FISH PROCESSORS AND TRADERS: KEY SOCIO-ECONOMIC INDICATORS AND VIEWS

4.1 Processor/Trader Sample Composition

Following the sampling procedure established for all the national sectors, which recognised that there was no basis for estimating total numbers of local fish processors and traders beforehand, the DRC survey team keyed its processor/trader sampling rate to the fishing unit rate (Reynolds and Paffen 1997b). This in effect established a quota of 224 post-harvest operators to be interviewed, their distribution throughout the sample sites being dictated by the distribution of sample fishing units. In the event, because fieldwork had to be curtailed due to the security situation, the team was only able to make contact with 82 of the projected 224 processors/traders.

The resulting post-harvest sector sample group is mostly composed of those who practise both fish processing and trading together, as opposed to specialising in either one or the other (Table 4.1). Slightly more than half of these individuals operate both locally and non-locally, i.e. both within and beyond a 5 km radius of their landing site bases (Table 4.2).

Table 4.1 Post-harvest sample respondents by enterprise type, DRC

Main enterprise type	Respondents per type	
	No.	%
Processing (rarely trades)	1	1.2
Processing + trading	54	65.9
Trading (rarely processes)	27	32.9
Total cases	82	100.0

Table 4.2 Post-harvest sample respondents by area of operation, DRC

Area of operation	Processors + traders
Local (5 km radius) %	40.0
Non-local (>5 km radius) %	6.2
Both local & non-local %	53.8
Total %	100.0
Report cases	80
Missing cases	2

4.2 Processor/Trader Respondent Background Characteristics

4.2.1 Gender, age, and formal education

The gender balance of the post-harvest sample weighs in favour of women, who make up 56% of the total group. Of those who practise both processing and trading, some 54% are men. But of the 'trader only' sub-group, only about one-quarter are men (Table 4.3).

Table 4.3 Post-harvest sample respondents by gender, DRC

Gender	Processors	Proc./traders	Traders	Combined
Male %	0.0	53.7	25.9	43.9
Female %	100.0	46.3	74.1	56.1
Total %	100.0	100.0	100.0	100.0
Report cases (N = 82)	1	54	27	82

Sample characteristics in terms of age and formal education attained are displayed in Tables 4.4 and 4.5 respectively. The age structure of the two gender sub-groups are quite similar. Roughly 2 in 10 individuals, female or male, are under 30 years old; about 6 in 10 are under 40 years. Marked gender-based differences are apparent however in terms of formal education achievements. Whilst some *58%* of males have attained a primary school certificate, the corresponding figure for women is about 13%. None of the women and only a few men report possession of a secondary school certificate.

Table 4.4 Age structure of post -harvest sample respondents by gender, DRC

Age range (yrs)	Female		Male		Total	
	%	Cum%	%	Cum%	%	Cum%
<15	0.0	0.0	0.0	0.0	0.0	0.0
15 - 18	2.2	2.2	0.0	0.0	1.2	1.2
19 - 21	2.2	4.3	5.6	5.6	3.7	4.9
22 - 25	8.7	13.0	5.6	11.1	7.3	12.2
26 - 29	4.3	17.4	11.1	22.2	7.3	19.5
30 - 39	47.8	65.2	33.3	55.6	41.5	61.0
40 - 49	30.4	95.7	16.7	72.2	24.4	85.4
50 - 59	2.2	97.8	25.0	97.2	12.2	97.6
>59	2.2	100.0	2.8	100.0	2.4	100.0
Total	100.0		100.0		100.0	
Report cases (N = 82)	46		36		82	

Table 4.5 Formal education certificate level, post-harvest sample respondents by gender, DRC

Primary School Certificate	Female	Male	Total
'No' %.	87.0	41.7	67.1
'Yes' %.	13.0	58.3	32.9
Total%	100.0	100.0	100.0
Report cases (N= 82)	46	36	82
Secondary School Certificate			
'No' %	100.0	91.7	96.3
'Yes' %.	0.0	8.3	3.7
Total %	100.0	100.0	100.0
Report cases (N= 82)	46	36	82

4.2.2 Marital Status and Dependents

Data on marital status and dependents presented in Tables 4.6 and 4.7 confirm the post-harvest sample as a group of mature individuals with spouse and family obligations. Around 9 in 10 are married, and the same proportion report bearing responsibility for the support of one or more dependents.

Table 4.6 Marital status, post-harvest sample respondents by gender, DRC

Marital status	Female	Male	Total
Not married %	2.2	13.9	7.3
Married %	97.8	86.1	92.7
Total %	100.0	100.0	100.0
Report cases (N= 82)	46	36	82

Table 4.7 Dependents reported, post-harvest sample respondents by gender, DRC

Any dependents	Female	Male	Total
'No' %	4.3	11.1	7.3
'Yes' %	95.7	88.9	92.7
Total %	100.0	100.0	100.0
Report cases (N= 82)	46	36	82

4.2.3 Place of birth and reasons for migration

Reference to Table 4.8 shows that about one quarter of post-harvest group respondents are native to the sample sites. Of the 75% born elsewhere, 'return to original family place' (place of parents' birth) is cited by about 58% of female respondents as the reason for migration to present place of residence (Table 4.9). Just under half of the male respondents born elsewhere report having migrated to present place of residence in order to engage in the fish business.

Table 4.8 Reported place of birth, post-harvest sample respondents by gender, DRC

Place of birth	Female	Male	Total
At site/vicinity %	26.1	25.0	25.6
Within 50 km %	41.3	33.3	37.8
Beyond 50 km %	32.6	41.7	36.6
Total %	100.0	100.0	100.0
Report cases (N= 119)	46	36	82

Table 4.9 Reported reason for migration to site, post-harvest sample respondents by gender, DRC

Reason for migration	Female	Male	Total
'Original family place' %	58.1	8.0	35.7
'With family/relatives' %	3.2	0.0	1.8
'For fishing/fish trading' %	3.2	48.0	23.2
'For farming' %	0.0	0.0	0.0
'For better conditions' %	16.1	24.0	19.6
'For security reasons/refugee' %	19.4	16.0	17.9
'Other' %	0.0	4.0	1.8
Total %	100.0	100.0	100.0
Total cases 'Not born here' (n = 56)	31	25	56
Missing cases	3	0	3

4.3 Post-harvest Enterprise and Income Status

A substantial majority of respondents of both sexes (80% female, 89% male) claim to be involved in fish processing/trading on a 'full-time' basis, in the sense that this is the activity that takes up most working time per month (Table 4.10). Men and women have about the same degree of fish processing/trading work experience (Table 4.11). The proportion of women with ten or less years experience is about 57%; the corresponding proportion for men is around 56%.

Table 4.10 Extent participation in fish business, post-harvest sample respondents by gender, DRC

Participation	Female	Male	Total
Full time %	80.4	88.9	84.1
Part time %	19.6	11.1	15.9
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table 4.11 Years involvement in fish processing/trading, post-harvest sample respondents by gender, DRC

Year range	Female		Male		Total	
	%	Cum %	%	Cum %	%	Cum %
<1	15.2	15.2	11.1	11.1	13.4	13.4
1 - 2	10.9	26.1	8.3	19.4	9.8	23.2
3 - 5	2.2	28.3	16.7	36.1	8.5	31.7
6 - 10	28.3	56.5	19.4	55.6	24.4	56.1
>10	43.5	100.0	44.4	100.0	43.9	100.0
Total	100.0	100.0	100.0	100.0	100.0	100.0
Report cases (N = 82)	46		36		82	

'Full-time' fish processing or trading employment may also be supplemented by other forms of work, especially in fishing, as shown by Table 4.12.

Table 4.12 Involvement in other work, post-harvest sample respondents by gender, DRC

Other work?	Female	Male	Total
Subsistence farming %	8.7	2.8	6.1
Subsist. + Cash farming %	0.0	2.8	1.2
Fishing %	80.4	61.1	72.0
Labourer`%	0.0	0.0	0.0
Salary job %	0.0	0.0	0.0
Business %	2.2	0.0	1.2
More than one other job %	8.7	33.3	19.5
No other job %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

As noted earlier, data on secondary employment and estimated income were not systematically collected during the DRC sector survey. Data on reported possession of real property amongst sample post-harvest operators indicate that over 60% do not own any land (Table 4.13).

Table 4.13 Reported ownership of land, post-harvest sample respondents by gender, DRC

Any land ownership?	Female	Male	Total
'No' %	54.3	69.4	61.0
'Yes' %	45.7	30.6	39.0
Total	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

4.4 Processor/Trader Opinions/Views on Sector Problems and Prospects

With minor adjustment to take their post-harvest orientation into account, the final section of the processor/trader interview form replicated that of the fisher form in probing for evaluative information on shared resource use, management, and occupational outlooks. As with the review of fisher sample findings, results are discussed below under five question group headings, viz.: 'personal circumstances and preferences;' 'state of resources and use rights;' 'possible regulations on access, gear, and methods;' 'role of government and fisheries authorities;' and 'obstacles to occupational success.'

4.4.1 Personal circumstances and preferences

Post-harvest respondents of both sexes are very strongly inclined (ca.80%) to continue with their present line of work (Table 4.14), though are slightly less eager (67%) as a group to continue operating out of their present bases (Table 4.15).

Table 4.14 Stated preference for continuing in fish processing/trading, post-harvest sample respondents by gender, DRC

Preference to continue?	Female	Male	Total
'Yes' %	82.6	77.8	80.5
'No' %	17.4	22.2	19.5
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table 4.15 Stated preference for staying in present location, post-harvest sample respondents by gender, DRC

Preference to stay?	Female	Male	Total
'Yes' %	67.4	66.7	67.1
'No' %	15.2	30.6	22.0
'No opinion' %	17.4	2.8	11.0
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

As with the fishers, members of the post-harvest sample group in the DRC were asked the hypothetical question on how one would use a year's worth of savings from work earnings, listed according to first, second, and third level preferences. Results appear in Table 4.16. First preference mentions related to investments either in gear (nets, lines, etc.), lamps, boats, outboard engines, or post-harvest related items are recorded for about 45% of male respondents, providing a further indication of their commitment to continued involvement with the fishery. Female respondents most often list farming-related investments at the first preference level, followed by family welfare purposes. The family welfare theme is the most commonly cited at the second and third preference levels by both male and female respondents.

Table 4.16 Stated preferences for use of one year's savings, post-harvest sample respondents by gender, DRC

First stated preference	Female	Male	Total
Fishing gear %	10.9	38.9	23.2
Fishing lamps %	0.0	5.6	2.4
Boat %	2.2	0.0	1.2
O/B Engine %	0.0	0.0	0.0
Invest processing/trading %	2.2	5.6	3.7
Invest farming %	34.8	13.9	25.6
Invest business/shop %	17.4	5.6	12.2
Family welfare purposes %	30.4	30.6	30.5
Other %	2.2	0.0	1.2
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table 4.16 (Cont.)

Second stated preference	Female	Male	Total
Fishing gear %	11.4	8.3	10.0
Fishing lamps %	0.0	0.0	0.0
Boat %	0.0	5.6	2.5
O/B Engine %	2.3	0.0	1.3
Invest processing/trading %	6.8	0.0	3.8
Invest farming %	25.0	22.2	23.8
Invest business/shop %	20.5	25.0	22.5
Family welfare purposes %	31.8	33.3	32.5
Other %	2.3	5.6	3.8
Total %	100.0	100.0	100.0
Report cases (n = 80)	44	36	80
No second preference	2	0	2

Third stated preference	Female	Male	Total
Fishing gear %	4.8	3.0	4.0
Fishing lamps %	0.0	0.0	0.0
Boat %	0.0	0.0	0.0
O/B Engine %	2.4	6.1	4.0
Invest processing/trading %	0.0	6.1	2.7
Invest farming %	31.0	27.3	29.3
Invest business/shop %	11.9	27.3	18.7
Family welfare purposes %	47.6	30.3	40.0
Other %	2.4	0.0	1.3
Total %	100.0	100.0	100.0
Report cases (n = 75)	42	33	75
No third preference	4	3	7

4.4.2 State of resources and use rights

Perceived state of commercial fish stocks

DRC processors/traders appear to be even more negative than their fisher counterparts in remarking on changes in the fishery in recent years. Some 88% of post-harvest sample individuals are of the opinion that catches have decreased from the time they first became involved in the fish business (Table 4.17). Asked to explain why such decline has occurred, most (59%) of these respondents take the fatalistic view that it is a matter of ‘God’s will’ (Table 4.18). Female respondents are particularly inclined towards this answer.

With regard to changes in catch levels anticipated within the near future, post-harvest sample group members on the whole prefer not to venture any opinion (Table 4.19).

Table 4.17 View of catches compared to when first started in fish business, post-harvest sample respondents by gender, DRC

Change from when first started?	Female	Male	Total
'Increase' %	0.0	0.0	0.0
'Decrease' %	87.0	88.9	87.8
'Similar' %	8.7	5.6	7.3
'No opinion' %	4.3	5.6	4.9
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table 4.18 Reasons cited for catch decrease from before, post-harvest sample respondents by gender, DRC

Reasons cited	Female	Male	Total
'Don't know' %	0.0	0.0	0.0
'God's will' %	76.9	37.5	59.1
'Over-fishing/stock decline' %	18.0	31.2	24.0
'Industrial fishing' %	0.0	6.3	2.8
'Use of small mesh sizes' %	0.0	0.0	0.0
'Presence foreign fishers' %	0.0	0.0	0.0
'Poor fishing methods' %	0.0	12.5	5.6
'Environmental change' %	2.6	9.4	5.6
'Regulations weak' %	0.0	0.0	0.0
'Improved gear' %	2.6	0.0	1.4
'Security problems' %	0.0	3.1	1.4
Total %	100.0	100.0	100.0
Report cases (n = 71)	39	32	71
Missing cases	1	4	5

Table 4.19 View of catches anticipated for the next five years, post-harvest sample respondents by gender, DRC

Change anticipated?	Female	Male	Total
'Increase' %	2.2	16.7	8.5
'Decrease' %	8.7	16.7	12.2
'Similar' %	0.0	2.8	1.2
'No opinion' %	89.1	63.9	78.0
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Views on resource use rights

DRC post-harvest respondents follow up on their negative evaluations of past trends with opposition to open access to the lake's fish resources. Substantial proportions are against suggestions that 'everyone should be allowed to fish everywhere' (88% 'nay' -- Fig. 4.l)[5], or that 'people should be allowed to fish outside their own country' (76% 'nay' -- Fig. 4.3), or even that 'people should be allowed to fish outside their own administrative district (67% 'nay' -- Fig. 4.2).

Fig. 4.1 'Allow everyone to fish everywhere.'
(DRC P/harvest group)

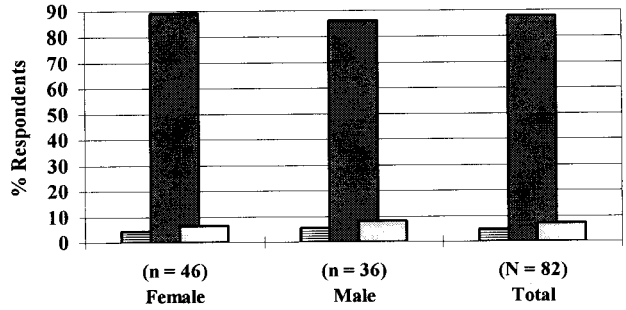


Fig. 4.2 'Allow people to fish outside own district.'
(DRC P/harvest group)

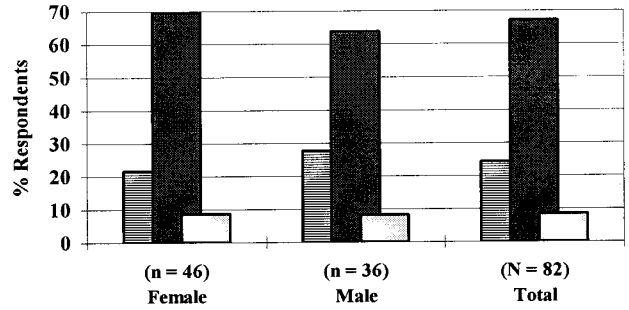


Fig. 4.3 'Allow people to fish outside own country.'
(DRC P/harvest group)

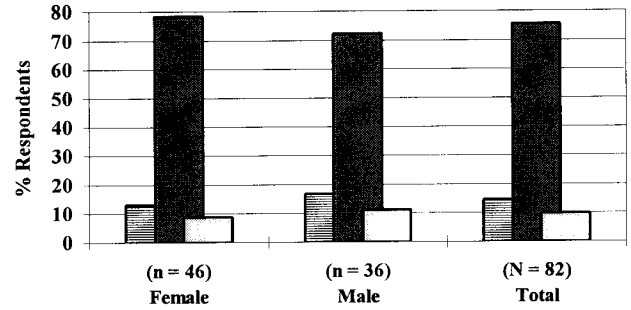


FIGURE LEGEND

'Yes' % 'No' % 'No opinion' %

[5]See Annex 2 for data tables on which Section 4 figures are based.

The use-right proposition responses can again be seen in relation to respondents' perceptions of resource abundance in the context of data shown in Fig. 4.4 and Table 4.20. Post-harvest respondents as a group are firmly of the opinion that there will not 'always be enough fish for everybody,' and blame this supposed state of future affairs on the adverse effects of fishing pressure on stocks.

Fig. 4.4 'Always enough fish for everybody in future.' (DRC P/harvest group)

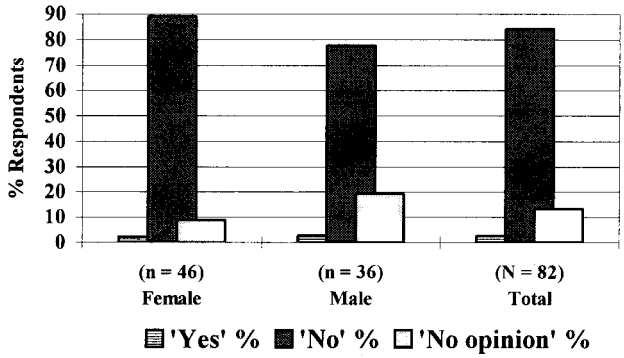


Table 4.20 Reasons cited for why not always enough fish in future, post-harvest sample respondents by gender, DRC

Reasons cited	Female	Male	Total
'Don't know' %	0.0	0.0	0.0
'God's will' %	3.0	9.5	5.6
'Over-fishing/stock decline' %	75.8	61.9	70.4
'Industrial fishing' %	0.0	0.0	0.0
'Use of small mesh sizes' %	0.0	0.0	0.0
'Presence foreign fishers' %	0.0	0.0	0.0
'Poor fishing methods' %	3.0	9.5	5.6
'Environmental change' %	18.2	19.0	18.5
'Regulations weak' %	0.0	0.0	0.0
'Improved gear' %	0.0	0.0	0.0
'Security problems' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 54)	33	21	54
Missing cases	8	7	15

4.4.3 Possible regulations on access, gear, and methods

Post-harvest sample respondent views on various possible measures to regulate access to Lake Tanganyika's fishery resources or to ban or otherwise restrict the use of certain gear or methods for harvesting them are presented through the next series of figures (Figs. 4.5 - 4.14). Moderate to substantial majorities of both male and female respondents oppose those measures which

would: a) limit access by season or area (Figs. *4.5* - 4.6); b) restrict the number of fishers allowed to operate (Fig. 4.7); c) restrict industrial gear operations (Fig. 4.9); d) prohibit or otherwise restrict beach seine operations (Figs. 4.11 -4.12); ore) prohibit or otherwise restrict lift net operations (Figs. 4.13 - 4.14).

Respondent opinion is divided with regard to other possible measures. Women appear to be against general restrictions on minimum mesh sizes allowed in the fishery (Fig. 4.8), and also against any outright prohibition on industrial fishing operations (Fig. 4.10). Men seem to be in favour of such measures.

Fig. 4.5 'Closed fishing seasons/times.'
(DRC P/harvest group)

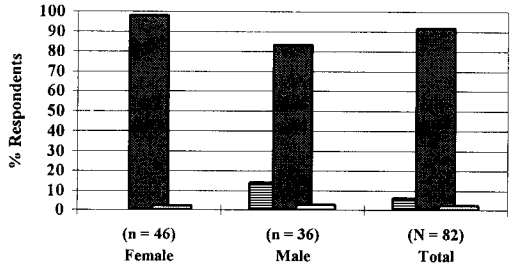


Fig. 4.6 'Closed fishing areas/places.'
(DRC P/harvest group)

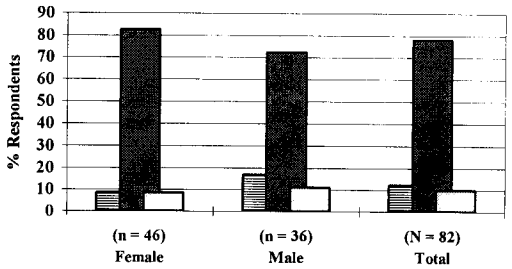


Fig. 4.7 'Restriction on number of fishers.'
(DRC P/harvest group)

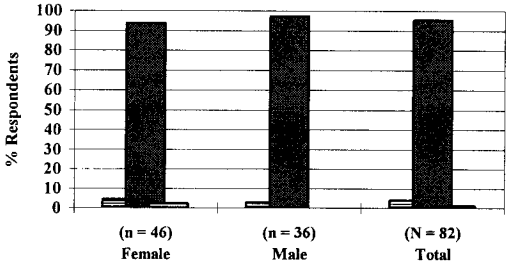


Fig. 4.8 'Restriction on mesh sizes.'
(DRC P/harvest group)

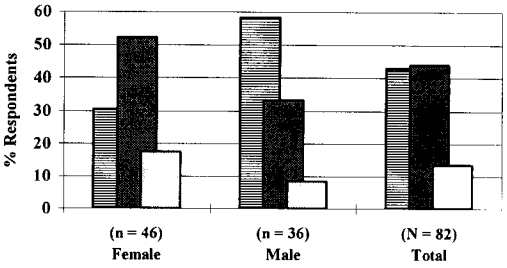


Fig. 4.9 'Restriction on industrial gear.'
(DRC P/harvest group)

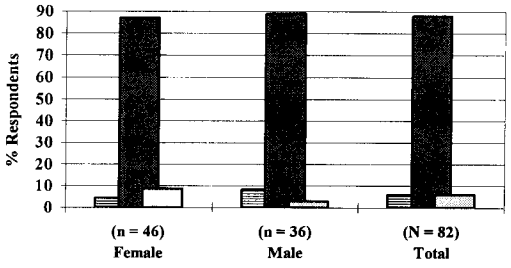


Fig. 4.10 'Prohibition on industrial gear.'
(DRC P/harvest group)

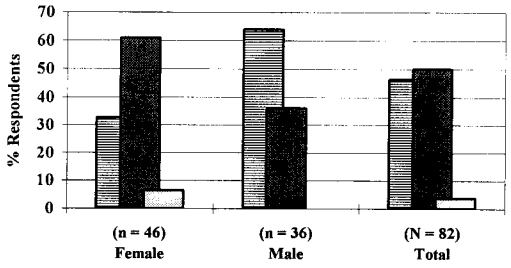


FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

Fig. 4.11 'Restriction on beach seines.'
(DRC P/harvest group)

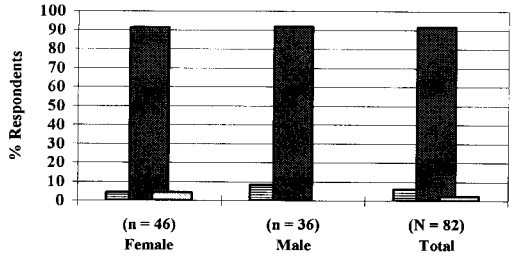


Fig. 4.12 'Prohibition on beach seines.'
(DRC P/harvest group)

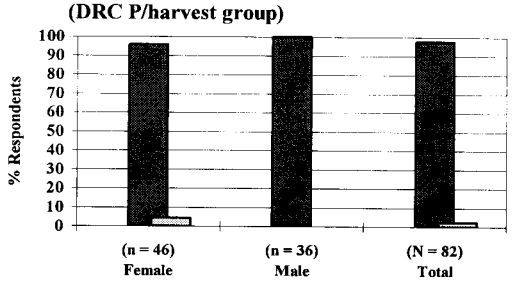


Fig. 4.13 'Restriction on lift nets.'
(DRC P/harvest group)

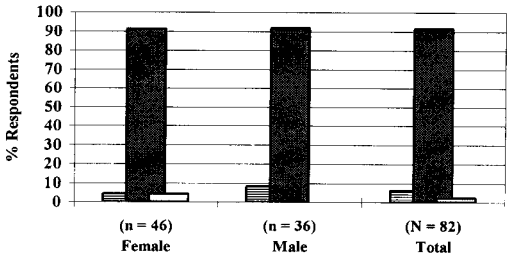


Fig. 4.14 'Prohibition on lift nets.'
(DRC P/harvest group)

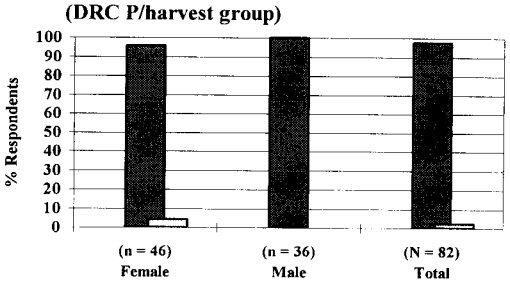


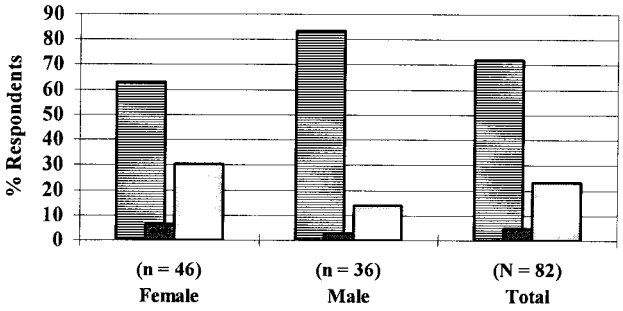
FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

4.4.4 Role of government and fisheries authorities

As noted earlier in the review of fisher sample findings, a further set of issues bearing on which agencies or parties should be responsible for elaborating and implementing management mechanisms is implied by the questions on possible effort and gear regulation. The post-harvest sample group as a whole appears quite willing to accept the idea that fishing rules 'should only be decided by the Government.' Some 72% of the processors/traders interviewed agree to this proposition (Fig. 4.1 *5),* primarily because the state us deemed to have both the responsibility and the means to perform such a function (Table 4.21).

Fig. 4.15 'Rules only to be decided by government.'
(DRC P/harvest group)



'Yes' % 'No' % 'No opinion' %

Table 4.21 **Reasons cited for why fishing restrictions should only be decided by government, post-harvest sample respondents by gender, DRC**

Response	Female	Male	Total
'Power/responsibity of gov't' %	100.0	93.1	96.5
'Gov't has the knowledge' %	0.0	6.9	3.5
' Shared responsibility, gov't + fishers' %	0.0	0.0	0.0
'Power/responsibity of fishers' %	0.0	0.0	0.0
'Fishers have the knowledge'	0.0	0.0	0.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n =57)	28	29	57
Missing cases	1	1	2

Figures 4.16 to 4.20 show breakdowns of polling results for propositions related to monitoring and enforcement mechanisms. In the same manner as for the fisher survey questionnaire (Form 2), these propositions were presented in the processor/trader questionnaire (Form 3) under the heading of the general question, 'If rules in the lake are made in future, how do you think they should be kept in force?' DRC post-harvest sample respondents are as a group definitely in favour of mechanisms that would entail: a) more fisheries patrol boats (Fig. 4.16); b) punishment of fishers (fines, gear confiscation, and/or withdrawal of fishing permit) who violate regulations (Fig. 4.19); and c) punishment of traders and consumers (fines, product confiscation, and/or withdrawal of trading permit) who violate regulations (Fig. 4.20). Female and male respondents differ on the questions of having more fisheries scouts (Fig. 4.17) and police involvement (Fig. 4.18) to enforce regulations. Male post-harvest operators strongly agree to more fisheries scouts, whereas opinion remains divided amongst female operators. Greater police involvement is advocated by a considerable majority of sample women, but firmly rejected by sample men.

Fig. 4.16 'Should be more patrol boats.'
(DRC P/harvest group)

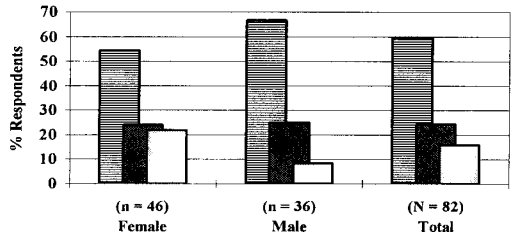


Fig. 4.17 'Should be more fishery scouts.'
(DRC P/harvest group)

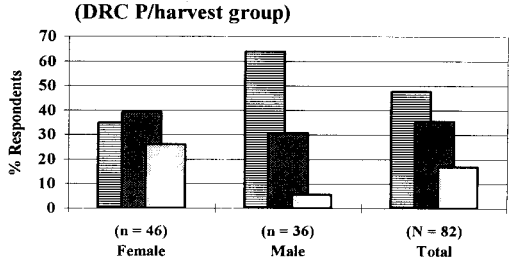


FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

Fig. 4.18 'Involve police more directly in enforcement.' (DRC P/harvest group)

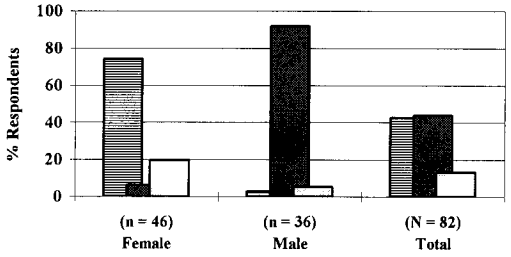


Fig. 4.19 'Should punish offending fishers.' (DRC P/harvest group)

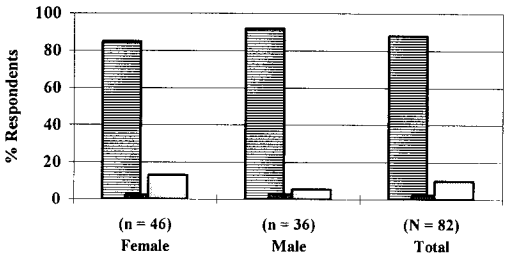


Fig. 4.20 'Should punish offending traders/consumers.' (DRC P/harvest group)

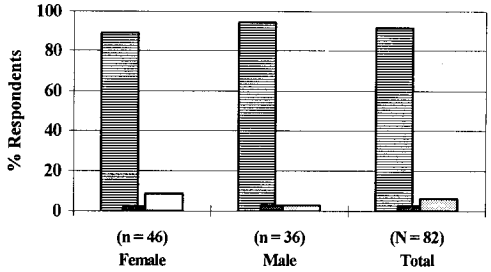


FIGURE LEGEND

'Agree' % 'Disagree' % 'No opinion' %

4.4.5 Obstacles to occupational success

Following the routine used for the fisher interviews, processor/trader informants were asked as a final interview item to talk about the three most serious job-related problems they confront. A tabulation of responses indicates that problems associated with low catches and profit levels (e.g. poor supplies of fish,' 'high prices of fish,' 'low income,' 'overfishing,' and 'catching of juvenile fish') are dominant worries within the post-harvest group overall (Table 4.22). 'Marketing problems,' which can involve lack of transport and/or high transport costs, and poor storage and/or selling facilities as well as simple low demand for product, figure as the most frequently cited theme at the second most serious level for all respondents (Table 4.23), and also at the third most serious level for female respondents (Table 4.24). Third-order occupational obstacles for male respondents again involve problems associated with low catches and profits.

Table 4.22 Most serious occupational problem cited, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
Lack of security	2.2	5.6	3.7
Low catches/profit	47.8	41.7	45.1
Seasonal fluctuations	6.5	2.8	4.9
Lack of/inadequate gear	0.0	2.8	1.2
Lack of engine/fuel	0.0	0.0	0.0
Lack of/poor processing facilities	0.0	5.6	2.4
Transport/marketing problems	15.2	30.6	22.0
Problems with industrial companies	0.0	0.0	0.0
Lack of /inadequate regulations	0.0	0.0	0.0
Excessive regulations	0.0	0.0	0.0
Excessive fees/taxes/levies	23.9	8.3	17.1
Lack of Gov't aid	4.3	2.8	3.7
Weather conditions	0.0	0.0	0.0
Presence of foreigners	0.0	0.0	0.0
Safety problems/poor working conditions	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 82)	46	36	82
Missing cases	0	0	0

Table 4.23 Second most serious occupational problem cited, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
Lack of security	2.4	2.9	2.6
Low catches/profit	11.9	2.9	7.9
Seasonal fluctuations	21.4	23.5	22.4
Lack of/inadequate gear	0.0	0.0	0.0
Lack of engine/fuel	0.0	2.9	1.3
Lack of/poor processing facilities	4.8	2.9	3.9
Transport/marketing problems	33.3	41.2	36.8
Problems with industrial companies	0.0	0.0	0.0
Lack of /inadequate regulations	0.0	0.0	0.0
Excessive regulations	0.0	0.0	0.0
Excessive fees/taxes/levies	19.0	23.5	21.1
Lack of Gov't aid	4.8	0.0	2.6
Weather conditions	0.0	0.0	0.0
Presence of foreigners	0.0	0.0	0.0
Safety problems/poor working conditions	2.4	0.0	1.3
Total %	100.0	100.0	100.0
Report cases (n = 76)	42	34	76
No second problem mentioned	4	2	6

Table 4.24 Third most serious occupational problem cited, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
Lack of security	5.7	0.0	3.0
Low catches/profit	22.9	35.5	28.8
Seasonal fluctuations	14.3	16.1	15.2
Lack of/inadequate gear	2.9	0.0	1.5
Lack of engine/fuel	0.0	0.0	0.0
Lack of/poor processing facilities	0.0	0.0	0.0
Transport/marketing problems	28.6	22.6	25.8
Problems with industrial companies	0.0	0.0	0.0
Lack of /inadequate regulations	0.0	0.0	0.0
Excessive regulations	0.0	0.0	0.0
Excessive fees/taxes/levies	22.9	19.4	21.2
Lack of Gov't aid	2.9	6.5	4.5
Weather conditions	0.0	0.0	0.0
Presence of foreigners	0.0	0.0	0.0
Safety problems/poor working conditions	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Report cases (n = 66)	35	31	66
No third problem mentioned	11	5	16

5. CONCLUSION

5.1 Summary Review

The 1997 LTR socio-economic survey of the Democratic Republic of Congo sector of Lake Tanganyika was carried out over a three week period from around mid-July to the first of August. Sample sites were chosen through a process of stratified random sampling, according to the common scheme designed for all four national sector SEC surveys. Also following standard lakewide procedures, three different data collection forms were supplied for use at each site: Form 1 to collect information on general community features; Form 2 to guide interviews with individual fishers; and Form 3 to guide interviews with individual processors and traders (Reynolds and Paffen 1 997b).

In the event, survey work was severely curtailed due to continuing civil unrest along the western shoreline. Interviews were conducted with a total of 99 fishers at only 8 of the 21 sites originally selected.

Seventy-eight of the 99 DRC sample fishers are associated with fishing units operating artisanal gear (standard lift nets, 'Apollo' lift nets, or beach seines) and include both unit 'owners and their 'crew.' The latter may include fishing unit leaders or

captains (as non-owners of main gear) as well as unit labourers (net pullers, setters, etc.). Sorted in this way, DRC artisanal fisher respondents comprise 32 owners and 46 crew.

The same owner-crew distinction can be applied to the traditional fishery (hand lines, longlines, gillnets, and lusenga nets). Owing to the very limited number (6) of traditional crew actually encountered, however, the two categories were treated analytically simply as one overall 'traditional' fisher group, comprising a total of 21 individuals.

The field team also conducted interviews with 82 processors and traders, or 'post-harvest' sample respondents. Of this group, some two-thirds engage in a combination of fish processing and trading and about one-third engage in trading only (i.e. are rarely involved in processing). Unlike the fisher sample population, which is exclusively male, the post-harvest sample is comprised of both men (44%) and women (56%).

The present report, in providing a preliminary review of survey findings covering selected key topics, follows the overall sequence and structure of the three field data collection forms. Thus, a review of basic sample landing site features (Section 2) in terms of population and settlement, infrastructure, and service availability precedes descriptive accounts of the sample fisher and post-harvest populations (Sections 3 and 4 respectively) in terms of respondent background characteristics, fishing-related enterprise, and views on sector problems and prospects.

5.2 Principal Findings

Local fishing villages

1) DRC sample fishing villages range in population from rather small settlements of two to three hundred inhabitants to more substantial centres of several thousand people. The adult gender structure of village populations indicates a slight majority of women at most sites.

2) Four of the eight sample sites register a decrease in overall population compared with the situation five years ago, a trend that is blamed on 'security problems.' Population increase due either to 'birthrate' or 'in-migration' is reported for three sites, and a stable situation is noted for the remaining site.

3) Road access to sample villages is registered in six cases, and all sites except one are served with regular water transport services.

4) Sud-Kivu sites are fairly well served with basic retailing services, but not with fuel and gear/equipment supply and service agents. In Shaba, Athenée, close to the large regional centre of Kalemie, is catered for by numerous retail and service

agents. The other two Shaba sites have very poor basic service inventories.

Local fishers** -- **background characteristics

5) All respondents in the DRC fisher sample are male. Traditional fishers and artisanal owners tend **to** be older (majority >30 years) than artisanal crew members (majority <30 years).

6) Levels of formal education attainment are relatively high, with most fishers in all categories claiming possession of a primary school certificate.

7) Substantial majorities of fisher respondents in all categories report being married and bearing responsibility for the welfare of one or more dependents.

8) Almost all traditional fishers and a slight majority of artisanal owners claim to be native-born residents of the sample villages. Most artisanal crew report being born in some other location. Of those born elsewhere, a wish to return to 'original family place' tends to be cited as the motivation for migration to present place of residence.

9) Virtually all fisher respondents are involved with fishing full-time, meaning that this is the activity that involves most of their working time per month.

10) Artisanal crew members as a group report fewer years of involvement in fishing work than do artisanal owners or traditional fishers.

11) Some two-thirds of artisanal owners claim access to at least some land, as compared to less than **one** third of artisanal crew or traditional fishers.

Local fishers** -- **opinions/views on sector problems and prospects

12) Most respondents express a wish for continued involvement in fishing work, and for the most part in their present place of operation.

13) Commitment to fishing is not especially reflected in patterns of stated preferences for use of a hypothetical one year's saved earnings. Family welfare, business, and farming investments tend to be given primacy over fishing gear and equipment investments.

14) DRC artisanal and traditional fishers share very negative perceptions of recent catch trends in the lake. Views are divided as to what the immediate future holds in store.

15) Sample fishers as a group are firmly in favour of limiting access to the lake's fish resources. Opinion is particularly set

against the proposition that people should be allowed to fish outside of their own national waters.

16) Data on fisher respondents' views vis-à-vis possible ways to regulate participation in the fisheries or the use of certain fishing gear or methods reflect a surprising reluctance (given their doubts about resource abundance and open access propositions) to accept any measures that would:

a) limit access by season;
b) limit access by area;
c) limit access through operator quotas;
d) restrict mesh sizes for common net gear;
e) prohibit or otherwise curb or the use of industrial gear, beach seines, or lift nets; or
f) prohibit the use of 'active' gillnetting.

17) At the same time, the principle that some kinds of regulation are in order seems to be generally accepted. There appears to be a certain measure of sentiment in favour of the idea that fishing rules 'should only be decided by the Government.'

18) With regard to possible fisheries enforcement mechanisms, sample fishers show strong solidarity in advocating that there should be:

a) more fisheries patrol boats;
b) more fisheries scouts;
c) punishment of fishers who violate regulations (fines, gear confiscation, and/or withdrawal of fishing permit); and
d) punishment of traders and consumers who violate regulations (fines, product confiscation, and/or withdrawal of trading permit).

19) Group opinion is strongly against 'more direct police involvement in fishery enforcement.'

20) On the question of identifying the most serious obstacles to their occupational success, a widely shared sense of frustration with gear problems (lack of availability or inadequate availability) is evident. Security problems (theft, harassment by military personnel, etc.) is the second most common obstacle mentioned.

Local fish processors and traders --background characteristics

21) Post-harvest sample respondents are primarily female (56%). Male and female sub-group age structures are quite similar, but marked gender-based differences exist with regard to reported levels of formal education. Only about 13% of women processors/traders claim to have earned a primary school certificate, as opposed to 58% of the men.

22) Data on marital status and dependents confirm the post-harvest sample as a group of mature individuals with spouse and family obligations.

23) Around one quarter of post-harvest sample processors/traders originate at their current landing site bases. Most of those born elsewhere indicate a wish to return to 'original family place' as the motivation for their migration to their present place of residence.

24) A substantial majority of respondents claim to be involved in fish processing/trading on a 'fulltime' basis, in the sense that this is the activity that takes up most working time per month. Men and women have about the same degree of work experience.

25) Over 60% of processors/traders interviewed report that they do not own any land.

Local fish processors and traders -- opinions/views on sector problems and prospects

26) Post-harvest group respondents of both sexes are definitely inclined to stay with their present line of work, and usually claim a preference to continue operating out of their present locations.

27) Commitment to fisheries work is further reflected in patterns of stated preferences for use of a hypothetical one year's saved earnings amongst male informants, who frequently mention fishing-or fish processing/trading-related investment themes as a first order preference. Female informants appear to give family welfare purposes highest priority.

28) Post-harvest sample operators are substantially (88%) of the opinion that catches have declined from the time they first became involved in the fish business.

29) Much more uncertainty exists in relation to what future trends will be, with most respondents venturing no opinion at all.

30) DRC post-harvest respondents follow up on their negative evaluations of past trends with broad support for propositions to limit access to the lake's fish resources based on residential or citizenship criteria.

31) Processor/trader majority opinion tends to oppose suggested measures which would impose:

a) closed fishing seasons;
b) closed fishing areas;
c) restrictions on numbers of fishers allowed to operate;
d) restrictions on industrial gear operations;
e) any prohibition or other restriction on beach seine operations; or
f) any prohibition or other restriction on lift net operations.

32) As for other possible measures, women appear to be against general restrictions on minimum mesh sizes allowed in the fishery and against any outright prohibition on industrial fishing operations, whilst men seem to be in favour of these steps.

33) The post-harvest sample group as a whole seems to be quite solidly behind the idea that fishing rules 'should only be decided by the Government.'

34) With regard to possible fisheries enforcement mechanisms, the post-harvest group generally follows the pattern of local sample fishers in advocating that:

a) there should be more fisheries patrol boats;
b) there should be punishment of fishers who violate regulations (fines, gear confiscation, and/or withdrawal of fishing permit); and
c) there should be punishment of traders and consumers who violate regulations (fines, product confiscation, and/or withdrawal of trading permit).

35) Female and male respondents differ on the questions of having more fisheries scouts (women against, men for) and police involvement (women for, men against) to enforce regulations.

36) Responses to a query on most serious obstacles to occupational success indicate that problems associated with low catches and profit levels (e.g. 'poor supplies of fish,' 'high prices of fish,' 'low income,' 'overfishing,' and 'catching of juvenile fish') are dominant worries within the post-harvest group overall.

5.3 Final Observations

The national data sets generated through the three survey forms are very large and contain a wealth of detail that simply could not be dealt with at present due to constraints of time. More comprehensive analytical treatment is certainly warranted, in order both to probe further into the selected key topics covered in the respective country reviews and to extend investigation into other critical areas. In this connection, it should be noted that

the complete data sets (including original questionnaire forms submitted by the field team) for all four lacustrine countries are deposited as part of permanent LTR archives in the project Documentation Centre at regional headquarters in Bujumbura. Furthermore, arrangements are being made through the LTR sub-stations to ensure that a copy of each national set is available at the relevant counterpart agency office (DoF Bujumbura, Burundi; CRH Uvira, DRC; TAFIRI Kigoma, Tanzania; and DoF Mpulungu, Zambia).

In the case of the DRC in particular, it would be a useful exercise to examine the fisher and post-harvest group sample data in greater depth against the background of the earlier study conducted by IFIP along the northwestern shoreline of Lake Tanganyika (Leendertse and Mambona Wa Bazolana 1992). It should be borne in mind however that the LTR survey was not intended simply to replicate the earlier survey. The IFIP survey concentrated especially on characteristics of gear and equipment kits, fishing unit operations, and personal backgrounds of sample fishers. A considerable body of descriptive material was thereby produced on boat and gear types, engines, replacement and maintenance costs, details of fishing operations, etc., as well as an extensive collection of biodata on fisher sample respondents (employment histories, family situation, ownership of productive assets, farming activities, etc.). Whilst many of these topical areas were covered in greater or lesser detail in the LTR survey interview forms for fishers (Form 2) and processors/traders (Form 3 -- see Reynolds and Paffen, 1997b), the basic intention was to use personal history and occupational data along with information collected on local community features (Form 1) to set out a general context within which respondents' opinions and views on sector problems and prospects -- with all their implications for fisheries planning and management concerns -- could be appreciated.

The IFIP northwest lakeshore survey also dealt to some extent with local perceptions of sector problems and prospects, and care was taken in designing the LTR individual interview forms to create as much overlap as possible between the two surveys in addressing these particular questions. Preliminary review suggests that the earlier IFIP findings are largely corroborated by the present survey on issues of: a) fishers' commitment to present occupation (most would stay in fishing work); and b) gear and equipment availability problems as serious obstacles to occupational success. On the other hand, contrary to the earlier findings, the present investigation reveals that DRC fishers are far more concerned with family welfare, business, or farming than fishing gear and equipment when it comes to ordering their investment preferences. Furthermore, it appears that problems with the security situation on the lake have become a much more serious concern for fishers along the northwestern coast than was previously the case.

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ANNEX 1

ADDITIONAL STATISTICAL TABLES -- DRC FISHER SAMPLE

Table A1.1 View on allowing everyone to fish everywhere in lake, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Yes' %	37.5	24.4	40.0
'No' %	59.4	68.9	55.0
'No opinion' %	3.1	6.7	5.0
Total %	100.0	100.0	100.0
Total cases (n = 97)	32	45	20
Missing cases	0	1	1

Table A1.2 View on allowing people to fish outside own district, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Yes' %	65.6	46.7	36.8
'No' %	31.3	46.7	63.2
'No opinion' %	3.1	6.7	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	45	19
Missing cases	0	1	2

Table A1.3 View on allowing people to fish outside own country, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Yes' %	16.1	35.6	21.0
'No' %	67.7	53.3	79.0
'No opinion' %	16.1	11.1	0.0
Total %	100.0	100.0	100.0
Total cases (n = 95)	31	45	19
Missing cases	1	1	2

Table A1.4 View on always enough fish for everybody in future, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Yes' %	41.4	23.3	20.0
'No' %	55.2	67.4	80.0
'No opinion' %	3.4	9.3	0.0
Total %	100.0	100.0	100.0
Total cases (n = 92)	29	43	20
Missing cases	3	3	1

Table A.5 View on closed seasons/times, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	18.8	4.5	15.0
'Disagree' %	81.3	93.2	85.0
'No opinion' %	0.0	2.3	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	44	20
Missing cases	0	2	1

Table A1.6 View on closed areas/places, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	12.5	4.5	25.0
'Disagree' %	87.5	93.2	75.0
'No opinion' %	0.0	2.3	0.0
Total %	100.0	100.0	100.0
Total cases (n =96)	32	44	20
Missing cases	0	2	1

Table A1.7 View on restriction of numbers of fishers, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	6.3	6.8	10.0
'Disagree' %	93.8	93.2	85.0
'No opinion' %	0.0	0.0	5.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	44	20
Missing cases	0	2	1

Table A1.8 View on restriction of mesh sizes, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	28.1	9.1	20.0
'Disagree' %	71.9	90.9	80.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	44	20
Missing cases	0	2	1

Table A1.9 View on restriction for gillnet mesh size, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	25.0	9.1	25.0
'Disagree' %	75.0	90.9	75.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	44	20
Missing cases	0	2	1

Table A1.10 View on restriction for beach seine mesh size, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	25.0	9.3	20.0
'Disagree' %	75.0	90.7	80.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 95)	32	43	20
Missing cases	0	3	1

Table A1.11 View on restriction for lift net mesh size, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	25.0	9.1	20.0
'Disagree' %	75.0	90.9	80.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	44	20
Missing cases	0	2	1

Table A1.12 View on restriction for industrial gear, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	50.0	42.2	40.0
'Disagree' %	50.0	55.6	60.0
'No opinion' %	0.0	2.2	0.0
Total %	100.0	100.0	100.0
Total cases (n = 97)	32	45	20
Missing cases	0	1	1

Table A1.13 View on prohibition for industrial gear, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	53.1	37.8	30.0
'Disagree' %	46.9	60.0	70.0
'No opinion' %	0.0	2.2	0.0
Total %	100.0	100.0	100.0
Total cases (n = 97)	32	45	20
Missing cases	0	1	1

Table A1.14 View on restrictions for beach seines, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	6.3	6.8	5.0
'Disagree' %	93.8	93.2	95.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	32	44	20
Missing cases	0	2	1

Table A1.15 View on prohibition for beach seines, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	3.1	4.4	5.0
'Disagree' %	96.9	95.6	95.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 97)	32	45	20
Missing cases	0	1	1

Table A1.16 View on restrictions for lift nets, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	3.2	4.4	10.0
'Disagree' %	96.8	95.6	90.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 96)	31	45	20
Missing cases	1	1	1

Table A1.17 View on prohibition for lift nets, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	3.1	4.4	10.0
'Disagree' %	96.9	95.6	90.0
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 97)	32	45	20
Missing cases	0	1	1

Table A1.18 View on prohibition for 'katuli' fishing, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	6.3	12.5	21.1
'Disagree' %	93.8	87.5	78.9
'No opinion' %	0.0	0.0	0.0
Total %	100.0	100.0	100.0
Total cases (n = 91)	32	40	19
Missing cases	0	6	2

Table A1.19 View on fishing restrictions only to be decided by government, sample respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Yes' %	90.6	81.4	70.0
'No' %	9.4	16.3	20.0
'No opinion' %	0.0	2.3	10.0
Total %	100.0	100.0	100.0
Total cases (n = 95)	32	43	20
Missing cases	0	3	1

Table A1.20 View on 'should be more patrol boats,' respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	58.1	69.8	55.0
'Disagree' %	41.9	25.6	35.0
'No opinion' %	0.0	4.7	10.0
Total %	100.0	100.0	100.0
Total cases (n = 94)	31	43	20
Missing cases	1	3	1

Table A1.21 View on 'more fishery scouts for enforcement,' respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	58.1	67.4	55.0
'Disagree' %	41.9	27.9	40.0
'No opinion' %	0.0	4.7	5.0
Total %	100.0	100.0	100.0
Total cases (n = 94)	31	43	20
Missing cases	0	0	1

Table A1.22 View on 'involve police more directly in fishery enforcement,' respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	25.8	33.3	30.0
'Disagree' %	74.2	61.9	65.0
'No opinion' %	0.0	4.8	5.0
Total %	100.0	100.0	100.0
Total cases (n = 93)	31	42	20
Missing cases	1	4	1

Table A1.23 View on 'punish offending fishers,' respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	71.0	73.8	70.0
'Disagree' %	29.0	21.4	25.0
'No opinion' %	0.0	4.8	5.0
Total %	100.0	100.0	100.0
Total cases (n = 92)	31	42	19
Missing cases	1	4	2

Table A1.24 View on 'punish offending traders/consumers,' respondents by type of fishery and fisher category, DRC

Response	Artisanal		Traditional
	Owner	Crew	(Owner+Crew)
'Agree' %	66.7	74.4	80.0
'Disagree' %	30.0	20.9	15.0
'No opinion' %	3.3	4.7	5.0
Total %	100.0	100.0	100.0
Total cases (n = 93)	30	43	20
Missing cases	2	3	1

ANNEX 2

ADDITIONAL STATISTICAL TABLES -- DRC POST-HARVEST SAMPLE

Table A2.1 View on allowing everyone to fish everywhere in lake, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Yes' %	4.3	5.6	4.9
'No' %	89.1	86.1	87.8
'No opinion' %	6.5	8.3	7.3
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.2 View on allowing people to fish outside own district, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Yes' %	21.7	27.8	24.4
'No' %	69.6	63.9	67.1
'No opinion' %	8.7	8.3	8.5
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.3 View on allowing people to fish outside own country, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Yes' %	13.0	16.7	14.6
'No' %	78.3	72.2	75.6
'No opinion' %	8.7	11.1	9.8
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.4 View on always enough fish for everybody in future, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Yes' %	2.2	2.8	2.4
'No' %	89.1	77.8	84.1
'No opinion' %	8.7	19.4	13.4
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.5 View on closed seasons/times, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	0.0	13.9	6.1
'Disagree' %	97.8	83.3	91.5
'No opinion' %	2.2	2.8	2.4
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.6 View on closed areas/places, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	8.7	16.7	12.2
'Disagree' %	82.6	72.2	78.0
'No opinion' %	8.7	11.1	9.8
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.7 View on restriction of numbers of fishers, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	4.3	2.8	3.7
'Disagree' %	93.5	97.2	95.1
'No opinion' %	2.2	0.0	1.2
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.8 View on restriction of mesh sizes, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	30.4	58.3	42.7
'Disagree' %	52.2	33.3	43.9
'No opinion' %	17.4	8.4	13.4
Total %			
Report cases (N = 82)	46	36	82

Table A2.9 View on restriction for industrial gear, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	4.3	8.3	6.1
'Disagree' %	87.0	88.9	87.8
'No opinion' %	8.7	2.8	6.1
Total %			
Report cases (N = 82)	46	36	82

Table A2.10 View on prohibition for industrial gear, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	32.6	63.9	46.3
'Disagree' %	60.9	36.1	50.0
'No opinion' %	6.5	0.0	3.7
Total %			
Report cases (N = 82)	46	36	82

Table A2.11 View on restrictions for beach seines, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	4.3	8.3	6.1
'Disagree' %	91.3	91.7	91.5
'No opinion' %	4.4	0.0	2.4
Total %			
Report cases (N = 82)	46	36	82

Table A2.12 View on prohibition for beach seines, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	0.0	0.0	0.0
'Disagree' %	95.7	100.0	97.6
'No opinion' %	4.3	0.0	2.4
Total %			
Report cases (N = 82)	46	36	82

Table A2.13 View on restrictions for lift nets, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	4.3	8.3	6.1
'Disagree' %	91.3	91.7	91.5
'No opinion' %	4.4	0.0	2.4
Total %			
Report cases (N = 82)	46	36	82

Table A2.14 View on prohibition for lift nets, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	0.0	0.0	0.0
'Disagree' %	95.7	100.0	97.6
'No opinion' %	4.3	0.0	2.4
Total %			
Report cases (N = 82)	46	36	82

Table A2.15 View on fishing restrictions only to be decided by government, post-harvest sample respondents by gender, DRC

Response	Female	Male	Total
'Yes' %	63.0	83.3	72.0
'No' %	6.5	2.8	4.9
'No opinion' %	30.4	13.9	23.2
Total %	100.0	100.0	100.0
Report cases (N = 82)	46	36	82

Table A2.16 View on 'should be more patrol boats,' post-harvest respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	54.3	66.7	59.8
'Disagree' %	23.9	25.0	24.4
'No opinion' %	21.8	8.3	15.8
Total %			
Report cases (N = 82)	46	36	82

Table A2.17 View on 'more fishery scouts for enforcement,' post-harvest respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	34.8	63.9	47.6
'Disagree' %	39.1	30.6	35.4
'No opinion' %	26.1	5.5	17.0
Total %			
Report cases (N = 82)	46	36	82

Table A2.18 View on 'involve police more directly in fishery enforcement,' post-harvest respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	73.9	2.8	42.7
'Disagree' %	6.3	91.7	43.9
'No opinion' %	19.8	5.5	13.4
Total %			
Report cases (N = 82)	46	36	82

Table A2.19 View on 'punish offending fishers,' post-harvest respondents by gender, DRC

Response	Female	Male	Total
'Agree' %	84.8	91.7	87.8
'Disagree' %	2.2	2.8	2.4
'No opinion' %	13.0	5.5	9.8
Total %			
Report cases (N = 82)	46	36	82